

**WCRIBMA**  
THE WORKERS' COMPENSATION RATING  
AND INSPECTION BUREAU OF MASSACHUSETTS

December 22, 2023

The Honorable Gary Anderson  
Commissioner of Insurance  
Massachusetts Division of Insurance  
1000 Washington Street, Suite 810  
Boston MA 02118-6200

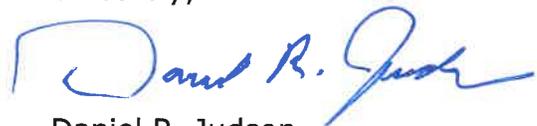
Dear Commissioner Anderson:

In accordance with General Laws, Chapter 152, Sections 52 and 53A, as amended by St. 1985, c. 572, I submit, on behalf of all members and subscribers of The Workers' Compensation Rating and Inspection Bureau of Massachusetts (WCRIBMA), a General Revision of Workers' Compensation Insurance Rates and Rating Values.

With this letter, I am submitting the technical support for the analysis underlying the proposed statewide decrease in average rates of 8.3%. Our Cost Containment filing is attached as Volume 3 of the filing.

We propose the manual rates to be effective 12:01 A.M., July 1, 2024, applicable to new and renewal policies.

Sincerely,



Daniel R. Judson  
President

**COMMONWEALTH OF MASSACHUSETTS  
DIVISION OF INSURANCE**

**Docket No. 23-**

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*In re:*

**APPLICATION OF THE WORKERS'  
COMPENSATION RATING AND INSPECTION  
BUREAU OF MASSACHUSETTS FOR APPROVAL  
OF A GENERAL RATE REVISION TO BE  
EFFECTIVE ON AND AFTER JULY 1, 2024**

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**PRE-FILED DIRECT TESTIMONY OF CAROLYN J. BERGH**

The Workers' Compensation Rating and Inspection Bureau of Massachusetts ("WCRIBMA") submits the following direct testimony of Carolyn J. Bergh in support of its application for a general rate revision to be effective on and after July 1, 2024.

Q. Please state your full name.

A. Carolyn J. Bergh.

Q. Ms. Bergh, please describe your current employment and your educational and professional experience.

A. I am presently employed as Vice President and Actuary at the WCRIBMA. I hold a bachelor's degree in mathematics and statistics from the University of Connecticut, Storrs. I am a Fellow of the Casualty Actuarial Society and a member of the American Academy of Actuaries. Before joining the WCRIBMA in September 2018, I spent five years as an assistant vice president and actuary for The Hartford overseeing their workers' compensation line of business, where my responsibilities included rating and pricing, reserving, claims and underwriting support. Prior to The Hartford, I was employed at the

NCCI for ten years. Six an half years as a Practice Leader and Senior Actuary, overseeing the Legislative Analysis area, Pool Reserving and Data Quality Team and three and a half years as a State Actuary / Project Leader for several states, including Virginia, Tennessee, Texas, Rhode Island and Iowa. My actuarial career began in 1987 at Aetna Property Casualty in Hartford where I worked on ratemaking for personal lines. Subsequently I have worked for several companies in both a ratemaking and reserving capacity: NCCI (9/89–10/91) Sr. Actuarial Analyst, Workers Compensation Class Ratemaking; Lancer Insurance Company (10/92-9/95) Commercial Auto and Personal Lines; Providence Washington Insurance Company (9/95-11/99) Commercial and Personal Lines; Bristol West Insurance Company (11/99-2/03) Non-Standard Auto. A copy of my curriculum vitae is attached to this testimony.

Q. What was your role in the preparation of the current WCRIBMA filing for a general rate revision?

A. I was ultimately responsible for preparation of the entire filing. I worked closely with the WCRIBMA's actuarial staff and our outside consulting experts in preparing the filing. I am testifying in support of the reasonableness of the WCRIBMA's overall rate indication and sponsor Sections I (Rate Recommendation), II ( Loss Development), III (Premium), IV (Benefit Change Adjustments), V (Trend), VI (Expenses) and XIV (Cost Containment). I also oversaw preparation of Volume 2 of the filing, which included consulting with and providing input to my colleague, Anthony Salido, regarding the data and methodology used in that volume. I also provided input into assumptions related to Volume 1, Section VII (Profit), which was prepared by the WCRIBMA's staff and peer reviewed by our outside consulting

expert George Zanjani. I worked with the WCRIBMA's outside consulting experts regarding their peer review and input on the other portions of the filing.

Q. Have you explained the basis of your derivation of each of the ratemaking factors that you are sponsoring in the text and accompanying exhibits found in the WCRIBMA's filing?

A. Yes.

Q. Are the data, calculations and narrative statements in the sections you are sponsoring complete and accurate?

A. To the best of my knowledge, information and belief, the data and calculations in the sections of the filing I am sponsoring are complete and accurate, and the narrative statements offered in support of these sections are also accurate and correct.

Q. Ms. Bergh, what general rate level change is the WCRIBMA recommending this year?

A. As shown in Section I of the filing, the WCRIBMA is recommending a decrease in average rates of 8.3% for workers' compensation, effective July 1, 2024.

Q. Are you familiar with the statutory standard that must be applied by the Commissioner in reviewing the rates proposed in the WCRIBMA's current filing – that they “are not excessive, inadequate or unfairly discriminatory” and that they “fall within a range of reasonableness”?

A. Yes.

Q. Do you have an opinion as to whether the rates proposed in the WCRIBMA's current filing satisfy the statutory standard?

A. Yes.

Q. What is your opinion?

A. It is my professional opinion that the rates proposed in the WCRIBMA's current filing are not excessive, inadequate or unfairly discriminatory for the classifications to which they apply, and that they fall within a range of reasonableness. Accordingly, I recommend that the Commissioner approve the WCRIBMA's filing.

Q. What was your role in the preparation of the cost containment section of the current WCRIBMA filing?

A. I oversaw the preparation of the cost containment section of the filing. I worked closely with WCRIBMA staff in reviewing the cost containment surveys for the participating companies and in the contacting of those companies about any outstanding questions the WCRIBMA had regarding the survey responses.

In addition to overseeing the compilation of these ten survey responses, I also peer reviewed the input of the updated data and information from the Insurance Fraud Bureau of Massachusetts. That information can be found in the cost containment filing. To the best of my knowledge, the information and exhibits in this section of the filing are complete and accurate.

Q. Are you familiar with the statutory provisions that require the WCRIBMA to make a cost containment filing?

A. Yes. It is my understanding that the legislature has mandated that the Commissioner make a finding, based on the information WCRIBMA submits in its filing, as to whether insurers employ acceptable "cost control programs and techniques ... which have had or are expected to have a substantial impact on fraudulent claim costs, unnecessary health care

costs, and any other unreasonable costs and expenses, as well as the collection of appropriate premium charges owed” to the insurers the WCRIBMA represents.

Q. Does this filing provide the information the Commissioner would need to make a finding that the industry’s cost control programs and techniques satisfy the statutory standard?

A. Yes.

Q. Do you have an opinion on what his finding should be this year?

A. Yes.

Q. What is your opinion?

A. In my professional opinion, the information the WCRIBMA has submitted this year should lead the Commissioner to make the finding that there are acceptable cost control programs and techniques’ presently in place which satisfy the statutory requirements.

Signed this 15<sup>th</sup> day of December 2023 under the pains and penalties of perjury.

  
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Carolyn J. Bergh, FCAS, MAAA, CPCU

**PROFESSIONAL EXPERIENCE:**

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***WORKERS' COMPENSATION RATING & INSPECTION BUREAU OF MA, Boston, MA***

9/18 – present **Vice President and Actuary**

Responsible for the management of the Actuarial and Data Operations departments.  
Oversee the collection of data and manage the preparation of workers' compensation rate filings for the Commonwealth of Massachusetts.

***THE HARTFORD, Hartford, CT***

10/12 – 5/18 **Assistant Vice President & Actuary, Workers Compensation Line of Business**

Ensured the profitability and rate adequacy of \$2.8B book of business  
Worked closely with product, underwriting, claims, reserving, finance, data scientist and field office  
Oversaw the functional areas of rating, pricing and planning  
Indications, filings, trends monitoring, planning, predictive modeling implementation and monitoring  
Pricing - Responsible for monitoring the regulatory environment and tracking marketplace activity including preparation of competitor analyses, rate-setting, and pricing proposals  
Industry influence and participation - Actuarial Committee (MA, PA, CA and NCCI)

2003 – 2012 ***NATIONAL COUNCIL ON COMPENSATION INSURANCE, Boca Raton, FL***

2006 – 2012 **Practice Leader & Senior Actuary**

Legislative Analysis - Oversaw the pricing of legislative proposals and enactments  
Provided support to legislators and insurance industry by analyzing benefit proposals, conducting research and participate in educational forums on cost drivers  
Residual Market Pool Reserving  
Data Quality

2003 – 2006 **Director and Actuary**

Oversaw the preparation of rate filings in several states  
Expert witness testimony and educational forums  
Team leader of legislative analysis oversaw pricing proposals and enacted legislation and research on benefit structure and post reform analysis

***BRISTOL WEST INSURANCE COMPANY, Davie, FL***

1999-2003 **Actuary and Manager** (Non-Standard Auto)

Assisted in building Actuarial and Product Management Department  
Quarterly Reserving - presented reserves and claims' trends to Sr. Management and BOD  
Preparation of Actuarial Reports and Opinions  
Liaison with external auditors, Department of Insurance personnel and Reinsurers  
Claims metrics development and monitoring  
Mergers and Acquisition activity



**EXPERT TESTIMONY:**

Helena, Montana, February 2009  
BOD MT State Fund – Medical Fee Schedule

Nashville, Tennessee, October 2007  
Workers Compensation Insurance Loss Cost Hearing

Nashville, Tennessee, April 2007  
Workers Compensation Insurance Loss Cost Hearing – Medical Fee Schedule - Law Only

Providence, Rhode Island, January 2007  
Workers Compensation Insurance Loss Cost Hearing

Nashville, Tennessee, October 2006  
Workers Compensation Insurance Loss Cost Hearing

Providence, Rhode Island, December 2005  
Workers Compensation Insurance Loss Cost Hearing

Nashville, Tennessee, September 2005  
Workers Compensation Insurance Loss Cost Hearing

Nashville, Tennessee, April 2005  
Workers Compensation Insurance Loss Cost Hearing – Medical Fee Schedule - Law Only

Nashville, Tennessee, February 2005  
Workers Compensation Insurance Loss Cost Hearing

Nashville, Tennessee, November 2004  
Workers Compensation Insurance Loss Cost Hearing

Nashville, Tennessee, July 2004  
Workers Compensation Insurance Loss Cost Hearing – Law Only

Nashville, Tennessee, February 2004  
Joint Committee on Workers Compensation

Nashville, Tennessee, February 2004  
Senate, Commerce, Labor and Agriculture Committee

**PUBLIC PRESENTATIONS:**

CAS Spring Meeting, June 2008  
WC Second Injury Fund Eliminations

Data Reporting Workshop, Jan 2008  
NCCI New Medical Call

Annual Issues Symposium, May 2007  
Performance of Payroll as the Exposure Base for WC

**STATE ADVISORY FORUMS:**

Nashville, Tennessee, September 2006

Austin, Texas, November 2005

Nashville, Tennessee, September 2005

Providence, Rhode Island, September 2005

Nashville, Tennessee, September 2004

Austin, Texas, November 2004

Austin, Texas, November 2003

Nashville, Tennessee, September 2003

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**PRE-FILED DIRECT TESTIMONY OF ANTHONY SALIDO**

The Workers' Compensation Rating and Inspection Bureau of Massachusetts ("WCRIBMA") submits the following direct testimony of Anthony Salido in support of Sections IX, X, XI, XII and XIII of its filing for a general rate revision to be effective on and after July 1, 2024.

Q. Please state your full name.

A. Anthony Salido.

Q. Mr. Salido, please describe your current employment and your educational and professional experience.

A. I am presently employed as Assistant Vice President, Data Operations and Actuary at the WCRIBMA, 101 Arch Street, Boston, Massachusetts. My educational background includes a Bachelors degree in Mathematics and Economics from Boston College. I joined the WCRIBMA in June 1998. I am a Fellow of the Casualty Actuarial Society. A copy of my resume is attached to this testimony.

Q. What was your role in the preparation of the current WCRIBMA filing?

A. I was responsible for the preparation of Volume 2 of the filing. I had principal responsibility for the preparation of the following sections of the filing: Sections IX (Classification), X (Experience Rating), XI (Miscellaneous Rating Values), XII (Retrospective Rating), and Section XIII (Data). These sections were also peer reviewed by my colleague, Carolyn Bergh, Vice President & Actuary, WCRIBMA, who oversaw preparation of the filing as a whole and consulted with and provided input to me regarding the data and methodology used in these sections of the filing.

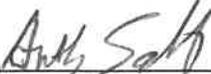
Q. Have you explained the basis of your derivation of each of the ratemaking factors in the text and accompanying exhibits found in Sections IX (Classification), X (Experience Rating), XI (Miscellaneous Rating Values), and XII (Retrospective Rating)?

A. Yes.

Q. Are the data, calculations and narrative statements in the sections you are sponsoring complete and accurate?

A. To the best of my knowledge, information and belief, the data and calculations underlying Sections IX (Classification), X (Experience Rating), XI (Miscellaneous Rating Values), and XII (Retrospective Rating) are complete and accurate, and the narrative statements are also accurate and correct.

Signed this 15<sup>th</sup> day of December, 2023 under the pains and penalties of perjury.

  
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Anthony Salido, FCAS, MAAA

Anthony D. Salido, FCAS, MAAA  
Workers' Compensation Rating and Inspection Bureau of MA  
101 Arch St. 5<sup>th</sup> Floor  
Boston, MA 02110

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**Work experience**

**The Workers' Compensation Rating and Inspection Bureau of MA  
Boston, MA**

06/1998 - Present

Senior Actuarial Analyst 01/2004-08/2010

Data Operations Director / Actuary 09/2010–11/2018

Assistant Vice President, Data Operations and Actuary 12/2018–Present

- Directs the collection, editing, and correction of all Unit Statistical, Policy and Aggregate Financial Call data submitted to the WCRIBMA by its member carriers.
- Responsible for the preparation of various sections contained in the WCRIBMA's rate filings, including loss development, premiums, benefit level adjustments, trend, expenses, experience rating, retrospective rating, class rates, F-Class rates, and miscellaneous rating.
- Maintains the data structures and associated metadata for the Actuarial Department's Financial Call and Unit Stat plan databases.
- Responsible for the maintenance of the nightly batch process that populates the Actuarial Department's databases, runs the Actuarial Department's data edits, and creates content for the WCRIBMA's intranet and web site.
- Formalized and directed the process employed by the WCRIBMA for the data reconciliations mandated by the Massachusetts Workers Compensation Statistical Plan. Worked with other WCRIBMA departments and data reporters to explain and/or correct anomalies identified by the reconciliation process.
- Developed and maintains Actuarial Department's intranet site which includes a history of Massachusetts workers' compensation rate filing activity, reconciliation reports, edit reports, and other content to support the WCRIBMA's rate filing efforts.
- Prepares Circular Letters and Special Bulletins.
- Responds to information requests from members, regulators, etc.

**Education**

F.C.A.S. 2010, M.A.A.A. 2008

Boston College, Chestnut Hill MA

B.A. in Mathematics and Economics 1998

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**PRE-FILED DIRECT TESTIMONY OF SHARON TENNYSON**

The Workers' Compensation Rating and Inspection Bureau of Massachusetts ("WCRIBMA") submits the following direct testimony of Sharon Tennyson in support of its application for a general rate revision to be effective on and after July 1, 2024.

Q. Please state your full name.

A. Sharon Tennyson.

Q. What are your professional qualifications?

A. I am an economist and Professor of Public Policy and Economics at Cornell University. Before moving to Cornell, I was on the faculty of the Department of Insurance and Risk Management at the Wharton School of the University of Pennsylvania. I have over 30 years' experience in research related to insurance markets. I serve as a Senior Associate Editor of the *Journal of Risk and Insurance* and on the Editorial Board of the *Journal of Insurance Regulation*. I am a former president of the Risk Theory Society. My particular area of expertise is in the industrial organization and regulation of insurance markets, and I have published extensively on these topics. My curriculum vitae is attached to this testimony.

Q. What was your role in the preparation of the current WCRIBMA filing for a general rate revision?

A. I was retained by Anderson & Kreiger LLP, counsel for the WCRIBMA, to provide an analysis based on well-accepted economic theory that uses available insurance market data to determine whether the commission allowance recommended by the WCRIBMA is reasonable and reflects the actual cost to agents or brokers of the services they provide. I completed such an analysis for the WCRIBMA and it is summarized in my report, reproduced in Section XIV of the WCRIBMA's rate filing. To the best of my knowledge, information and belief, the data and calculations underlying my report are complete and accurate, and the narrative statements offered in my report are also accurate and correct, and continue to reflect the competitive situation of the workers compensation market in Massachusetts in 2023.

Q. Professor Tennyson, what conclusions did you reach as a result of your analysis?

A. It is my professional opinion that the commission allowance recommended by the WCRIBMA is reasonable and reflects the actual cost to agents and brokers of the services they provide as producers of workers' compensation insurance policies in Massachusetts.

Q. Have you explained in your report how you came to these conclusions?

A. Yes.

Q. Does your report contain all the data that you relied upon in reaching these conclusions?

A. Yes.

Signed this 13<sup>th</sup> day of December 2023 under the pains and penalties of perjury.



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Sharon Tennyson

**SHARON TENNYSON, Ph.D.**

Cornell University

2214 MVR Hall, Ithaca, NY

Email: [sharon.tennyson@cornell.edu](mailto:sharon.tennyson@cornell.edu)

Website: <https://www.human.cornell.edu/people/st96>

**AREAS OF INTEREST**

Insurance Law and Economics, Consumer Policy, Regulatory Economics, Consumer Finance

**EDUCATION**

Ph.D., Economics, Northwestern University; Fields: Industrial Organization, Public Economics

B.A., Economics, University of California at Los Angeles

**PRIMARY ACADEMIC APPOINTMENTS**

2021- *Professor*, Jeb. E. Brooks School of Public Policy and Department of Economics, Cornell University

2013-2021 *Professor*, Department of Policy Analysis and Management, Cornell University

1998-2012 *Associate Professor*, Department of Policy Analysis and Management, Cornell University

1990-1998 *Assistant Professor*, Department of Insurance and Risk Management, University of Pennsylvania

**SECONDARY APPOINTMENTS**

2022- Associate, Brazilian Institute of Insurance Law (IBDC)

2020-2022 Member, Advisory Board, Cornell Program on Infrastructure Policy

2019-2020 Member, Research Working Group on Rural Revitalization and Resiliency in Upstate New York, Polson Institute, Cornell

2018- Faculty Fellow, Atkinson Center for a Sustainable Future, Cornell

2017-2020 Coordinator, Faculty Working Group on Disaster Resilience, Mario Einaudi Center for International Studies, Cornell

2017-2020 Director of Graduate Studies, Graduate Field of Public Affairs, Cornell

2017-2018 Advisory Board member, Mario Einaudi Center for International Studies, Cornell

2014-2017 Director, Cornell Institute for Public Affairs

2014- Faculty Affiliate, Cornell Institute for Behavioral and Household Finance

2013-2018 Core Faculty member, Cornell Institute for Public Affairs

2012 - Faculty Affiliate, Bronfenbrenner Center for Translational Research, Cornell

2008 - Senior Research Fellow, Networks Financial Institute, Scott College of Business

2003-2008 Faculty Fellow, Program on Pharmaceutical Policy Issues, Department of Policy Analysis and Management, Cornell

2003-2004 Project Coordinator, Program on Pharmaceutical Policy Issues, Department of Policy Analysis and Management, Cornell

2002-2003 Director of Undergraduate Studies, Department of Policy Analysis and Management, Cornell

1996-1998 Senior Research Fellow, Financial Institutions Center, Wharton School

**EXTERNAL LEADERSHIP POSITIONS**

- 2020-2021 Executive Committee member, International Academy of Financial Consumers  
 2019- Editor, *International Review of Financial Consumers* (Advisor, 2016-2019)  
 2018- Senior Editor, *Journal of Risk and Insurance* (Associate Editor, 2004-2017)  
 2018- Editorial Board member, *Journal of Consumer Affairs*  
 2011-2017 Editor, *Journal of Consumer Affairs*  
 2011-2018 International Board of Advisors, SKKU Graduate School of Insurance, SKKU School of Business, Seoul, Korea  
 2005- Editorial Review Board member, *Journal of Insurance Regulation*  
 2003-2004 President, Risk Theory Society (Officer 2002-2005)

**VISITING APPOINTMENTS**

- June 2016 GenRe Distinguished Visitor, University of Cologne, Germany  
 July 2011 Munich Risk and Insurance Center, Ludwig Maximilians-Universität, Germany  
 Feb 2011 Center for Insurance Research, Florida State University  
 April 2000 Department of Insurance and Risk Management, University of Pennsylvania  
 1999 Centre for Market and Public Organisation (CMPO), University of Bristol, U.K.

**RECENT HONORS AND AWARDS**

- 2022 Keynote Speaker, International Academy of Financial Consumers 9<sup>th</sup> annual Global Forum on Financial Consumers, Hanoi, Vietnam; “Insurance Literacy around the Globe: Evidence from the 2021 ReMark Global Consumer Study”  
 2020 Fulbright U.S. Scholar (Global Fellowship), The Fulbright Program, US Department of State (unfulfilled due to COVID-19 pandemic)  
 2019 Graduate KON/HEAA Advising Award, College of Human Ecology, Cornell University  
 2019 Delegate (Cornell University), UN Climate Change Conference (COP25), Madrid  
 2019 Keynote Speaker, International Academy of Financial Consumers 6<sup>th</sup> annual Global Forum on Financial Consumers, Yogyakarta, Indonesia; “Linking Academic Research with Public Policy”  
 2018 Social Science Fellowship, Atkinson Center for a Sustainable Future, Cornell (awarded for spring 2019)  
 2017 Invited Panelist, 7<sup>th</sup> Insurance Law Forum, Brazilian Institute of Insurance Law (IBDS), Sao Paulo, Brazil; “Insurance and Regulatory Capture”  
 2016 Winner, 2015 Best Article, *Risk Management and Insurance Review*; “Product Ratings as a Market Reaction to Deregulation: Evidence from the German Insurance Market” (with Stephanie Meyr)  
 2014 Winner, 2013 Spencer L. Kimball Writing Award, *Journal of Insurance Regulation* Best Article award; “The Effects of Regulatory Reforms in the South Carolina Auto Insurance Market” (with Robert Klein and Martin F. Grace)  
 2013 Keynote Speaker, 13<sup>th</sup> Annual Regulatory Affairs Symposium, Insurance Bureau of Canada, Toronto; “Ontario Auto Insurance: Great Expectations”  
 2012 Winner, 2011 Casualty Actuarial Society Award for Best Article published by the American Risk and Insurance Association; “The Impact of Rate Regulation on Claims: Evidence from Massachusetts Automobile Insurance” (with Richard Derrig)

- 2012 Winner, 2011 Best Feature Article, *Risk Management and Insurance Review*; “The Impact of Rate Regulation on Claims: Evidence from Massachusetts Automobile Insurance” (with Richard Derrig)
- 2011 Winner, 2010 Best Article, *Geneva Risk and Insurance Review*; “Incentive Effects of Community Rating in Insurance Markets: Evidence from Massachusetts Automobile Insurance”
- 2011 Keynote Speaker, American Council on Consumer Interests; “Perspectives on Consumer Protection Regulation”
- 2010 Winner, 2009 Best Feature Article, *Risk Management and Insurance Review*; “Do State Cost Control Policies Reduce Medicaid Prescription Drug Spending?” (with Kosali I. Simon and Julie Hudman)
- 2010 Keynote Speaker, Louisiana Conference on Insurance Fraud and Vehicle Theft; “The Many Faces of Fraud: Moral, Social and Economic Catalysts”
- 2010 Keynote Speaker, China International Conference on Insurance and Risk Management, Xi Ning China; “Issues and Challenges in Consumer Protection Regulation”

### **CURRENT WORKING PAPERS**

“Mortality Risks, Subjective Well-Being and Polygenic Scores: Evidence from the Health and Retirement Study” with Nan Zhu and Lisa L. Posey, under review.

“No Traffic Expected: The Impact of the COVID-19 Pandemic on Road Safety in Mexico” with Jose Balmori de la Miyar, Adan Silverio Murillo and Lauren Hoehn-Valasco, under review.

“Impact of Rural School-Based Health Centers on Health Care Utilization Among Students with Asthma” with Wendy Brunner, John Sipple, Chris Kjolhede and Peter Fiduccia, in preparation.

“School-Based Health Centers Reduce Absenteeism in Rural Areas” with Zhuang Han, Wendy Brunner, Peter Fiduccia, John Sipple and Chris Kjolhede, in preparation.

“What Accounts for Rising and Falling Flood Insurance Take-Up in New York State?” with John A. Zinda, Katherine Foster and David Kay, in preparation.

“In Whose Name? Joint Planning of Individual Retirement Savings in Korea” with Hae Kyung Yang and Frances Woolley, in preparation

“Is Risk-Taking in our Nature? Behavioral Genetics in Financial Decision-Making” with Vickie Bajtelsmit and Lisa L. Posey, in preparation.

### **REFEREED JOURNAL ARTICLES**

“School-Based Healthcare and Rural Community Health” with John Sipple, Peter Fiduccia, Wendy Brunner, Elizabeth Lembo and Chris Kjolhede, *Community Development*, January 2023 1-18. <https://doi.org/10.1080/15575330.2022.2163409>

“The Effects of State Legal Environments on Automobile Insurance Claims and Compensation: Evidence from the *Royal Globe* Doctrine” with Brian Richman, *Risk Management and Insurance Review*, 25, 491– 513, December 2022. <https://doi.org/10.1111/rmir.12232>

“Price Subsidies and the Demand for Automobile Insurance” with BoHeng Su, *The North American Actuarial Journal* 2022. <https://doi.org/10.1080/10920277.2022.2082986>

“My Wife is my Insurance Policy: Household Bargaining and the Purchase of Long-Term Care Insurance” with Hae Kyung Yang and Frances Woolley, *Research on Aging* 44.9-10 October 2022: 692-708.

“EU Intermediary Regulation and its Impact on Insurance Agent Quality: Evidence from Germany” with Christoph Lex, *International Review of Law and Economics* 68 December 2021: 106021.

“Credible or Biased? An Analysis of Insurance Product Ratings” with Stephanie Müller and Patricia Born, *International Review of Financial Consumers* 5 (1) April 2020: 25-39.

“Effects of Informational Nudges on Consumer Debt Repayment Behaviors” with Lauren Jones and Caezilia Loibl, *Journal of Economic Psychology* 51 December 2015: 16-33.

“Directors’ and Officers’ Liability Insurance, Corporate Risk and Risk Taking: New Panel Data Evidence on the Role of Directors’ and Officers’ Liability Insurance” with M. Martin Boyer, *Journal of Risk and Insurance* 82(4) December 2015: 753-791.

“Ontario Auto Insurance Reform: A Game of “Whack-A-Mole” with Mary Kelly and Anne E. Kleffner, *Assurances* 82(4) December 2015: 43-74.

“Product Ratings as a Market Reaction to Deregulation: Evidence from the German Insurance Market” with Stephanie Meyr, *Risk Management & Insurance Review* 18(1) Spring 2015: 77- 100.  
Winner, 2015 American Risk and Insurance Association Award for Best Article published in *RMIR*

“The Influence of FDA Advisory Information and Black Box Warnings on Individual Use of Prescription Antidepressants” with Kristy Parkinson, Joseph Price and Kosali Simon, *Review of Economics of the Household* 12(4) December 2014: 771-790.

“The Development and Regulation of China’s Insurance Market: History and Perspectives” with Bingzheng Chen, Maoqi Wang and Haizhen Zhou, *Risk Management & Insurance Review* 17(2) Fall 2014: 241-263.

“The Role of Life Experience in Long Term Care Insurance Decisions” with HaeKyung Yang, *Journal of Economic Psychology* 42 June 2014: 175-188.

“Does the Threat of Insurer Liability for “Bad Faith” Affect Insurance Settlements?” with Danial P. Asmat, *Journal of Risk and Insurance* 81(1) March 2014: 1-23.

“The Effects of Regulatory Reforms in the South Carolina Auto Insurance Market” with Robert W. Klein and Martin Grace, *Journal of Insurance Regulation* 32 2013: 1-30.  
Winner, 2013 Spencer L. Kimball Writing Award, *Journal of Insurance Regulation*  
Best Article award

“The Effect of Prescription Drug Withdrawals on the Use of Competitor Drugs: The Case of Vioxx” with J. Michael Collins and Kosali Simon, *Journal of Economic Behavior and Organization* 86(1) February 2013: 148-168.

“Determination of the Dates of Passage of the Married Women’s Property Acts and Earnings Acts” with R. Richard Geddes, *Research in Economic History* Vol. 29 2013: 145-189.

“The Effects of Expanding Property Rights on Women’s Economic Activity” with R. Richard Geddes and Dean Lueck, *Journal of Law and Economics* 55(4) November 2012: 839-867.

“Consumers’ Insurance Literacy: Evidence from Survey Data” *Financial Services Review* 20(3) Fall 2011: 165-179.

“The Impact of Rate Regulation on Claims: Evidence from Massachusetts Automobile Insurance” with Richard A. Derrig, *Risk Management & Insurance Review* 14(2) Fall 2011: 173-200.

Winner, 2011 American Risk and Insurance Association Award for Best Feature Article published in *RMIR*

Winner, 2011 Casualty Actuarial Society Award for Best Article Published by the American Risk and Insurance Association

“The Effects of Regulated Premium Subsidies on Insurance Costs: An Empirical Analysis of Automobile Insurance” with Lauren Regan and Mary A. Weiss, *Journal of Risk and Insurance* 77(3) September 2010: 597-624.

“Incentive Effects of Community Rating in Insurance Markets: Evidence from Massachusetts Automobile Insurance” *Geneva Risk and Insurance Review* 35(1) June 2010: 19-46.

Winner, 2010 European Group of Risk and Insurance Economists Award for Best Article published in *GRIR*

“The Law and Economics of First Party Insurance Bad Faith Liability” with William J. Warfel, *Connecticut Insurance Law Journal* 16(1) 2009-2010: 203-242.

“State Prescription Drug Policies, Cost Barriers and the Use of Acute Care Services by Medicaid Beneficiaries” with Hae Kyung Yang, *Journal of Consumer Affairs* 43(1) Spring 2009: 4-25.

“Do State Cost Control Policies Reduce Medicaid Prescription Drug Spending?” with Kosali I. Simon and Julie Hudman, *Risk Management & Insurance Review* 12(1) Winter 2009: 37-64.

Winner, 2009 American Risk and Insurance Association (ARIA) Award for Best Feature Article, *RMIR*

“The Emergence and Potential Consequences of First Party Insurance Bad Faith Liability” with William J. Warfel, *Journal of Insurance Regulation* 28(2) Winter 2008: 3-20.

“The Relationship between Auto Insurance Rate Regulation and Insured Loss Costs: An Empirical Analysis” with Lauren Regan and Mary A. Weiss, *Journal of Insurance Regulation* 27(1) Fall 2008: 23-46.

“Insurance Fraud and Optimal Claims Settlement Strategies” with Keith J. Crocker, *Journal of Law*

*and Economics* 45(2) October 2002: 469-508.

“Claims Auditing in Automobile Insurance: Fraud Detection and Deterrence Objectives” with Pau Salsas-Forn, *Journal of Risk and Insurance* 69(3) September 2002: 289-308.

“Insurance Experience and Consumers’ Attitudes toward Insurance Fraud” *Journal of Insurance Regulation* 21(2) Winter 2002: 35-56.

“State Curriculum Mandates and Student Knowledge of Personal Finance” with Chau Nguyen, *Journal of Consumer Affairs* 25(2) Winter 2001: 241-262.

“Regulation, Political Influence and the Price of Automobile Insurance” with J. David Cummins and Richard D. Phillips, *Journal of Insurance Regulation* 20(1) Fall 2001: 9-50.

“Efficiency, Scale Economies and Consolidation in the U.S. Life Insurance Industry” with J. David Cummins and Mary A. Weiss, *Journal of Banking and Finance* 23(2-4) February 1999: 325-357.

“Capital Shocks and Merger Activity in the Property-Liability Insurance Industry” with Sandra L. Chamberlain, *Journal of Risk and Insurance* 65(4) December 1998: 563-595.

“The Coexistence of Distribution Systems under Price Search: Theory and some Evidence from Insurance” with Lisa L. Posey, *Journal of Economic Behavior and Organization* 35(1) January 1998: 95-115.

“The Impact of Rate Regulation on State Automobile Insurance Markets” *Journal of Insurance Regulation* 15(4) Summer 1997: 502-523.

“Economic Institutions and Individual Ethics: A Study of Consumer Attitudes Toward Insurance Fraud” *Journal of Economic Behavior and Organization* 30(2) February 1997: 247-266.

“Agent Discretion and the Choice of Insurance Marketing System” with Laureen Regan, *Journal of Law and Economics* 39(2) October 1996: 637-666.

“Moral Hazard in Insurance Claiming: Evidence from Automobile Insurance” with J. David Cummins, *Journal of Risk and Uncertainty* 12(1) January 1996: 29-50.

“Regulatory Lag in Automobile Insurance” *Journal of Risk and Insurance* 60(1) March 1993: 36-58.

“Reinsurance and the Liability Insurance Crisis” with Lawrence A. Berger and J. David Cummins, *Journal of Risk and Uncertainty* 5(3) July 1992: 253-272.

“Labor Market Discrimination, Imperfect Information and Self-Employment” with Stephen Coate, *Oxford Economic Papers* 44(2) April 1992: 272-288.

“Controlling Automobile Insurance Costs” with J. David Cummins, *Journal of Economic Perspectives* 6(2) Spring 1992: 95-115.

## BOOK CHAPTERS

“Insurance Distribution,” with James I. Hilliard, chapter in *The Handbook of Insurance* 3<sup>rd</sup> edition, Georges Dionne, editor, forthcoming 2024.

“Insurer Liability and Claim Settlement Failures: Evidence from the United States” Chapter 19 in *Contemporary Insurance Law*, 20<sup>th</sup> Anniversary Commemorative Volume of the Brazilian Institute of Insurance Law (IBDS), Ernesto Tzirulnik, Anamaria Blanco, Carolina Cavalcanti and Vitor Boaventura Xavier, eds. Roncarati Publishers, Sao Paulo, 2021.

“The Law and Economics of Insurance Bad Faith Liability” with Danial Asmat, Chapter 12 in *Research Handbook of the Economics of Insurance Law*, Daniel Schwartz and Peter Siegelman, eds. Edward Elgar Publishers, 2015.

“Insurance Distribution” with James I. Hilliard and Laureen Regan, chapter 23 in *Handbook of Insurance* 2<sup>nd</sup> edition, Georges Dionne, editor. Springer, 2013.

“Challenges and Approaches to Consumer Protection in the Insurance Industry” in *The Fundamentals of Future Insurance Regulation and Supervision: A Global Perspective*, Patrick M. Liedtke and Jan Monkiewicz, editors. Palgrave MacMillan, 2011.

“Automobile Insurance Regulation: The Massachusetts Experience” with Laureen Regan and Mary A. Weiss, in J. David Cummins, ed., *Deregulating Property-Liability Insurance: Restoring Competition and Increasing Market Efficiency*. Washington, DC: American Enterprise Institute-Brookings Institution Joint Center for Regulatory Studies, 2002: 25-80.

“Insurance Distribution Systems” with Laureen Regan, in Georges Dionne, ed., *Handbook of Insurance*, Kluwer Academic Publishers, 2000: 709-745.

“Costly State Falsification or Verification? Theory and Evidence from Bodily Injury Liability Claims” with Keith J. Crocker, in Georges Dionne and Claire Laberge-Nadeau, eds., *Automobile Insurance: Road Safety, New Drivers, Risks, Insurance Fraud and Regulation*, Kluwer Academic Publishers, 1999: 120-130.

“Rate Regulation and the Industrial Organization of Automobile Insurance” with Susan J. Saponic, in David Bradford, ed., *The Economics of Property-Casualty Insurance*, University of Chicago Press, 1998: 113-138.

“Moral Hazard, Adverse Selection and Community Monitored Insurance Programs” with Neil A. Doherty, in Robert Klein, ed., *Alternative Approaches to Insurance Regulation*, National Association of Insurance Commissioners, 1998: 97-110.

## PUBLISHED ESSAYS AND POLICY BRIEFS

“Insurance and Regulatory Capture” invited article for the Proceedings of the 7<sup>th</sup> Insurance Law Forum, Brazilian Institute for Insurance Law (IBDS), Brazil. 2018.

“Can Regulations Improve Financial Information and Advice?” invited article, *International Review*

*of Financial Consumers* 1(1) Oct 2016: 1-8.

*How Risk and Insurance Experts View the Effectiveness of Prior Approval and Market-Oriented Rate Regulatory Policies in Auto Insurance*, Insurance Research Council, August 2013.

*Does Ontario Need a New Auto Insurance System?* with Mary Kelly and Anne Kleffner, Insurance Bureau of Canada policy brief, September 2012.

*Long Term Effects of Rate Regulatory Reforms in Automobile Insurance Markets*, Insurance Research Council, March 2012.

*Consumers' Insurance Literacy*, Policy Brief 2011-PB-06 Networks Financial Institute July 2011.

“Consumer Protection in Insurance Markets” invited article, *Journal of Financial Consumers* 1(1) June 2011: 1-10.

*Rethinking Consumer Protection Regulation in Insurance Markets*, Policy Brief 2010-PB-07 Networks Financial Institute September 2010.

*Analyzing the Role for a Consumer Financial Protection Agency*, Policy Brief 2009-PB-13 Networks Financial Institute December 2009.

“Moral, Social and Economic Dimensions of Insurance Claims Fraud” *Social Research: An International Quarterly* 75(4) Winter 2008: 1181-1204.

*State Regulation and Consumer Protection in the Insurance Industry*, Policy Brief 2008-PB-03 Networks Financial Institute February 2008. Reprinted in *Consumer Protection: Diverging Perspectives*, G. Radhika, ed., Hyderabad: Icfai University Press, 2008-09

*First-Party Insurance Bad Faith Liability: Law, Theory, and Economic Consequences*, with William J. Warfel, National Association of Mutual Insurance Companies Issue Brief 2008.

*Efficiency Consequences of Insurance Rate Regulation*, Policy Brief 2007-PB-03 Networks Financial Institute. Reprinted in *The Icfai University Journal of Insurance Law* 6(3) 2008: 41-54.

## **OTHER NON-REFEREED PUBLICATIONS**

“Can health insurance companies charge the unvaccinated higher premiums? What about life insurers? 5 questions answered” with Kosali I. Simon, *The Conversation*, August 18, 2021. <https://theconversation.com/can-health-insurance-companies-charge-the-unvaccinated-higher-premiums-what-about-life-insurers-5-questions-answered-165959>

“Insurer Anti-Fraud Programs: Contracts and Detection versus Norms and Prevention” *Journal of Financial Transformation*, Spring 2011.

“Bad Faith Lawsuits: Raise Standard of Proof” with William J. Warfel, *Fraud Focus* (newsletter published by The Coalition Against Insurance Fraud), Winter 2009.

“Bad-Faith Liability for Unfair Claims Settlement Practices in First-Party Insurance” with William J. Warfel, *Pravartak: Journal of Insurance and Risk Management*, May 2009.

“Financial Literacy: A Public Policy Issue -- The Effect of Curriculum Mandates on Student Financial Knowledge” with Chau Nguyen and B.J. Bristow, *Proceedings of the 2000 Annual Conference of the Association for Financial Planning and Counseling*, November 2000.

“Curriculum Mandates: A Policy to Increase Financial Literacy?” with B.J. Bristow and Chau Nguyen, *Jumpstart Coalition Newsletter*, October 2000.

“Government Regulation of Insurer Sales Practice” *Market and Public Organisation*, University of Bristol, Issue 2, December 1999: 7-10.

Book Review of “The Liability Maze: The Impact of Liability Law on Safety and Innovation” by Peter Huber and Robert Litan, eds., published in *Journal of Policy Analysis and Management*, V11, No.4 (Fall 1992): 728-731

“The Effect of Rate Regulation on Underwriting Cycles” *CPCU Journal* 44(1) Mar 1991:33-45.

## **UNPUBLISHED PAPERS**

“Enhancing the Impact of Rural School-Based Health Centers via Parenting Education” with Kimberly A. Kopko, 2020.

“The Airline Passenger Protection Rule: Airline Responses for On-Time Performance” with Sra Chuenchoksan and Andrew M. McClintock, 2017.

“Tort Liability and Settlement Failure: Evidence on Litigated Auto Insurance Claims” with Danial P. Asmat. *Available at SSRN 2816697*, 2016.

“State Regulations, Uninsured Driving and the Cost of Automobile Insurance” with Mary A. Weiss, 2011.

“Trends in State Medicaid Prescription Drug Policies 1990-2004: What are the main policies the states are using?” with Kosali Simon and Julie Hudman, 2005.

“Medicaid Crowd-out Of Private Insurance: The Case of Long Term Care” with Hyojin Kang and Alan Mathios, 2004.

## **CONFERENCE PARTICIPATION**

### Organizational Activities:

2024	Local host and program chair, Global Forum on Financial Consumers
2020-2022	Organizing committee member, Global Forum on Financial Consumers
2018-2020	Session organizer and moderator, American Economic Association session for American Risk and Insurance Association
2015	Local organizer (host institution), Risk Theory Society
2013	Organizer, Editors’ Roundtable, ACCI annual meeting

- 2012 Plenary session co-organizer and moderator, panel on Consumer Protection Regulation, Asia-Pacific Risk and Insurance Association annual meeting
- 2009 Co-organizer, NAIC-Temple Symposium on Insurance Solvency Regulation
- 2008 Session organizer, American Economic Association meeting
- 2002 Program Chair, Risk Theory Society Seminar
- 1999 Session organizer, CSWEP session, Western Economic Association meeting

Research Presentations:

- 2019 Global Forum on Financial Consumers; IAFICO Fifth Annual Congress, Indonesia (plenary session presenter); UN Climate Change Conference (COP25), Madrid, panel presentation at the EU Pavilion (presenter)
- 2018 Bronfenbrenner Center for Translational Research, Talk at Twelve (panelist)
- 2017 7<sup>th</sup> Insurance Law Forum, IBDS, Sao Paulo, Brazil (presenter)
- 2016 7<sup>th</sup> CEAR/MRIC Behavioral Insurance Workshop, Munich (discussant)
- 2015 Global Forum on Financial Consumers; IAFICO First Annual Congress, Jeju Korea (plenary session presenter)
- World Risk and Insurance Economics Congress (discussant), Munich
- Public Choice Society annual meeting (presenter and discussant)
- 2014 Public Choice Society annual meeting (presenter and discussant)
- 2013 Casualty Actuarial Society national meeting (presenter), Vancouver, BC
- American Risk and Insurance Association meeting (discussant)
- 2012 National Insurance Council of Canada annual meeting (panelist), Quebec City
- Risk Theory Society seminar (presenter)
- American Council on Consumer Interests meeting (presenter)
- Webinar, National Association of Mutual Insurance Companies (presenter)
- Asia-Pacific Risk and Insurance Association meeting (presenter)
- 2011 Allied Social Science Association meeting, session sponsored by American Risk and Insurance Association (presenter)
- American Risk and Insurance Association meeting (presenter)
- 2010 World Risk and Insurance Economics Congress, Singapore (presenter and discussant)
- Conference on Insurance Regulatory Reform Issues: A Regional Perspective, Networks Financial Institute, Indianapolis (panelist)
- C.D. Howe Institute Conference on Price Regulation and Social Welfare: The Case of Automobile Insurance in Canada, Toronto (discussant)
- 2009 National Association of Mutual Insurance Companies Public Policy Summit
- 2008 American Society of Health Economists meeting (presenter)
- American Economic Association meeting (presenter)
- Searle Center Conference on Insurance Markets and Regulation, Northwestern University (presenter)
- American Risk and Insurance Association meeting, (presenter and discussant)
- Insurance Bureau of Canada Regulatory Affairs Symposium, Toronto (presenter)
- Fifth Insurance Reform Summit, Networks Financial Institute, Washington, D.C.
- Conference on Empirical Legal Studies (discussant)
- 2007 American Risk and Insurance Association meeting (presenter and discussant)
- Casualty Actuary Society Northeast Regional Meeting (presenter)
- Fourth Insurance Reform Summit, Networks Financial Institute, Washington, D.C.

- (presenter)
- 2006 International Society for New Institutional Economics meeting (presenter)  
American Risk and Insurance Association meeting (discussant)
- 2002 Casualty Actuarial Society national meeting (presenter)  
Insurance Research Council/Massachusetts Automobile Insurers' Bureau  
Conference on Insurance Fraud (presenter)
- 2001 American Enterprise Institute-Brookings Joint Center for Regulatory Studies  
Conference on Property-Liability Insurance Price Deregulation (presenter)  
American Council on Consumer Interests meeting (presenter) Risk Theory  
Society Seminar (presenter) Casualty Actuarial Society national meeting  
(presenter)
- 2000 Seminar of the European Group of Risk and Insurance Economists (presenter,  
discussant)  
Insurance: Mathematics and Economics meeting (presenter)
- 1998 Economic Policy Institute Conference on Automobile Insurance (discussant)
- 1997 Fifth International Conference on Insurance Solvency and Finance (presenter)  
International Conference on Automobile Insurance, University of Montreal (presenter)
- 1996 American Risk and Insurance Association meeting (presenter)
- 1995 American Risk and Insurance Association meeting (presenter)
- 1994 American Risk and Insurance Association meeting (presenter)  
Econometric Society North American Summer Meeting (presenter)  
Franco-American Economics Seminar (presenter)  
National Bureau of Economic Research Conferences on Property-Casualty  
Insurance (presenter)
- 1993 American Economic Association meeting (presenter)
- 1992 American Risk and Insurance Association meeting (presenter)  
Risk Theory Society Seminar (presenter)
- 1991 American Risk and Insurance Association meeting (presenter)

*Educational Presentations:*

- 2018 Sungkyunkwan University, Seoul Korea, Guest Lecturer on Disaster Risk Financing
- 2016 Cornell Cooperative Extension, Parenting Education In-Service, Panelist;  
"Enhancing Community Impacts of School-Based Health Clinics in Rural New  
York via Parenting Education: A Pilot Study"
- 2015 Sungkyunkwan University, Seoul Korea, Guest Lecturer on Consumer Protection  
Economics
- 2015 Huebner Foundation Faculty-PhD Seminar, Faculty Panelist, Munich, August
- 2012 Cornell Cooperative Extension, Family and Economic Resource Management In-  
Service, Panelist; "Improving Consumers' Use of Credit Cards: The Role of Policy"
- 2012 Casualty Actuarial Society Northeast Regional meeting (CANE), General Session  
Speaker; "Lessons for Actuaries from Behavioral Economics" (with James Guszca)
- 2012 Bad Faith and Beyond Conference, Rutgers-Camden Law School, Panelist;  
"Empirical Perspectives on Bad Faith Liability"
- 2012 American Council of Consumer Interests Webinar for Emerging Academics;  
"Publishing: Perspectives of an Editor"
- 2011 General Session Speaker, Casualty Actuarial Society InFocus Seminar; "Lessons  
for Insurance Actuaries from Behavioral Economics" (with James Guszca)

- 2010 Cornell University, Johnson Graduate School of Management, Faculty Panel “Financial Protections in the U.S. and Globally” (Andrew Ross Sorkin visit)
- 2010 Singapore College of Insurance, Distinguished Visiting Professor Lecture; “Understanding Consumer Behavior in Insurance Transactions”
- 2010 Cornell Human Ecology Alumni Association, annual meeting; “Financial Regulatory Reforms”
- 2010 National Conference of Insurance Legislators, Institute for Insurance Policy; “The Cost of Claims Fraud: Who Ultimately Pays?”
- 2008 National Association of Mutual Insurance Companies, annual meeting; “Consequences of First-Party Insurance Bad Faith Liability”
- 2001 Cooperative Extension Conference (ACCEE); “Life is a Risky Business: Making Insurance Choices Wisely”
- 2000 Cornell Cooperative Extension Inservice; “Improving Insurance Knowledge of New York State Consumers”
- 1996 Minnesota Independent Insurance Agents Association; “The Future of Insurance Marketing Systems”

Other Conference Participation:

Research Forum co-moderator, World Risk and Insurance Economics Conference, 2020; Session chair, Global Forum on Financial Consumers, 2021, 2019, 2015; Moderator, Plenary Session of Best Paper Finalists, ACCI annual meeting, 2016, 2015, 2014; Session chair, Public Choice Society, 2014; Faculty participant, Insurance Economics Colloquium, Wildbad Kreuth Germany, 2013; Panelist, Editors’ Round Table, Marketing and Public Policy, 2013; Moderator, CAS Spring Meeting General Session, 2013; Panelist, Progrés International Insurance Seminar of the Geneva Association, Geneva Switzerland, Panel on Consumer Protection Regulation, 2012; Panelist, University of Wisconsin Center for Financial Security, Financial Literacy Workshop, 2011; Cornell Cooperative Extension FERM Project Working Team lunch, faculty speaker, 2011; Invited participant, Enterprise Risk Management Institute International (ERM-II), Symposium on Systemic Risk in the Insurance Industry, 2010; Resident academic, annual CEO Conference of Canadian property-casualty insurance companies 2007; Session moderator, American Risk and Insurance Association meetings 2000, 2004, 2006, 2007, 2008, 2015 (WRIEC); Session moderator, ACCI 2001, 2012, 2013

**PUBLIC POLICY CONSULTING**

- 2022 Expert witness, Massachusetts Special Commission on Auto Body Rates (consultant to the Massachusetts Insurance Federation)
- 2018 Consultant, Insurance Research Council, research on no-fault automobile insurance in Florida (no report)
- 2016 Expert witness, Massachusetts Division of Insurance hearings on workers compensation rates (consultant to Workers Compensation Rating and Inspection Bureau of Massachusetts)
- 2013 White Paper: *Commission Allowances in Workers’ Compensation Rates* (consultant to Workers Compensation Rating and Inspection Bureau of Massachusetts)
- 2012 White Paper: *Reforming Ontario’s Auto Insurance System: Research and Recommendations*, with Mary Kelly and Anne Kleffner (consultant to Insurance Bureau of Canada)
- 2011 Expert witness, Michigan Senate hearings on No-fault Insurance; White paper: *Excess Costs in Michigan Auto Insurance: Causes and Implications for Reform* (consultant to several insurance companies)

- 2011 White paper: *Long Term Consequences of Auto Insurance Rate Deregulation*; (consultant to Insurance Research Council)
- 2008 Expert witness, Massachusetts Special Commission on Auto Body Rates (consultant to the Massachusetts Insurance Federation)
- 2008 White Paper: *First-Party Insurance Bad Faith Liability: Law, Theory, and Economic Consequences*, with William J. Warfel (consultant to National Association of Mutual Insurance Companies)
- 2007 Expert witness, Massachusetts Automobile Insurance Competition hearing; White paper: *Evaluating Competition in Automobile Insurance Markets* (consultant to The Fairness for Good Drivers Coalition)
- 2007 White paper: *Unintended Consequences of Insurance Price Suppression* (consultant to Insurance Bureau of Canada)
- 2006 Expert witness, Alberta Automobile Insurance hearing (consultant to the Insurance Bureau of Canada)
- 1995 Expert witness, Maryland State Governor’s Commission on Reforming Baltimore City Automobile Insurance

## GRANT FUNDING

- 2023-2028 Principal Investigator (co-PI Wendy Brunner, co-I’s John Sipple, Mildred Warner, Elaine Wethington, Xue Zhuang), *NIH (National Institute on Minority Health and Health Disparities) R01 Grant*, “School Based Health Centers - An approach to address health disparities among rural youth”
- 2023-2026 Principal Investigator (in collaboration with Kim Kopko), *USDA National Institute of Food and Agriculture Smith-Lever Grant*, “Community Partnerships to Advance Parenting Education”
- 2022-2025 Principal Investigator (in collaboration with John Zinda), *Hatch Grant, USDA*, “Flood Risk Rating and Environmental Justice in New York”
- 2020-2023 Principal Investigator (in collaboration with Kim Kopko), *USDA National Institute of Food and Agriculture Smith-Lever Grant*, “Exploring School-Extension Partnerships with a Focus on Parenting Education”
- 2020-2023 Co-Principal Investigator (Principal Investigator John Sipple), *Hatch Grant, USDA*, “Enhancing the Impact of School-Based Health Clinics in Rural New York State”
- 2020-2023 Co-Principal Investigator (Principal Investigator John Zinda), *CSREES Research-Extension Integration Grant*, “Flood Risk in Context: Insurance and Risk Response in Flood-Prone Communities”
- 2019-2020 Principal Investigator (in collaboration with Nancy Wells, Laurie Miller and Maria-Jose Sanchez), *Engaged Cornell Curriculum Planning Grant*, “Agricultural Sustainability and Community Resilience through School Programs in Rural Chile”
- 2016-2019 Principal Investigator (in collaboration with John Sipple and Kim Kopko) *CSREES Research-Extension Integration Grant*, “Enhancing the Community Impact of School-Based Health Centers in Building a Culture of Health in Rural New York”
- 2014-2015 Principal Investigator, *Cornell Institute for Social Science Director’s Discretionary Grant*, “Supplemental Funding for RTS Conference”
- 2011-2012 Principal Investigator, *Cornell Institute for Social Science Small Grant*, “Credit Card Reforms: Helping or Hurting Consumers?”
- 2006-2008 Principal Investigator, *Program on Consumers, Pharmaceutical Policy and Health*

- 2007 Grant, “Drug Choice, Negative Information and Consumer Behavior” 2003-  
Co-Principal Investigator (with Kosali Simon), *Program on Consumers, Pharmaceutical Policy and Health* Grant, “State Regulation of Medicaid Pharmacy Benefits”
- 2003-2005 Initiative Team Member (with PAM Dept. colleagues), *Merck Company Foundation* Program on Pharmaceutical Policy Issues Grant, “Program on Consumers, Pharmaceutical Policy and Health”, John Rizzo, Principal Investigator
- 2000-2003 Principal Investigator, *College of Human Ecology* Grant, Cornell University: “Regulatory Issues in Insurance Markets”
- 1999-2001 Principal Investigator (collaborative research with B.J. Bristow), *CSREES Research-Extension Integration* Grant: “Insurance Choices: Knowledge, Confidence and Competence of New York State Consumers”
- 1998-2003 Principal Investigator, *Hatch Grant, USDA*: “Issues in the Regulation of Insurance Marketing and Distribution”
- 1995-1997 Principal Investigator (collaborative research with Keith J. Crocker), *National Science Foundation, Economics Division* Grant #SBR95-07768: “Contracting with Costly State Falsification: Theory and Empirical Results from Automobile Insurance” 1995-1996 Principal Investigator, *National Association of Insurance Commissioners Journal of Insurance Regulation* Grant: “The Effects of Rate Regulation on the Structure of Automobile Insurance Markets”
- 1994-1995 Principal Investigator, *University of Pennsylvania Research Foundation* Grant: “Regulation and Industrial Organization in Structurally Competitive Industries: The Case of Automobile Insurance”
- 1994-1995 Principal Investigator, *University of Pennsylvania Research Foundation* Grant: “Social Norms in Economic Settings: Consumer Attitudes Toward Insurance Fraud”
- 1993-1995 Co-Principal Investigator (collaborative research with J.D. Cummins), *Financial Institutions Center* Grant, The Wharton School: “The Management and Control of Fraud in Insurance Firms”
- 1993-1994 Co-Principal Investigator (collaborative research with S. Chamberlain), *Fishman-Davidson Center* Grant, The Wharton School: “The Risk and Efficiency Effects of Insurance Company Mergers”
- 1992-1993 Principal Investigator, *University of Pennsylvania Research Foundation* Grant: “The Tort System and Insurance 'Lotteries'”
- 1989-1990 Principal Investigator, *Society of CPCU* Grant: “The Effects of Rate Regulation on Underwriting Cycles”
- 1988-1989 Doctoral Dissertation Fellowship, *State Farm Companies Foundation*: “Supply Dynamics and Underwriting Cycles in Property Liability Insurance”
- 1987-1988 Graduate Research Fellowship, *Center for Urban Affairs and Public Policy*, Northwestern University

#### PH.D. COMMITTEES

- 2018 Peter Wissoker (CRP)  
2017 Liyuan Cui (Economics)  
2015 Sra Chuenchoksan (Economics)

2014	Lauren E. Jones (PAM) (chair)
2014	José Balmori di la Miyar (PAM) (chair)
2008	J. Michael Collins (PAM) (chair)
2007	Sara Hoda (PAM)
2007	Hae Kyung Yang (PAM)
2007	Ajay Aseem Palvia (Economics)
2005	Sonja Afroz (Economics)
2003	Hyojin Kang (PAM)
1998	M. Martin Boyer (RMI) (chair)
1998	Susan J. Suponcic (Public Policy)
1997	David M. Russell (RMI)
1996	Jweeping Er (RMI)
1995	Sung Hun Seog (RMI)
1995	Tracy Shepard Allotey (RMI)
1994	Jeong D. Kim (Healthcare Systems)
1994	Richard A. Phillips (RMI)
1993	Laureen A. Regan (RMI)
1993	Anne E. Kleffner (RMI)
1993	David W. Sommer (RMI)
1992	Lisa L. Posey (RMI)

#### **MASTERS' THESIS COMMITTEES CHAIRED**

2021	Yeni Mulyono, CIPA (thesis)
2019	Jeanine Foote, CIPA (thesis)
2019	Maryam Pakneshan, CIPA (thesis)
2019	Yongjoo Lee, CIPA (professional report)
2018	Roberto Galvan, CIPA (thesis)
2016	Akiko Toya, CIPA (professional report)
2015	Xiaodi Li, CIPA (thesis)
2015	Rafael Morales, CIPA (thesis)
2013	Samir Kiuhan, CIPA (thesis)
2013	Cheng Chen, CIPA (professional report)
2011	Andrew McClintock, PAM (thesis)
2011	Scott Talaga, CIPA (thesis)

Mentor, Maria Jose Sanchez Arrieta, post-Fulbright research study, 2015-2016

Mentor, Cristoph Lex, visiting Ph.D. student, Ludwig Maximillion University, Spring 2013

Mentor, Maoqi Wang, visiting Ph.D. student, Tsinghua University, Fall 2011

#### **PROFESSIONAL SERVICE**

##### *Service to Government and Industry:*

Member, Consumer Financial Education Committee, The Actuarial Foundation, 2012-2013;

Member, Board of Trustees, Elizabeth Ann Clune Montessori School of Ithaca, 2004-2007;

Economic Reviewer, Institute for Defense Analysis, 2003-2006; Board of Directors, Ithaca Community Childcare Center, 2000-2004 (Vice President, 2002-2003; Secretary 2001-2002);

Advisor, Consumer Information Task Force Coalition Against Insurance Fraud, 1996-1997

*Service to American Risk and Insurance Association:*

Mehr Award Committee, 2021; ARIA Early Career Award Committee, 2021, 2022; Session Coordinator 2018, 2019, 2020; Program Committee 1993, 1996, 1997, 2000, 2006, 2007, 2008, 2010, 2013, 2014, 2015, 2016, 2017, 2018; Nominations Committee 1996, 2015; Best JRI Feature Article Awards Committee 1995, 1996, 1998, 2006, 2007, 2008, 2012, 2014; Best RMIR Feature Article Awards Committee 2013, 2014, 2017, 2022; Best RMIR Perspectives Article Awards Committee 2010 (Chair), 2011; Book Awards Committee, 1992, 1999 (Chair), 2003, 2004

*Ad Hoc Reviewing:*

Journal of Risk and Insurance (assistant editor award, 1996 and 1997), North American Actuarial Journal, Journal of Economic Psychology, Journal of Economic History, Criminology, Journal of Financial Stability, Journal of Public Policy and Marketing, Natural Hazards, Review of Economics of the Household, Risk Management and Insurance Review, Geneva Risk and Insurance Review, Management Science, Asia-Pacific Journal of Risk and Insurance, Journal of Consumer Affairs, Journal of Policy Analysis and Management, Astin Bulletin, Journal of Law Economics and Organization, Journal of Banking and Finance, Journal of Political Economy, American Economic Review, Journal of Law and Economics, Journal of Business Ethics, National Science Foundation, Geneva Papers on Risk and Insurance: Issues and Practice, Journal of Legal Studies, Journal of Insurance Regulation, European Economic Review, Journal of Consumer Policy, International Review of Economics and Finance, Industrial and Labor Relations Review, Journal of Insurance Issues, Economic Journal, Journal of Financial Intermediation, Journal of Risk and Uncertainty, Review of Industrial Organization, MIT Press, Elsevier Press, Social Sciences and Humanities Research Council of Canada

**CORNELL UNIVERSITY SERVICE***College and University Committees:*

University Faculty Advisory Committee on Tenure Appeals (FACTA), 2021-2025; Atkinson Center Postdoctoral Fellowship Review Committee, 2020; Truman Scholarship Review Committee, 2018, 2019, 2023; Atkinson Center Academic Venture Fund Review Committee, 2019, 2021; CHE Grievance Committee, 2015-2020; Faculty Senate Committee on Program Review, 2013- 2016; Faculty Senate Committee on Academic Freedom and Professional Status of the Faculty, 2012-2015; External Member, AEM Hiring Committee for Nonprofit Management, 2014; Mann Library Committee, 2005-2009 (chair 2008-2009); University Benefits Committee, 2002-2006; Grant Review Team, Hatfield Fund for the Enhancement of Economics Education, 2002-2005; CHE Nominations Committee, 2001-2004, 2010-2017; CHE Educational Policies Committee, 2002-2003; Review Team, Pre-proposals for Cornell Cooperative Extension Learning Centers, 2001

*Department Committees:*

Chair, Brooks School Academic Integrity Hearing Board (AIHB), 2023-; Liaison to Mann Library, 2005-2014; Executive Committee, 2002-2003; Undergraduate Committee, 1998-2003 (Chair, 2002-2003); Sloan MHA Program Committee, 1998-2001; Faculty Search Committee, 1998-2002, 2002-2004 (Chair), 2005-2006, 2006-2007 (co-Chair), 2008-2009, 2009-2010, 2010-2011, 2012-2013, 2014-2015 (co-Chair); Search Committee for Sloan Program Associate Director, 1999-2000 (Chair); Graduate Field Committee, 2000-2002

**CORNELL GRADUATE FIELD MEMBERSHIP**

Public Policy; Economics; Risk Analysis, Communication and Policy

**COURSES TAUGHT**

- Cornell: Economics of Consumer Policy, Risk Management and Policy, Microeconomics for Management and Policy (MHA), Intermediate Policy Analysis, Regulating Financial Institutions, Honors Thesis Seminar, Economics of Consumer Law and Protection, Economics of the Public Sector, Consumers, Information and Regulatory Policy (PhD), Seminar on Pharmaceutical Policy Issues (MHA)
- Wharton: Principles of Risk and Insurance, Risk Management, Risk Management and Treatment (MBA), Industrial Organization of Insurance Markets (PhD)

**COMMONWEALTH OF MASSACHUSETTS  
DIVISION OF INSURANCE**

Docket No. 23-

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*In re:*

**APPLICATION OF THE WORKERS'  
COMPENSATION RATING AND INSPECTION  
BUREAU OF MASSACHUSETTS FOR APPROVAL  
OF A GENERAL RATE REVISION TO BE  
EFFECTIVE ON AND AFTER July 1, 2024**

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**PRE-FILED DIRECT TESTIMONY OF GEORGE ZANJANI**

The Workers' Compensation Rating and Inspection Bureau of Massachusetts ("WCRIBMA") submits the following direct testimony of George Zanjani in support of its application for a general rate revision to be effective on and after July 1, 2024.

Q. Please state your full name.

A. George Zanjani.

Q. What are your professional qualifications?

A. I am Professor of Finance and the holder of the Frank Park Samford Chair of Insurance at the University of Alabama. A complete curriculum vitae is attached to this testimony as Exhibit 1. To summarize, my undergraduate studies were at Stanford University from 1987-1990, where I earned an A.B./B.S in Economics and Biology. I joined the commercial lines actuarial department of Fireman's Fund Insurance Companies in 1990 as an Assistant Actuarial Analyst. Upon leaving in 1994, I was a Senior Actuarial Analyst, an Associate of the Casualty Actuarial Society, and the head of the company's Workers' Compensation actuarial unit. I did my graduate studies in Economics at the University of Chicago, earning a Ph.D. in 2000. I joined the Research Department of the Federal Reserve

Bank of New York in the Capital Markets Function as a Research Economist in 2000, leaving as a Senior Economist in 2008. I joined the Robinson College of Business of Georgia State University in 2008 as an Associate Professor of Risk Management and Insurance and was the inaugural holder of the AAMGA Distinguished Chair in Risk Management and Insurance in 2011. I started my current position in 2017. Over the past five years I have also served as an expert witness on underwriting profit provisions in various rate hearings.

Q. What was your role in the preparation of the current WCRIBMA filing for a general rate revision?

A. I reviewed the calculations, inputs, narrative, and model used in Section VII of the WCRIBMA's filing. Specifically, I reviewed the inputs to and estimation of the cost of capital and the portfolio rate of return, as well as the application of the discounted cash flow models to derive the proposed underwriting profit provision. I have relied on the WCRIBMA for estimates of underwriting cash flow patterns (for losses, expenses and premiums) and taken as given the actuarial projections of losses and expenses underlying the discounted cash flow models. Based on the information available to me, I believe that the data and calculations underlying Section VII of the filing to be complete and accurate, and the narrative statements offered in support of Section VII are also accurate and correct.

Q. Are you familiar with the underwriting profit provision used by the WCRIBMA in calculating the proposed rates?

A. Yes.

Q. Are you familiar with the statutory standard that must be applied by the Massachusetts Commissioner of Insurance in reviewing the rates proposed in the

WCRIBMA's current filing – that they “are not excessive, inadequate or unfairly discriminatory” and that they “fall within a range of reasonableness”?

A. Yes.

Q. Do you have an opinion as to whether the rates proposed in the WCRIBMA's current filing satisfy the statutory standard?

A. Yes.

Q. What is your opinion?

A. It is my opinion that---assuming 1) the actuarial projections of losses, expenses and premiums in the filing are reasonable and 2) that the cash flow patterns used in the models are reasonable---then the proposed rates satisfy the statutory standard. My conclusion follows from two main observations. First, the discounted cash flow models used to calculate the underwriting profit provision are correctly constructed to produce a provision that yields a fair return to invested capital. Second, the critical discretionary inputs to the models---specifically the weighted average cost of capital (WACC), the portfolio rate of return, and the leverage ratio---are reasonable and well-suited to the Massachusetts workers' compensation market.

Details of the models and the derivation of the inputs are provided in Section VII of the filing. Below, I offer additional perspective on the reasonableness of the critical discretionary inputs to the model.

#### *Portfolio Rate of Return*

The WCRIBMA bases the portfolio allocations and leverage assumptions on data from the groups writing workers' compensation in Massachusetts. Specifically, the portfolio weights and the leverage ratio used in the models are premium-weighted averages of the figures

from the insurance groups operating in Massachusetts, with the premium weights being Massachusetts workers' compensation DPW. In my opinion, this approach gives figures more relevant and closely matched to the Massachusetts workers' compensation market than figures based on national industry composites.

To elaborate, the asset portfolio for the total industry reflects the heavy equity allocations of certain personal lines carriers and other companies that do not underwrite workers' compensation insurance. Similarly, reserve-to-surplus ratios vary considerably across lines of insurance, with long-tailed lines having higher ratios due to the additional loss reserves on the balance sheet. Both of these examples argue for a more tailored approach for finding the asset portfolio and leverage relevant for the workers' compensation line. Basing the assumptions on composites of segments of the industry, such as A.M. Best's Commercial Casualty Composite, is a step in the right direction; however, such composites may include data from companies focusing in other casualty lines and are also not tailored to Massachusetts specifically. By using averages based on groups serving the Massachusetts workers' compensation market, I believe the WCRIBMA is tailoring its assumptions as closely as possible to the ratemaking task at hand.

The WCRIBMA's practice of estimating investment income on the basis of yields expected to prevail in the future period for which the rates will apply is, in my opinion, a sound approach and consistent with fundamental principles of finance and actuarial principles on ratemaking (e.g., ASOP 30). While various methods could be used to develop forecasts for the future period, using current yields as the basis for forecasting is reasonable and has the advantage of being transparent.

The argument for using prospective yields---as opposed to “embedded” yields based on the returns obtained by insurers on investments made in the past---is straightforward. The ratemaking exercise concerns a transaction that will occur in the future, not the past. The money received from the policyholder, in the future, will be invested at the rates that prevail in that future, not at rates that existed in the past. Any existing assets deployed to support the transaction will, in an economic sense, have underlying values that reflect those future market conditions and thus prospective yields consistent with those conditions.

The perils of using embedded yields are well-known and have been recognized in the academic literature for some time. For example, Nobel Laureate Franco Modigliani, writing with a co-author in an article specifically addressing Massachusetts insurance rate regulation more than three decades ago, wrote:<sup>1</sup>

... current market yields should always be used in preference to embedded or trended (a common actuarial practice) yields. Investors are interested in what they will earn on currently invested assets, not in past history. The practical effect of using embedded yields is to understate the profitability of insurance when yields are rising and to overstate it when yields are falling. Only current yields will [e]nsure that regulation meets a "capital attraction" standard at all times.

This observation rings as true today as it did then. If we assume that embedded yields will prevail in the prospective period, we will set profit provisions that are too high when rates are rising (because we are underestimating the investment income that is being earned) and too low when rates are falling (because we are overestimating the investment income that is being earned).

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<sup>1</sup> Hill, R.D., and Modigliani, F. (1987), “The Massachusetts Model of Profit Regulation in Nonlife Insurance: An Appraisal and Extensions,” in Fair Rate of Return in Property-Liability Insurance, J.D. Cummins and S.E. Harrington (eds.), Springer, Page 30.

The current situation offers a timely and powerful illustration of the problem. Interest rates have risen dramatically over the past two years as the Federal Reserve has hiked the Federal Funds rate from zero percent to over five percent (as of December, 2023). Long rates have risen as well, with the benchmark 10-year Treasury reaching yields in excess of 4%---yield levels that have not been seen since 2007. Consequently, there is a significant gap between the prospective yields forecasted by the WCRIBMA, based on current yields, and those “embedded” in the industry portfolio. Current yields are much higher than embedded yields.

To illustrate, the weighted average bond yield from the filing (Section VII-J, Exhibit 1, Page 1) as estimated by the WCRIBMA is roughly 4.51%, and the yield on cash is 5.49%. A typical approach to estimating embedded yields is to take the investment income as reported on Page 12 of the Annual Statement and relate it to the corresponding asset values (averaged over the current and prior year) on Page 2. Doing this using the 2023 and 2022 editions of A.M. Best’s Aggregates and Averages produces a bond yield of approximately 3.0% and a cash yield of approximately 1.2%. Thus, relying on embedded yields rather than current yields in the present case would produce a higher profit factor and higher rates.

Related to the foregoing is the WCRIBMA’s practice of matching yields to bonds on the basis of the remaining time to maturity rather than the stated maturity at the original date of issue. This is completely consistent with fundamental finance theory and with the realities of pricing in the bond market, where securities are priced in real time on the basis of future cash flows. For example, a thirty year bond issued 29 years ago but purchased today would feature cash flows over the coming year only and would be priced accordingly. Matching this security to a 30 year yield in a prospective exercise would not make sense. Moreover,

in the current environment (as of this writing), the inversion of the yield curve means that using a 30 year yield would have the impact of *understating* the return relative to a 1 year yield.

### *Leverage Ratio*

In the current filing, the WCRIBMA continues to calculate the leverage ratio from a premium-weighted average of company-level reserves-to-surplus ratios to a premium-weighted average of company-level surplus-to-reserves ratios, with the latter result subsequently being inverted to obtain the reserves-to-surplus ratio. It is my opinion that this approach produces an improvement on the previous practice, which had been applied in situations where the leverage ratio was based on an industry aggregate. The transition to weighted averages based on company-level data necessitated a transition to the current method. Specifically, to recap the explanation further detailed in the text of Section VII-A, developing premiums with a leverage ratio based on the premium-weighted average of company-level surplus-to-reserves ratios ensures that the surplus allocation implied by those premiums, when aggregated across companies, matches the total allocated surplus obtained under the assumptions that 1) each Massachusetts workers' compensation premium dollar generates the same reserve profile across companies (in a prospective sense) and 2) each company allocates surplus to reserves based on its own aggregate surplus-to-reserves ratio. Thus, I view this change as further progress toward the goal of ensuring that the premiums charged for the Massachusetts workers' compensation market reflect input assumptions more appropriately tailored to the Massachusetts workers' compensation market.

*Cost of Capital*

As described in the text of Section VII-E, the WCRIBMA considers two models to estimate the cost of equity---a CAPM-based approach and a Discounted Cash Flow Model. As with the asset portfolio and leverage calculations, the critical inputs for the cost of equity calculation are based as closely as possible on the Massachusetts workers' compensation market. Specifically, all publicly traded holding companies engaged in underwriting workers' compensation insurance in Massachusetts are sampled, with the average cost of equity being based on a weighted average using Massachusetts workers' compensation DPW. The output is then averaged and combined with an estimated cost of debt to produce a WACC of 9.48%.

The methods used by the WCRIBMA are widely accepted means of estimating the cost of capital. However, all methods of estimation have various inputs and implementation choices that can affect the results. To get a sense of where the WCRIBMA estimate falls in relation to others, I gathered alternative recent estimates of the WACC for the property-casualty insurance industry from publicly available sources in the following table:

<b>Method</b>	<b>Source</b>	<b>Date</b>	<b>WACC Estimate</b>
CAPM	Kroll	9/30/23	7.9%
CAPM + Size Premium	Kroll	9/30/23	8.2%
CAPM Build-Up	Kroll	9/30/23	8.7%
Fama-French 5-Factor	Kroll	9/30/23	8.8%
Discounted Cash Flow (1-stage)	Kroll	9/30/23	17.6%
Discounted Cash Flow (3-stage)	Kroll	9/30/23	18.8%
CAPM	Damodaran Online	1/5/23*	8.1%

- The Damodaran estimate features an updated Treasury yield based on the filing data.

The figures are sourced from the industry composite for the latest available quarterly update of the *U.S. Industry Benchmarking Module* by Kroll (formerly Duff & Phelps) and the latest available annual update of the costs of capital by industry sector released by Aswath Damodaran, a valuation expert at New York University (*available at <http://pages.stern.nyu.edu/~adamodar/>*). As can be seen from the table, the WCRIBMA figure of 9.48%---which is based on an average of the output of CAPM and Discounted Cash Flow methodologies---falls within the span of estimates above and thus appears reasonable in the context of other available estimates for the industry. It should be noted, however, that the WCRIBMA estimate is tailored specifically to the Massachusetts workers' compensation market, so it could be higher or lower, at any given time, than estimates for the broader industry. In addition, as I will detail below, all of these cost of capital estimates are based

on publicly traded companies and thus should be adjusted for the presence of the private companies that comprise a significant share of the Massachusetts market.

Q. Do you have anything to add to the text of Section VII of the filing at this time?

A. Yes, while I have concluded that the filed rates are reasonable and not excessive, there are two additional points worth mentioning.

First, the cost of capital analysis of WCRIBMA is based entirely on publicly traded stock firms, which have the easiest access to financing and thus the lowest costs of capital. However, I estimate that---based on 2022 direct premiums written---only 61% of the workers' compensation market in Massachusetts is underwritten by firms associated with publicly traded holding companies. Firms associated with private, often mutual, ownership underwrite the remaining 39%. This segment is well-known to have more difficulty in accessing financing, with the problem for mutuals being especially acute.

Q. How much of a difference does this make?

A. Research dating back at least as far as the 1960's has demonstrated that private equity trades at a substantial discount to public equity. The discount is thought to derive from a variety of factors, including the illiquid nature of private equity stakes (also known as a "lack of marketability") as well as information, monitoring, and control issues. The discount translates into a higher cost of equity. For example, if a public firm's cost of equity is estimated at 10% and the equity of a comparable private firm is selling at a 20% discount to that of the public firm, the private firm's cost of equity would be estimated as:

$$12.5\% = 10\% / (1 - 20\%)$$

The discount is difficult to estimate. The attached Exhibit 2 to my testimony summarizes some of the academic research on the private firm discount. Studies have taken a variety of approaches to measurement. “IPO” studies compare the prices of pre-IPO share transactions in a private company with post-IPO share prices after the company is public. “Acquisition” studies compare the valuations of acquired private companies versus the valuations of acquired public companies. “Restricted stock” and “private placement” studies compare the prices of restricted stock issued by public companies with the prices of their traded shares.

All the approaches have their flaws. IPO studies, for example, may have a bias toward overstating the discount because of the differences in timing of transactions. Restricted stock and private placement studies tend to understate the discount: Since they confine their attention to public companies, they do not account for factors other than the discount for lack of marketability (DLOM), and, moreover, the actual restrictions on marketability for private placements have been loosened significantly over the years by the Securities and Exchange Commission.

On balance, however, the studies point to a substantial discount. To get a sense of the import, I use a discount of 25%, which is slightly below the average of the averages of the three groups in Exhibit 2 (when taking the midpoint of the ranges for the studies with ranges of estimates). Accounting for a 25% valuation discount on 39% of the market would raise the WACC estimates presented earlier as follows:

<b>Method</b>	<b>Source</b>	<b>Date</b>	<b>Adjusted WACC Estimate</b>
CAPM	Kroll	9/30/23	8.8%
CAPM + Size Premium	Kroll	9/30/23	9.2%
CAPM Build-Up	Kroll	9/30/23	9.7%
Fama-French 5-Factor	Kroll	9/30/23	9.8%
Discounted Cash Flow (1-stage)	Kroll	9/30/23	19.8%
Discounted Cash Flow (3-stage)	Kroll	9/30/23	21.1%
CAPM	Damodaran Online	1/5/23	9.1%

This exercise underscores the conclusion that the WCRIBMA's WACC estimate of 9.48% is reasonable and far from aggressive when viewed in the context of estimates for the overall industry. Moreover, although the cost of capital input used in the filing does not contemplate any higher cost of capital endured by private firms, doing so would obviously produce a higher underwriting profit provision and higher rates.

Q. What is the second additional point you would like to make?

A. Consistent with the Commissioner's Decision on 2003 Rates, there is no consideration of policyholder dividends in the course of deriving the underwriting profit provision. While the interpretation of policyholder dividends may vary from company to company, at least in the case of stock companies the dividends represent cash payments that, like other expense items, reduce the profit of the firm. Accounting for such reasonably expected dividend payments connected with risk transfer would evidently reduce the

projected rate of return on capital. Consideration of policyholder dividends would obviously produce a higher underwriting profit provision and higher rates.

Signed this 15<sup>th</sup> day of December 2023 under the pains and penalties of perjury.

**George  
Zanjani**

Digitally signed by  
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George Zanjani

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## Education

**Ph.D.**, Economics, University of Chicago, 2000  
**ACAS**, Casualty Actuarial Society, 1994  
**A.B./B.S.**, Economics and Biology, Stanford University, 1990

## Work Experience

### **University of Alabama (Tuscaloosa, Alabama)**

**Professor of Finance and Frank Park Samford Chair of Insurance, 2017-**

### **University of Cologne**

*Gen Re Visiting Professor, 2023*

### **Georgia State University (Atlanta, Georgia)**

*AAMGA Distinguished Chair in Risk Management & Insurance, 2011-2017*  
*Associate Professor, 2008-2017*

### **Nanyang Technological University (Singapore)**

*Visiting Senior Research Fellow, 2011-12, 2013-2014*

### **Federal Reserve Bank of New York (New York, New York)**

*Senior Economist, 2006-2008*  
*Economist, 2000-2006*

### **Fireman's Fund Insurance Companies (Novato, California)**

*Senior Actuarial Analyst, 1993-94*  
*Actuarial Analyst, 1991-1993*  
*Assistant Actuarial Analyst, 1990-1991*

## Publications: Refereed Scholarly

"Economic Capital and RAROC in a Dynamic Model," (with Daniel Bauer), *Journal of Banking and Finance*, 125: Article 106071, (2021) [Winner of Casualty Actuarial Society Hachemeister Prize, 2015]

- “Capital Allocation Techniques: Review and Comparison,” (with Daniel Bauer and Qiheng Guo), *Variance*, 14(2), (2021)
- “Dynamic Capital Allocation with Irreversible Investments,” (with Daniel Bauer, Shinichi Kamiya, and Xiaohu Ping), *Insurance: Mathematics and Economics* 85: 138-52, (2019)
- “What Drives Tort Reform Legislation? Economics and Politics of the State Decisions to Restrict Liability Torts,” (with Yiling Deng), *Journal of Risk & Insurance* 85: 959-991, (2018)
- “Egalitarian Equivalent Capital Allocation,” (with Shinichi Kamiya), *North American Actuarial Journal* 21: 382-96, (2017)
- “The Marginal Cost of Risk, Risk Measures, and Capital Allocation,” (with Daniel Bauer), *Management Science* 62: 1431-1457 (2016)
- “Economic Analysis of Risk and Uncertainty Induced by Health Shocks: A Review and Extension,” (with Tomas J. Philipson), in *Handbook of the Economics of Risk and Uncertainty*, Volume 1, Mark J. Machina and W. Kip Viscusi (eds.), North Holland: Elsevier (2014)
- “Capital Allocation and Its Discontents,” (with Daniel Bauer), in *Handbook of Insurance* (2<sup>nd</sup> edition), Georges Dionne (ed.), New York: Springer (2013)
- “Financial Pricing of Insurance,” (with Daniel Bauer and Richard D. Phillips), in *Handbook of Insurance* (2<sup>nd</sup> edition), Georges Dionne (ed.), New York: Springer (2013)
- “Insurance Risk, Risk Measures, and Capital Allocation: Navigating a Copernican Shift,” (with Michael R. Powers), *Annual Review of Financial Economics* 5: 201-223 (2013)
- “Catastrophe Bonds, Reinsurance, and the Optimal Collateralization of Risk Transfer,” (with Darius Lakdawalla), *Journal of Risk & Insurance* 79, pp. 449-76 (2012)
- “An Economic Approach to Capital Allocation,” *Journal of Risk and Insurance* 77, pp. 523-549 (2010) [Winner of Casualty Actuarial Society ARIA Award, 2010]
- “Federal Financial Exposure to Catastrophic Risk,” (with J. David Cummins and Michael Suher), in *Measuring and Managing Federal Financial Risk*, Deborah Lucas (ed.), Chicago: University of Chicago Press (2010)
- “Public versus Private Underwriting of Catastrophe Risk: Lessons from the California Earthquake Authority,” in *Risking House and Home: Disasters, Cities, Public Policy*, John M. Quigley and Larry A. Rosenthal (eds.), Berkeley: Berkeley Public Policy Press (2008)

“Regulation, Capital, and the Evolution of Organizational Form in U.S. Life Insurance,” *American Economic Review* 97, pp. 973-983 (2007)

“Insurance, Self Protection, and the Economics of Terrorism,” (with Darius Lakdawalla), *Journal of Public Economics* 89, pp. 1891-1905 (2005)

“Terrorism Insurance Policy and the Public Good,” (with Darius Lakdawalla), *St. John’s Journal of Legal Commentary* 18, pp. 463-469 (2004)

“The Production and Regulation of Health Insurance: Limiting Opportunism in Proprietary and Non-Proprietary Organizations,” (with Tomas Philipson) in *Individual Decisions for Health*, Bjorn Lindgren (ed.), pp. 194-206, Routledge International Studies in Health Economics, Routledge: London (2003)

“Pricing and Capital Allocation in Catastrophe Insurance,” *Journal of Financial Economics* 65, pp. 283-305 (2002) [reprinted in *Insurance and Risk Management Volume I: Economics of Insurance Markets*, Gregory Niehaus (ed.), Northampton: Edward Elgar Publishing, (2008)]

## **Publications: Professional/Practitioner**

Book review of “Moral Hazard in Health Insurance,” *Journal of Economic Literature* 53, pp. 682-3 (2015)

“Microinsurance Lessons from History,” (with Rick Koven), *Microinsurance Learning and Knowledge (MILK)* (2013)

“Institutional Investors and Asset Allocations: Accounting and Regulation of Private Defined Benefit Pension Plans and Other Institutional Investors in the United States, Mexico, and Australia,” (with John Broadbent, Michael Palumbo, and Julio Santaella), *CGFS Publication No. 27, Working Group on Institutional Investors, Global Savings, and Asset Allocation* (2006)

“An Overview of Political Risk Insurance” (with Kausar Hamdani and Elise Liebers), *CGFS Publication No. 22, Working Group on Foreign Direct Investment in the Financial Sector of Emerging Market Economies* (2005)

## **Work in Progress**

“Life Insurance and Annuity Pricing During the Financial Crisis, Revisited,” (with Daniel Bauer, Lars Powell, and Boheng Su), working paper, 2023

“Dynamic Capital Allocation in General Insurance,” (with Daniel Bauer and Qiheng Guo), working paper, 2023

- "The Ignorance of Crowds: Understanding Reserving Errors in the Liability Crisis of 1997-2001," (with Eren Cifci, Qianlong Liu, Steve Mildenhall, Lars Powell, and Kenny Wunder), working paper, 2023
- "Market Discipline and Guaranty Funds in Life Insurance," (with Martin Grace, Shinichi Kamiya, and Robert W. Klein), working paper, 2023
- "The Effect of Government Guarantees on Market Discipline in the Property-Casualty Insurance Industry," (with Yiling Deng, Ty Leverty, and Kenny Wunder), working paper, 2023
- "An Integrated Approach to Measuring Asset and Liability Risks in Financial Institutions," (with Daniel Bauer), working paper, 2023
- "Optimal Insurance Contracts with Insurer Background Risk," (with Xiaohu Ping), working paper, 2015
- "The Effect of Banking Crises: Evidence from Non-Life Insurance Consumption," (with Shinichi Kamiya and Jackie Li), working paper, 2015
- "Bankruptcy in the Core and Periphery of Financial Groups: The Case of the Property-Casualty Insurance Industry" working paper, 2010
- "The Rise and Fall of the Fraternal Life Insurer: Law and Organizational Form in U.S. Life Insurance, 1870-1920," working paper, (*revise and resubmit, Journal of Law & Economics*), 2007
- "Organizational Form and the Underwriting Cycle: Theory with Evidence from the Pennsylvania Fire Insurance Market, 1873-1909," working paper, 2004
- "Consumption versus Production of Insurance," (with Tomas Philipson), *NBER Working Paper #6225*, 1997

## **External Research Projects and Consulting**

- 2023 Using Industry Level Experience to Improve Company Loss Reserving, sponsored by CAS
- 2023 Expert Witness, Insurance Rate Filings, North Carolina
- 2023 Expert Witness, Workers' Compensation Rate Filings, Massachusetts
- 2022 Expert Witness, Insurance Rate Filings, North Carolina
- 2021 Expert Witness, *Golson v. Provident Life*, Alabama
- 2021 Expert Witness, Workers' Compensation Rate Filings, Massachusetts
- 2021 Expert Witness, Insurance Rate Filings, North Carolina
- 2020 Expert Witness, Insurance Rate Filings, North Carolina
- 2019 NCCI Review of Cost of Capital Methodology
- 2019 Expert Witness, Workers' Compensation Rate Filings, Massachusetts
- 2019 Expert Witness, Insurance Rate Filings, North Carolina

- 2018 NCCI Review of TCJA
- 2017 Expert Witness, Workers' Compensation Rate Hearing, Florida
- 2016 Expert Witness, Assigned Risk Workers' Compensation Rate Hearing, Virginia
- 2015 Expert Witness, Workers' Compensation Rate Hearing, Florida
- 2015 NCCI Revision of Underwriting Profit and Contingency Internal Rate of Return Model
- 2015 An Extension of the Project on the Costs of Holding Capital, sponsored by the CAS
- 2013 Microinsurance Centre Lessons from History Project
- 2012 Allocation of the Costs of Holding Capital, sponsored by the CAS,
- 2011 CRO Risk Index Project, co-sponsored by SOA and Bloomberg, co-founder
- 2009 "The Financial Crisis and Lessons for Insurers," \$50,000 SOA grant, role: report co-author

## **Papers Presented at Professional Meetings**

- 2023 "Life Insurance and Annuity Pricing During the Financial Crisis, Revisited" EGRIE Annual Seminar, Malaga, Spain
- 2023 "Life Insurance and Annuity Pricing During the Financial Crisis, Revisited" IME Annual Conference, Edinburgh, UK
- 2023 "Understanding Loss Reserving Errors in the Liability Catastrophe of 1997-2001," IME Annual Conference, Edinburgh, UK
- 2023 "Understanding Loss Reserving Errors in the Liability Catastrophe of 1997-2001," Gen Re Seminar, Cologne, Germany
- 2022 "Understanding Loss Reserving Errors in the Liability Catastrophe of 1997-2001," Conference in Honor of J.David Cummins and Mary Weiss, Temple University, Philadelphia
- 2020 "Life Insurance and Annuity Pricing During the Financial Crisis, Revisited" WRIEC, virtual meeting
- 2019 "An Integrated Approach to Measuring Asset and Liability Risks in Financial Institutions," EGRIE Annual Meeting, Rome, Italy
- 2019 "An Integrated Approach to Measuring Asset and Liability Risks in Financial Institutions," ARIA Annual Meeting, San Francisco, CA
- 2019 "An Integrated Approach to Measuring Asset and Liability Risks in Financial Institutions," RTS Annual Seminar, Tuscaloosa, AL
- 2017 "The Effect of Government Guarantees on Market Discipline in the Property-Casualty Insurance Industry," NBER Insurance Project Workshop, Boston, MA
- 2015 "The Marginal Cost of Risk in a Multi-Period Model," NBER Insurance Project Workshop, Stanford, CA
- 2015 "The Marginal Cost of Risk in a Multi-Period Model," CAS Annual Meeting, Philadelphia, PA
- 2015 "Dynamic Capital Allocation," IME Annual Conference, Liverpool UK
- 2015 "What Drives Tort Reform Legislation? Economics and Politics of the State Decisions to Restrict Liability Torts," ASSA Annual Meeting, Boston, MA
- 2014 "The Marginal Cost of Risk in a Multi-Period Model," CAS Centennial, New York, NY
- 2014 "Market Discipline and Guaranty Funds in Life Insurance," EGRIE Annual Seminar, St. Gallen, CH
- 2014 "Dynamic Capital Allocation with Irreversible Investments," EGRIE Annual Seminar, St. Gallen, CH
- 2014 "What Drives Tort Reform Legislation? Economics and Politics of the State Decisions to Restrict Liability Torts," ARIA Annual Meeting, Seattle, WA
- 2014 "The Marginal Cost of Risk in a Multi-Period Model," ARIA Annual Meeting, Seattle, WA
- 2014 "Market Discipline and Guaranty Funds in Life Insurance," ARIA Annual Meeting, Seattle, WA
- 2014 "The Marginal Cost of Risk in a Multi-Period Model," IME Conference, Shanghai, CN
- 2014 "The Effect of Banking Crises: Evidence from Non-Life Insurance Consumption," Risk Theory Seminar, Munich, Germany
- 2013 "The Effect of Banking Crises: Evidence from Non-Life Insurance Consumption," ASSA Annual Meeting, Philadelphia, PA
- 2013 "Optimal Insurance Contracts with Insurer Background Risk," EGRIE Annual Meeting, Paris, FR
- 2013 "The Effect of Banking Crises: Evidence from Non-Life Insurance Consumption," ARIA Annual Meeting, Washington D.C.

- 2013 “The Marginal Cost of Risk, Risk Measures, and Capital Allocation,” IRFRC Catastrophe Risk Conference, Singapore
- 2013 “Optimal Insurance Contracts with Insurer Background Risk,” ARIA Annual Meeting, Washington D.C.
- 2013 “The Marginal Cost of Risk, Risk Measures, and Capital Allocation,” CEAR/ETH Indices of Risk and New Risk Measures Conference, Zurich, CH
- 2012 “The Marginal Cost of Risk, Risk Measures, and Capital Allocation,” CAS Spring Meeting, Phoenix, AZ
- 2012 “The Marginal Cost of Risk, Risk Measures, and Capital Allocation,” Symposium: Risk and Catastrophic Events, State College, PA
- 2012 “The Marginal Cost of Risk, Risk Measures, and Capital Allocation,” ASSA Annual Meeting, Chicago, IL
- 2011 “The Marginal Cost of Risk, Risk Measures, and Capital Allocation,” NBER Insurance Project Workshop, Cambridge, MA
- 2010 “Bankruptcy in the Core and Periphery of Financial Groups: The Case of the Property-Casualty Insurance Industry,” ASSA Annual Meeting, Atlanta, GA
- 2009 “Bankruptcy in the Core and Periphery of Financial Groups: The Case of the Property-Casualty Insurance Industry,” Risk Management and Corporate Governance Conference, Loyola University of Chicago
- 2009 “Bankruptcy in the Core and Periphery of Financial Groups: The Case of the Property-Casualty Insurance Industry,” ARIA Annual Meeting, Providence, RI
- 2008 “An Economic Approach to Capital Allocation,” Risk Theory Society, Annual Meeting, Fort Collins, CO
- 2007 “Federal Financial Exposure to Catastrophic Risk,” ARIA Annual Meeting, Quebec City, CA
- 2007 “Catastrophe Bonds, Reinsurance, and the Optimal Collateralization of Risk Transfer,” EFMA Annual Meeting, Vienna, AT
- 2007 “Catastrophe Bonds, Reinsurance, and the Optimal Collateralization of Risk Transfer,” 5<sup>th</sup> Inffiniti Conference on International Financial Integration, Dublin, IE
- 2007 “Federal Financial Exposure to Catastrophic Risk,” NBER Conference on Measuring and Managing Federal Financial Risk, Evanston, IL
- 2006 Insuring Catastrophic Losses: The Status of TRIA and Proposed Natural Disaster Backstops, Wash., D.C.
- 2006 “Catastrophe Bonds, Reinsurance, and the Optimal Collateralization of Risk Transfer,” Risk Theory Society, Annual Meeting, Richmond, VA
- 2006 “Public versus Private Underwriting of Catastrophe Risk: Lessons from the California Earthquake Authority,” Berkeley Symposium on Real Estate, Catastrophic Risk, and Public Policy
- 2006 “Catastrophe Bonds, Reinsurance, and the Optimal Collateralization of Risk Transfer,” NBER Insurance Project Workshop, Cambridge, MA
- 2005 “Regulation, Capital, and the Evolution of Organizational Form in U.S. Life Insurance,” NBER Insurance Project Workshop, Cambridge, MA
- 2004 “The Rise and Fall of the Fraternal Life Insurer: Law and Organizational Form in U.S. Life Insurance,” NBER Insurance Project Workshop, Cambridge, MA
- 2004 “Regulation, Capital, and the Evolution of Organizational Form in U.S. Life Insurance,” American Finance Association, Annual Meeting, San Diego, CA
- 2003 “Insurance, Self-Protection, and the Economics of Terrorism,” Risk Theory Society, Annual Meeting, Atlanta, GA
- 2003 “Terrorism Insurance Policy and the Public Good,” St. John’s Journal of Legal Commentary 10<sup>th</sup> Annual Legal Symposium: Terrorism and its Impact on Insurance: Legislative Responses and Coverage Issues, Queens, NY
- 2003 “Insurance, Self-Protection, and the Economics of Terrorism,” NBER Insurance Project Workshop, Cambridge, MA
- 2002 “Pricing and Capital Allocation in Catastrophe Insurance,” CAS Risk and Capital Management Seminar, Toronto, CA
- 2002 “Market Discipline and Government Guarantees in U.S. Life Insurance,” Risk Theory Society, Annual Meeting, Urbana-Champaign, IL
- 2001 “Pricing and Capital Allocation in Catastrophe Insurance,” Risk Theory Society, Annual Meeting, Montreal

*Other Conferences Talks and Panel Participation*

- 2018 Surplus Lines Automation Conference, Florida
- 2017 International Conference on Business Sciences, Cairo University, Egypt

- 2016 IIF Insurance Colloquium, Basel, Switzerland
- 2016 Surplus Lines Association of California, California (keynote)
- 2014 Surplus Lines Automation Conference, Florida
- 2011 PRMIA Annual Risk Leadership Conference, Atlanta, GA
- 2011 7<sup>th</sup> International Microinsurance Conference, Rio de Janeiro, Brazil
- 2010 Property Loss Research Bureau Eastern Adjusters Conference, Atlanta, GA (keynote)
- 2008 NCOIL Annual Meeting, Duck Key, FL
- 2007 Capital Markets Symposium on Securitized Insurance Risk, New York, NY
- 2006 Insuring Catastrophic Losses: The Status of TRIA and Proposed Natural Disaster Backstops, Wash., D.C.
- 2006 Catastrophe Bonds and Insurance Linked Securities Summit, New York, NY
- 2005 12<sup>th</sup> Annual International Conference Promoting Business Ethics, New York, NY

## **Service Activities in Academic and Professional Organizations**

Senior Editor, *Journal of Risk and Insurance* (2019- )  
Associate Editor, *Insurance: Mathematics and Economics* (2022-)  
International Research Advisory Board, Risk and Insurance Research Center, NCCU, Taiwan  
American Risk & Insurance Association (ARIA) President (2012-13)  
Risk Theory Society President (2011-2012)  
American Risk & Insurance Association Board Member (2007-2014)  
Editorial Board, *Journal of Insurance Issues* (2012-2014)  
Huebner Colloquium Panelist (2016-2019)

### External Committees

*ARIA Program Committee, various years; ARIA Nominations Committee, 2015, 2016, 2018; Mehr Award Committee, 2023; Kulp-Wright Book Award Committee, 2005*

Discussant: *EGRIE Annual Seminar, Malaga, 2023; ARIA Annual Meeting, Los Angeles, 2022; WRIEC 2020; EGRIE Annual Meeting, Rome, 2019; ARIA Annual Meeting, San Francisco, 2019; ARIA Annual Meeting, Chicago, 2018; ARIA Annual Meeting, Boston, 2016; SIFR Insurance Conference, Stockholm, 2015; EGRIE Annual Seminar, St. Gallen, 2014; ARIA Annual Meeting, Seattle, 2014; ARIA Annual Meeting, San Diego, 2011; CEAR Workshop on Insurance for the Poor, Atlanta, 2010; CEAR Workshop on Risk Perception and Subjective Beliefs, Atlanta, 2010; Midwest Finance Association Annual Meeting, Chicago, 2009; 5<sup>th</sup> Infiniti Conference, Dublin, 2007; EFMA Annual Meeting, Vienna, 2007; AEA Annual Meeting, San Diego, 2004*

Session Chair: *ARIA Annual Meeting, Chicago, 2018, ARC, Atlanta, 2017; IME, Atlanta, 2017; ARIA Annual Meeting, San Diego, 2011; Midwest Finance Association Annual Meeting, Chicago, 2009; ARIA Annual Meeting, Quebec City, 2007; EFMA Annual Meeting, Vienna, 2007;*

Referee for *Asia-Pacific Journal of Risk and Insurance, Astin Bulletin, Australian Social Monitor, Contemporary Economic Policy, Current Issues in Economics and Finance, Defense and Peace Economics, European Economic Review, Financial Review, Geneva Papers: Issues and Practice, Geneva Risk and Insurance Review, Health Affairs, Insurance: Mathematics and Economics, Journal of Banking and Finance, Journal of Business, Journal of Finance, Journal of Financial Intermediation, Journal of Financial Services Research, Journal of Law and Economics, Journal of Mathematical Economics, Journal of Money, Credit, and Banking, Journal of Political Economy, Journal of Risk and Insurance, Management Science, Mathematical Social Sciences, North American Actuarial Journal, Proceedings of the National Academy of Sciences, Review of Financial Studies, Risk Management and Insurance Review, Scandinavian Actuarial Journal, and Science.*

Working Group Participation

*Committee on the Global Financial System, Working Group on Institutional Investors, Global Savings, and Asset Allocation (2006); Presidential Working Group on Financial Markets, Working Group on Terrorism Insurance (2006)*

**Continuing Education Activities**

- 2004-2007 Central Banking Seminar, Federal Reserve Bank of New York, Topics: Introduction to U.S. Financial Markets; Introduction to Non-bank Financial Institutions
- 2009 Texas Farm Bureau Program, Georgia State University, Topic: Securitization, the Insurance Industry, and the Panic of 2007
- 2009-2012 Horst K. Jannott Visiting Fellows Program, Georgia State University, Topics: Securitization, the Insurance Industry, and the Panic of 2007; Introduction to Statistics

## Sample of Findings on the Private Company Discount

Study	Years	Discount	Type
Emory (1994)	1992-1993	45%	IPO
Willamette Management Associates (various)	1975-1997	29% to 60%	IPO
Garland and Reilly (2004)	1998-2002	35%	IPO
Larcker et al. (2018)	2017	39% to 47%	IPO
Koeplin et al. (2000)	1984-1998	20% to 30%	Acquisitions
Block (2007)	1999-2006	20% to 25%	Acquisitions
Officer (2007)	1979-2003	15% to 30%	Acquisitions
Paglia and Harjoto (2010)	1993-2008	65% to 70%	Acquisitions
Jaffe et al. (2018)	1985-2014	0%	Acquisitions
Lohrey (2020)	2005-2015	48% to 62%	Acquisitions
Goetz (2021)	1997-2014	13%	Acquisitions
Silber (1991)	1981-1988	34%	Restricted Stock
Johnson (1999)	1991-1995	20%	Restricted Stock
Bajaj et al. (2001)	1990-1995	7%	Private placements
Comment (2012)	2004-2010	5% to 6%	Private placements
Finnerty (2013)	1991-1997	21%	Private placements
Finnerty (2013)	1997-2007	15%	Private placements
Chen et al. (2015)	1999-2012	10%	Private placements

William L. Silber (1991), "Discounts on Restricted Stock: The Impact of Illiquidity on Stock Prices," *Financial Analyst Journal*, July-August 1991, 60-64.

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BA Johnson (1999), "Quantitative Support for Discounts for Lack of Marketability" *Business Valuation Review* 16, 152-55.

John Koeplin, Atulya Sarin, Alan C. Shapiro (2000), "The Private Company Discount," *Journal of Applied Corporate Finance* 12, 94-101.

Mukesh Bajaj, David J. Denis, Stephen P Ferris, and Atulya Sarin (2001), "Firm Value and Marketability Discounts," *Journal of Corporation Law* 27, 89-115.

Garland, P.J., and Reilly, A.L. (2004), "Update on the Willamette Management Associates Pre-IPO Discount for Lack of Marketability Study for the Period 1998-2002," *Willamette Management Associates Insights*, Spring 2004, 38-44.

Block, S. (2007), "The Liquidity Discount in Valuing Privately Owned Companies," *Journal of Applied Finance* 17(2), 33-40.

Officer, M.S. (2007), "The Price of Corporate Liquidity: Acquisition Discounts for Unlisted Targets," *Journal of Financial Economics* 83(3), 571-598.

John K. Paglia and Maretno Harjoto (2010), "The Discount for Lack of Marketability in Private Companies: A Multiples Approach," *Journal of Business Valuation and Economic Loss Analysis* 5(1), Article 5.

Robert Comment (2012), "Revisiting the Illiquidity Discount: A New (and Skeptical) Restricted Stock Study," *Journal of Applied Corporate Finance* 24, 80-91.

John D. Finnerty (2013), "The Impact of Stock Transfer Restrictions on the Private Placement Discount," *Financial Management* 42, 575-609.

Chen, Linda H., Edward A. Dyl, George J. Jiang, and Januj A. Juneja (2015), "Risk, Illiquidity, or Marketability: What Matters for the Discounts on Private Placements?" *Journal of Banking and Finance* 57, 41-50.

Jeffrey F. Jaffe, Jan Jindra, David J. Pedersen, and Torben Voetmann (2018), "Do Unlisted Targets Sell at Discounts?" *Journal of Financial and Quantitative Analysis*, forthcoming.

David F. Larcker, Brian Tayan, and Edward Watts (2018), "Cashing it In: Private Company Exchanges and Employee Sales Prior to IPO," *Stanford Closer Look Series*, CGRP-73

Peter L. Lohrey (2020), "The Dodd-Frank Act and the Private Company Discount: An Empirical Investigation," *Journal of Forensic Accounting Research* 5(1), 298-318.

Sabrina Goetz (2021), "Public versus Private: New Insights into the Private Company Discount," *Journal of Business Valuation and Economic Loss Analysis* 16(1), 15-40.

\* The Willamette research studies were unpublished but reported in [Business Valuation Discounts and Premiums](#), Chapter 5, by Shannon Pratt (New York: John Wiley & Sons, Inc., p. 85).

# MASSACHUSETTS WORKERS' COMPENSATION

## VOLUME 1: INDEX 7/1/2024

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## **Introduction**

On behalf of our more than three hundred member carriers, the Workers' Compensation Rating and Inspection Bureau of Massachusetts ("WCRIBMA") recommends that average rates for workers' compensation insurance be decreased by 8.3% for policies effective on and after July 1, 2024.

### **Filing Summary**

This filing is divided into three parts (Volumes). Volume 1 is the main rate level filing, with explanatory text and actuarial exhibits underlying the calculation of the average rate indication. Volume 2 contains revised Experience and Retrospective Rating Plan parameters, miscellaneous rating values, and classification rate displays. Volume 3 addresses cost containment. The pre-filed testimony of two WCRIBMA actuaries supporting this filing, Carolyn Bergh and Anthony Salido, and the WCRIBMA's outside expert witnesses, Dr. George Zanjani of the University of Alabama, and Dr. Sharon Tennyson of Cornell University, is included with the filing.

This filing presents the required testimony, data, and calculations supporting the WCRIBMA's recommended rate revisions. The rates the WCRIBMA recommends are neither excessive nor inadequate; they are not unfairly discriminatory; and they fall within a range of reasonableness. The Commissioner should, therefore, approve the WCRIBMA's filing in accordance with M.G.L. c. 152, § 53A.

In this introduction, the WCRIBMA presents a summary of the principal ratemaking issues and methods considered in the filing. Consistent with past practice, the WCRIBMA

uses a loss ratio methodology to derive two separate rate indications based on two different policy years that are then weighted together to produce the final recommendation. This year, the WCRIBMA returned to its standard pre-pandemic practice of deriving its indication from data on the policy years two and three years prior: 2020 and 2021.<sup>1 2</sup> This return to standard practice is once again feasible because there is now enough data on policy year 2020 and 2021 policies to make meaningful long-term predictions even in the face of those years' pandemic-related abnormalities.

Using a standard loss ratio method, the WCRIBMA calculates a permissible loss, loss adjustment expense (“LAE”) and fixed expense ratio (“Target Cost Ratio”) and compares it to an adjusted loss, LAE and fixed expense ratio reflecting the past experience that supports this filing (“Actual Cost Ratio”). The WCRIBMA adjusts Aggregate Financial premium and loss data from the experience period so that the data reflects, as accurately as possible, the conditions that are expected to prevail during the period when the rates are expected to be in effect; here, at least, July 1, 2024 through June 30, 2025. The recommended rate change is designed to align the Actual Cost Ratio with the Target Cost Ratio.

It is important to understand that the ratemaking methodology used in this filing is not a series of unrelated calculations, but rather an integrated series of adjustments,

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<sup>1</sup> Policy year data is used by NCCI for determining indicated loss cost (or rate) changes in all 37 states and the District of Columbia where NCCI files loss costs (or rates).

<sup>2</sup> A policy year is based on policies with effective dates in a twelve-month period. Policy year 2020 data are those policies with effective dates between 1/1/20 and 12/31/20. Policy year 2020 data comprise premium and loss experience generated by policies written during 2020, regardless of when the loss occurs. Similarly, policy year 2021 data comprise premium and loss experience generated by policies written during 2021.

based on the WCRIBMA’s actuarial and its outside experts’ expertise, to the reported experience that, taken together, yield a reasonable rate level. Each of these adjustments is summarized below and further detailed in the body of the filing.

## **2020 and 2021 Policy Year Data**

The Rate Filing utilizes data from policy years 2020 and 2021, evaluated as of December 31, 2022. As Insurance Commissioner Anderson noted in the 2023 Rate Decision, “the global pandemic generated immediate and wide-ranging changes in the way work is conducted and businesses operate, including the delivery of medical services. The long-term effects of the pandemic are unpredictable and challenge efforts to develop prospective rates.” However, given the three and a half years that have transpired since COVID-19’s most disruptive direct and indirect impacts, our review of the data demonstrates that it is once again feasible and preferable to use the latest available policy years to determine rates in the prospective period. The data from these years, in our view, is the most likely to yield reasonable predictions of how the workers’ compensation market is expected to emerge.

The WCRIBMA is also giving equal weight to the experience underlying policy years 2020 and 2021, in the determination of the statewide overall rate change for policies effective beginning July 1, 2024. Data on policy years 2020 and 2021 reflect the current state of employment, level of lost-time claims, utilization of medical services and wage growth that has occurred over the past few years, and we expect conditions to continue

to stabilize. As these trends evolve, the results produced by our methodology will reflect that evolution as well.

The data<sup>3</sup> analyzed by the WCRIBMA reflects that we are now at a new lower level of workers' compensation claims<sup>4</sup> and medical losses<sup>5</sup>. Offsetting those trends are higher wages<sup>6</sup> putting upward pressure on indemnity losses<sup>7</sup>. Further, although the overall unemployment rate across Massachusetts remains at or below pre-pandemic levels over the past few months (8/23-10/23)<sup>8</sup>, the trends vary by industry<sup>9</sup>. Those industries hit hardest during the pandemic (services, retail, restaurant, and leisure & hospitality) continue to operate with fewer employees. Given the observed and expected increase in automation and other labor-saving technology<sup>10</sup> (e.g., kiosks for ordering, self check-in and check-out, curbside pickup and delivery), it is unclear whether employment figures in those industries will return to pre-pandemic levels. Other sub-industries, on the other hand, have rebounded, hiring enough employees to offset the decline in employment in those parts of the job market. Professional & business services and construction were the first sub-industries to rebound and reached pre-pandemic employment levels in 2021. Education, transportation, and wholesale reached pre-pandemic employment levels in

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<sup>3</sup> Section I-A, Appendix.

<sup>4</sup> Section I-A, Appendix, Exhibit 1.

<sup>5</sup> Section I-A, Appendix, Exhibit 2.

<sup>6</sup> Section I-A, Appendix, Exhibit 3.

<sup>7</sup> Section I-A, Appendix, Exhibit 4.

<sup>8</sup> Section I-A, Appendix, Exhibit 5.

<sup>9</sup> Section I-A, Appendix, Exhibit 6.

<sup>10</sup> See e.g., [Expected pandemic-driven employment changes: a comparison of 2019–29 and 2020–30 projection sets : Monthly Labor Review: U.S. Bureau of Labor Statistics \(bls.gov\)](#); [Hotels turn to robots and room cleanings every 4 days to ease staffing shortages : NPR](#)

2022 and healthcare, as of October 2023, has returned to levels of employees consistent with those prior to the pandemic.

Notwithstanding the differences in employment rates, lost-time claim counts have dropped in almost all sub-industries.<sup>11</sup> But, once again, the reduction in claim counts is not uniform. Those industries in which employment levels remain below pre-pandemic levels are contributing most to the decline in lost-time claims. The WCRIBMA will continue to monitor trends in employment levels and claims emergence.

Along with the reduction of claims, the data demonstrates that medical losses are lower as well, whether measured by the number of transactions or by dollars paid.<sup>12</sup> This is especially the case for medical expenses associates with in person services such as doctors' and hospital visits.<sup>13</sup> Drug costs were already declining consistently throughout service years 2017-2022 and continue on this pattern.

These favorable trends in medical losses, however, have been offset to some degree by the significant increases in the state average weekly wages<sup>14</sup>, which have put upward pressure on indemnity losses. Indemnity losses are currently at levels consistent with pre-pandemic years<sup>15</sup>, even though the lost-time claim counts are reduced.

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<sup>11</sup> Section I-A, Appendix, Exhibit 7.

<sup>12</sup> Section I-A, Appendix, Exhibit 8.

<sup>13</sup> Section I-A, Appendix, Exhibit 9. Among those visits that still occur, the vast majority remain in-person visits. During the pandemic, the use of telemedicine spiked from 24 to 13,300 transactions per service year. Even with this large increase, however, telemedicine was a relatively immaterial category of the medical delivery system for workers' compensation, and as of service year 2022, telemedicine visits have dropped significantly (3,400 transactions) from the peak.

<sup>14</sup> Section I-A, Appendix, Exhibit 3.

<sup>15</sup> Section I-A, Appendix, Exhibit 4.

## **Losses (Sections II, IV, V)**

Losses require three separate adjustments to rate period levels. The first, described in Section II of the filing, is loss development. Since the claims associated with policy year 2020 and policy year 2021 losses have not yet all been settled, the WCRIBMA looks at past settlement patterns to estimate ultimate values.

Workers' compensation payments may reflect claims for either (or both) indemnity (wage loss and survivor benefits) and medical benefits. These are developed separately. The WCRIBMA calculates two different estimates of ultimate medical and indemnity losses. The first is based on the development of past paid losses. The second is based on the development of the sum of past paid losses and case reserves. These are averaged before the WCRIBMA calculates the experience period loss ratios.

Next, losses are adjusted to reflect benefit level changes. Separate adjustments are calculated to bring indemnity and medical losses for policy years 2020 and 2021 to the July 1, 2024 benefit level, and additional adjustments to bring losses from the July 1, 2024 benefit level to the projected benefit level for the period the rates will be in effect.<sup>16</sup> These calculations are displayed in Section IV of the filing. These adjustments are made to reflect the impact of the changes in Statewide Average Weekly Wage (SAWW)<sup>17</sup> made

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<sup>16</sup> Historically, the SAWW in Massachusetts has increased steadily. However, due to the distortive impact that COVID-19 and the accompanying local, state and federal mandates (e.g., stay-at-home orders, economic shutdowns and federal relief, (e.g., Paycheck Protection Program)), the SAWW effective 10/1/2021, \$1,694.24, was 14% higher than the prior year. This large jump in the SAWW was not entirely a reflection of rising wages. Rather, it was due to the disproportionate impact that the shutdowns had on lower wage industries (services, retail, restaurants and leisure & hospitality), as compared to higher wage paying professions which continued working through remote work throughout mandated shutdowns. The rate of change has normalized and to some extent decelerated off of the higher level in 2021. See Section I-A, Appendix, Exhibit 10.

<sup>17</sup> As of 10/1/2023, Department of Unemployment Assistance (DUA) promulgated the State Average Weekly Wage (SAWW) of \$1,796.72 from the prior (10/1/2022) SAWW of \$1,765.34.

every October 1<sup>st</sup> by the Commonwealth’s Division of Unemployment Assistance. The latest SAWW, effective 10/1/2023, \$1,796.72<sup>18</sup> is only 1.8% higher than the prior year. In an effort to estimate the prospective benefit levels, when rates would be in effect under this valuation, the latest value of SAWW is used to project values of the SAWW and utilizes a SAWW trend factor of 4.7% as shown in Section IV - D, Exhibit 3. As in prior years, the WCRIBMA uses a simulation model to estimate the wage-based benefit effects.<sup>19</sup>

Finally, losses are adjusted for trend to account for expected changes in loss costs from the experience period to the time the recommended rates will be in effect. Using regression techniques, the WCRIBMA analyzes the distinct underlying components of observed loss trends: changes in claim frequency, claim severity, and wages<sup>20</sup>. Details of the loss trend calculations are found in Section V.

### **Premiums (Section III)**

For most workers’ compensation policies, the final premium is unknown until after the policy expires. Insurers base initial premiums on estimated payroll, subject to a post-expiration audit. Policy years 2020 and 2021 premium, the years underlying the experience period, have returned to pre-pandemic levels with wages and rate changes both having direct impacts and is representative of the post-pandemic environment.<sup>21</sup> As

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<sup>18</sup> The WCRIBMA has estimated that the 10/1/2023 SAWW reflects data underlying the period from 4/1/2022 to 3/31/2023 and reflects the post-COVID-19 wage levels.

<sup>19</sup> WCRIBMA simulation model is based on NCCI’s previously utilized automatics model.

<sup>20</sup> Wages are used as a proxy for exposure because payroll is the predominant exposure base.

<sup>21</sup> Section I-A, Appendix, Exhibit 11.

mentioned previously, given the three and a half years that have transpired since COVID-19's most disruptive direct and indirect impacts, our review of the data demonstrates that it is once again feasible and preferable to use the latest available policy years to determine rates in the prospective period. Policy counts have continued to grow, year over year, throughout this period. Following the recovery of the economy generally, the policy count growth has not been uniform for all industries - with those industries hit hardest with closures and mandates seeing policy count declines between policy year 2019 and 2020 (leisure & hospitality, retail, and restaurants) growth in other sub-industries (professional & business services and services) more than offset those declines.<sup>22</sup> As a result, policy year premium is developed using a technique much like loss development. The WCRIBMA also adjusts reported premiums to the current rate level. These adjustments are described in Section III.

## **Expenses (Section VI)**

Section VI contains the calculations underlying the expense provisions in the rates. As in past years, these calculations are based on the methods specified by the Commissioner in the 1987 Rate Decision. Expenses are divided into fixed and variable categories. Variable expenses are proportional to either premium (premium taxes, commissions, and other acquisition expenses) or losses (loss adjustment expenses). Fixed expenses are divided into expense categories (salaries, postage, utilities, etc.). As in the 2023 rate filing, the WCRIBMA uses a composite external index to estimate

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<sup>22</sup> Section I-A, Appendix, Exhibit 12.

expense trends. The WCRIBMA also continues to include a provision to reflect the estimated net cost to insurers for the purchase of reinsurance.

## **Underwriting Profit (Section VII)**

Discounted cash flow models are used to estimate the underwriting profit provision in Section VII. WCRIBMA uses the internal rate of return (“IRR”) model and the insurer capital cost (“ICC”) model. The IRR model is widely used in insurance ratemaking<sup>23</sup> and was approved by the Commissioner for use in workers’ compensation ratemaking in Massachusetts in 2003. The ICC model is mathematically equivalent to the IRR model and is used to quantify the capital costs in dollar terms.<sup>24</sup>

To implement the IRR and ICC models, the WCRIBMA first determines the various inputs needed by the models, such as the cost of capital (or target rate of return), the expected return on insurers’ invested assets, the leverage ratio, and the cash flows associated with underwriting. Using the IRR and ICC models and their associated inputs, the WCRIBMA derives the premium level required to achieve the target return on capital.

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<sup>23</sup> Actuarial Standard of Practice No. 30 (ASOP #30) - Treatment of Profit and Contingency Provisions and the Cost of Capital in Property/Casualty Insurance Ratemaking, published by the Actuarial Standards Board, lists three examples of models that may be used to directly develop an underwriting profit provision, including the Net Present Value (NPV) Model. ASOP #30 states that the “internal rate of return (IRR) model, a specific application of the general NPV model, uses an iteration technique to calculate the rate(s) of return that will set the net present value of a risk transfer’s cash inflows and outflows equal to zero.”

<sup>24</sup> The list of models that may be used to directly develop an underwriting profit provision which are described in ASOP #30 also includes the total financial needs model. “Total financial needs models are used to develop the underwriting profit provision such that the sum of underwriting profit, miscellaneous (non-investment) income, investment income from insurance operations, and investment income on capital, after income taxes, will equal the cost of capital. Each of these components is explicitly quantified.” The ICC model is an example of a total financial needs model.

In this filing, consistent with the 2023 rate filing, the WCRIBMA uses a weighted average of surplus to reserves (as compared to reserves to surplus). This is recommended because of WCRIBMA's use of a methodology to calculate various inputs based on weighted averages of companies writing workers' compensation in the Commonwealth.<sup>25</sup> The ideal way to ensure that the surplus allocation embedded in the premium will recover the total aggregate industry surplus allocated to the Commonwealth's workers' compensation line of business, based on the leverage ratios of the individual companies, is to calculate a weighted average surplus-to-reserves ratio. This methodology is discussed in greater detail in Section VII.

## **Classifications and Rating Plan Parameters (Sections IX-XII)**

Section IX describes how the overall rate change is distributed among the more than four hundred classifications for which workers' compensation policies are written in Massachusetts. Section X presents D-Ratio and expected loss rate calculations for use in experience rating. Section XI details the derivation of miscellaneous rating values, including credit factors for both the Massachusetts Benefits Deductible Program and the Massachusetts Benefits Claim and Aggregate Deductible Program. Section XII contains the calculation of various retrospective rating parameters, including hazard group relativities and excess loss factors.

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<sup>25</sup> Refer to the 7/1/2020 Filing, Section VII-F, Exhibit 1, where we relied on all group companies that write workers' compensation in MA for the calculation of the leverage ratio and Section VII-J, Exhibit 1, Page 3, to estimate the proportion of assets in the portfolio. Additionally, in the 7/1/2022 Filing, Section VII-E, we consistently used the same group of companies for the calculation of the cost of capital.

# I 000011

In the 2023 Rate Decision, the Commissioner stated that “the parties” should “address” the question of whether an individual self insurance group’s (SIG) data, in particular the Massachusetts NAHRO Insurance Group, Inc. (NAHRO), in class code 9033, should be incorporated into the WCRIBMA’s calculations. This issue had been raised only by way of a written public comment<sup>26</sup> provided to the Commissioner at the public hearing on the 2023 Rates, and thus had not been addressed or developed by any of the parties’ to the 2023 Rate Proceeding (or any past rate proceeding) in the course of reaching a stipulation regarding rates governing workers’ compensation rates for all industries effective July 1, 2023.

WCRIBMA has reviewed the Commissioner’s request in light of existing DOI precedent, which had historically suggested SIG data should not be used in ratemaking. That is because SIGs, pursuant to M.G.L. c. 152, § 25E, are not insurers or insurance companies and therefore not subject to the same insurance laws or regulations as the WCRIBMA’s member carriers. SIGs such as NAHRO are instead permitted to file independent rates with the Division of Insurance (DOI). M.G.L. c. 152, § 25O(3); 211 CMR 67.09(4). In fact, it is our understanding that NAHRO has filed its own rates on two recent occasions. In June 2022, NAHRO filed for a manual rate of \$2.40 (+15% from MA Bureau Manual Rate) effective July 1, 2022. We understand that the request was approved on September 27, 2022 for policies effective October 1, 2022 and subsequent. We also understand that NAHRO followed a similar process in May 2023, filing for a rate of \$2.52

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<sup>26</sup> Workers Compensation Rate Hearing February 3, 2023 Testimony of Jeffrey Kadison, ACAS, MAA on behalf of the Massachusetts NAHRO Insurance Group, Inc.

(+25% from Bureau Manual Rate) on May 8, 2023, effective June 1, 2023. This request was approved on May 31, 2023 for policies effective June 1, 2023 and subsequent.<sup>27</sup>

Because they are not subject to the same rules and regulations as other insurers and they are exempt from the data quality programs, SIG data is not subjected to the same rigorous data review and quality controls to which WCRIBMA subjects data provided to it by its member insurers. Among other things, SIGs are not subject to the Unit Statistical Plan Data Quality Improvement Program, now referred to as the Unit Statistical Plan Data Quality Incentive Program (USP Data Program) created pursuant to the 2000 Rate Decision to ensure that the submission of USP Data was timely and accurate for the purposes of ratemaking for member insurers. The approved<sup>28</sup> Data Quality Incentive Program in fact includes a provision<sup>29</sup> stating that the program would not apply to Self-Insurance Groups.

WCRIBMA collects USR and policy data from SIGs for the limited purpose of calculating experience modifications or “mods” for the SIG’s members. This relationship between SIGs and the WCRIBMA is memorialized in a written agreement between each SIG and the WCRIBMA. Although SIGs have some reporting requirements via these agreements, since the 2000 Decision excludes them from the USP Data Program, the

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<sup>27</sup> The WCRIBMA was not involved in any way in reviewing or analyzing either of these requests and was not a party to these rate filings and therefore cannot comment on their appropriateness, or the data used or whether they are neither excessive nor inadequate; not unfairly discriminatory; and fall within a range of reasonableness as required by statute.

<sup>28</sup> [Data Quality Incentive Programs \(wcribma.org\)](https://www.wcribma.org); CIRCULAR LETTER NO. 1851 and *Decision* approving the data quality incentive program.

<sup>29</sup> The Decision states that the data quality incentive program for unit statistical data (program) shall apply only to insurers licensed to write workers’ compensation insurance in Massachusetts. The program will not apply to Self-Insurance Groups (“SIGs”).

WCRIBMA has no ability to ensure compliance. If a SIG reports incomplete or inaccurate data, there is no method to require correction and so SIG data cannot be relied upon beyond its limited use.

It would be inconsistent with the WCRIBMA's focus on using high quality, validated data underlying the rate filing to include data not subjected to the same data quality safeguards that apply to data from other carriers. If such data were to be utilized in future rate filings, the WCRIBMA would, at a minimum, need to request modifications to the Data Quality Compliance Program via changes to the Massachusetts Workers Compensation Statistical Plan, and to secure new agreements with each and every SIG to ensure compliance with data reporting and data quality obligations.

With this in mind and in order to comply with the 2023 Decision, the WCRIBMA has outlined alternatives to using SIG data for the purposes of developing rates for Class Code 9033 (the proposed manual rate for which in this filing is \$1.95) for future consideration. The method found in this filing, however, does not include SIG data due, in part, to the issues identified above, including the precedential nature of the 2000 Decision, data quality concerns and the potentially unfairly discriminatory consequences of using just one SIG's data in ratemaking, but not that of other SIGs.<sup>30</sup>

Subject to these limitations, and for the purposes of an analysis only, the WCRIBMA notes that other possible ways to use NAHRO's data for class code 9033, may include:<sup>31</sup>

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<sup>30</sup> We do not receive data from the other SIG that writes 9033 (MIIA), as they are exempt from reporting to the WCRIBMA. However, we understand from information provided by the DOI that there were 13 Housing Authorities insured through MIIA as of 9/30/2023.

<sup>31</sup> Details of the derivation can be found in Section IX - Classification Ratemaking.

- Using 3 Yrs. Of SIG 67072 (NAHRO) as another state in the CW Complement of Credibility; would result in a rate of \$2.03 (as compared to \$1.95). This would be the most consistent way of using “other” data in the development of class rates. However, without validated data, the WCRIBMA would not have confidence that this rate is not excessive or unfairly discriminatory.
- Using 3 Yrs. Of SIG 67072 (NAHRO) for Complement of Credibility, ignoring other states’ 9033 data; would result in a rate of \$2.25 (as compared to \$1.95). This assumes that other states’ data that write class code 9033, adjusted to MA exposure levels, is inappropriate in class rates. However, this would be a marked departure from the standard classification ratemaking methodology underlying all other class codes’ rates and how other states develop their class rates or loss costs, which uses the availability of data from a validated set of data associated with similar risks in other states. The data underlying the countrywide complement are all subject to their individual data collection organization’s data quality programs.

## **Data (Section XIII)**

Section XIII describes the process the WCRIBMA uses to validate and edit the data used in its rate filings. Section XIII also provides details about certain adjustments

to the reported data, including the exclusion of certain data deemed necessary this year for purposes of this rate filing.

## **Cost Containment**

The WCRIBMA's cost containment filing once again includes the responses of ten representative carriers to a survey of cost containment practices. In 2013, the WCRIBMA revised its survey instrument to obtain an expanded array of information.<sup>32</sup> In 2023, the WCRIBMA added questions regarding COVID-19's impacts on carriers' operations in response to the Commissioner's comments in his Decision and Order on Docket No. R2022-02. The results of the data collected from this request are explained in the Cost Containment portion of the filing. The WCRIBMA recommends that, as in the past, the Commissioner accept this filing as evidence of the industry's compliance with its statutory cost containment obligations.

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<sup>32</sup> In the 2012 Rate Decision, the Commissioner stated that the scope of the WCRIBMA's 2012 Cost Containment Survey "focuses on loss costs and premium collection and does not address other expenses that workers' compensation insurers incur, such as general expenses, overhead, and commissions." In response, the current survey has a broader scope and addresses general expenses, such as salaries, travel, advertising, and rent. The current survey also addresses commissions.

Lost-Time Claim Counts

Policy Year	Age of Development					
	12	24	36	48	60	72
2012		14,063	14,276	14,294	14,322	14,342
2013	7,616	14,330	14,576	14,632	14,660	14,683
2014	7,501	14,734	14,979	15,055	15,088	15,107
2015	7,690	14,793	15,016	15,083	15,136	15,167
2016	7,601	14,569	14,803	14,894	14,929	14,925
2017	7,688	15,248	15,545	15,637	15,655	15,678
2018	7,700	14,947	15,145	15,186	15,239	
2019	7,668	13,382	13,554	13,648		
2020	6,430	12,597	12,924			
2021	6,894	13,527				
2022	6,630					

I 000016

Medical Paid Losses

Policy Year	Age of Development					
	12	24	36	48	60	72
2012		114,114,320	147,357,974	160,470,798	166,129,704	168,321,300
2013	30,531,730	117,495,113	150,381,352	162,566,648	167,213,931	170,039,574
2014	33,571,817	127,653,913	166,068,055	181,330,995	188,175,184	192,590,466
2015	33,088,968	126,707,969	164,287,251	178,682,576	183,984,754	186,868,170
2016	34,668,495	129,008,112	162,811,107	176,947,884	182,141,622	185,194,852
2017	34,214,706	132,279,464	171,979,353	184,125,236	192,518,281	195,656,664
2018	34,153,090	137,957,197	172,367,712	187,215,888	193,554,671	
2019	35,958,904	120,082,967	157,012,431	171,020,189		
2020	28,273,883	110,348,204	141,093,605			
2021	30,740,562	108,134,028				
2022	27,903,844					

Medical Paid + Case Losses

Policy Year	Age of Development					
	12	24	36	48	60	72
2012		195,387,442	208,894,136	216,185,429	217,150,001	214,636,748
2013	90,586,299	207,086,455	213,094,868	212,710,881	201,886,002	202,344,225
2014	100,427,116	223,896,738	237,259,695	240,904,284	241,359,684	240,823,550
2015	98,778,760	209,226,632	226,560,558	231,441,162	227,844,368	226,489,495
2016	104,028,059	209,540,241	219,835,091	226,907,928	224,351,389	224,025,274
2017	95,462,279	211,949,935	231,458,264	233,496,712	235,884,795	235,370,725
2018	98,916,365	214,431,134	228,937,654	234,024,827	236,893,098	
2019	106,175,896	196,574,411	224,397,891	228,579,817		
2020	85,295,015	188,723,086	193,973,708			
2021	92,653,027	181,984,878				
2022	90,061,492					

Source: WCRIBMA Financial Call Data

I 000017

Derivation of Estimated Statewide Average Weekly Wage (SAWW)

Effective Date (1)	Actual SAWW (2)	SAWW Annual Nominal Change (3a)	SAWW Annual Percent Change (3b)	Estimated Annual SAWW Trend Factor (4)	Projected SAWW (5)
10/1/2012	1,173.06				
10/1/2013	1,181.28	8.22	0.7%		
10/1/2014	1,214.99	33.71	2.9%		
10/1/2015	1,256.47	41.48	3.4%		
10/1/2016	1,291.74	35.27	2.8%		
10/1/2017	1,338.05	46.31	3.6%		
10/1/2018	1,383.41	45.36	3.4%		
10/1/2019	1,431.66	48.25	3.5%		
10/1/2020	1,487.78	56.12	3.9%		
10/1/2021	1,694.24	206.46	13.9%		
10/1/2022	1,765.34	71.10	4.2%		
10/1/2023	1,796.72	31.38	1.8%		
10/1/2024				1.047	1,881.53
10/1/2025				1.047	1,970.34

I 000018

Notes:

(2): Data from Department of Unemployment Assistance

(4): 4.7% Estimated Annual Trend in SAWW, Section V-A, Exhibit 1

Indemnity Paid Losses

Policy Year	Age of Development					
	12	24	36	48	60	72
2012		108,552,689	209,492,021	280,525,740	323,696,089	345,266,290
2013	22,674,650	119,644,185	224,888,760	295,608,379	336,481,201	351,873,668
2014	25,776,339	129,874,697	246,269,327	333,986,371	380,253,183	396,979,269
2015	26,425,214	134,978,310	251,450,932	334,318,444	375,186,740	392,662,199
2016	27,222,237	133,963,071	254,307,515	330,448,394	374,706,274	397,051,226
2017	27,085,784	140,625,373	264,006,729	348,998,745	409,251,390	445,391,404
2018	28,813,520	144,555,830	258,042,083	358,208,312	426,637,795	
2019	30,518,057	141,420,073	257,122,289	362,648,900		
2020	26,290,893	126,548,201	239,625,935			
2021	29,075,498	141,585,832				
2022	30,391,952					

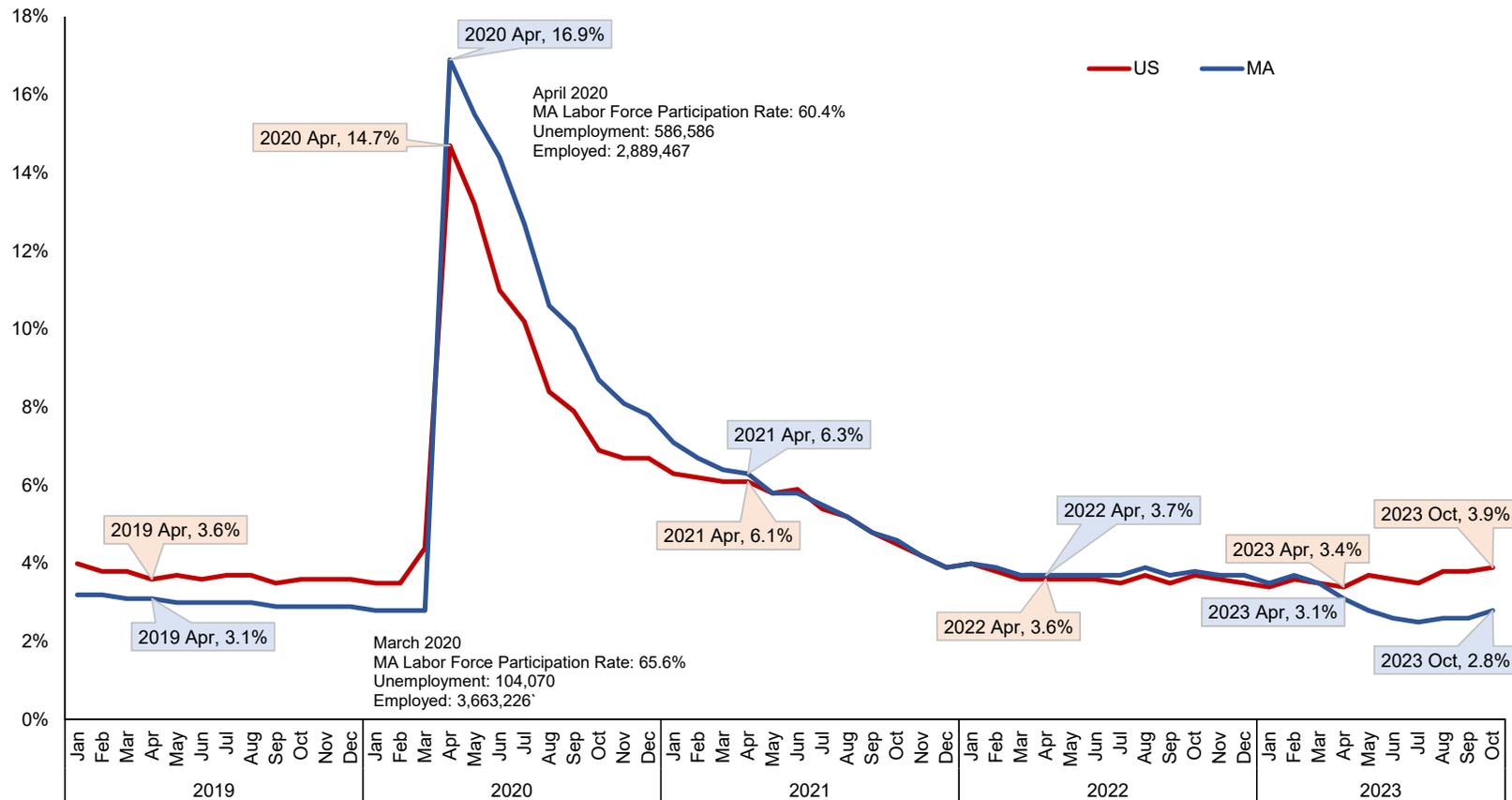
Indemnity Paid + Case Losses

Policy Year	Age of Development					
	12	24	36	48	60	72
2012		206,453,419	295,225,949	335,842,717	357,496,939	366,467,707
2013	68,825,479	231,771,476	314,333,352	346,711,622	366,639,009	374,369,556
2014	75,522,537	244,254,386	352,317,352	397,448,432	420,136,065	423,602,486
2015	81,402,231	250,030,384	350,205,798	397,871,589	416,362,726	424,280,120
2016	75,020,723	243,872,130	349,444,011	396,395,441	418,569,881	432,248,062
2017	71,715,004	253,292,574	372,535,397	430,706,209	467,144,570	481,659,569
2018	73,695,367	255,543,315	373,857,292	446,638,500	487,374,014	
2019	80,256,795	251,786,335	374,499,419	447,823,269		
2020	66,157,496	225,047,937	340,673,305			
2021	69,359,930	242,085,044				
2022	76,195,851					

Source: WCRIBMA Financial Call Data

I 000019

(Un) Employment Rate



I 000020

Source: BLS.gov

Employment by Sub-industry

Number of Employees						
Industry Subgroup	2018	2019	2020	2021	2022	2023*
Professional & Business Services	905,825	924,400	894,750	924,833	960,225	983,100
Services	139,325	140,475	118,275	125,017	134,633	138,710
Construction	159,658	163,950	153,433	165,350	170,858	177,230
Education	169,633	177,833	169,658	174,733	182,917	186,250
Healthcare	627,517	639,783	601,875	618,850	626,283	646,820
Leisure & Hospitality	100,000	104,300	65,100	74,650	90,442	100,250
Manufacturing	242,367	244,242	230,025	233,117	237,975	237,550
Restaurant	275,442	275,417	196,942	223,717	254,558	260,930
Retail	353,942	351,800	318,275	329,158	332,400	330,860
Transportation	102,075	104,683	94,600	101,908	107,892	110,520
Wholesale	123,992	123,550	116,000	118,617	124,483	129,930
<b>Total Private</b>	<b>3,199,775</b>	<b>3,250,433</b>	<b>2,958,933</b>	<b>3,089,950</b>	<b>3,222,667</b>	<b>3,302,150</b>

Change in Employees					
Industry Subgroup	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023*
Professional & Business Services	18,575	-29,650	30,083	35,392	22,875
Services	1,150	-22,200	6,742	9,617	4,077
Construction	4,292	-10,517	11,917	5,508	6,372
Education	8,200	-8,175	5,075	8,183	3,333
Healthcare	12,267	-37,908	16,975	7,433	20,537
Leisure & Hospitality	4,300	-39,200	9,550	15,792	9,808
Manufacturing	1,875	-14,217	3,092	4,858	-425
Restaurant	-25	-78,475	26,775	30,842	6,372
Retail	-2,142	-33,525	10,883	3,242	-1,540
Transportation	2,608	-10,083	7,308	5,983	2,628
Wholesale	-442	-7,550	2,617	5,867	5,447
<b>Total Private</b>	<b>50,658</b>	<b>-291,500</b>	<b>131,017</b>	<b>132,717</b>	<b>79,483</b>

<b>Total % Change from Prior Year</b>	<b>1.6%</b>	<b>-9.0%</b>	<b>4.4%</b>	<b>4.3%</b>	<b>2.5%</b>
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1000021

Source: BLS.gov

Note: Values highlighted in yellow indicate a return to pre-COVID employment levels.

\*2023 average through Oct 2023

Lost Time Claim Count by Sub-Industry

Number of Lost-Time Claim Counts (@ 1st Report, CPY)				
Industry Subgroup	2018	2019	2020	2021
Professional & Business Services	549	484	426	423
Services	2,121	1,857	1,712	1,766
Construction	2,735	2,473	2,540	2,584
Education	1,241	1,046	980	1,122
Healthcare	1,635	1,482	1,344	1,343
Leisure & Hospitality	615	452	276	440
Manufacturing	1,823	1,665	1,646	1,762
Restaurant	805	725	535	682
Retail	701	699	615	532
Transportation	1,326	1,203	1,315	1,374
Wholesale	849	871	915	943
Other	500	388	390	411
Total Private	14,900	13,345	12,694	13,382

Change in Lost-Time Claim Counts				
Industry Subgroup	2018-2019	2019-2020	2020-2021	
Professional & Business Services	-65	-58	-3	
Services	-264	-145	54	
Construction	-262	67	44	
Education	-195	-66	142	
Healthcare	-153	-138	-1	
Leisure & Hospitality	-163	-176	164	
Manufacturing	-158	-19	116	
Restaurant	-80	-190	147	
Retail	-2	-84	-83	
Transportation	-123	112	59	
Wholesale	22	44	28	
Other	-112	2	21	
Total Private	-1,555	-651	688	

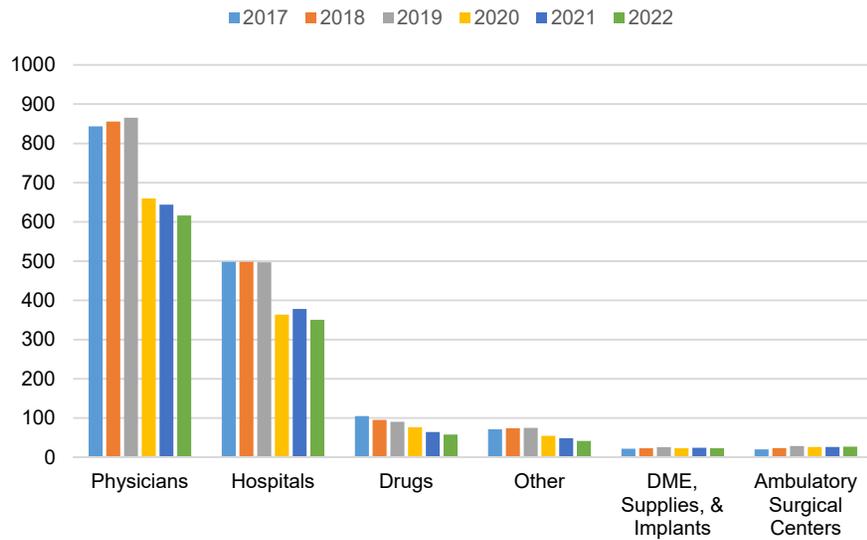
Total % Change from Prior Year	-10.4%	-4.9%	5.4%
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Source: Unit Statistical Data

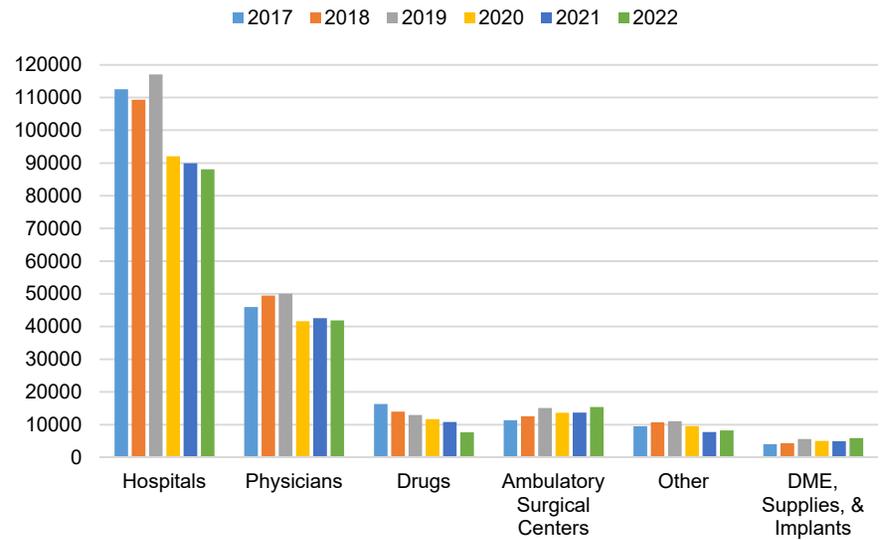
1000022

Medical Data

Number of Transactions by Medical Category  
 Service Year (000's)

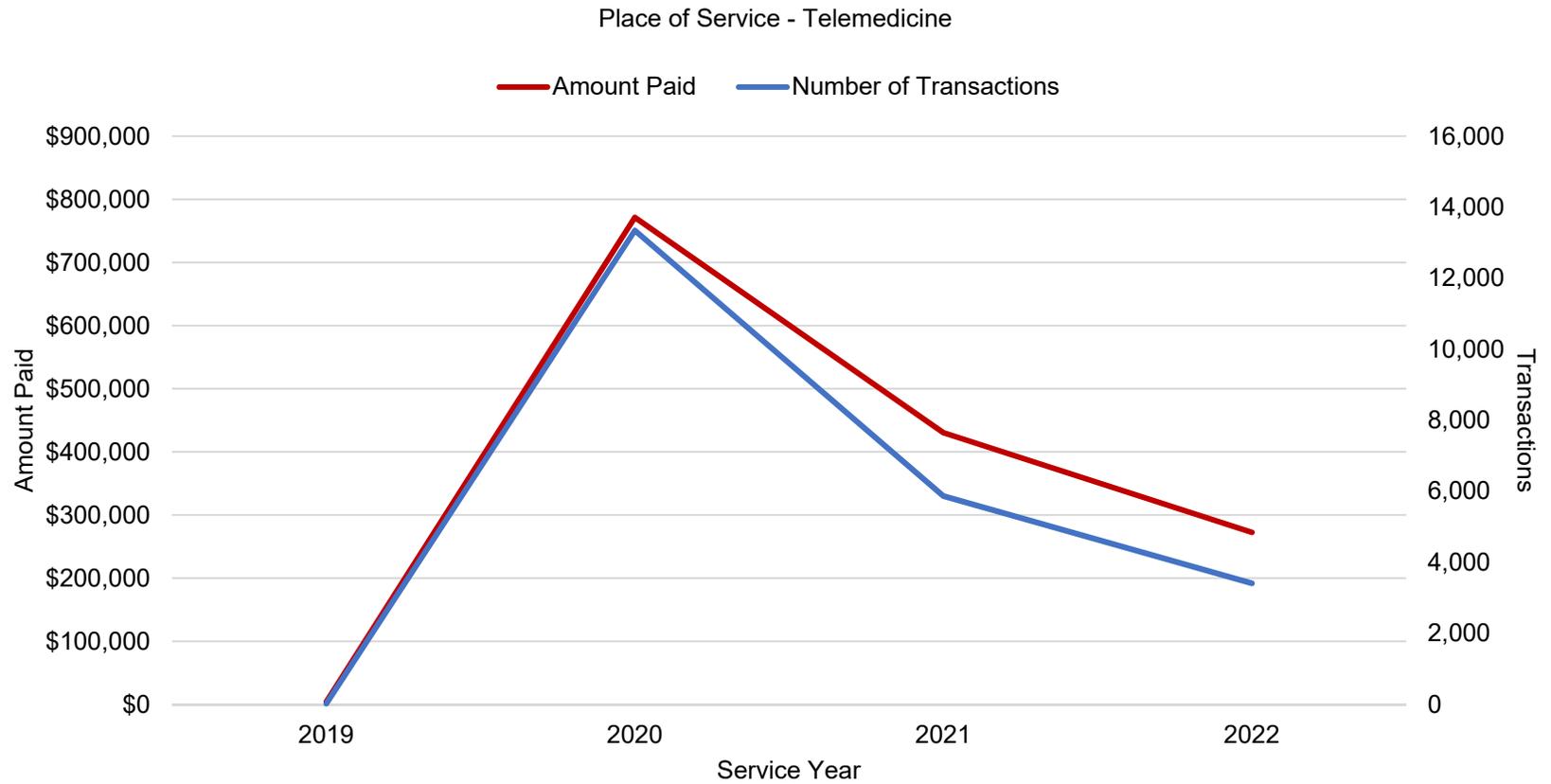


Amount Paid by Medical Category  
 Service Year (\$000s)



I 000023

Source: MA Medical Data Call



Source: MA Medical Data Call; Based on Place of Service Code

I 000024

State Average Weekly Wage Changes are Moderating Across Most Industries

Average Weekly Wage in Q2							
Industry Code	Industry Subgroup	2018	2019	2020	2021	2022	2023
11	Agriculture, Forestry, Fishing and Hunting	1,082	1,120	1,088	1,294	1,153	1,185
21	Mining	1,300	1,401	1,507	1,472	1,521	1,580
22	Utilities	2,413	2,520	2,276	2,761	2,912	2,886
23	Construction	1,432	1,482	1,512	1,591	1,637	1,747
31-33	Manufacturing	1,633	1,629	1,728	1,809	1,800	1,862
42	Wholesale Trade	1,766	1,837	1,945	2,146	2,256	2,245
44-45	Retail Trade	658	705	778	836	848	847
48-49	Transportation and Warehousing	955	1,000	1,105	1,110	1,169	1,213
51	Information	2,271	2,374	2,595	2,837	2,953	3,104
52	Finance and Insurance	2,374	2,554	2,725	2,796	2,950	2,988
53	Real Estate Rental and Leasing	1,388	1,415	1,559	1,665	1,798	1,785
54	Professional, Scientific, and Technical	2,451	2,559	2,736	3,040	3,028	3,146
55	Management of Companies and Enterprises	2,392	2,559	2,543	2,707	2,842	2,788
56	Administrative	915	966	1,081	1,097	1,209	1,243
61	Educational Services	1,317	1,333	1,489	1,453	1,499	1,536
62	Health Care and Social Assistance	1,054	1,079	1,169	1,192	1,262	1,300
71	Arts, Entertainment, and Recreation	715	760	1,038	851	940	940
72	Accommodation and Food Services	475	507	520	555	617	658
81	Public Administration	723	760	959	911	935	983

Change in Average Weekly Wage in Q2						
Industry Code	Industry Subgroup	2018-2019	2019-2020	2020-2021	2021-2022	2021-2023
11	Agriculture, Forestry, Fishing and Hunting	3.5%	-2.9%	18.9%	-10.9%	2.8%
21	Mining	7.8%	7.6%	-2.3%	3.3%	3.9%
22	Utilities	4.4%	-9.7%	21.3%	5.5%	-0.9%
23	Construction	3.5%	2.0%	5.2%	2.9%	6.7%
31-33	Manufacturing	-0.2%	6.1%	4.7%	-0.5%	3.4%
42	Wholesale Trade	4.0%	5.9%	10.3%	5.1%	-0.5%
44-45	Retail Trade	7.1%	10.4%	7.5%	1.4%	-0.1%
48-49	Transportation and Warehousing	4.7%	10.5%	0.5%	5.3%	3.8%
51	Information	4.5%	9.3%	9.3%	4.1%	5.1%
52	Finance and Insurance	7.6%	6.7%	2.6%	5.5%	1.3%
53	Real Estate Rental and Leasing	1.9%	10.2%	6.8%	8.0%	-0.7%
54	Professional, Scientific, and Technical	4.4%	6.9%	11.1%	-0.4%	3.9%
55	Management of Companies and Enterprises	7.0%	-0.6%	6.4%	5.0%	-1.9%
56	Administrative	5.6%	11.9%	1.5%	10.2%	2.8%
61	Educational Services	1.2%	11.7%	-2.4%	3.2%	2.5%
62	Health Care and Social Assistance	2.4%	8.3%	2.0%	5.9%	3.0%
71	Arts, Entertainment, and Recreation	6.3%	36.6%	-18.0%	10.5%	0.0%
72	Accommodation and Food Services	6.7%	2.6%	6.7%	11.2%	6.6%
81	Public Administration	5.1%	26.2%	-5.0%	2.6%	5.1%

Source: BLS.gov

1000025

Standard Earned Premium + Adjusted ARAP (in \$000's)

Policy Year	Age of Development					
	12	24	36	48	60	72
2012		973,162	984,612	981,849	981,725	971,567
2013	569,022	1,025,460	1,032,685	1,031,285	1,024,062	1,022,660
2014	590,227	1,073,408	1,088,171	1,081,213	1,080,440	1,080,362
2015	614,165	1,152,188	1,153,685	1,153,148	1,152,671	1,152,452
2016	649,919	1,191,171	1,202,239	1,201,306	1,200,884	1,200,692
2017	691,047	1,252,860	1,272,754	1,273,219	1,272,388	1,271,974
2018	693,579	1,235,738	1,258,237	1,257,649	1,257,155	
2019	681,275	1,213,420	1,220,362	1,219,335		
2020	656,499	1,179,484	1,204,479			
2021	655,423	1,227,048				
2022	688,573					

- Other than 2020 where the most significant shutdowns were in effect, standard premium plus adjusted ARAP premiums have returned to pre-pandemic levels
  - Higher wages have a direct impact on payroll, the basis for most premium
    - 10/1/2018: +3.4%
    - 10/1/2019: +3.5%
    - 10/1/2020: +3.9%
    - 10/1/2021: +13.9%
    - 10/1/2022: +4.2%
    - 10/1/2023: +0.8%
  - Rate Changes also have a direct impact on premium
    - Effective 7/1/2018: -12.9%
    - Effective 7/1/2020: -6.8%
    - Effective 7/1/2022: -3.5%
    - Effective 7/1/2023: -10.2%

Source: WCRIBMA Financial Call Data

Policy Count by Sub-Industry

Policy Counts					
Industry Subgroup	2018	2019	2020	2021	2022
Professional & Business Services	38,237	40,189	44,292	51,556	55,109
Services	82,292	91,507	92,977	96,855	98,037
Building Services	8,053	8,296	8,318	8,410	8,622
Construction	46,779	47,424	47,072	48,918	50,368
Education	6,181	6,265	6,263	6,461	6,621
Healthcare	8,834	8,849	8,908	9,255	9,510
Leisure & Hospitality	6,274	6,379	6,027	6,150	6,271
Manufacturing	8,257	8,154	7,901	7,949	7,921
Protective Services	300	311	310	325	344
Public Works	1,272	1,259	1,231	1,240	1,217
Restaurant	11,597	11,674	11,114	11,396	11,767
Retail	12,209	12,172	11,612	12,006	12,258
Transportation	3,415	3,494	3,478	3,606	3,618
Wholesale	4,388	4,257	4,192	4,180	4,060
Other	1,261	1,320	1,261	1,297	1,259
<b>Total Private</b>	<b>239,349</b>	<b>251,550</b>	<b>254,956</b>	<b>269,604</b>	<b>276,982</b>

Change in Policy Counts					
Industry Subgroup	2018-2019	2019-2020	2020-2021	2021-2022	
Professional & Business Services	1,952	4,103	7,264	3,553	
Services	9,215	1,470	3,878	1,182	
Building Services	243	22	92	212	
Construction	645	-352	1,846	1,450	
Education	84	-2	198	160	
Healthcare	15	59	347	255	
Leisure & Hospitality	105	-352	123	121	
Manufacturing	-103	-253	48	-28	
Protective Services	11	-1	15	19	
Public Works	-13	-28	9	-23	
Restaurant	77	-560	282	371	
Retail	-37	-560	394	252	
Transportation	79	-16	128	12	
Wholesale	-131	-65	-12	-120	
Other	59	-59	36	-38	
<b>Total Private</b>	<b>12,201</b>	<b>3,406</b>	<b>14,648</b>	<b>7,378</b>	

<b>Total % Change from Prior Year</b>	<b>5.1%</b>	<b>1.4%</b>	<b>5.7%</b>	<b>2.7%</b>
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I 000027

Source: WCRIBMA's Policy File Information System as of 9/12/2023. Uses Governing Class code to derive sub-industry. Policy File data is coverage information that is primarily collected for use in the Online Proof of Coverage (POC) information used by the Massachusetts Department of Industrial Accidents, tracking the receipt of Unit Statistical Data to determine the distribution of Experience Rating to each insured's current carrier.

# I 000028

Section I - Rate Recommendation  
Subsection A - Introduction  
7/1/2024

Section I - A  
Exhibit 1

## RATE INDICATION SUMMARY

<b>Statewide Rate Change Summary</b>		
<i>Indication Effective Date: 7/1/2024</i>		
(1)	Indicated Rate Change Based on Policy Year 2020 Data (Section I-B, Exhibit 1)	-7.7%
(2)	Indicated Rate Change Based on Policy Year 2021 Data (Section I-B, Exhibit 1)	-8.9%
(3)	Average Indicated Rate Change = [ (1) + (2) ] / 2.0	-8.3%

<b>Expense Constants</b>			
	Current	Recommended	
(4)	For Risks developing at least \$1,000 in Standard Premium (Section VI-D, Exhibit 1)	\$338	\$338
(5)	For Risks developing at least \$200 and less than \$1,000 in Standard Premium (Section VI-D, Exhibit 1)	\$250	\$250
(6)	For Risks developing less than \$200 in Standard Premium (Section VI-D, Exhibit 1)	\$159	\$159
(7)	Per Capita Risks (for each exposure, up to a maximum of 4)	\$64	\$64

# I 000029

Section I - Rate Recommendation  
 Subsection B - Calculation of Indicated Rate Change  
 7/1/2024

Section I - B  
 Exhibit 1

	Policy Year <u>2020</u>	Policy Year <u>2021</u>
(1) Standard Earned Premium plus Adjusted ARAP Premium (Section I-D, Exhibit 2)	1,204,478,740	1,227,048,456
(2) Composite Adjustment Factor (Section I-D, Exhibit 2)	1.032	1.037
(3) Adjusted Standard Earned Premium plus Adjusted ARAP = [ (1) x (2) ]	1,242,774,151	1,272,071,589
(4) Cumulative Premium Development Factor to Ultimate (Section I-D, Exhibit 2)	0.999	1.014
(5) Rate On-Level Factor (Section I-D, Exhibit 2)	0.834	0.867
(6) Factor to Remove Expense Constant (Section I-D, Exhibit 2)	0.959	0.959
(7) Adjusted On-Level Standard Earned Premium plus Adjusted ARAP at Ultimate = [ (3) x (4) x (5) x (6) ]	993,546,230	1,072,493,586
(8) Annual Wage Trend (Section I-D, Exhibit 4)	0.047	0.047
(9) Wage Trend Factor to 7/1/2025 (based on Section I-D, Exhibit 4)	1.230	1.175
(10) Standard Earned Premium plus ARAP Projected to Prospective Effective Period = [ (7) x (9) ]	1,222,461,134	1,260,158,436
(11) Average On-Level Incurred Losses Projected to Prospective Effective Period (Section I-C Exhibit I, Page 1 Item (30), Page 2 Item (30))	737,597,684	752,514,319
(12) Loss Ratio Projected to Prospective Effective Period = [ (11) / (10) ]	0.603	0.597
(13) Factor to Remove the Large Deductible Contribution to the Residual Market Subsidy (Section I-E)	0.993	0.993
(14) Loss Adjustment Expense Factor (Section I-D, Exhibit 5)	1.195	1.195
(15) Fixed Expense Ratio (Section VI-B, Exhibit 1)	0.052	0.050
(16) Indicated Policy Year Loss, LAE, and Fixed Expense Ratio = { [ (12) x (14) ] + (15) } x (13)	0.768	0.758
(17) Commission and Other Acquisition Expense Ratio (Section I-D, Exhibit 5)	0.115	0.115
(18) Premium Tax Ratio (Section I-D, Exhibit 5)	0.022	0.022
(19) Premium Discount Ratio (Section I-D, Exhibit 5)	0.054	0.054
(20) Variable Expense Ratio = [ (17) + (18) + (19) ]	0.190	0.190
(21) Underwriting Profit Provision (Section VII-A)	-0.022	-0.022
(22) Permissible Loss, LAE, and Fixed Expense Ratio = [ 1.0 - (20) - (21) ]	0.832	0.832
(23) Indicated Rate Change = [ (16) / (22) ] - 1.0	<b>-7.7%</b>	<b>-8.9%</b>
(24) Overall Indicated Rate Change = 0.5 x (23) PY2020 + 0.5 x (23) PY2021		<b>-8.3%</b>

# I 000030

Section I - Rate Recommendation  
 Subsection C - Indicated Rate Change Detail  
 7/1/2024

Section I - C  
 Exhibit 1  
 Page 1

Premium and Incurred Losses Projected to the Prospective Effective Period  
 Policy Year 2020

**Premium**

(1)	Adjusted On-Level Standard Earned Premium plus Adjusted ARAP at Ultimate (Section I -D, Exhibit 2)	993,546,230
(2)	Annual Wage Trend (Section I-D, Exhibit 4)	0.047
(3)	Wage Trend Factor to Prospective Effective Period (7/1/2025)	1.230
(4)	Standard Earned Premium plus ARAP Projected to Prospective Effective Period = [ (1) x (3) ]	1,222,461,134

**Indemnity Losses**

		<u>Paid</u>	<u>Paid + Case</u>
(5)	Indemnity Losses at Latest Month - Industry Total (Section I-D, Exhibit 1)	241,139,628	342,585,609
(6)	Indemnity Loss Development Factor to 252 Months (Section I-D, Exhibit 1)	1.943	1.301
(7)	Tail Factor 252 Months to Ultimate (Section I-D, Exhibit 1)	1.034	1.015
(8)	Factor to Adjust for Escalated Benefits (Section I-D, Exhibit 1)	1.045	1.000
(9)	Estimated Ultimate Indemnity Loss = [ (5) x (6) x (7) x (8) ]	506,365,113	452,616,311
(10)	Annual Indemnity Loss Trend (Section I-D, Exhibit 4)	0.021	0.021
(11)	Indemnity Loss Trend Factor to 7/1/2025	1.097	1.097
(12)	Estimated Indemnity Losses Trended = [ (9) x (11) ]	555,543,263	496,574,379
(13)	Estimated Benefit Change Factor Prior to 1/1/2024 (Section I-D, Exhibit 3)	1.045	1.045
(14)	On Level Losses = [ (12) x (13) ]	580,667,813	519,032,050
(15)	Estimated Benefit Change Factor Subsequent to 1/1/2024 (Section I-D, Exhibit 3)	1.017	1.017
(16)	On-Level Incurred Losses Projected to Prospective Effective Period = [ (14) x (15) ]	590,679,396	527,980,941

**Medical Losses**

(17)	Medical Losses at Latest Month - Industry Total (Section I-D, Exhibit 1)	141,765,209	194,963,546
(18)	Medical Loss Development Factor to 252 Months (Section I-D, Exhibit 1)	1.263	0.965
(19)	Tail Factor 252 Months to Ultimate (Section I-D, Exhibit 1)	1.071	0.981
(20)	Factor to Adjust for Escalated Benefits (1.000 for Medical Losses)	1.000	1.000
(21)	Estimated Ultimate Medical Loss = [ (17) x (18) x (19) x (20) ]	191,787,327	184,522,565
(22)	Annual Medical Loss Trend (Section I-D, Exhibit 4)	-0.012	-0.012
(23)	Medical Loss Trend Factor to 7/1/2025	0.947	0.947
(24)	Estimated Medical Losses Trended = [ (21) x (23) ]	181,709,017	174,826,014
(25)	Estimated Benefit Change Factor Prior to 1/1/2024 (Section I-D, Exhibit 3)	1.000	1.000
(26)	On Level Losses = [ (24) x (25) ]	181,709,017	174,826,014
(27)	Estimated Benefit Change Factor Subsequent to 1/1/2024 (Section I-D, Exhibit 3)	1.000	1.000
(28)	On-Level Incurred Losses Projected to Prospective Effective Period = [ (26) x (27) ]	181,709,017	174,826,014

**Total Combined Medical and Indemnity Losses**

(29)	Total Estimated Ultimate Losses Trended and On Level = [ (16) + (28) ]	772,388,414	702,806,955
(30)	Average On-Level Incurred Losses Projected to Prospective Effective Period	737,597,684	

# I 000031

Section I - Rate Recommendation  
 Subsection C - Indicated Rate Change Detail  
 7/1/2024

Section I - C  
 Exhibit 1  
 Page 2

## Premium and Incurred Losses Projected to the Prospective Effective Period Policy Year 2021

### Premium

(1)	Adjusted On-Level Standard Earned Premium plus Adjusted ARAP at Ultimate (Section I-D, Exhibit 2)	1,072,493,586
(2)	Annual Wage Trend (Section I-D, Exhibit 4)	0.047
(3)	Wage Trend Factor to Prospective Effective Period (7/1/2025)	1.175
(4)	Standard Earned Premium plus ARAP Projected to Prospective Effective Period = [ (1) x (3) ]	1,260,158,436

### Indemnity Losses

		<u>Paid</u>	<u>Paid + Case</u>
(5)	Indemnity Losses at Latest Month - Industry Total (Section I-D, Exhibit 1)	142,399,901	243,445,087
(6)	Indemnity Loss Development Factor to 252 Months (Section I-D, Exhibit 1)	3.606	1.918
(7)	Tail Factor 252 Months to Ultimate (Section I-D, Exhibit 1)	1.034	1.015
(8)	Factor to Adjust for Escalated Benefits (Section I-D, Exhibit 1)	1.045	1.000
(9)	Estimated Ultimate Indemnity Loss = [ (5) x (6) x (7) x (8) ]	554,942,240	473,947,833
(10)	Annual Indemnity Loss Trend (Section I-D, Exhibit 4)	0.021	0.021
(11)	Indemnity Loss Trend Factor to 7/1/2025	1.075	1.075
(12)	Estimated Indemnity Losses Trended = [ (9) x (11) ]	596,422,213	509,373,760
(13)	Estimated Benefit Change Factor Prior to 1/1/2024 (Section I-D, Exhibit 3)	1.017	1.017
(14)	On Level Losses = [ (12) x (13) ]	606,499,024	517,979,849
(15)	Estimated Benefit Change Factor Subsequent to 1/1/2024 (Section I-D, Exhibit 3)	1.017	1.017
(16)	On-Level Incurred Losses Projected to Prospective Effective Period = [ (14) x (15) ]	616,955,977	526,910,599

### Medical Losses

(17)	Medical Losses at Latest Month - Industry Total (Section I-D, Exhibit 1)	108,739,207	183,122,452
(18)	Medical Loss Development Factor to 252 Months (Section I-D, Exhibit 1)	1.633	1.038
(19)	Tail Factor 252 Months to Ultimate (Section I-D, Exhibit 1)	1.071	0.981
(20)	Factor to Adjust for Escalated Benefits (1.000 for Medical Losses)	1.000	1.000
(21)	Estimated Ultimate Medical Loss = [ (17) x (18) x (19) x (20) ]	190,222,064	186,424,763
(22)	Annual Medical Loss Trend (Section I-D, Exhibit 4)	-0.012	-0.012
(23)	Medical Loss Trend Factor to 7/1/2025	0.959	0.959
(24)	Estimated Medical Losses Trended = [ (21) x (23) ]	182,401,624	178,760,438
(25)	Estimated Benefit Change Factor Prior to 1/1/2024 (Section I-D, Exhibit 3)	1.000	1.000
(26)	On Level Losses = [ (24) x (25) ]	182,401,624	178,760,438
(27)	Estimated Benefit Change Factor Subsequent to 1/1/2024 (Section I-D, Exhibit 3)	1.000	1.000
(28)	On-Level Incurred Losses Projected to Prospective Effective Period = [ (26) x (27) ]	182,401,624	178,760,438

### Total Combined Medical and Indemnity Losses

(29)	Total Estimated Ultimate Losses Trended and On Level = [ (16) + (28) ]	799,357,601	705,671,037
(30)	Average On-Level Incurred Losses Projected to Prospective Effective Period	752,514,319	

# I 000032

Section I - Rate Recommendation  
 Subsection D - Loss Development Summary  
 7/1/2024

Section I - D  
 Exhibit 1

## Summary of Estimated Ultimate Losses

### Paid Loss Development Method

Policy Year (1)	Benefit Type (2)	Paid Losses at 12/31/22 (3)	Cumulative Factors from Latest Month to 252 Months (4)	Losses Developed to 252 Months (5)	Tail Factor from 252 Months to Ultimate (6)	Factor to Adjust for Escalated Benefits (7)	Estimated Ultimate Losses (8)
2020	Indemnity	241,139,628	1.943	468,560,919	1.034	1.045	506,365,113
2020	Medical	141,765,209	1.263	179,015,950	1.071	1.000	191,787,327
2020	Total	382,904,837		647,576,869			698,152,441
2021	Indemnity	142,399,901	3.606	513,511,376	1.034	1.045	554,942,240
2021	Medical	108,739,207	1.633	177,554,920	1.071	1.000	190,222,064
2021	Total	251,139,108		691,066,296			745,164,304

### Paid Plus Case Loss Development Method

Policy Year (9)	Benefit Type (10)	Paid Plus Case Losses at 12/31/22 (11)	Cumulative Factors from Latest Month to 252 Months (12)	Losses Developed to 252 Months (13)	Tail Factor from 252 Months to Ultimate (14)	Factor to Adjust for Escalated Benefits (15)	Estimated Ultimate Losses (16)
2020	Indemnity	342,585,609	1.301	445,865,504	1.015	1.000	452,616,311
2020	Medical	194,963,546	0.965	188,154,794	0.981	1.000	184,522,565
2020	Total	537,549,155		634,020,299			637,138,875
2021	Indemnity	243,445,087	1.918	466,878,865	1.015	1.000	473,947,833
2021	Medical	183,122,452	1.038	190,094,437	0.981	1.000	186,424,763
2021	Total	426,567,539		656,973,302			660,372,596

Notes:

- (3), (11): Aggregate Financial Data.
- (4), (12): Section II - B, Exhibit 1.
- (5) = (3) x (4)
- (6): Section II - C, Exhibit 1, Page 1.
- (7): Section II - D, Exhibit 1, Page 1.
- (8) = (5) x (6) x (7)
- (13) = (11) x (12)
- (14): Section II - C, Exhibit 2, Page 1.
- (15): Section II - D, Exhibit 2, Page 1.
- (16) = (13) x (14) x (15)

# I 000033

Section I - Rate Recommendation  
 Subsection D - Premium Summary  
 7/1/2024

Section I - D  
 Exhibit 2

Policy Year Aggregate Financial Data  
 Calculation of Standard Premium plus Adjusted ARAP Premium Development Factors  
 Industrywide

Summary Exhibit

	Policy Year as of 12/31/2022	
	2020	2021
(1) Standard Earned Premium plus Adjusted ARAP Premium	1,204,478,740	1,227,048,456
(2) Adjustment for Experience and Merit Rating, ARAP, and Construction Credit Off-balance	1.031	1.031
(3) Adjustment Factor to Remove the Impact of Loading for Recoupment of Insolvency Fund Assessments	1.001	1.005
(4) Composite Adjustment Factor = (2) x (3)	1.032	1.037
(5) Adjusted Standard Earned Premium plus ARAP = (1) x (4)	1,242,774,151	1,272,071,589
(6) Cumulative Premium Development Factor to Ultimate (see Section III-A, Exhibit 1, Page 2)	0.999	1.014
(7) Rate On-Level Factor	0.834	0.867
(8) Factor to Remove Expense Constant	0.959	0.959
(9) Adjusted On-Level Standard Earned Premium plus Adjusted ARAP at Ultimate = (5) x (6) x (7) x (8)	993,546,230	1,072,493,586

Notes:

- (1): Section III-B, Exhibit 2
- (2): Section III-B, Exhibit 1
- (3): Section III-C, Exhibit 1
- (6): Premiums are deemed to be fully developed at 252 months.
- (7): Section III-D, Exhibit 1
- (8): Section VI-F, Exhibit 2.

# I 000034

Section I - Rate Recommendation  
 Subsection D - Benefit Change Adjustments Summary  
 7/1/2024

Section I - D  
 Exhibit 3

## Benefit Level Adjustment Factors

### All Injury Types

Time Period		Indemnity					Medical	Total
Beginning Period	Ending Period	Death	Permanent Total	Permanent Partial	Temporary Total	All Injury Types	All Injury Types	All Injury Types
1/1/2024	Prosp. Eff. Period					1.017	1.000	
PY 2020	1/1/2024					1.045	1.000	
PY 2021	1/1/2024					1.017	1.000	
PY 2007	Prosp. Eff. Period	1.112	1.131	1.220	1.083	1.171	1.032	
PY 2008	Prosp. Eff. Period	1.106	1.122	1.203	1.077	1.158	1.024	
PY 2009	Prosp. Eff. Period	1.104	1.119	1.197	1.076	1.153	1.002	
PY 2010	Prosp. Eff. Period	1.104	1.119	1.198	1.076	1.154	1.000	
PY 2011	Prosp. Eff. Period	1.100	1.114	1.188	1.074	1.147	1.000	
PY 2012	Prosp. Eff. Period	1.095	1.106	1.175	1.070	1.137	1.000	
PY 2013	Prosp. Eff. Period	1.093	1.103	1.169	1.068	1.132	1.000	
PY 2014	Prosp. Eff. Period	1.087	1.099	1.161	1.066	1.126	1.000	
PY 2015	Prosp. Eff. Period	1.075	1.093	1.149	1.062	1.117	1.000	
PY 2016	Prosp. Eff. Period	1.069	1.085	1.138	1.058	1.108	1.000	
PY 2017	Prosp. Eff. Period	1.063	1.077	1.125	1.053	1.097	1.000	
PY 2018	Prosp. Eff. Period	1.056	1.069	1.111	1.047	1.086	1.000	
PY 2019	Prosp. Eff. Period	1.048	1.060	1.098	1.041	1.076	1.000	
PY 2020	Prosp. Eff. Period	1.040	1.049	1.082	1.034	1.063	1.000	
PY 2021	Prosp. Eff. Period	1.023	1.027	1.045	1.019	1.034	1.000	
PY 2019	CPY 2020_07	1.016	1.020	1.031	1.014		1.000	
PY 2020	CPY 2021_07	1.025	1.032	1.053	1.022		1.000	
PY 2021	CPY 2022_07	1.014	1.017	1.028	1.012		1.000	
CPY 2020_07	Prosp. Eff. Period							1.034
CPY 2021_07	Prosp. Eff. Period							1.014
CPY 2022_07	Prosp. Eff. Period							1.009
CPY 2008_09	Prosp. Eff. Period							1.102
Prior Eff. Period	Prosp. Eff. Period					0.996	1.000	0.998

Notes:

1/1/2024 refers to a point in time. All other time periods refer to Policy Years.

From Section IV-A, Exhibit 1.

Example:  $PY\ 2013\ to\ Prosp.\ Eff.\ Period\ for\ Permanent\ Partial = 1.169 = 1.231 / 1.054$ ,

where 1.231 is the Index Factor for Prosp. Eff. Period and 1.054 is the Index Factor for PY 2013 for Indemnity Permanent Partial, from Exhibit 2.

Prior Eff. Period uses benefit level projections from prior filing.

**Paid Trend Summary**

	Indemnity				Medical								SAWW		
	Severity		Frequency		Lost-Time Medical				Medical Only				Trend	Credibility	
	Trend	Credibility	Trend	Credibility	Trend	Credibility	Trend	Credibility	Trend	Credibility	Trend	Credibility			
(1) Massachusetts Trend															
5 Year	3.0%	39.7%	-1.9%	32.4%	-1.2%	28.6%	-1.9%	32.4%	2.4%	100.0%	-9.6%	11.2%	6.5%	49.8%	
6 Year	3.9%	51.4%	-1.6%	46.1%	-0.3%	37.2%	-1.6%	46.1%	2.6%	100.0%	-7.7%	12.6%	6.1%	70.7%	
7 Year	4.0%	66.6%	-1.4%	59.8%	0.1%	47.2%	-1.4%	59.8%	2.7%	100.0%	-6.7%	15.3%	5.7%	85.2%	
8 Year	3.8%	79.1%	-1.6%	71.0%	0.0%	57.3%	-1.6%	71.0%	2.8%	100.0%	-6.1%	18.5%	5.3%	95.0%	
9 Year	3.9%	91.8%	-1.6%	83.0%	0.8%	49.2%	-1.6%	83.0%	2.6%	100.0%	-5.7%	21.6%	5.0%	99.1%	
10 Year	3.8%	100.0%	-1.6%	94.4%	1.1%	54.5%	-1.6%	94.4%	2.4%	100.0%	-5.5%	24.4%	4.7%	100.0%	
(2) Selected Trend	3.8%		-1.6%		0.0%		-1.6%		2.4%		-5.5%		4.7%		
(3) 15 Year Massachusetts Complement of Credibility	3.1%		-1.7%		1.5%		-1.7%		2.1%		-4.9%		3.7%		
(4) <b>Credibility Weighted Trend</b>	<b>3.8%</b>		<b>-1.6%</b>		<b>0.6%</b>		<b>-1.6%</b>		<b>2.4%</b>		<b>-5.1%</b>		<b>4.7%</b>		

	Lost-Time Medical	Medical Only
(5) Medical Loss Trend	-1.0%	-2.8%
(6) Fraction of Total Medical	88.1%	11.9%
(7) Total Medical Loss Trend	-1.2%	

	Indemnity	Medical
(8) Total Loss Trend	2.1%	-1.2%
(9) SAWW Trend	4.7%	4.7%
(10) Total Net Trend	-2.5%	-5.6%

Notes:

- (1), (3): Section V, Exhibit 2 Severity; Exhibit 3 Frequency and SAWW.
- (2): Selection based on the fit with the highest credibility and least number of years.
- (4) = Credibility Weighted Selected Trend
- (5) =  $[(1.0 + \text{Credibility Weighted Severity Trend}) \times (1.0 + \text{Credibility Weighted Frequency Trend})] - 1.0$
- (6) Medical Only = Medical Only Fraction of Total Medical from Section IV-E, Exhibit 2  
 Lost Time Medical =  $1.0 - \text{Medical Only}$
- (7) = Weighted Average of (5) using (6) as weights
- (8): Indemnity =  $(1.0 + \text{Credibility Weighted Severity Trend}) \times (1.0 + \text{Credibility Weighted Frequency Trend}) - 1.0$   
 Medical = Row (7)
- (9): (4) for SAWW.
- (10) =  $\{ [1.0 + (8)] / [1.0 + (9)] \} - 1.0$

1000035

# I 000036

Section I - Rate Recommendation  
Subsection D - Expenses Summary  
7/1/2024

Section I - D  
Exhibit 5

## Summary of Expense Ratios

(1)	Commission and Other Acquisition Expense Ratio	11.5%
(2)	Average Premium Discount as a % of Standard Premium + ARAP	5.4%
(3)	Premium Tax Ratio = 2.28% x [ 1.0 - (2) ]	2.2%
(4)	Variable Expense Ratio = (1) + (2) + (3)	19.0%
(5)	Fixed Expense Ratio	5.1%
(6)	Total Loss Adjustment Expense Ratio (LAE / Loss)	19.5%

### Notes:

(1): Section VI-G, Exhibit 1.

(2): Section VI-E, Exhibit 1.

(3): 2.28% from Section VI-B, Exhibit 3.

(5): Section VI-B, Exhibit 1.

(6): Section VI-H, Exhibit 1, Page 1.

# I 000037

Section I - Rate Recommendation  
 Subsection E - Reflecting the Impact of Large Deductibles  
 7/1/2024

Section I - E  
 Exhibit 1  
 Page 1

## Factor to Remove the Large Deductible Contribution to the Residual Market Subsidy

	Total Market	Residual Market (rm)	Voluntary Market (vol)
(1) Permissible Loss, LAE, and Fixed Expense Ratio	83.2%		
(2) Fixed Expense Ratio	5.1%		
(3) Permissible Loss and LAE Ratio = [ (1) - (2) ]	78.1%		
(4) Loss Ratio Differential, LR	1.360		
(5) Market Weight, $W_x$		19%	81%
(6) Implied Permissible Loss and LAE Ratio		0.995	0.731
(7) Implied Permissible Loss, LAE, and Fixed Expense Ratio		1.046	0.782
(8) Implied Permissible Loss, LAE, and Fixed Expense Ratio Differential	1.337		
(9) Variable Expense Ratio	19.0%	9.0%	21.3%
(10) Underwriting Profit Provision	-2.19%		
(11) Implied Rate Factor Equivalent		1.122	0.968
(12) Implied Rate Differential, d	1.159		
(13) Residual Market Rate equivalent, $Q_{rm}$	1.126		
(14) Proportion of Total Voluntary Assessable Premium Not from Large Deductibles, U	0.713		
(15) Factor to Remove the Large Deductible Contribution to the Residual Market Subsidy	<b>0.993</b>		

### Notes:

(1): Section VI-A, Exhibit 1 and Section VII-A, Exhibit 1.

(2): Section VI-B, Exhibit 1.

(4): Loss Ratio Differential from Page 2, assumes LAE as % of loss is the same for Residual and Voluntary Market.

(5): Residual Market weight,  $W_{rm}$ , from Section I-E, Exhibit 2, Voluntary Market weight,  $W_{vol} = 1.0 - W_{rm}$

(6): Voluntary Market Implied Permissible Loss and LAE Ratio = (3) / [ (5) $_{W_{rm}}$  x (4) + (5) $_{W_{vol}}$  ]

Residual Market Permissible Implied Loss and LAE Ratio = (4) x (6) $_{vol}$

(7) = (2) + (6)

(8) = (7) $_{rm}$  / (7) $_{vol}$

(9): Section VI-A, Exhibit 1, Total Market; Residual Market commission calculated based on the Residual Market - Pool Procedures - Producer Fee Schedule.

Premium discounts were discontinued in the Residual Market effective 1/1/1991.

(10): Section VII-A, Exhibit 1.

(11) = (7) / [ 1.0 - (9) - (10) ]

(12) = (11) $_{rm}$  / (11) $_{vol}$

(13) = d / [  $w_{vol} + (w_{rm} \times d)$  ]

(14): Exhibit 2.

(15) = [ 1.0 -  $W_{rm} \times Q_{rm} \times (1.0 - U)$  ] / [ 1.0 -  $W_{rm} \times (1.0 - U)$  ]

Calculation of Residual Market to Voluntary Loss Ratio Differential  
 (\$ amounts in millions)

Policy Year	Total Market			Residual Market			Voluntary Market			Loss Ratio Differential LR <sub>rm</sub> / LR <sub>vol</sub> = (7) / (10)
	Standard Earned Premium plus ARAP	Paid Losses and Case Reserves	Paid + Case Loss Ratio = (3) / (2)	Standard Earned Premium Plus ARAP	Paid Losses and Case Reserves	Paid + Case Loss Ratio = (6) / (5)	Standard Earned Premium Plus ARAP	Paid Losses and Case Reserves	Paid + Case Loss Ratio = (9) / (8)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2016	1,198	660	55.1%	267	174	65.1%	930	486	52.2%	1.246
2017	1,269	720	56.7%	273	174	63.8%	996	546	54.8%	1.164
2018	1,254	725	57.8%	259	176	68.2%	995	549	55.1%	1.237
2019	1,217	677	55.6%	235	172	73.1%	981	505	51.4%	1.421
2020	1,202	538	44.7%	220	126	57.4%	982	411	41.9%	1.371
2021	1,225	427	34.8%	221	103	46.6%	1,004	324	32.2%	1.446
2022	687	167	24.3%	120	34	28.2%	567	133	23.4%	1.205
(12) Average of 2020 and 2021				220	115	52.0%	993	367	37.0%	1.405
(13) Average All Years				228	137	60.1%	922	422	45.7%	1.315
(14) Selected Loss Ratio Differential										<b>1.360</b>

Note:  
 Data as of 12/31/2022 from Aggregate Financial Database, excluding large deductible policies.

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**LOSS DEVELOPMENT**

As explained in the 2003 Rate Decision, “[t]he ultimate value of losses cannot be determined from reported losses alone, because losses are not always reported immediately and loss values change over time as payments are made and reserves adjusted.” 2003 Rate Decision, page 5. Loss development thus requires an actuarial method of estimating the ultimate settlement value of losses based on “reported losses”<sup>1</sup> and historical patterns of development, i.e. the change in the observed value of a loss between valuation dates. Loss development factors are mathematically derived by analyzing the development of losses from initial reporting and reserving to the ultimate value at the time of the final settlement. The assumption is that losses develop in a consistent pattern over time so that historical experience can be used to predict future development.<sup>2</sup> Reported losses are developed to their estimated “ultimate” level based on historical loss development patterns. The pattern of change in reported losses over time is observed at regular intervals and converted into age-to-age link ratios, each of which reflects the ratio of the loss valued as of time (T+1) to the loss valued as of time T. When applied successively, age-to-age link ratios yield cumulative loss development factors. Cumulative loss development factors are then applied to current reported losses to estimate what the ultimate value of losses will be when all associated claims are settled.

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<sup>1</sup> The term “reported losses” refers to either paid losses or paid losses plus case reserves.

<sup>2</sup> As explained in Section I, given the three and a half years that have transpired since COVID-19’s most disruptive direct and indirect impacts, our review of the data demonstrates that it is once again feasible and preferable to use the latest available policy years to determine rates in the prospective period. The data from these years, in our view, is the most likely to yield reasonable predictions of how the workers’ compensation market is expected to emerge.

## II 000002

In this section of the Filing, reported losses for policy years 2020 and 2021, are evaluated as of December 31, 2022. These reported losses are developed to their estimated ultimate levels for the industry. Consistent with the Casualty Actuarial Society Statement of Principles Regarding Property and Casualty Insurance Ratemaking<sup>3</sup>, the WCRIBMA examines the results of multiple methods of estimating ultimate losses in order to derive a reasonable estimate of losses. After examining those multiple methods, the selected estimate of ultimate losses is the average of the estimates derived by developing paid losses and by developing the sum of paid losses and case reserves. The paid loss data used in this filing are the actual inception-to-date paid losses, net of subrogation and second injury fund recoveries. The case reserve data used in this filing are the claim-specific amounts held as reserves for anticipated future claims payments.

The 2020 policy year and 2021 policy year ultimate loss estimates used in the rate indication are calculated by multiplying the reported losses by the applicable loss development factor to ultimate, which is the product of all age-to-age development factors (including the tail factor discussed below) from a given month (“age”) of development forward to the point at which we expect no further development.

One goal, when using historical data as the basis for the ultimate loss estimates, is to balance stability with responsiveness. Stability helps avoid large fluctuations that do not fairly represent future anticipated losses. As more years are considered, the result becomes more stable. However, responsiveness is also important: the only data that

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<sup>3</sup> [Statement of Principles Regarding P&C Casualty Insurance Ratemaking 2021.pdf \(casact.org\)](#)

## II 000003

should be included are those that represent current and ongoing conditions. This, in turn, argues for using the most recent reliable data available. As noted in Section I, data on policy years 2020 and 2021 fairly represent post-pandemic employment levels, level of lost-time claims, utilization of medical services, and wage growth.

Due to the stability in the Massachusetts benefit delivery system and claim adjudication process,<sup>4</sup> the WCRIBMA continues to select age-to-age development factors for the paid losses as the unweighted averages of the latest two indicated age-to-age link ratios. However, due to greater volatility in the paid plus case development, selected age-to-age development factors are the unweighted averages of the latest five years. Using the five-year average helps mitigate the additional volatility in paid plus case that can result from the presence or absence of large losses in a single year.<sup>5</sup>

As in past filings, medical and indemnity losses are developed separately because their development patterns differ. The use of distinct medical and indemnity loss development factors avoids potential distortions that could arise from changes in the relative proportions of medical and indemnity losses over time. In this filing, we are developing losses for the entire industry. Section II-A, Exhibit 1 summarizes the results, and the underlying details of the methodology are reviewed in Section II-B.

Consistent with past filings, the historical experience of companies that have stopped writing new business in Massachusetts and that did not report policy experience

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<sup>4</sup> Workers' Compensation Research Institute CompScope™ (Benchmarks for Massachusetts, 16<sup>th</sup> Edition and Medical Benchmarks for Massachusetts, 20<sup>th</sup> Edition)

<sup>5</sup> Large losses are lost-time claims where indemnity plus medical losses are greater than or equal to ten million dollars.

## II 000004

valued as of the end of the latest calendar year has been excluded from our Aggregate Financial Data in order to avoid distortions to the rate indication. In addition, this filing excludes Aggregate Financial Losses associated with the catastrophic events of September 11, 2001<sup>6</sup> and claims and losses associated with COVID-19<sup>7</sup>.

The WCRIBMA uses historical data and the resultant loss development factors to develop the policy year paid and the paid plus case losses to 252 months. An industry based "tail factor" accounts for development beyond 252 months to ultimate (the point at which there is no further payment activity).

The indicated ultimate indemnity tail factor is then adjusted for escalation. We make this adjustment for escalated benefits because some of the losses in the loss development triangle do not reflect the change in the law that introduced inflation-based increases in indemnity benefits or lost wages. See St. 1986, c. 572. The development pattern of indemnity losses that are subject to escalation will differ from that of indemnity losses not subject to escalation (unless escalation is zero). Section II-D provides the details of the calculation.

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<sup>6</sup> Consistent with past practice since the 2003 rate filing.

<sup>7</sup> Claims and losses coded as CAT-12, consistent with the 2023 rate filing.

**TAIL FACTORS**

Workers' compensation carriers in Massachusetts report Aggregated Financial Policy Year Loss experience to the WCRIBMA at year-end valuation points for twenty-one consecutive years (252 months). As a result, the WCRIBMA can develop losses to 252 months using the age-to-age link ratios previously described. However, workers' compensation losses may continue to develop well beyond 252 months. For instance, a young person could suffer a severe work-related injury and collect workers' compensation benefits for the balance of his/her lifetime, in some cases forty years or more. The "tail factor" accounts for such instances by considering loss development from 252 months of development to ultimate.

Beyond 252 months of development, policy year loss experience is aggregated for statistical reporting purposes and reported in total as a single value. This loss experience is summarized and reported each year as an aggregate number "prior to" a given policy year. This experience does not lend itself to the calculation and application of age-to-age link ratios. However, this data can be used to develop a tail factor, which is essentially a loss development factor to ultimate intended to account for all remaining loss development beyond a given point. In this filing, we derive tail factor estimates for loss development from 252 months of development to ultimate.

This filing uses the same tail-factor development method employed by the Commissioner in the 2003 Rate Decision and by the WCRIBMA in all subsequent rate filings. The WCRIBMA estimates tail factors by calculating the calendar year change in

## II 000006

losses for all policy years included in the most recent “prior to” line, and comparing that result to the reported losses for the oldest policy year not included in the “prior to” line.

Medical losses tend to develop differently than do indemnity losses (Section II-B). Accordingly, we calculate distinct tail factors for medical and indemnity losses in order to reflect these differing development patterns. Using separate tail factors ensures that the rate indication reflects the different development patterns, and prevents the estimate of ultimate losses from being distorted by shifts in the proportions of medical and indemnity losses over time. Separate tail factors are also estimated for paid and paid-plus-case reported losses.

As in previous filings, the selected tail factor is based on the average of five observations in order to reduce volatility from large losses. Each of the five years, in this filing, have a common report level of 252 months so that the calculated tail factor is consistent with the losses to which it is applied. We then calculate a tail factor to project losses from 252 months to ultimate values. The tail factor calculation is detailed on Exhibit 1, Page 1 and Exhibit 2, Page 1 of Section II-C.

### **Growth Factor Adjustment**

Changes in the level of ultimate losses over time can distort the calculation of the tail factor. Without a growth factor adjustment, the tail factor would aggregate all years beyond 252 months and calculate the factor based on the assumption that policy years prior to 2002 had the same level of ultimate losses as policy year 2002. This assumption is not true. Stated mathematically: if the ratios used to calculate the tail factor reflect losses in the numerator that relate to a different level of ultimate losses than do the losses

## II 000007

used in the denominator,<sup>8</sup> the tail factor will be distorted. This is not a problem for the age-to-age link ratios used through 252 months of development that only use the data for a given policy year in the calculation. However, the growth factor is intended to adjust for differences in the ultimate value of losses across policy years, thereby creating a more accurate estimate of development in the tail (see Section II-C, Exhibit 1, Page 2 and Page 3 and Exhibit 2, Page 2 and Page 3). In this filing, as has been done since the 2020 rate filing, we develop indemnity and medical growth factors separately, and calculate the growth factor for each individual policy year that contributes to the tail. This is consistent with the rationale for developing losses separately for indemnity and medical, and will better capture any shifts in data between benefit types and policy years, creating a more accurate estimate of development in the tail. The growth factors continue to be derived for both paid (Section II-C, Exhibit 1, Pages 2 and 3) and paid plus case (Section II-C, Exhibit 2, Pages 2 and 3). Conceptually, the growth factor decomposes the calendar year development for policy years prior to 2002 into individual policy year components, and then adjusts based on each policy year's estimated contribution to the aggregate development. The data underlying the calculation of the growth factor are the historical policy year losses from the Aggregate Financial Data, evaluated as of the latest common development point, 108 months.<sup>9</sup>

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<sup>8</sup> See Formula in Section II-C:  $[(\text{Inception-to-date losses for PYs Prior to Policy Year 2002 at 12/31/[Y]} - \text{Inception-to-date losses for PYs Prior to Policy Year 2002 at 12/31/[Y] - 1 year})] / (\text{Losses for Policy Year 2002 at 12/31/[Y]})$ .

<sup>9</sup> The Aggregate Financial Data has been used in lieu of Annual Statement data to eliminate potential distortions in the growth factor calculation due to the Annual Statement's inclusion of large deductible experience in the workers' compensation line of business. Aggregate Financial Data valued as of 108 months was used because data for policy years 1972 through 1977 were only reported through 108 months of development.

**ADJUSTMENT FOR ESCALATED BENEFITS**

This section calculates factors that reflect the impact of the 1986 introduction of escalation (inflation-indexed wage loss benefit increases) on loss development. This adjustment for differences in development patterns is necessary because some of WCRIBMA's loss data predates the change in law introducing escalation of indemnity benefits. Older, unescalated losses necessarily exhibit a development pattern that differs from the expected development of newer, escalated indemnity losses.

The statutory escalation of benefits became effective on October 1, 1986, following the passage of St. 1986, c. 582. Data collected for policy year 1987 and later years reflect the impact of escalation. In this filing, age-to-age link ratios are derived from experience for policy years 1998 and later to develop losses to 252 months. Beyond 252 months of development, loss development factors, including age-to-age link ratios and tail factors, are derived from experience for policy years 2002 and prior. Reported losses for policy years prior to 1987 do not reflect the impact of escalation, so the portion of the tail factor that is based on data from these years must be adjusted.

The same simulation model has been used to quantify the adjustment for escalated benefits at the WCRIBMA since our 2003 rate filing. The simulation model assumes that permanent total claimants experience impaired mortality.

Exhibits 1 and 2, in Section II-D, estimate the differentials between the escalated and non-escalated development factors for both the paid and paid-plus-case loss development

## II 000009

Section II - Loss Development  
Subsection A - Summary  
7/1/2024

Section II - A  
Page 9

methods, respectively. The resulting factors are the basis for the selected escalation factor used in the estimation of ultimate losses.

# II 000010

Section II - Loss Development  
 Subsection A - Loss Development Summary  
 7/1/2024

Section II - A  
 Exhibit 1

## Summary of Estimated Ultimate Losses Industry

### Paid Loss Development Method

Policy Year (1)	Benefit Type (2)	Paid Losses at 12/31/22 (3)	Cumulative Factors from Latest Month to 252 Months (4)	Losses Developed to 252 Months (5)	Tail Factor from 252 Months to Ultimate (6)	Factor to Adjust for Escalated Benefits (7)	Estimated Ultimate Losses (8)
2020	Indemnity	241,139,628	1.943	468,560,919	1.034	1.045	506,365,113
2020	Medical	141,765,209	1.263	179,015,950	1.071	1.000	191,787,327
2020	Total	382,904,837		647,576,869			698,152,441

2021	Indemnity	142,399,901	3.606	513,511,376	1.034	1.045	554,942,240
2021	Medical	108,739,207	1.633	177,554,920	1.071	1.000	190,222,064
2021	Total	251,139,108		691,066,296			745,164,304

### Paid Plus Case Loss Development Method

Policy Year (9)	Benefit Type (10)	Paid Plus Case Losses at 12/31/22 (11)	Cumulative Factors from Latest Month to 252 Months (12)	Losses Developed to 252 Months (13)	Tail Factor from 252 Months to Ultimate (14)	Factor to Adjust for Escalated Benefits (15)	Estimated Ultimate Losses (16)
2020	Indemnity	342,585,609	1.301	445,865,504	1.015	1.000	452,616,311
2020	Medical	194,963,546	0.965	188,154,794	0.981	1.000	184,522,565
2020	Total	537,549,155		634,020,299			637,138,875

2021	Indemnity	243,445,087	1.918	466,878,865	1.015	1.000	473,947,833
2021	Medical	183,122,452	1.038	190,094,437	0.981	1.000	186,424,763
2021	Total	426,567,539		656,973,302			660,372,596

**Notes:**

- (3), (11): Aggregate Financial Data.
- (4), (12): Section II - B, Exhibit 1.
- (5) = (3) x (4)
- (6): Section II - C, Exhibit 1, Page 1.
- (7): Section II - D, Exhibit 1, Page 1.
- (8) = (5) x (6) x (7)
- (13) = (11) x (12)
- (14): Section II - C, Exhibit 2, Page 1.
- (15): Section II - D, Exhibit 2, Page 1.
- (16) = (13) x (14) x (15)

Policy Year Aggregate Financial Data  
 Summary of Loss Development Factors  
 Industry

Loss Development Factors From																			
Months of Development	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-132	132-144	144-156	156-168	168-180	180-192	192-204	204-216	216-228	228-240	240-252
<b>(1) Indemnity Paid Losses</b>																			
2 Year Average	1.856	1.399	1.182	1.074	1.037	1.012	1.010	1.002	1.003	1.004	1.005	1.003	1.003	1.001	1.001	1.003	1.001	1.002	1.002
Cumulative Factor to 252	3.606	1.943	1.389	1.175	1.094	1.055	1.042	1.032	1.029	1.026	1.022	1.017	1.014	1.011	1.010	1.008	1.006	1.004	1.002
<b>(2) Medical Paid Losses</b>																			
2 Year Average	1.293	1.088	1.040	1.017	1.016	1.011	1.008	1.008	1.009	1.008	1.005	1.004	1.003	1.005	1.004	1.003	1.002	1.004	1.005
Cumulative Factor to 252	1.633	1.263	1.161	1.117	1.098	1.081	1.069	1.061	1.052	1.043	1.035	1.030	1.026	1.023	1.018	1.014	1.011	1.009	1.005
<b>(3) Indemnity Paid Plus Case Losses</b>																			
5 Year Average	1.474	1.163	1.067	1.022	1.008	1.001	1.000	1.004	1.002	1.002	1.001	1.001	1.001	1.002	1.001	1.001	1.001	1.000	1.000
Cumulative Factor to 252	1.918	1.301	1.119	1.048	1.025	1.017	1.017	1.016	1.012	1.010	1.008	1.007	1.006	1.005	1.002	1.002	1.001	1.000	1.000
<b>(4) Medical Paid Plus Case Losses</b>																			
5 Year Average	1.076	1.021	1.000	0.998	0.991	0.995	1.006	0.992	1.003	0.993	0.998	0.998	0.998	1.000	0.992	0.994	0.994	0.997	0.996
Cumulative Factor to 252	1.038	0.965	0.946	0.946	0.948	0.957	0.961	0.955	0.963	0.960	0.967	0.969	0.971	0.973	0.973	0.981	0.987	0.993	0.996

Notes:

- (1): Exhibit 2, Page 1.
- (2): Exhibit 2, Page 2.
- (3): Exhibit 3, Page 1.
- (4): Exhibit 3, Page 2.

II 000011

# II 000012

Policy Year Aggregate Financial Data  
 Calculation of Indemnity Paid Loss Development Factors  
 Industry

Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor	Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor
	24	36			144	156	
2016	133,963	254,308	1.898	2006	324,293	325,527	1.004
2017	140,625	264,007	1.877	2007	336,118	337,086	1.003
2018	144,556	258,042	1.785	2008	326,517	327,754	1.004
2019	141,420	257,122	1.818	2009	315,043	317,928	1.009
2020	126,548	239,626	1.894	2010	339,532	339,808	1.001
2 Yr Average			1.856	2 Yr Average			1.005
5 Yr Average			1.854	5 Yr Average			1.004
Selected Average			1.856	Selected Average			1.005
Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor	Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor
	36	48			156	168	
2015	251,451	334,318	1.330	2005	333,017	333,650	1.002
2016	254,308	330,448	1.299	2006	325,527	326,629	1.003
2017	264,007	348,999	1.322	2007	337,086	337,594	1.002
2018	258,042	358,208	1.388	2008	327,754	328,705	1.003
2019	257,122	362,649	1.410	2009	317,928	319,159	1.004
2 Yr Average			1.399	2 Yr Average			1.003
5 Yr Average			1.350	5 Yr Average			1.003
Selected Average			1.399	Selected Average			1.003
Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor	Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor
	48	60			168	180	
2014	333,986	380,253	1.139	2004	339,456	339,902	1.001
2015	334,318	375,187	1.122	2005	333,650	334,279	1.002
2016	330,448	374,706	1.134	2006	326,629	327,530	1.003
2017	348,999	409,251	1.173	2007	337,594	337,764	1.001
2018	358,208	426,638	1.191	2008	328,705	330,357	1.005
2 Yr Average			1.182	2 Yr Average			1.003
5 Yr Average			1.152	5 Yr Average			1.002
Selected Average			1.182	Selected Average			1.003
Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor	Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor
	60	72			180	192	
2013	336,481	351,874	1.046	2003	306,608	307,440	1.003
2014	380,253	396,979	1.044	2004	339,902	341,415	1.004
2015	375,187	392,662	1.047	2005	334,279	335,329	1.003
2016	374,706	397,051	1.060	2006	327,530	327,926	1.001
2017	409,251	445,391	1.088	2007	337,764	338,177	1.001
2 Yr Average			1.074	2 Yr Average			1.001
5 Yr Average			1.057	5 Yr Average			1.003
Selected Average			1.074	Selected Average			1.001
Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor	Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor
	72	84			192	204	
2012	345,266	355,189	1.029	2002	288,973	289,461	1.002
2013	351,874	361,510	1.027	2003	307,440	308,144	1.002
2014	396,979	402,548	1.014	2004	341,415	342,156	1.002
2015	392,662	406,276	1.035	2005	335,329	336,121	1.002
2016	397,051	412,870	1.040	2006	327,926	328,118	1.001
2 Yr Average			1.037	2 Yr Average			1.001
5 Yr Average			1.029	5 Yr Average			1.002
Selected Average			1.037	Selected Average			1.001
Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor	Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor
	84	96			204	216	
2011	350,176	355,601	1.015	2001	271,584	272,190	1.002
2012	355,189	360,397	1.015	2002	289,461	289,766	1.001
2013	361,510	364,077	1.007	2003	308,144	308,771	1.002
2014	402,548	407,048	1.011	2004	342,156	343,449	1.004
2015	406,276	411,555	1.013	2005	336,121	336,567	1.001
2 Yr Average			1.012	2 Yr Average			1.003
5 Yr Average			1.012	5 Yr Average			1.002
Selected Average			1.012	Selected Average			1.003
Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor	Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor
	96	108			216	228	
2010	333,718	335,233	1.005	2000	267,149	267,396	1.001
2011	355,601	359,939	1.012	2001	272,190	272,152	1.000
2012	360,397	363,442	1.008	2002	289,766	290,424	1.002
2013	364,077	368,608	1.012	2003	308,771	309,411	1.002
2014	407,048	410,205	1.008	2004	343,449	343,636	1.001
2 Yr Average			1.010	2 Yr Average			1.001
5 Yr Average			1.009	5 Yr Average			1.001
Selected Average			1.010	Selected Average			1.001
Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor	Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor
	108	120			228	240	
2009	310,836	312,676	1.006	1999	238,739	239,056	1.001
2010	335,233	337,518	1.007	2000	267,396	267,683	1.001
2011	359,939	362,637	1.007	2001	272,152	272,320	1.001
2012	363,442	364,175	1.002	2002	290,424	291,449	1.004
2013	368,608	369,516	1.002	2003	309,411	309,652	1.001
2 Yr Average			1.002	2 Yr Average			1.002
5 Yr Average			1.005	5 Yr Average			1.001
Selected Average			1.002	Selected Average			1.002
Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor	Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor
	120	132			240	252	
2008	322,911	325,771	1.009	1998	226,160	226,492	1.001
2009	312,676	313,605	1.003	1999	239,056	239,328	1.001
2010	337,518	338,616	1.003	2000	267,683	268,149	1.002
2011	362,637	363,956	1.004	2001	272,320	272,484	1.001
2012	364,175	365,387	1.003	2002	291,449	292,568	1.004
2 Yr Average			1.003	2 Yr Average			1.002
5 Yr Average			1.004	5 Yr Average			1.002
Selected Average			1.003	Selected Average			1.002
Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor	Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor
	132	144			252	264	
2007	334,293	336,118	1.005	1997	219,149	219,396	1.001
2008	325,771	326,517	1.002	1998	226,160	226,492	1.001
2009	313,605	315,043	1.005	1999	239,056	239,328	1.001
2010	338,616	339,532	1.003	2000	267,683	268,149	1.002
2011	363,956	365,526	1.004	2001	272,320	272,484	1.001
2 Yr Average			1.004	2 Yr Average			1.002
5 Yr Average			1.004	5 Yr Average			1.002
Selected Average			1.004	Selected Average			1.002

Notes:  
 Losses from Aggregate Financial Data.

# II 000013

Policy Year Aggregate Financial Data  
 Calculation of Medical Paid Loss Development Factors  
 Industry

Policy Year	Losses (in 000's)		Loss Development Factor	Policy Year	Losses (in 000's)		Loss Development Factor
	Evaluated at Month				Evaluated at Month		
	24	36			144	156	
2016	129,008	162,811	1.262	2006	172,248	174,791	1.015
2017	132,279	171,979	1.300	2007	172,569	173,365	1.005
2018	137,957	172,368	1.249	2008	159,320	159,821	1.003
2019	120,083	157,012	1.308	2009	160,748	161,589	1.005
2020	110,348	141,094	1.279	2010	172,402	173,213	1.005
2 Yr Average			1.293	2 Yr Average			1.005
5 Yr Average			1.280	5 Yr Average			1.006
Selected Average			1.293	Selected Average			1.005
	36	48			156	168	
2015	164,287	178,683	1.088	2005	169,857	170,868	1.006
2016	162,811	176,948	1.087	2006	174,791	177,430	1.015
2017	171,979	184,125	1.071	2007	173,365	173,001	0.998
2018	172,368	187,216	1.086	2008	159,821	160,376	1.003
2019	157,012	171,020	1.089	2009	161,589	162,205	1.004
2 Yr Average			1.088	2 Yr Average			1.004
5 Yr Average			1.084	5 Yr Average			1.005
Selected Average			1.088	Selected Average			1.004
	48	60			168	180	
2014	181,331	188,175	1.038	2004	171,858	172,625	1.004
2015	178,683	183,985	1.030	2005	170,868	172,108	1.007
2016	176,948	182,142	1.029	2006	177,430	180,120	1.015
2017	184,125	192,518	1.046	2007	173,001	173,523	1.003
2018	187,216	193,555	1.034	2008	160,376	160,767	1.002
2 Yr Average			1.040	2 Yr Average			1.003
5 Yr Average			1.035	5 Yr Average			1.006
Selected Average			1.040	Selected Average			1.003
	60	72			180	192	
2013	167,214	170,040	1.017	2003	158,282	159,396	1.007
2014	188,175	192,590	1.023	2004	172,625	173,737	1.006
2015	183,985	186,868	1.016	2005	172,108	173,040	1.005
2016	182,142	185,195	1.017	2006	180,120	181,505	1.008
2017	192,518	195,657	1.016	2007	173,523	174,042	1.003
2 Yr Average			1.017	2 Yr Average			1.005
5 Yr Average			1.018	5 Yr Average			1.006
Selected Average			1.017	Selected Average			1.005
	72	84			192	204	
2012	168,321	169,928	1.010	2002	147,943	148,981	1.007
2013	170,040	171,497	1.009	2003	159,396	160,260	1.005
2014	192,590	194,572	1.010	2004	173,737	174,522	1.005
2015	186,868	190,150	1.018	2005	173,040	173,760	1.004
2016	185,195	187,805	1.014	2006	181,505	182,173	1.004
2 Yr Average			1.016	2 Yr Average			1.004
5 Yr Average			1.012	5 Yr Average			1.005
Selected Average			1.016	Selected Average			1.004
	84	96			204	216	
2011	172,418	174,633	1.013	2001	129,888	130,771	1.007
2012	169,928	171,899	1.012	2002	148,981	150,294	1.009
2013	171,497	172,001	1.003	2003	160,260	160,851	1.004
2014	194,572	196,048	1.008	2004	174,522	174,811	1.002
2015	190,150	192,972	1.015	2005	173,760	174,471	1.004
2 Yr Average			1.011	2 Yr Average			1.003
5 Yr Average			1.010	5 Yr Average			1.005
Selected Average			1.011	Selected Average			1.003
	96	108			216	228	
2010	166,607	168,686	1.012	2000	123,664	124,631	1.008
2011	174,633	176,645	1.012	2001	130,771	131,600	1.006
2012	171,899	174,068	1.013	2002	150,294	151,323	1.007
2013	172,001	172,985	1.006	2003	160,851	161,312	1.003
2014	196,048	198,126	1.011	2004	174,811	175,152	1.002
2 Yr Average			1.008	2 Yr Average			1.002
5 Yr Average			1.011	5 Yr Average			1.005
Selected Average			1.008	Selected Average			1.002
	108	120			228	240	
2009	158,007	159,067	1.007	1999	117,206	118,081	1.007
2010	168,686	170,174	1.009	2000	124,631	125,997	1.011
2011	176,645	178,474	1.010	2001	131,600	132,422	1.006
2012	174,068	175,423	1.008	2002	151,323	152,108	1.005
2013	172,985	174,411	1.008	2003	161,312	161,643	1.002
2 Yr Average			1.008	2 Yr Average			1.004
5 Yr Average			1.008	5 Yr Average			1.006
Selected Average			1.008	Selected Average			1.004
	120	132			240	252	
2008	157,632	158,493	1.005	1998	112,370	112,918	1.005
2009	159,067	159,962	1.006	1999	118,081	118,927	1.007
2010	170,174	171,247	1.006	2000	125,997	127,345	1.011
2011	178,474	180,334	1.010	2001	132,422	133,137	1.005
2012	175,423	176,635	1.007	2002	152,108	152,843	1.005
2 Yr Average			1.009	2 Yr Average			1.005
5 Yr Average			1.007	5 Yr Average			1.007
Selected Average			1.009	Selected Average			1.005
	132	144					
2007	171,562	172,569	1.006				
2008	158,493	159,320	1.005				
2009	159,962	160,748	1.005				
2010	171,247	172,402	1.007				
2011	180,334	181,932	1.009				
2 Yr Average			1.008				
5 Yr Average			1.006				
Selected Average			1.008				

Notes:  
 Losses from Aggregate Financial Data.

# II 000014

Section II - Loss Development  
 Subsection B - Policy Year Data  
 7/1/2024

Section II - B  
 Exhibit 3  
 Page 1

Policy Year Aggregate Financial Data  
 Calculation of Indemnity Paid Plus Case Loss Development Factors  
 Industry

Policy Year	Losses (in 000's)		Loss Development Factor	Policy Year	Losses (in 000's)		Loss Development Factor
	Evaluated at Month				Evaluated at Month		
	24	36			144	156	
2016	243,872	349,444	1.433	2006	329,762	329,910	1.000
2017	253,293	372,535	1.471	2007	340,585	341,036	1.001
2018	255,543	373,857	1.463	2008	333,047	333,160	1.000
2019	251,786	374,499	1.487	2009	322,810	323,653	1.003
2020	225,048	340,673	1.514	2010	344,172	344,695	1.002
2 Yr Average			1.501	2 Yr Average			1.002
5 Yr Average			1.474	5 Yr Average			1.001
Selected Average			1.474	Selected Average			1.001
	36	48			156	168	
2015	350,206	397,872	1.136	2005	338,936	339,566	1.002
2016	349,444	396,395	1.134	2006	329,910	329,766	1.000
2017	372,535	430,706	1.156	2007	341,036	340,669	0.999
2018	373,857	446,639	1.195	2008	333,160	333,962	1.002
2019	374,499	447,823	1.196	2009	323,653	324,352	1.002
2 Yr Average			1.195	2 Yr Average			1.002
5 Yr Average			1.163	5 Yr Average			1.001
Selected Average			1.163	Selected Average			1.001
	48	60			168	180	
2014	397,448	420,136	1.057	2004	346,166	346,681	1.001
2015	397,872	416,363	1.046	2005	339,566	339,873	1.001
2016	396,395	418,570	1.056	2006	329,766	330,028	1.001
2017	430,706	467,145	1.085	2007	340,669	340,757	1.000
2018	446,639	487,374	1.091	2008	333,962	334,707	1.002
2 Yr Average			1.088	2 Yr Average			1.001
5 Yr Average			1.067	5 Yr Average			1.001
Selected Average			1.067	Selected Average			1.001
	60	72			180	192	
2013	366,639	374,370	1.021	2003	311,168	312,153	1.003
2014	420,136	423,602	1.008	2004	346,681	347,968	1.004
2015	416,363	424,280	1.019	2005	339,873	340,430	1.002
2016	418,570	432,248	1.033	2006	330,028	330,354	1.001
2017	467,145	481,660	1.031	2007	340,757	341,262	1.001
2 Yr Average			1.032	2 Yr Average			1.001
5 Yr Average			1.022	5 Yr Average			1.002
Selected Average			1.022	Selected Average			1.002
	72	84			192	204	
2012	366,468	371,695	1.014	2002	294,450	294,966	1.002
2013	374,370	375,695	1.004	2003	312,153	312,028	1.000
2014	423,602	426,347	1.006	2004	347,968	348,310	1.001
2015	424,280	427,309	1.007	2005	340,430	341,073	1.002
2016	432,248	435,498	1.008	2006	330,354	330,047	0.999
2 Yr Average			1.007	2 Yr Average			1.000
5 Yr Average			1.008	5 Yr Average			1.001
Selected Average			1.008	Selected Average			1.001
	84	96			204	216	
2011	366,585	367,585	1.003	2001	274,280	274,438	1.001
2012	371,695	371,541	1.000	2002	294,966	295,127	1.001
2013	375,695	375,002	0.998	2003	312,028	312,599	1.002
2014	426,347	428,819	1.006	2004	348,310	348,886	1.002
2015	427,309	426,569	0.998	2005	341,073	340,772	0.999
2 Yr Average			1.002	2 Yr Average			1.000
5 Yr Average			1.001	5 Yr Average			1.001
Selected Average			1.001	Selected Average			1.001
	96	108			216	228	
2010	341,673	342,042	1.001	2000	270,856	270,956	1.000
2011	367,585	367,880	1.001	2001	274,438	274,224	0.999
2012	371,541	371,171	0.999	2002	295,127	295,665	1.002
2013	375,002	375,657	1.002	2003	312,599	313,081	1.002
2014	428,819	428,429	0.999	2004	348,886	348,773	1.000
2 Yr Average			1.000	2 Yr Average			1.001
5 Yr Average			1.000	5 Yr Average			1.001
Selected Average			1.000	Selected Average			1.001
	108	120			228	240	
2009	319,973	321,726	1.005	1999	241,772	241,729	1.000
2010	342,042	343,458	1.004	2000	270,956	271,208	1.001
2011	367,880	369,660	1.005	2001	274,224	273,988	0.999
2012	371,171	373,063	1.005	2002	295,665	295,772	1.000
2013	375,657	376,029	1.001	2003	313,081	313,225	1.000
2 Yr Average			1.003	2 Yr Average			1.000
5 Yr Average			1.004	5 Yr Average			1.000
Selected Average			1.004	Selected Average			1.000
	120	132			240	252	
2008	331,121	332,165	1.003	1998	229,846	230,141	1.001
2009	321,726	320,829	0.997	1999	241,729	241,862	1.001
2010	343,458	344,470	1.003	2000	271,208	271,279	1.000
2011	369,660	371,147	1.004	2001	273,988	273,910	1.000
2012	373,063	373,504	1.001	2002	295,772	295,709	1.000
2 Yr Average			1.003	2 Yr Average			1.000
5 Yr Average			1.002	5 Yr Average			1.000
Selected Average			1.002	Selected Average			1.000
	132	144					
2007	340,689	340,585	1.000				
2008	332,165	333,047	1.003				
2009	320,829	322,810	1.006				
2010	344,470	344,172	0.999				
2011	371,147	372,563	1.004				
2 Yr Average			1.001				
5 Yr Average			1.002				
Selected Average			1.002				

Notes:  
 Losses from Aggregate Financial Data.

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Section II - Loss Development  
 Subsection B - Policy Year Data  
 7/1/2024

Section II - B  
 Exhibit 3  
 Page 2

Policy Year Aggregate Financial Data  
 Calculation of Medical Paid Plus Case Loss Development Factors  
 Industry

Policy Year	Losses (in 000's)		Loss Development Factor	Policy Year	Losses (in 000's)		Loss Development Factor
	Evaluated at Month				Evaluated at Month		
	24	36			144	156	
2016	209,540	219,835	1.049	2006	198,297	199,584	1.006
2017	211,950	231,458	1.092	2007	189,914	188,256	0.991
2018	214,431	228,938	1.068	2008	172,189	172,144	1.000
2019	196,574	224,398	1.142	2009	179,294	179,056	0.999
2020	188,723	193,974	1.028	2010	196,982	195,344	0.992
2 Yr Average			1.085	2 Yr Average			0.995
5 Yr Average			1.076	5 Yr Average			0.998
Selected Average			1.076	Selected Average			0.998
	36	48			156	168	
2015	226,561	231,441	1.022	2005	192,613	192,631	1.000
2016	219,835	226,908	1.032	2006	199,584	201,179	1.008
2017	231,458	233,497	1.009	2007	188,256	186,036	0.988
2018	228,938	234,025	1.022	2008	172,144	171,876	0.998
2019	224,398	228,580	1.019	2009	179,056	178,532	0.997
2 Yr Average			1.020	2 Yr Average			0.998
5 Yr Average			1.021	5 Yr Average			0.998
Selected Average			1.021	Selected Average			0.998
	48	60			168	180	
2014	240,904	241,360	1.002	2004	194,158	194,828	1.003
2015	231,441	227,844	0.984	2005	192,631	191,723	0.995
2016	226,908	224,351	0.989	2006	201,179	200,477	0.997
2017	233,497	235,885	1.010	2007	186,036	185,532	0.997
2018	234,025	236,893	1.012	2008	171,876	171,337	0.997
2 Yr Average			1.011	2 Yr Average			0.997
5 Yr Average			1.000	5 Yr Average			0.998
Selected Average			1.000	Selected Average			0.998
	60	72			180	192	
2013	201,886	202,344	1.002	2003	176,741	178,011	1.007
2014	241,360	240,824	0.998	2004	194,828	194,472	0.998
2015	227,844	226,489	0.994	2005	191,723	191,536	0.999
2016	224,351	224,025	0.999	2006	200,477	199,521	0.995
2017	235,885	235,371	0.998	2007	185,532	185,165	0.998
2 Yr Average			0.998	2 Yr Average			0.997
5 Yr Average			0.998	5 Yr Average			1.000
Selected Average			0.998	Selected Average			1.000
	72	84			192	204	
2012	214,637	210,152	0.979	2002	169,687	169,579	0.999
2013	202,344	200,658	0.992	2003	178,011	174,126	0.978
2014	240,824	239,042	0.993	2004	194,472	193,438	0.995
2015	226,489	226,604	1.001	2005	191,536	191,585	1.000
2016	224,025	221,825	0.990	2006	199,521	196,643	0.986
2 Yr Average			0.995	2 Yr Average			0.993
5 Yr Average			0.991	5 Yr Average			0.992
Selected Average			0.991	Selected Average			0.992
	84	96			204	216	
2011	211,592	210,622	0.995	2001	151,860	151,860	1.002
2012	210,152	210,518	1.002	2002	169,579	169,301	0.998
2013	200,658	198,429	0.989	2003	174,126	173,052	0.994
2014	239,042	237,839	0.995	2004	193,438	189,830	0.981
2015	226,604	225,408	0.995	2005	191,585	190,594	0.995
2 Yr Average			0.995	2 Yr Average			0.988
5 Yr Average			0.995	5 Yr Average			0.994
Selected Average			0.995	Selected Average			0.994
	96	108			216	228	
2010	201,999	202,503	1.002	2000	148,550	148,953	1.003
2011	210,622	210,473	0.999	2001	151,860	151,163	0.995
2012	210,518	212,071	1.007	2002	169,301	167,717	0.991
2013	198,429	198,077	0.998	2003	173,052	171,358	0.990
2014	237,839	243,235	1.023	2004	189,830	188,363	0.992
2 Yr Average			1.010	2 Yr Average			0.991
5 Yr Average			1.006	5 Yr Average			0.994
Selected Average			1.006	Selected Average			0.994
	108	120			228	240	
2009	186,118	183,132	0.984	1999	141,056	141,537	1.003
2010	202,503	197,828	0.978	2000	148,953	148,611	0.998
2011	210,473	209,800	0.997	2001	151,163	150,527	0.996
2012	212,071	208,227	0.982	2002	167,717	167,094	0.996
2013	198,077	202,377	1.022	2003	171,358	170,374	0.994
2 Yr Average			1.002	2 Yr Average			0.995
5 Yr Average			0.992	5 Yr Average			0.997
Selected Average			0.992	Selected Average			0.997
	120	132			240	252	
2008	171,380	171,917	1.003	1998	134,066	133,947	0.999
2009	183,132	180,723	0.987	1999	141,537	140,118	0.990
2010	197,828	199,140	1.008	2000	148,611	146,970	0.989
2011	209,800	210,346	1.003	2001	150,527	150,270	0.998
2012	208,227	211,353	1.015	2002	167,094	167,293	1.001
2 Yr Average			1.009	2 Yr Average			1.000
5 Yr Average			1.003	5 Yr Average			0.996
Selected Average			1.003	Selected Average			0.996
	132	144					
2007	192,003	189,914	0.989				
2008	171,917	172,189	1.002				
2009	180,723	179,294	0.992				
2010	199,140	196,982	0.989				
2011	210,346	209,221	0.995				
2 Yr Average			0.992				
5 Yr Average			0.993				
Selected Average			0.993				

Notes:  
 Losses from Aggregate Financial Data.

Paid Loss Tail Factors

Indemnity Paid 252nd Month to Ultimate Loss Tail Development Factor

(1) Policy Year	(2) Losses for Policy Year 252 mo	(3) Losses for All Prior Years		(4) 252 - Ult for PY	(5) Growth Factor	(6) Indicated 252 - Ult for PY
		Previous	Current			
1997	210,135,315		9,333,702,245			
1998	226,492,043	9,543,837,560	9,557,641,889	1.061	0.580	1.035
1999	239,327,879	9,784,133,932	9,798,427,537	1.060	0.640	1.038
2000	268,148,995	10,037,755,416	10,049,030,428	1.042	0.730	1.031
2001	272,483,830	10,317,179,423	10,329,220,838	1.044	0.760	1.034
2002	292,568,389	10,601,704,668	10,613,484,402	1.040	0.830	1.033
					5yr average	1.034

Medical Paid 252nd Month to Ultimate Loss Tail Development Factor

(8) Policy Year	(9) Losses for Policy Year 252 mo	(10) Losses for All Prior Years		(11) 252 - Ult for PY	(12) Growth Factor	(13) Indicated 252 - Ult for PY
		Previous	Current			
1997	98,899,548		3,035,302,766			
1998	112,918,251	3,134,202,314	3,143,402,030	1.081	0.830	1.068
1999	118,926,703	3,256,320,281	3,265,744,304	1.079	0.870	1.069
2000	127,345,474	3,384,671,007	3,394,154,236	1.074	0.940	1.070
2001	133,136,936	3,521,499,710	3,532,321,634	1.081	1.000	1.081
2002	152,843,135	3,665,458,570	3,674,691,257	1.060	1.140	1.069
					5yr average	1.071

Notes:

(2), (3), (4): Indemnity Paid Losses from Aggregate Financial Data.

(9), (10), (11): Medical Paid Losses from Aggregate Financial Data.

(5) = 1.000 + [(4) - (3)] / (2)

(6): From Page 2

(7) = 1.000 + [(5) - 1.000] x (6)

(12) = 1.000 + [(11) - (10)] / (9)

(13): From Page 3

(14) = 1.000 + [(12) - 1.000] x (13)

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Growth Factor Adjustment  
 Indemnity Paid Losses

Policy Year (1)	Paid Losses (2)	Relative Development for Report Interval (3)					Dollar Development (4)					On-Level Dollar Development (5)				
							Prior to 2002	Prior to 2001	Prior to 2000	Prior to 1999	Prior to 1998	Prior to 2002	Prior to 2001	Prior to 2000	Prior to 1999	Prior to 1998
1973	73,759,346				0.011%					8,033					23,213	
1974	77,865,871			0.012%	0.022%				9,092	16,961				26,637	46,425	
1975	78,107,817		0.009%	0.023%	0.033%			7,372	18,241	25,520			24,222	53,274	69,638	
1976	94,145,927	0.010%	0.019%	0.035%	0.044%		9,696	17,772	32,979	41,013		27,007	48,445	79,911	92,851	
1977	109,594,217	0.010%	0.021%	0.028%	0.047%	0.054%	11,220	22,574	31,033	51,187	59,679	28,811	54,015	72,667	106,548	
1978	154,813,691	0.020%	0.031%	0.038%	0.058%	0.065%	31,698	47,832	58,450	90,385	101,164	57,623	81,022	96,890	133,185	
1979	179,429,626	0.031%	0.041%	0.047%	0.070%	0.076%	55,107	73,917	84,680	125,708	136,791	86,434	108,029	121,112	159,822	
1980	199,752,841	0.041%	0.051%	0.057%	0.082%	0.087%	81,798	102,861	113,126	163,270	174,040	115,246	135,037	145,335	186,459	
1981	237,008,170	0.051%	0.062%	0.066%	0.093%	0.098%	121,317	146,455	156,595	221,396	232,312	144,057	162,044	169,557	213,096	
1982	260,515,583	0.061%	0.072%	0.076%	0.105%	0.109%	160,020	187,811	196,716	273,774	283,726	172,868	189,051	193,780	239,733	
1983	293,478,029	0.072%	0.082%	0.085%	0.117%	0.120%	210,311	241,799	249,307	342,682	351,588	201,680	216,059	218,002	266,370	
1984	355,837,967	0.082%	0.093%	0.094%	0.128%	0.131%	291,428	329,825	335,868	457,047	465,049	230,491	243,066	242,225	293,008	
1985	438,534,312	0.092%	0.103%	0.104%	0.140%	0.142%	404,050	451,640	455,316	614,470	620,886	259,303	270,073	266,447	319,645	
1986	552,105,171	0.102%	0.113%	0.113%	0.152%	0.152%	565,211	625,465	625,345	838,072	841,812	288,114	297,081	290,670	346,282	
1987	695,660,221	0.113%	0.124%	0.123%	0.163%	0.163%	783,391	859,739	853,605	1,137,211	1,136,459	316,926	324,088	314,892	372,919	
1988	772,012,181	0.123%	0.134%	0.132%	0.175%	0.174%	948,405	1,033,608	1,020,161	1,352,170	1,345,270	345,737	351,095	339,115	399,556	
1989	802,368,271	0.133%	0.144%	0.142%	0.187%	0.185%	1,067,839	1,156,885	1,136,008	1,499,028	1,485,552	374,548	378,103	363,337	426,193	
1990	728,654,947	0.143%	0.154%	0.151%	0.199%	0.196%	1,044,332	1,125,645	1,100,420	1,446,395	1,428,432	403,360	405,110	387,560	452,830	
1991	488,888,984	0.154%	0.165%	0.160%	0.210%	0.207%	750,741	805,598	784,469	1,027,540	1,011,647	432,171	432,117	411,782	479,467	
1992	303,138,664	0.164%	0.175%	0.170%	0.218%	0.218%	496,535	530,736	515,027	672,529	660,293	460,983	459,125	436,005	506,104	
1993	246,118,632	0.174%	0.185%	0.179%	0.234%	0.229%	428,333	456,253	441,382	574,765	562,897	489,794	486,132	460,227	532,741	
1994	197,907,758	0.184%	0.196%	0.189%	0.245%	0.240%	364,690	387,262	373,602	485,286	474,188	518,605	513,139	484,450	559,378	
1995	201,060,384	0.195%	0.206%	0.198%	0.257%	0.250%	391,083	414,138	398,531	516,494	503,639	547,417	540,147	508,672	586,015	
1996	187,578,951	0.205%	0.216%	0.208%	0.269%	0.261%	384,063	405,688	389,514	503,765	490,298	576,228	567,154	532,895	612,652	
1997	195,823,310	0.215%	0.227%	0.217%	0.280%	0.272%	420,990	443,686	425,117	548,772	533,175	605,040	594,161	557,117	639,289	
1998	213,138,040	0.225%	0.237%	0.227%	0.292%		480,034	504,867	482,824	622,181		633,851	621,169	581,340	665,926	
1999	228,123,554	0.235%	0.247%	0.236%			537,139	563,858	538,303			662,662	648,176	605,562		
2000	256,627,056	0.246%	0.257%				630,525	660,740				691,474	675,183			
2001	262,236,591	0.256%					671,154					720,285				
<b>2002</b>	<b>281,433,590</b>															
						<b>11,331,412</b>	<b>11,588,576</b>	<b>10,790,543</b>	<b>13,624,439</b>	<b>12,990,424</b>	<b>9,363,708</b>	<b>8,777,383</b>	<b>7,872,311</b>	<b>8,657,041</b>	<b>7,544,137</b>	
<b>(6) Indicated Growth Factor:</b>											<b>0.826</b>	<b>0.757</b>	<b>0.730</b>	<b>0.635</b>	<b>0.581</b>	
<b>(7) Selected Growth Factor:</b>											<b>0.830</b>	<b>0.760</b>	<b>0.730</b>	<b>0.640</b>	<b>0.580</b>	

II 000017

- Notes:  
 (2): Losses from Aggregate Financial Data evaluated as of 108 months.  
 (3): Estimated % paid loss emergence for the report interval.  
 (4) = (2) x (3)  
 (5) = (3) x [(2) for PY YYYY] respectively for each 'Prior to YYYY' column  
 (6) = [ Sum of (5) ] / [ Sum of (4) ]



Paid Plus Case Loss Tail Factors

Indemnity Paid Plus Case 252nd Month to Ultimate Loss Tail Development Factor

(1) Policy Year	(2) Losses for Policy Year 252 mo	(3) Losses for All Prior Years		(5) 252 - Ult for PY	(6) Growth Factor	(7) Indicated 252 - Ult for PY
		Previous	Current			
1997	213,488,927		9,428,179,044			
1998	230,140,977	9,641,667,971	9,647,375,222	1.025	0.550	1.014
1999	241,861,635	9,877,516,199	9,885,715,542	1.034	0.610	1.021
2000	271,278,951	10,127,577,177	10,131,661,095	1.015	0.710	1.011
2001	273,910,419	10,402,940,046	10,408,753,306	1.021	0.750	1.016
2002	295,708,534	10,682,663,725	10,687,929,310	1.018	0.830	1.015
					5yr average	1.015

Medical Paid Plus Case 252nd Month to Ultimate Loss Tail Development Factor

(8) Policy Year	(9) Losses for Policy Year 252 mo	(10) Losses for All Prior Years		(12) 252 - Ult for PY	(13) Growth Factor	(14) Indicated 252 - Ult for PY
		Previous	Current			
1997	107,352,129		3,184,319,520			
1998	133,947,456	3,291,671,649	3,293,431,413	1.013	0.920	1.012
1999	140,117,794	3,427,378,869	3,427,197,531	0.999	0.910	0.999
2000	146,970,141	3,567,315,325	3,560,136,602	0.951	1.080	0.947
2001	150,270,362	3,707,106,743	3,704,283,867	0.981	1.080	0.980
2002	167,292,955	3,854,554,229	3,849,678,507	0.971	1.180	0.966
					5yr average	0.981

Notes:

- (2), (3), (4): Indemnity Paid Plus Case Losses from Aggregate Financial Data.
- (9), (10), (11): Medical Paid Plus Case Losses from Aggregate Financial Data.
- (5) = 1.000 + [(4) - (3)] / (2)
- (6): From Page 2
- (7) = 1.000 + [(5) - 1.000] x (6)
- (12) = 1.000 + [(11) - (10)] / (9)
- (13): From Page 3
- (14) = 1.000 + [(12) - 1.000] x (13)

II 000019



Growth Factor Adjustment  
 Medical Paid Plus Case Losses

Policy Year (1)	Incurred Losses (2)	Relative Development for Report Interval (3)				Dollar Development (4)					On-Level Dollar Development (5)				
						Prior to 2002	Prior to 2001	Prior to 2000	Prior to 1999	Prior to 1998	Prior to 2002	Prior to 2001	Prior to 2000	Prior to 1999	Prior to 1998
1978	49,815,665				0.006%					2,860					7,360
1979	57,472,939				-0.001%				(321)	6,599				(708)	14,721
1980	62,122,817			-0.025%	-0.001%				(15,655)	(694)				(38,034)	(1,416)
1981	77,677,866			-0.010%	-0.050%	-0.002%	0.023%		(7,534)	(39,150)	(1,302)			(14,809)	(76,069)
1982	74,813,207	-0.016%	-0.019%	-0.076%	-0.002%	0.029%		(12,297)	(14,512)	(56,559)	(1,672)	21,475	(27,659)	(29,618)	(114,103)
1983	85,766,376	-0.033%	-0.029%	-0.101%	-0.003%	0.034%		(28,194)	(24,955)	(86,452)	(2,396)	29,543	(55,318)	(44,427)	(152,138)
1984	104,980,448	-0.049%	-0.039%	-0.126%	-0.003%	0.040%		(51,765)	(40,728)	(132,275)	(3,520)	42,189	(82,977)	(59,236)	(190,172)
1985	137,155,127	-0.066%	-0.048%	-0.151%	-0.004%	0.046%		(90,174)	(66,512)	(207,378)	(5,365)	62,993	(110,636)	(74,045)	(228,207)
1986	164,067,413	-0.082%	-0.058%	-0.176%	-0.004%	0.052%		(134,835)	(95,476)	(289,414)	(7,335)	84,773	(138,295)	(88,854)	(266,241)
1987	198,799,980	-0.099%	-0.068%	-0.202%	-0.005%	0.057%		(196,055)	(134,969)	(400,780)	(9,998)	114,132	(165,954)	(103,663)	(304,276)
1988	217,918,342	-0.115%	-0.078%	-0.227%	-0.006%	0.063%		(250,727)	(169,085)	(494,238)	(12,178)	137,619	(193,612)	(118,472)	(342,310)
1989	231,139,216	-0.131%	-0.087%	-0.252%	-0.006%	0.069%		(303,930)	(201,761)	(582,469)	(14,208)	159,238	(221,271)	(133,281)	(380,345)
1990	217,474,912	-0.148%	-0.097%	-0.277%	-0.007%	0.075%		(321,708)	(210,926)	(602,839)	(14,583)	162,309	(248,930)	(148,089)	(418,379)
1991	183,795,164	-0.164%	-0.107%	-0.302%	-0.007%	0.080%		(302,095)	(196,086)	(555,795)	(13,352)	147,725	(276,589)	(162,898)	(456,414)
1992	141,603,167	-0.181%	-0.116%	-0.328%	-0.008%	0.086%		(256,021)	(164,807)	(463,891)	(11,078)	121,942	(304,248)	(177,707)	(494,448)
1993	126,882,200	-0.197%	-0.126%	-0.353%	-0.008%	0.092%		(250,260)	(159,979)	(447,639)	(10,636)	116,550	(331,907)	(192,516)	(532,483)
1994	115,172,605	-0.214%	-0.136%	-0.378%	-0.009%	0.098%		(246,095)	(156,386)	(435,351)	(10,298)	112,406	(359,566)	(207,325)	(570,517)
1995	102,074,365	-0.230%	-0.145%	-0.403%	-0.009%	0.103%		(234,885)	(148,501)	(411,563)	(9,697)	105,482	(387,225)	(222,134)	(608,551)
1996	99,448,260	-0.247%	-0.155%	-0.428%	-0.010%	0.109%		(245,187)	(154,325)	(426,035)	(10,003)	108,478	(414,884)	(236,943)	(646,586)
1997	104,079,057	-0.263%	-0.165%	-0.454%	-0.011%	0.115%		(273,712)	(171,606)	(472,101)	(11,051)	119,504	(442,543)	(251,752)	(684,620)
1998	128,207,506	-0.279%	-0.175%	-0.479%	-0.011%			(358,238)	(223,824)	(613,856)	(14,329)		(470,202)	(266,561)	(722,655)
1999	126,734,409	-0.296%	-0.184%	-0.504%				(374,953)	(233,544)	(638,740)			(497,861)	(281,370)	(760,689)
2000	150,930,797	-0.312%	-0.194%					(471,348)	(292,771)				(525,519)	(296,179)	
2001	152,687,652	-0.329%						(501,931)					(553,178)		
<b>2002</b>	<b>168,277,252</b>														
						(4,904,409)	(2,868,286)	(7,372,180)	(164,017)	1,684,354	(5,808,373)	(3,109,879)	(7,987,238)	(148,725)	1,545,694
(6) Indicated Growth Factor:											1.184	1.084	1.083	0.907	0.918
(7) Selected Growth Factor:											<b>1.180</b>	<b>1.080</b>	<b>1.080</b>	<b>0.910</b>	<b>0.920</b>

II 000021

- Notes:  
 (2): Losses from Aggregate Financial Data evaluated as of 108 months.  
 (3): Estimated % paid loss emergence for the report interval.  
 (4) = (2) x (3)  
 (5) = (3) x [(2) for PY YYYY] respectively for each 'Prior to YYYY' column  
 (6) = [ Sum of (5) ] / [ Sum of (4) ]

# II 000022

Section II - Loss Development  
 Subsection D - Adjustment for Escalation of Benefits  
 7/1/2024

Section II - D  
 Exhibit 1  
 Page 1

## Differential in Indemnity Loss Development

### Paid Loss Development Method Calculation of Adjustment for Differential in Loss Development

Escalated or Unescalated (1)	Injury Type (2)	Implicit LDF to Ultimate From Month				
		168	180	192 (3)	204	216
Escalated	Fatal	3.036	2.859	2.703	2.562	2.433
Escalated	Permanent Total	4.073	3.719	3.417	3.157	2.929
Escalated	Other Indemnity	1.000	1.000	1.000	1.000	1.000
Escalated	Total Indemnity	1.157	1.152	1.146	1.141	1.135
Unescalated	Fatal	1.942	1.861	1.789	1.725	1.668
Unescalated	Permanent Total	2.452	2.295	2.160	2.043	1.941
Unescalated	Other Indemnity	1.000	1.000	1.000	1.000	1.000
Unescalated	Total Indemnity	1.062	1.059	1.056	1.053	1.050

Escalated or Unescalated (4)	Injury Type (5)	Differential in Loss Development at Month				
		168	180	192 (6)	204	216
Escalated	Fatal	1.563	1.536	1.511	1.485	1.459
Escalated	Permanent Total	1.661	1.620	1.582	1.545	1.509
Escalated	Other Indemnity	1.000	1.000	1.000	1.000	1.000
Escalated	Total Indemnity	<b>1.090</b>	<b>1.088</b>	<b>1.086</b>	<b>1.083</b>	<b>1.081</b>

Selected Differential in Indemnity Loss Development at Month 432 1.045

**Notes:**

(3) = [ (8) Exhibit 1, Page 2 ] / [ (9) Exhibit 1, Page 2 ]

(6) = [ (3) for Escalated ] / [ (3) for Unescalated ]

# II 000023

## Differential in Indemnity Loss Development

### Paid Loss Development Method Calculation of Adjustment for Differential in Loss Development

Escalated or Unescalated (1)	Injury Type (2)	Losses at Month						Injury Type Weights @ Ultimate (5)
		Ultimate (3)	168	180	192 (4)	204	216	
Escalated	Fatal	874,958	288,217	306,023	323,680	341,550	359,626	1.79%
Escalated	Permanent Total	1,668,738	409,709	448,697	488,350	528,641	569,759	11.08%
Escalated	Other Indemnity							57.40%
Escalated	Total Indemnity							70.27%
Unescalated	Fatal	465,615	239,708	250,218	260,195	269,862	279,221	0.95%
Unescalated	Permanent Total	824,906	336,400	359,427	381,858	403,713	424,987	5.48%
Unescalated	Other Indemnity							57.40%
Unescalated	Total Indemnity							63.83%

Escalated or Unescalated (6)	Injury Type (7)	Estimated Losses at Month					
		Ultimate (8)	168	180	192 (9)	204	216
Escalated	Fatal	1,788	589	625	661	698	735
Escalated	Permanent Total	11,084	2,721	2,980	3,244	3,511	3,784
Escalated	Other Indemnity	57,402	57,402	57,402	57,402	57,402	57,402
Escalated	Total Indemnity	70,273	60,712	61,007	61,307	61,611	61,921
Unescalated	Fatal	951	490	511	532	551	570
Unescalated	Permanent Total	5,479	2,234	2,387	2,536	2,681	2,823
Unescalated	Other Indemnity	57,402	57,402	57,402	57,402	57,402	57,402
Unescalated	Total Indemnity	63,832	60,126	60,301	60,470	60,635	60,795

**Notes:**

Escalation calculation applied only to Fatal and Permanent Total Injury Types.

(4): Average discounted losses are calculated from Simulation Model loss flows using a 3.5% discount rate.

(5): Escalated: From Section IV-E, Exhibit 2, Page 1. As a % of total losses, Indemnity and Medical.

Unescalated: [ (5) for Escalated ] x { [ (3) for Unescalated ] / [ (3) for Escalated ] }.

(8) = (5) x 100,000

(9) = (8) x [ (4) / (3) ]

# II 000024

Section II - Loss Development  
 Subsection D - Adjustment for Escalation of Benefits  
 7/1/2024

Section II - D  
 Exhibit 2  
 Page 1

## Differential in Indemnity Loss Development

### Paid Plus Case Loss Development Method Calculation of Adjustment for Differential in Loss Development

Escalated or Unescalated (1)	Injury Type (2)	Implicit LDF to Ultimate From Month				
		168	180	192 (3)	204	216
Escalated	Fatal	1.364	1.340	1.317	1.295	1.274
Escalated	Permanent Total	1.398	1.368	1.340	1.313	1.288
Escalated	Other Indemnity	1.000	1.000	1.000	1.000	1.000
Escalated	Total Indemnity	1.054	1.051	1.048	1.045	1.043
Unescalated	Fatal	1.212	1.198	1.184	1.171	1.159
Unescalated	Permanent Total	1.253	1.234	1.215	1.198	1.183
Unescalated	Other Indemnity	1.000	1.000	1.000	1.000	1.000
Unescalated	Total Indemnity	1.020	1.019	1.018	1.017	1.016

Escalated or Unescalated (4)	Injury Type (5)	Differential in Loss Development at Month				
		168	180	192 (6)	204	216
Escalated	Fatal	1.125	1.119	1.112	1.105	1.099
Escalated	Permanent Total	1.115	1.109	1.102	1.096	1.089
Escalated	Other Indemnity	1.000	1.000	1.000	1.000	1.000
Escalated	Total Indemnity	<b>1.033</b>	<b>1.032</b>	<b>1.030</b>	<b>1.028</b>	<b>1.027</b>

Selected Differential in Indemnity Loss Development at Month 432 1.000

Notes:

(3) = [ (8) Exhibit 2, Page 2 ] / [ (9) Exhibit 2, Page 2 ]

(6) = [ (3) for Escalated ] / [ (3) for Unescalated ]

# II 000025

Section II - Loss Development  
 Subsection D - Adjustment for Escalation of Benefits  
 7/1/2024

Section II - D  
 Exhibit 2  
 Page 2

## Differential in Indemnity Loss Development

### Paid Plus Case Loss Development Method Calculation of Adjustment for Differential in Loss Development

Escalated or Unescalated (1)	Injury Type (2)	Losses at Month						Injury Type Weights @ Ultimate (5)
		Ultimate (3)	168	180	192 (4)	204	216	
Escalated	Fatal	874,958	641,246	652,979	664,504	675,808	686,874	1.79%
Escalated	Permanent Total	1,668,738	1,193,905	1,219,988	1,245,595	1,270,688	1,295,221	11.08%
Escalated	Other Indemnity							57.40%
Escalated	Total Indemnity							70.27%
Unescalated	Fatal	465,615	384,035	388,719	393,217	397,535	401,676	0.95%
Unescalated	Permanent Total	824,906	658,201	668,658	678,696	688,321	697,538	5.48%
Unescalated	Other Indemnity							57.40%
Unescalated	Total Indemnity							63.83%

Escalated or Unescalated (6)	Injury Type (7)	Estimated Losses at Month					
		Ultimate (8)	168	180	192 (9)	204	216
Escalated	Fatal	1,788	1,310	1,334	1,358	1,381	1,403
Escalated	Permanent Total	11,084	7,930	8,103	8,273	8,440	8,603
Escalated	Other Indemnity	57,402	57,402	57,402	57,402	57,402	57,402
Escalated	Total Indemnity	70,273	66,642	66,839	67,033	67,223	67,408
Unescalated	Fatal	951	785	794	803	812	821
Unescalated	Permanent Total	5,479	4,372	4,441	4,508	4,572	4,633
Unescalated	Other Indemnity	57,402	57,402	57,402	57,402	57,402	57,402
Unescalated	Total Indemnity	63,832	62,558	62,637	62,713	62,786	62,856

**Notes:**

Escalation calculation applied only to Fatal and Permanent Total Injury Types.

(4): Average discounted losses are calculated from Simulation Model loss flows using a 3.5% discount rate.

(5): Escalated: From Section IV-E, Exhibit 2, Page 1. As a % of total losses, Indemnity and Medical.

Unescalated: [ (5) for Escalated ] x { [ (3) for Unescalated ] / [ (3) for Escalated ] }.

(8) = (5) x 100,000

(9) = (8) x [ (4) / (3) ]

Accident Year Aggregate Financial Data  
 Summary of Loss Development Factors

Months of Development	Loss Development Factors From																			Tail Factor	Escalation Factor	
	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-132	132-144	144-156	156-168	168-180	180-192	192-204	204-216	216-228	228-240			240-252
<u>(1) Indemnity Paid Losses</u>																						
2 Year Average	2.776	1.639	1.289	1.117	1.056	1.023	1.009	1.007	1.003	1.003	1.003	1.005	1.003	1.002	1.001	1.002	1.003	1.002	1.001	1.002	1.034	1.045
Cumulative	8.011	2.886	1.761	1.365	1.223	1.157	1.131	1.121	1.114	1.111	1.107	1.104	1.098	1.094	1.092	1.091	1.089	1.086	1.084	1.083	1.081	1.045
<u>(2) Medical Paid Losses</u>																						
2 Yr Average	2.016	1.152	1.064	1.028	1.014	1.011	1.010	1.009	1.009	1.006	1.007	1.005	1.003	1.005	1.004	1.003	1.004	1.003	1.005	1.005	1.071	1.000
Cumulative	3.015	1.495	1.298	1.220	1.187	1.170	1.157	1.145	1.135	1.124	1.117	1.109	1.104	1.101	1.096	1.092	1.089	1.085	1.082	1.076	1.071	1.000

Notes:  
 Tail Factors from Section II-C, Exhibit 1, Page 1 (accident year tail factors were approximated using policy year tail factors).  
 Escalation Factor from Section II-D, Exhibit 1, page 1.

II 000026

# II 000027

Section II - Loss Development  
 Subsection E - Accident Year Data  
 7/1/2024

Section II - E  
 Exhibit 1  
 Page 2

## Accident Year Aggregate Financial Data Calculation of Indemnity Paid Loss Development Factors

Accident Year	Losses (in 000's)		Loss Development Factor	Accident Year	Losses (in 000's)		Loss Development Factor
	Evaluated at Month				Evaluated at Month		
	12	24			132	144	
2017	63,445	190,745	3.006	2007	331,941	333,800	1.006
2018	68,035	201,555	2.962	2008	342,755	343,327	1.002
2019	69,353	198,262	2.859	2009	313,811	315,868	1.007
2020	58,718	162,033	2.760	2010	316,215	317,073	1.003
2021	67,654	188,916	2.792	2011	369,308	370,153	1.002
2 Yr Average			2.776	2 Yr Average			1.003
5 Yr Average			2.876	5 Yr Average			1.004
Selected Average			2.776	Selected Average			1.003
	24	36			144	156	
2016	184,424	292,391	1.585	2006	320,859	321,597	1.002
2017	190,745	297,169	1.558	2007	333,800	334,603	1.002
2018	201,555	309,832	1.537	2008	343,327	343,535	1.001
2019	198,262	324,109	1.635	2009	315,868	319,090	1.010
2020	162,033	266,247	1.643	2010	317,073	317,309	1.001
2 Yr Average			1.639	2 Yr Average			1.005
5 Yr Average			1.592	5 Yr Average			1.003
Selected Average			1.639	Selected Average			1.005
	36	48			156	168	
2015	304,299	375,046	1.232	2005	336,525	337,163	1.002
2016	292,391	351,384	1.202	2006	321,597	322,795	1.004
2017	297,169	363,203	1.222	2007	334,603	335,895	1.004
2018	309,832	392,900	1.268	2008	343,535	344,098	1.002
2019	324,109	424,858	1.311	2009	319,090	320,793	1.005
2 Yr Average			1.289	2 Yr Average			1.003
5 Yr Average			1.247	5 Yr Average			1.003
Selected Average			1.289	Selected Average			1.003
	48	60			168	180	
2014	330,894	357,490	1.080	2004	329,222	330,047	1.003
2015	375,046	400,533	1.068	2005	337,163	338,595	1.004
2016	351,384	380,167	1.082	2006	322,795	323,161	1.001
2017	363,203	400,657	1.103	2007	335,895	335,995	1.000
2018	392,900	444,264	1.131	2008	344,098	345,153	1.003
2 Yr Average			1.117	2 Yr Average			1.002
5 Yr Average			1.093	5 Yr Average			1.002
Selected Average			1.117	Selected Average			1.002
	60	72			180	192	
2013	356,834	367,549	1.030	2003	306,684	307,118	1.001
2014	357,490	375,195	1.050	2004	330,047	331,019	1.003
2015	400,533	410,037	1.024	2005	338,595	339,874	1.004
2016	380,167	397,624	1.046	2006	323,161	323,589	1.001
2017	400,657	427,325	1.067	2007	335,995	336,302	1.001
2 Yr Average			1.056	2 Yr Average			1.001
5 Yr Average			1.043	5 Yr Average			1.002
Selected Average			1.056	Selected Average			1.001
	72	84			192	204	
2012	333,712	342,179	1.025	2002	277,454	278,028	1.002
2013	367,549	370,876	1.009	2003	307,118	307,619	1.002
2014	375,195	378,793	1.010	2004	331,019	331,794	1.002
2015	410,037	419,694	1.024	2005	339,874	340,817	1.003
2016	397,624	406,602	1.023	2006	323,589	323,736	1.000
2 Yr Average			1.023	2 Yr Average			1.002
5 Yr Average			1.018	5 Yr Average			1.002
Selected Average			1.023	Selected Average			1.002
	84	96			204	216	
2011	359,932	363,513	1.010	2001	265,677	266,182	1.002
2012	342,179	347,448	1.015	2002	278,028	278,339	1.001
2013	370,876	374,035	1.009	2003	307,619	308,158	1.002
2014	378,793	381,923	1.008	2004	331,794	333,199	1.004
2015	419,694	423,727	1.010	2005	340,817	341,510	1.002
2 Yr Average			1.009	2 Yr Average			1.003
5 Yr Average			1.010	5 Yr Average			1.002
Selected Average			1.009	Selected Average			1.003
	96	108			216	228	
2010	312,030	313,276	1.004	2000	257,886	258,248	1.001
2011	363,513	366,614	1.009	2001	266,182	266,017	0.999
2012	347,448	350,302	1.008	2002	278,339	278,668	1.001
2013	374,035	377,113	1.008	2003	308,158	309,349	1.004
2014	381,923	383,820	1.005	2004	333,199	333,024	0.999
2 Yr Average			1.007	2 Yr Average			1.002
5 Yr Average			1.007	5 Yr Average			1.001
Selected Average			1.007	Selected Average			1.002
	108	120			228	240	
2009	310,150	312,612	1.008	1999	224,664	224,889	1.001
2010	313,276	315,233	1.006	2000	258,248	258,646	1.002
2011	366,614	368,415	1.005	2001	266,017	266,270	1.001
2012	350,302	351,384	1.003	2002	278,668	278,902	1.001
2013	377,113	378,247	1.003	2003	309,349	309,949	1.002
2 Yr Average			1.003	2 Yr Average			1.001
5 Yr Average			1.005	5 Yr Average			1.001
Selected Average			1.003	Selected Average			1.001
	120	132			240	252	
2008	340,444	342,755	1.007	1998	228,823	229,257	1.002
2009	312,612	313,811	1.004	1999	224,889	225,055	1.001
2010	315,233	316,215	1.003	2000	258,646	259,346	1.003
2011	368,415	369,308	1.002	2001	266,270	266,383	1.000
2012	351,384	352,923	1.004	2002	278,902	279,828	1.003
2 Yr Average			1.003	2 Yr Average			1.002
5 Yr Average			1.004	5 Yr Average			1.002
Selected Average			1.003	Selected Average			1.002

Notes:  
 Losses from Aggregate Financial Data.



# III 000001

## PREMIUMS

### **Background**

This filing evaluates the adequacy of the current rate level by comparing the historical loss, Loss Adjustment Expense (“LAE”), and fixed expense ratios to permissible loss, LAE, and fixed expense ratios. The historical loss ratio is the ratio of losses and loss adjustment expenses to earned premium. In the current ratemaking methodology, “earned premium” includes policy year earned standard premium and All Risk Adjustment Program (“ARAP”) premium. Policy year premiums are defined as the premiums associated with all policies taking effect in a given year. Policy year earned premiums, by contrast, are the premiums related to the portion of the policy year that has already expired. Standard premium is the premium resulting from standard rating procedures using WCRIBMA rates, after applying experience rating adjustments, Merit Rating Plan adjustments, Construction Classification Premium Adjustment Program (“CCPAP”) Credits, expense constants, and loss constants. Since the ARAP premium reported on the Aggregate Financial Policy Year Call is affected by deviations and schedule rating credits, a factor is applied to the reported ARAP premium to adjust the premium from Company Level to Bureau Designated Statistical Reporting (DSR) Level. Adjustment factors applicable to policy year 2020 and policy year 2021 are calculated in Section III-A.

In this Section, policy years 2020 and 2021 earned standard premiums and adjusted ARAP premiums are used in the indication and adjusted to reflect the current rate level, as affected by interim rate filings, in Section III.

# III 000002

Policy year premiums for policy years 2020 and 2021, the years underlying the experience period, have returned to pre-pandemic levels as a result of both wages and rate changes. The policy year premiums are representative of the post-pandemic environment. As mentioned in Section I, given the three and a half years that have transpired since COVID-19's most disruptive direct and indirect impacts, our review of the data demonstrates that it is once again feasible and preferable to use the latest available policy years to determine rates in the prospective period. Policy counts have continued to grow, year over year, throughout this period. This policy count growth, much like the economic recovery, has not been uniform for all industries. Some industries hit hardest with closures and other mandates (leisure & hospitality, retail, and restaurants) saw policy count declines between policy year 2019 and 2020 and have not recovered at the same rate as other industries. Still, growth in other sub-industries (professional & business services and services) has more than offset those declines.

## **Summary**

Initial workers' compensation insurance premiums are estimates. The typical premium is a function of the employer's payroll during the time the policy is in effect, so it is not known definitively at policy inception. In addition to payroll audit adjustments, other adjustments may occur to the premium as a result of changes to the policy. For example, experience modification factors may change during the term of a policy or CCPAP credit applications may be filed up to six months after the termination date of a policy.

# III 000003

Insurance carriers typically try to estimate the impact of such premium adjustments. However, industry-wide policy year earned standard and ARAP premium historically develops until such time as all audits have been finalized and no further premium modifications can be made. Therefore, premiums must be developed to ultimate so that the premiums used in the indication properly reflect the actual exposure level giving rise to the ultimate losses.

The currently-effective rates were derived using “estimated values” for the average experience modification, the average merit rating credit, the average ARAP surcharge, and the average CCPAP credit. However, the “actual values” for the policy years under review differ from the “estimated values” loaded into the current rates. The WCRIBMA applies factors to premiums to adjust the “actual values” of the experience modification, merit rating credit, ARAP surcharge, and CCPAP credit to the “estimated values” loaded in the current rates. These offsets are necessary to ensure that the change in the current manual rates (which contain the same “estimated values”) is consistent with the overall average indicated rate level change. Additionally, the loading for prior Insolvency Fund assessments is removed.

## **Premium Development**

The WCRIBMA developed premium to 252 months utilizing historical premium development factors based on the average of the latest five age-to-age development factors, also known as link ratios. For a given policy year, a premium development link ratio is the ratio of the premium valued as of time (T+1) to the premium valued as of time

# III 000004

T. As in recent filings, annual age-to-age link ratios are calculated using the sum of earned standard premium and adjusted ARAP premium. The calculation of standard premium plus adjusted ARAP premium development factors is completed in Section III-A.

## **Impact of Experience and Merit Rating, ARAP and Construction Credit**

The currently-effective rates contain an assumed load to reflect an estimated average experience modification and merit rating impact, ARAP impact, and Construction Credit impact. The actual experience modifications, merit rating debits or credits, ARAP surcharges, and Construction Credits for the policy years under review differ from the estimated values used in deriving the current rates. A factor is applied to premiums to adjust the impact of these programs to the level anticipated in the current rates. Adjustment factors applicable to policy year 2020 and policy year 2021 are calculated in Section III-B.

### **Experience modification**

Consistent with past practice, the WCRIBMA uses the historical experience modification anticipated in the rates to derive of the adjustment factor. This is appropriate because the purpose of the adjustment factor is to bring premium to the current rate level. The experience modification reflected in the rates for non-merit-rated risks is 1.00 and the average merit rating for merit-rated risks is -2.0%.

### **ARAP**

ARAP was introduced in Massachusetts for policies effective 1/1/1990 and after. The premium used to develop the rate indication is standard premium plus ARAP premium. An adjustment for the ARAP offset is included to reflect the fact that the ARAP surcharges

# III 000005

during policy year 2020 and policy year 2021 were not equal to the ARAP surcharge anticipated by the offset in the rates.

## **Construction Credit Offset**

An adjustment for the Construction Credit offset is necessary to reflect the fact that the extent to which Construction Credits were eventually applied in the data for policy year 2020 and policy year 2021 differed from that which was anticipated in the rates.

## **Loading for Recoupment of Insolvency Fund Assessments**

In Section III-C, factors are calculated to adjust the policy year 2020 and policy year 2021 premiums to exclude the one-time loadings for recoupment of Insolvency Fund assessments.

## **On-Level Adjustment**

WCRIBMA also tests the adequacy of the overall rate level to determine whether there is a need for change in the indicated rates. In doing so, historical reported premium data is utilized to estimate the amount of future premium needed in the prospective effective period. The historical premium is adjusted to the level of the current rates to account for rate changes that occurred since the historical experience period. Otherwise, the projected premium would not be appropriate for calculating the current rate need. Further, workers' compensation policies are not written evenly throughout the year. To account for this variation, the on-level factors derived in this filing use rate level weights

# III 000006

based on USR data for the historical period. Premium on-level factors are calculated in Section III-D.

## **Premium Adjustment Factor**

Premium adjustment factors bring historical standard premium data to the level applicable for different policy periods. They are used to estimate the percentage of premium eligible for experience rating, adjust the layers of standard premium for premium discount and expense constant calculations, and determine weights used in calculating the weighted average premium collection pattern used to estimate the profit provision. Premium adjustment factors are composite factors that meld adjustments related to exposure growth and trend, premium on-leveling, changes in rating programs and the proposed rate change. These adjustments are calculated in Section III-E.

# III 000007

Section III - Premiums  
 Subsection A - Summary  
 7/1/2024

Section III - A  
 Exhibit 1  
 Page 1

Policy Year Aggregate Financial Data  
 Calculation of Adjusted On-Level Standard Premium plus Adjusted ARAP at Ultimate  
 Industrywide

Summary Exhibit

	Policy Year as of	
	2020	2021
(1) Standard Earned Premium plus Adjusted ARAP Premium	1,204,478,740	1,227,048,456
(2) Adjustment for Experience and Merit Rating, ARAP, and Construction Credit Off-balance	1.031	1.031
(3) Adjustment Factor to Remove the Impact of Loading for Recoupment of Insolvency Fund Assessments	1.001	1.005
(4) Composite Adjustment Factor = (2) x (3)	1.032	1.037
(5) Adjusted Standard Earned Premium plus ARAP = (1) x (4)	1,242,774,151	1,272,071,589
(6) Cumulative Premium Development Factor to Ultimate (see Page 2)	0.999	1.014
(7) Rate On-Level Factor	0.834	0.867
(8) Factor to Remove Expense Constant	0.959	0.959
(9) Adjusted On-Level Standard Earned Premium plus Adjusted ARAP at Ultimate = (5) x (6) x (7) x (8)	993,546,230	1,072,493,586

Notes:

- (1): Section III-B, Exhibit 2
- (2): Section III-B, Exhibit 1
- (3): Section III-C, Exhibit 1
- (6): Premiums are deemed to be fully developed at 252 months.
- (7): Section III-D, Exhibit 1
- (8): Section VI-F, Exhibit 2.

Policy Year Aggregate Financial Data  
 Calculation of Standard Premium plus Adjusted ARAP Premium Development Factors  
 Industrywide

Premium Development Factors From:																			
Months of Development	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-132	132-144	144-156	156-168	168-180	180-192	192-204	204-216	216-228	228-240	240-252
2 Year Average	1.013	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Cumulative Factor to 252	1.012	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
5 Year Average	1.015	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Cumulative Factor to 252	1.014	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Notes:  
 Page 3

800000 III

# III 000009

Policy Year Aggregate Financial Data  
Calculation of Standard Premium plus Adjusted ARAP Premium Development Factors  
Industrywide

Policy Year	Premium (in 000's) Evaluated at Month		Premium Development Factor	Policy Year	Premium (in 000's) Evaluated at Month		Premium Development Factor
	24	36			132	144	
2016	1,117,787	1,132,501	1.013	2007	981,967	981,963	1.000
2017	1,183,358	1,204,893	1.018	2008	806,643	806,642	1.000
2018	1,172,020	1,192,918	1.018	2009	768,933	768,933	1.000
2019	1,144,199	1,151,141	1.006	2010	842,867	842,867	1.000
2020	1,104,614	1,126,288	1.020	2011	913,894	913,893	1.000
2 yr Average			1.013	2 yr Average			1.000
5 yr Average			1.015	5 yr Average			1.000
	36	48			144	156	
2015	1,088,524	1,088,017	1.000	2006	998,597	998,594	1.000
2016	1,132,501	1,131,655	0.999	2007	981,963	981,963	1.000
2017	1,204,893	1,205,165	1.000	2008	806,642	806,640	1.000
2018	1,192,918	1,192,343	1.000	2009	768,933	768,933	1.000
2019	1,151,141	1,150,127	0.999	2010	842,867	842,867	1.000
2 yr Average			0.999	2 yr Average			1.000
5 yr Average			1.000	5 yr Average			1.000
	48	60			156	168	
2014	1,027,787	1,027,443	1.000	2005	937,360	937,358	1.000
2015	1,088,017	1,087,541	1.000	2006	998,594	998,593	1.000
2016	1,131,655	1,131,259	1.000	2007	981,963	981,963	1.000
2017	1,205,165	1,204,338	0.999	2008	806,640	806,640	1.000
2018	1,192,343	1,192,136	1.000	2009	768,933	768,928	1.000
2 yr Average			1.000	2 yr Average			1.000
5 yr Average			1.000	5 yr Average			1.000
	60	72			168	180	
2013	975,743	975,683	1.000	2004	900,201	900,200	1.000
2014	1,027,443	1,027,373	1.000	2005	937,358	937,358	1.000
2015	1,087,541	1,087,327	1.000	2006	998,593	998,594	1.000
2016	1,131,259	1,131,066	1.000	2007	981,963	981,963	1.000
2017	1,204,338	1,204,355	1.000	2008	806,640	806,629	1.000
2 yr Average			1.000	2 yr Average			1.000
5 yr Average			1.000	5 yr Average			1.000
	72	84			180	192	
2012	928,309	928,322	1.000	2003	897,175	897,175	1.000
2013	975,683	975,643	1.000	2004	900,200	900,200	1.000
2014	1,027,373	1,027,256	1.000	2005	937,358	937,358	1.000
2015	1,087,327	1,087,276	1.000	2006	998,594	998,594	1.000
2016	1,131,066	1,131,283	1.000	2007	981,963	981,962	1.000
2 yr Average			1.000	2 yr Average			1.000
5 yr Average			1.000	5 yr Average			1.000
	84	96			192	204	
2011	913,907	913,918	1.000	2002	838,885	838,885	1.000
2012	928,322	928,312	1.000	2003	897,175	897,175	1.000
2013	975,643	975,568	1.000	2004	900,200	900,200	1.000
2014	1,027,256	1,027,242	1.000	2005	937,358	937,358	1.000
2015	1,087,276	1,087,591	1.000	2006	998,594	998,594	1.000
2 yr Average			1.000	2 yr Average			1.000
5 yr Average			1.000	5 yr Average			1.000
	96	108			204	216	
2010	842,668	842,687	1.000	2001	723,086	723,086	1.000
2011	913,918	913,899	1.000	2002	838,885	838,885	1.000
2012	928,312	928,352	1.000	2003	897,175	897,175	1.000
2013	975,568	975,580	1.000	2004	900,200	900,200	1.000
2014	1,027,242	1,027,347	1.000	2005	937,358	937,358	1.000
2 yr Average			1.000	2 yr Average			1.000
5 yr Average			1.000	5 yr Average			1.000
	108	120			216	228	
2009	768,910	768,934	1.000	2000	664,304	664,304	1.000
2010	842,687	842,870	1.000	2001	723,086	723,086	1.000
2011	913,899	913,900	1.000	2002	838,885	838,885	1.000
2012	928,352	928,324	1.000	2003	897,175	897,175	1.000
2013	975,580	975,673	1.000	2004	900,200	900,200	1.000
2 yr Average			1.000	2 yr Average			1.000
5 yr Average			1.000	5 yr Average			1.000
	120	132			228	240	
2008	806,636	806,643	1.000	1999	679,445	679,445	1.000
2009	768,934	768,933	1.000	2000	664,304	664,304	1.000
2010	842,870	842,867	1.000	2001	723,086	723,086	1.000
2011	913,900	913,894	1.000	2002	838,885	838,885	1.000
2012	928,324	928,314	1.000	2003	897,175	897,175	1.000
2 yr Average			1.000	2 yr Average			1.000
5 yr Average			1.000	5 yr Average			1.000
					240	252	
				1998	707,400	707,400	1.000
				1999	679,445	679,445	1.000
				2000	664,304	664,305	1.000
				2001	723,086	723,086	1.000
				2002	838,885	838,885	1.000
				2 yr Average			1.000
				5 yr Average			1.000

Notes:  
Premiums from Aggregate Financial Data.

Adjustment for Experience and Merit Rating, ARAP and Construction Credit Off-Balance

Rate Level Effective Date (1)	Experience Mod for Non-Merit Rated Risks		Merit Rating Impact		Average Experience Mod and Merit Rating Factor (6)	ARAP Charge in Rates (7)	Construction Credit in Construction Rates (8)	Policy Year Written Weights		Calendar Year Earned Weights		
	Anticipated in Rates (2)	Percentage of Premium (3)	Anticipated in Rates (4)	Percentage of Premium (5)				2020 (9)	2021 (10)	2020 (11)	2021 (12)	2022 (13)
7/1/2020	1.000	0.870	-0.022	0.130	0.997	0.053	-0.033	44.7%	100.0%	12.8%	89.1%	87.3%
7/1/2022	1.000	0.870	-0.022	0.130	0.997	0.054	-0.037					12.7%
7/1/2023	1.000	0.873	-0.022	0.127	0.997	0.055	-0.037					

	Policy Year		Calendar Year Earned		
	2020	2021	2020	2021	2022
(14) Weighted Average Experience and Merit Rating factor anticipated in rates	0.997	0.997	0.997	0.997	0.997
(15) Weighted ARAP Charge anticipated in rates	0.052	0.053	0.051	0.053	0.053
(16) Percentage of Premium for CCPAP Eligible Classes	0.386	0.382	0.380	0.384	0.384
(17) Weighted Average Construction Credit anticipated in rates	-0.013	-0.013	-0.013	-0.013	-0.013
(18) Combined Weighted Average impact anticipated in rates = (14) x [ 1.0 + (15) ] x [ 1.0 + (17) ]	1.035	1.037	1.035	1.036	1.037
(19) Manual Premium	1,162,933,140	1,210,325,323	1,171,391,346	1,186,629,232	
(20) Standard Earned Premium at DSR Level, excluding Expense Constants	1,114,113,620	1,162,533,901	1,120,002,312	1,138,323,761	
(21) ARAP Premium	51,324,387	51,953,593	51,525,204	51,638,990	
(22) Adjustment Factor to Adjust from Company Level to DSR Level Premium	1.055	1.047	1.059	1.047	
(23) Standard Earned Premium plus Adjusted ARAP = (20) + [ (21) x (22) ]	1,168,238,801	1,216,947,000	1,174,566,243	1,192,374,515	
(24) Combined Actual impact = (23) / (19)	1.005	1.005	1.003	1.005	1.005
(25) Adjustment for Experience and Merit Rating, ARAP, and Construction Credit Off-balance = (18) / (24)	<b>1.031</b>	<b>1.031</b>	<b>1.032</b>	<b>1.031</b>	<b>1.032</b>

Notes:  
 (3) = 1.0 - (5)  
 (2), (4), (5), (7), (8): Previous filings.  
 (6) = [ (2) x (3) ] + [ 1.0 + (4) ] x (5)  
 (9),(10): Section III-D, Exhibit 2.  
 (11),(12): Section III-D, Exhibit 3.  
 (13): Section III-D, Exhibit 4.  
 (14) = Sum [ (6) x (9) through (13) ]  
 (15) = Sum [ (7) x (9) through (13) ]  
 (17) = Sum [ (8) x (9) through (13) ] x (16)  
 (16), (19), (20), (21): Unit Statistical Data, Excluding Large Deductible Policies. CY 2022 uses CY 2021 values.  
 (22): Section III-B, Exhibit 2.

III 000010

Policy Year Aggregate Financial Data  
 Calculation of Standard Premium plus ARAP Premium  
 Industrywide

	Policy Year valued as of 12/31/2022		Calendar Years		
	2020	2021	2020	2021	2022
(1) Aggregate Financial: Standard Earned Premium at DSR Level	1,149,944,931	1,173,987,270	1,157,016,335	1,131,217,786	1,231,863,860
(2) Aggregate Financial: Standard Earned Premium at Company Level	1,090,439,185	1,120,922,322	1,092,580,780	1,080,742,428	1,170,196,096
(3) Aggregate Financial: ARAP Premium	51,711,870	50,662,788	50,778,184	50,100,440	49,901,865
(4) Adjustment Factor to Adjust from Company Level to DSR Level Premium = (1) / (2)	1.055	1.047	1.059	1.047	1.053
(5) Adjusted ARAP Premium = (3) x (4)	54,533,809	53,061,186	53,772,855	52,440,348	52,531,626
(6) Standard Earned Premium plus adjusted ARAP Premium = (1) + (5)	1,204,478,740	1,227,048,456	1,210,789,190	1,183,658,134	1,284,395,486

Notes:  
 (1),(2),(3): Aggregate Financial Data.

III 000011

Factor to Remove the Impact of Loading for Recoupment of Insolvency Fund Assessments

Rate Level Effective Date (1)	Loading for Recoupment of Insolvency Fund Assessments (2)	Policy Year Weights		Calendar Year Earned Weights		
		2020 (3)	2021 (4)	2020 (5)	2021 (6)	2022 (7)
7/1/2018	0.26%	55.3%		87.2%	10.9%	
7/1/2020	-0.54%	44.7%	100.0%	12.8%	89.1%	87.3%
7/1/2022	0.56%					12.7%
7/1/2023						

Policy Year		Calendar Year Earned		
2020	2021	2020	2021	2022

(8) Weighted Average Loading for Recoupment of Insolvency Fund Assessment in the Rates = Sum [ (2) x (3) through (7) ]	-0.0010	-0.0054	0.0016	-0.0045	-0.0040
(9) Adjustment Factor to Remove the Impact of Loading for Recoupment of Insolvency Fund Assessments = [ 1.0 - (8) ]	<b>1.001</b>	<b>1.005</b>	<b>0.998</b>	<b>1.005</b>	<b>1.004</b>

Notes:

- (2): Previous filings.
- (3),(4): Section III-D, Exhibit 2.
- (5),(6): Section III-D, Exhibit 3.
- (7): Section III-D, Exhibit 4.

# III 000013

Section III - Premiums  
 Subsection D - Rate On-Level Factors  
 7/1/2024

Section III - D  
 Exhibit 1

## Rate On-Level Factors

Rate Level Effective Date (1)	Rate Change (2)	Cumulative Rate Level Change (3)	Factor to Current Rate Level (4)	Policy Year Weights	
				2020 (5)	2021 (6)
7/1/2018		1.000	0.808	55.3%	
7/1/2020	0.932	0.932	0.867	44.7%	100.0%
7/1/2022	0.965	0.900	0.898		
7/1/2023	0.898	0.808	1.000		

(7) Rate On-Level Factor  
 = Sum [ (4) x (5) through (6) ]

Policy Year	
2020	2021
0.834	0.867

**Notes:**

(2) Previous filings.

(3):  $(3)_t = (2)_t \times (3)_{t-1}$

(4):  $(3)_{\text{latest rate level effective date}} / (3)$ .

(5),(6): Exhibit 2.

# III 000014

Section III - Premiums  
 Subsection D - Premium On-Level Factors  
 7/1/2024

Section III - D  
 Exhibit 2

Policy Year Weights for On-Leveling Earned Premium

Policy Year (1)	Policy Month (2)	Standard Earned Premium plus ARAP at Rate Level Effective			Earned Premiums (6)
		7/1/2018 (3)	7/1/2020 (4)	7/1/2022 (5)	
2020	1	196,441,535			196,441,535
2020	2	73,854,396			73,854,396
2020	3	83,727,169			83,727,169
2020	4	115,844,082			115,844,082
2020	5	87,234,686			87,234,686
2020	6	114,209,538			114,209,538
2020	7		128,631,343		128,631,343
2020	8		67,482,417		67,482,417
2020	9		89,632,250		89,632,250
2020	10		94,313,462		94,313,462
2020	11		68,275,004		68,275,004
2020	12		93,619,453		93,619,453
2020	Total	671,311,406	541,953,929		1,213,265,334

2021	1		194,438,240		194,438,240
2021	2		82,177,025		82,177,025
2021	3		93,339,014		93,339,014
2021	4		123,658,468		123,658,468
2021	5		89,785,822		89,785,822
2021	6		110,015,355		110,015,355
2021	7		132,860,956		132,860,956
2021	8		75,900,776		75,900,776
2021	9		89,498,978		89,498,978
2021	10		99,298,287		99,298,287
2021	11		76,261,788		76,261,788
2021	12		96,765,882		96,765,882
2021	Total		1,264,000,591		1,264,000,591

2022	1		203,983,961		203,983,961
2022	2		86,219,784		86,219,784
2022	3		97,921,430		97,921,430
2022	4		129,729,345		129,729,345
2022	5		94,193,804		94,193,804
2022	6		115,416,332		115,416,332
2022	7			134,560,805	134,560,805
2022	8			76,871,899	76,871,899
2022	9			90,644,085	90,644,085
2022	10			100,568,772	100,568,772
2022	11			77,237,447	77,237,447
2022	12			98,003,879	98,003,879
2022	Total		727,464,656	577,886,886	1,305,351,541

Rate Level Effective Date (7)	Policy Year Weights		
	2020 (8)	2021 (9)	2022 (10)
7/1/2018	55.3%		
7/1/2020	44.7%	100.0%	55.7%
7/1/2022			44.3%

**Notes:**

(3), (4), (5): Unit Statistical Data. PY 2022 based on PY 2021 data subject to adjustments for rate level, exposure growth, and wage changes.

(6) = (3) + (4) + (5)

(8), (9), (10) = [ PY Total of (3), (4) or (5) ] / [ PY Total of (6) ]

# III 000015

Section III - Premiums  
 Subsection D - Premium On-Level Factors  
 7/1/2024

Section III - D  
 Exhibit 3

Calendar Year ("CY") Weights for On-Leveling Earned Premium

Policy Year (1)	Policy Month (2)	CY in which Premium is Earned (3)	Standard Earned Premium plus ARAP at Rate Level Effective			Earned Premiums (7)
			7/1/2018 (4)	7/1/2020 (5)	7/1/2022 (6)	
2018	12	2020				0
2019	1	2020	2,203,671			2,203,671
2019	2	2020	7,806,682			7,806,682
2019	3	2020	17,021,161			17,021,161
2019	4	2020	28,932,364			28,932,364
2019	5	2020	29,898,612			29,898,612
2019	6	2020	46,861,777			46,861,777
2019	7	2020	67,603,068			67,603,068
2019	8	2020	43,052,529			43,052,529
2019	9	2020	60,539,203			60,539,203
2019	10	2020	69,115,643			69,115,643
2019	11	2020	60,326,548			60,326,548
2019	12	2020	84,776,041			84,776,041
2020	1	2020	194,339,985			194,339,985
2020	2	2020	66,269,259			66,269,259
2020	3	2020	68,203,793			68,203,793
2020	4	2020	85,629,103			85,629,103
2020	5	2020	57,159,877			57,159,877
2020	6	2020	64,631,662			64,631,662
2020	7	2020		64,182,749		64,182,749
2020	8	2020		26,951,605		26,951,605
2020	9	2020		27,378,644		27,378,644
2020	10	2020		22,069,566		22,069,566
2020	11	2020		10,013,643		10,013,643
2020	12	2020		3,691,291		3,691,291
Total		2020	1,054,370,979	154,287,499		1,208,658,477

2019	12	2021	17			17
2020	1	2021	2,143,737			2,143,737
2020	2	2021	7,591,560			7,591,560
2020	3	2021	15,529,594			15,529,594
2020	4	2021	30,221,215			30,221,215
2020	5	2021	30,075,252			30,075,252
2020	6	2021	49,573,315			49,573,315
2020	7	2021		64,436,071		64,436,071
2020	8	2021		40,523,218		40,523,218
2020	9	2021		62,235,750		62,235,750
2020	10	2021		72,223,743		72,223,743
2020	11	2021		58,244,994		58,244,994
2020	12	2021		89,897,218		89,897,218
2021	1	2021		192,310,334		192,310,334
2021	2	2021		73,888,876		73,888,876
2021	3	2021		75,838,912		75,838,912
2021	4	2021		91,436,462		91,436,462
2021	5	2021		58,810,774		58,810,774
2021	6	2021		62,480,403		62,480,403
2021	7	2021		66,244,250		66,244,250
2021	8	2021		30,313,972		30,313,972
2021	9	2021		27,709,861		27,709,861
2021	10	2021		23,325,255		23,325,255
2021	11	2021		11,310,158		11,310,158
2021	12	2021		3,863,766		3,863,766
Total		2021	135,134,690	1,105,094,016		1,240,228,706

Rate Level Effective Date (8)	Calendar Year Earned Weights	
	2020 (9)	2021 (10)
7/1/2018	87.2%	10.9%
7/1/2020	12.8%	89.1%
7/1/2022		

**Notes:**

(4), (5), (6): Unit Statistical Data.

(7) = (4) + (5) + (6)

(9), (10) = [ CY Total of (4), (5) or (6) ] / [ CY Total of (7) ]

# III 000016

Section III - Premiums  
 Subsection D - Premium On-Level Factors  
 7/1/2024

Section III - D  
 Exhibit 4

Calendar Year ("CY") Weights for On-Leveling Earned Premium

Policy Year (1)	Policy Month (2)	CY in which Premium is Earned (3)	Standard Earned Premium plus ARAP at Rate Level Effective			PY Premiums Earned During CY (7)
			7/1/2018 (4)	7/1/2020 (5)	7/1/2022 (6)	
2020	12	2022		3,841		3,841
2021	1	2022		2,121,781		2,121,781
2021	2	2022		8,288,008		8,288,008
2021	3	2022		17,501,647		17,501,647
2021	4	2022		32,226,998		32,226,998
2021	5	2022		30,979,489		30,979,489
2021	6	2022		47,542,658		47,542,658
2021	7	2022		66,632,705		66,632,705
2021	8	2022		45,593,794		45,593,794
2021	9	2022		61,802,544		61,802,544
2021	10	2022		75,989,169		75,989,169
2021	11	2022		64,963,226		64,963,226
2021	12	2022		92,921,120		92,921,120
2022	1	2022		201,816,619		201,816,619
2022	2	2022		77,540,459		77,540,459
2022	3	2022		79,577,986		79,577,986
2022	4	2022		95,950,163		95,950,163
2022	5	2022		61,710,662		61,710,662
2022	6	2022		65,562,046		65,562,046
2022	7	2022			67,111,910	67,111,910
2022	8	2022			30,707,365	30,707,365
2022	9	2022			28,071,244	28,071,244
2022	10	2022			23,629,163	23,629,163
2022	11	2022			11,457,110	11,457,110
2022	12	2022			3,913,991	3,913,991
	Total	2022		1,128,724,917	164,890,783	1,293,615,700

Rate Level Effective Date (8)	Calendar Year Earned Weights
	2022 (9)
7/1/2018	
7/1/2020	87.3%
7/1/2022	12.7%

**Notes:**

(4), (5), (6): Unit Statistical Data. PY 2022 based on PY 2021 data subject to adjustments for rate level, exposure growth, and wage changes.

(7) = (4) + (5) + (6)

(9) = [CY Total of (4), (5) or (6)] / [CY Total of (7)]

# III 000017

Section III - Premiums  
Subsection E - Premium Adjustment Factors  
7/1/2024

Section III - E  
Exhibit 1

## Calculation of Premium Adjustment Factor PY 2021 to Prospective Effective Period 7/1/2024 - 6/30/2025

(1)	Wage Trend from PY 2021 to Prospective Effective Period 7/1/2024 - 6/30/2025	1.151
(2)	Exposure Growth	1.009
(3)	Rate On-Level Factor	0.867
(4)	Overall Indicated Rate Change for Policies Effective 7/1/2024	0.917
(5)	Adjustment Factor to Balance Experience Rating, ARAP, and Construction Credits	1.031
(6)	Impact of Change in Indicated Loading for Recoupment of Insolvency Fund Assessments	1.005
(7)	Adjustment Factor = (1) x (2) x (3) x (4) x (5) x (6)	0.957
(8)	<b>Selected Factor</b>	<b>0.96</b>

### Notes:

(1):	Statewide Average Weekly Wage for PY 2021 (Section V-G, Exhibit 1)	1,771.94
	Statewide Average Weekly Wage for 10/1/2023, based on data period 4/1/22 to 4/1/23 (Section V-G, Exhibit 1)	1,796.72
	Statewide Average Weekly Wage at 7/1/2025 (using wage trend of 4.7%, Section V-A, Exhibit 1)	2,039.69
(2):	Exposure growth from PY 2021 to Prospective Effective Period 7/1/2024 - 6/30/2025 (Section V-H, Exhibit 3)	
(3):	Section III-D, Exhibit 1.	
(4):	Section I-B, Exhibit 1.	
(5):	Exhibit 2.	
(6):	PY 2021 factor to load for Recoupment of Insolvency Fund (Section III-C, Exhibit 1: [ 1.0 + (8) ]).	0.995
	Policy Effective factor to load for Recoupment of Insolvency Fund Assessments (Section IX-K, Exhibit 5, Page 1).	1.000

# III 000018

Section III - Premiums  
Subsection E - Premium Adjustment Factors  
7/1/2024

Section III - E  
Exhibit 2

## Factor to Balance Experience Rating, ARAP, and Construction Credit

### Beginning Period - PY 2021

(1)	Anticipated Impact on Manual Rates of Experience Rating, ARAP, and Construction Credits	1.037
(2)	Actual Impact on Manual Rates of Experience Rating, ARAP, and Construction Credits	1.005
(3)	Ratio of Anticipated to Actual = (1) / (2)	1.031

### Ending Period - Prospective Effective Period 7/1/2024 - 6/30/2025

(4)	Anticipated Impact on Manual Rates of Experience Rating, ARAP, and Construction Credits	1.036
(5)	Actual is Assumed to be equal to the Anticipated, Since the Actual Impact has yet to be Determined	1.036
(6)	Ratio of Anticipated to Actual is Assumed to be 1.000	1.000
(7)	Adjustment Factor to Balance Experience Rating, ARAP, and Construction Credits = (3) / (6)	1.031

### Notes:

- (1), (2): PY 2021, Section III-B, Exhibit 1.  
(4): Prospective Effective Period, Section IX-K, Exhibit 1.

# IV 000001

## **BENEFIT CHANGE ADJUSTMENTS**

In Section IV, we calculate benefit change adjustment factors that are used in Sections I, II, V, IX, X, XI, and XII of the rate filing. We use benefit change adjustment factors to adjust loss experience to the benefit level as of a given period or point in time.

### **Benefit Change Adjustments**

The benefit change adjustments are summarized in Section IV-A, Exhibit 1. We calculate separate adjustments to bring indemnity and medical losses for policy years 2020 and 2021 to the July 1, 2024 benefit level, and additional adjustments to bring losses from the July 1, 2024 benefit level to the projected benefit level for the period the rates will be in effect. These benefit change adjustments are used in Section I of the filing. In the same exhibit, we also present additional benefit level adjustments used in other sections of the filing.

Benefit changes considered in this section are the result of the reevaluations of the Statewide Average Weekly Wage (“SAWW”) made every October 1<sup>st</sup> by the Commonwealth’s Division of Unemployment Assistance. Historically, the SAWW in Massachusetts has increased steadily. However, due primarily to the distortive impact of COVID-19, the SAWW of \$1,694.24, effective 10/1/2021, was 14% higher than the prior year. This large jump in the SAWW was largely due to the disproportionate impact that COVID-associated shutdowns had on job losses in lower-wage service industries such as hospitality, retail and restaurants, as compared to higher-wage professions where employees continued working remotely during mandated shutdowns. As would be expected

# IV 000002

with the return of a more robust economy, the rate of change appears to have normalized or fallen below average since 2021's uniquely rapid increase. The latest SAWW of \$1,796.72, effective 10/1/2023 is only 1.8% higher than the prior year. In an effort to estimate the prospective benefit levels when rates would be in effect under this valuation, the latest value of the SAWW is used to project values of the SAWW. We utilize a SAWW trend factor of 4.7% as shown in Section IV - D, Exhibit 3 and calculated in Section V-A, Exhibit 1.

In Section IV-B, we display in detail how we estimate the effects of the changes in the SAWW announced in 2023, and those project for 2024 and 2025. Section IV-C summarizes the provisions of Chapter 398, showing benefits that are tied to the SAWW. Section IV-D contains backup data used in the evaluations. The model underlying the estimates is described below. Section IV-E includes injury type weights.

## **Section IV-B - Determination of the Effect of Announced SAWW Changes**

### **Introduction**

We use a version of the NCCI's "Automatics Model" to evaluate the effects of changes in the SAWW. The Automatics Model, a traditional approach used in the prior rate filing, looks at benefits paid to average claimants.

### **Description of the Model**

NCCI's "Automatics Model" is used to evaluate benefit changes that depend on changes in the SAWW. Indemnity benefits are generally determined as a percentage of the SAWW, subject to maximum and minimum amounts, and in Massachusetts, SAWW changes are announced every October.

# IV 000003

For each injury type, the indemnity benefits payable to an average claimant are determined before and after each announced SAWW change. The estimated impact of the change in the SAWW is calculated by comparing the “before” and “after” costs.

Section IV-B details the estimation of changes in the costs of benefits arising from changes in the SAWW effective October 1, 2023, and the projected SAWW changes on October 1, 2024 and October 1, 2025. Exhibit 1, pages 1 and 2, estimates the effect on fatal benefits. Exhibit 2 evaluates the effect on permanent total benefits. Exhibit 3 evaluates the effect on permanent partial benefits. Exhibit 4 looks at temporary total benefits.

## **Section IV-B, Exhibit 1 – Benefits for Fatal Claims**

Fatal benefits are the sum of dependent survivor benefits and burial payments, both of which are functions of the SAWW.<sup>1</sup> Expected dependent-survivor payments are valued on page 1. The NCCI provided the WCRIBMA with the distribution of dependents by category - none, widow alone, widow with children, etc. For each category of dependents, the cost is estimated as the product of a contingent annuity value and an average weekly benefit.

The contingent annuity values represent the present value of a stream of payments of \$1 discounted to reflect both the time value of money, and the possibility that a contingent event would cause the payment stream to cease. Such contingent events that would affect dependent survivor benefits include death or remarriage of the dependent survivor. The WCRIBMA estimated annuity values using the model underlying the currently approved

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<sup>1</sup> According to the National Funeral Directors Association, 2021 General Price List Survey, the national median cost of a funeral was \$7,848. If a vault is included, something that is typically required by a cemetery, the median cost is \$9,420. The cost does not take into account cemetery, monument or marker costs or miscellaneous cash-advance charges, such as for flowers or an obituary.

# IV 000004

pension tables in the Massachusetts' Workers' Compensation Statistical Plan, which assume an interest rate of 3.5% and COLA adjustments of 1.8%. The annuities reflect the appropriate U.S. life tables in all cases except for the category of "three orphans" and "widow with child(ren)", where an annuity certain was used to approximate joint survivorship.

Average weekly benefits before and after the SAWW revision are evaluated on page 2. The estimated average weekly benefit depends on the proportions of workers whose wages result in the application of the statutory minimum benefit, a benefit that falls above the statutory minimum but below the statutory maximum, or the application of the statutory maximum benefit. As in the 2023 rate filing, these proportions come from the Massachusetts Wage Table ("Wage Table"). As shown in Section IV-D Exhibit 1, the Wage Table is based on the NCCI 2019 Standard Wage Distribution Table.

## **Section IV-B, Exhibit 2 – Benefits for Permanent Total Cases**

To evaluate the effect of announced SAWW changes on permanent total losses, we consider weekly wage loss benefits and specific injury payments separately. We then weigh those benefits and payments together. Most permanent total payments are associated with weekly wage loss benefits. The statutory weekly wage loss benefit is two thirds of the pre-injury wage, subject to a minimum and maximum. The minimum and maximum are a function of the SAWW. Therefore, changes to the SAWW affect the average benefit paid. The second component we consider is specific injury payments. These benefits vary directly with the SAWW. Specific injury payments are made for the loss of use of body parts and determined as various multiples of the SAWW as listed in Section 36 of M.G.L. Chapter 152.

# IV 000005

## **Section IV-B, Exhibit 3 – Benefits for Permanent Partial Cases**

Permanent partial disability cases typically include a temporary period of total disability, referred to as the “healing period”, followed by a period of partial disability during which the worker has the capacity to earn a wage that is less than the pre-injury wage. Different benefit structures apply during each period. In addition, under Section 36 of M.G.L. Chapter 152, specific injury payments are made for the loss of use of various body parts. In this exhibit, we weigh together the effect of the SAWW on wage loss, specific injury payments, and healing period payments, using weights provided by the NCCI.

## **Section IV-B, Exhibit 4 – Benefits for Temporary Total Cases**

We evaluate the effect on temporary total benefits in Exhibit 4. Temporary total wage loss benefits under Section 34 of M.G.L. Chapter 152 provide an injured worker sixty percent of their pre-injury average weekly wage subject to a cap, the statutory maximum compensation rate, and a floor, the statutory minimum compensation rate. However, if the average weekly wage of the employee is less than the minimum compensation rate, his wage compensation rate is set equal to his average weekly wage.

## **Section IV-C – Provisions of the Law**

Section IV-C summarizes the benefit changes due to the increase in the maximum and minimum weekly benefits. It includes both historical changes and projected changes.

# IV 000006

Section IV – Benefit Change Adjustments  
Subsection A - Summary  
7/1/2024

Section IV - A  
Page 6

## **Section IV-D – Massachusetts Data**

Historical data used in the estimation of benefit change adjustments are shown in Section IV-D, along with the derivation of projected SAWW values. The WCRIBMA utilizes both historical DCI data and NCCI data.

## **Section IV-E – Injury Type Weights**

Unit Statistical Data are used in Section IV-E to calculate the relative weights for indemnity and medical benefits for the various injury types. Injury type weights are estimated at two valuation points, ultimate and at fifth-report.

# IV 000007

Section IV - Benefit Change Adjustments  
 Subsection A - Summary  
 7/1/2024

Section IV - A  
 Exhibit 1

## Benefit Level Adjustment Factors

### All Injury Types

Time Period		Indemnity					Medical	Total
Beginning Period	Ending Period	Death	Permanent Total	Permanent Partial	Temporary Total	All Injury Types	All Injury Types	All Injury Types
1/1/2024	Prosp. Eff. Period					1.017	1.000	
PY 2020	1/1/2024					1.045	1.000	
PY 2021	1/1/2024					1.017	1.000	
PY 2007	Prosp. Eff. Period	1.112	1.131	1.220	1.083	1.171	1.032	
PY 2008	Prosp. Eff. Period	1.106	1.122	1.203	1.077	1.158	1.024	
PY 2009	Prosp. Eff. Period	1.104	1.119	1.197	1.076	1.153	1.002	
PY 2010	Prosp. Eff. Period	1.104	1.119	1.198	1.076	1.154	1.000	
PY 2011	Prosp. Eff. Period	1.100	1.114	1.188	1.074	1.147	1.000	
PY 2012	Prosp. Eff. Period	1.095	1.106	1.175	1.070	1.137	1.000	
PY 2013	Prosp. Eff. Period	1.093	1.103	1.169	1.068	1.132	1.000	
PY 2014	Prosp. Eff. Period	1.087	1.099	1.161	1.066	1.126	1.000	
PY 2015	Prosp. Eff. Period	1.075	1.093	1.149	1.062	1.117	1.000	
PY 2016	Prosp. Eff. Period	1.069	1.085	1.138	1.058	1.108	1.000	
PY 2017	Prosp. Eff. Period	1.063	1.077	1.125	1.053	1.097	1.000	
PY 2018	Prosp. Eff. Period	1.056	1.069	1.111	1.047	1.086	1.000	
PY 2019	Prosp. Eff. Period	1.048	1.060	1.098	1.041	1.076	1.000	
PY 2020	Prosp. Eff. Period	1.040	1.049	1.082	1.034	1.063	1.000	
PY 2021	Prosp. Eff. Period	1.023	1.027	1.045	1.019	1.034	1.000	
PY 2019	CPY 2020_07	1.016	1.020	1.031	1.014		1.000	
PY 2020	CPY 2021_07	1.025	1.032	1.053	1.022		1.000	
PY 2021	CPY 2022_07	1.014	1.017	1.028	1.012		1.000	
CPY 2020_07	Prosp. Eff. Period							1.034
CPY 2021_07	Prosp. Eff. Period							1.014
CPY 2022_07	Prosp. Eff. Period							1.009
CPY 2008_09	Prosp. Eff. Period							1.102
Prior Eff. Period	Prosp. Eff. Period					0.996	1.000	0.998

**Notes:**

1/1/2024 refers to a point in time. All other time periods refer to Policy Years.

Example: PY 2013 to Prosp. Eff. Period for Permanent Partial =  $1.169 = 1.231 / 1.054$ ,

where 1.231 is the Index Factor for Prosp. Eff. Period and 1.054 is the Index Factor for PY 2013 for Indemnity Permanent Partial, from Exhibit 2.

Prior Eff. Period uses benefit level projections from prior filing.

Benefit Level Changes and Weights

Injury Type: Total Indemnity																						Weighted Average Benefit Level	
Date of Change	10/1/2006	10/1/2007	10/1/2008	4/1/2009	10/1/2009	10/1/2010	10/1/2011	10/1/2012	10/1/2013	10/1/2014	3/24/2015	10/1/2015	10/1/2016	10/1/2017	10/1/2018	10/1/2019	10/1/2020	10/1/2021	10/1/2022	10/1/2023	10/1/2024		10/1/2025
Benefit Level Change	1.000	1.011	1.012	1.000	1.000	0.998	1.011	1.008	1.002	1.007	1.000	1.008	1.008	1.010	1.010	1.010	1.012	1.037	1.012	1.005	1.013	1.013	
Level Change	1.000	1.011	1.023	1.023	1.023	1.021	1.032	1.041	1.043	1.050	1.050	1.059	1.068	1.079	1.089	1.100	1.113	1.154	1.168	1.160	1.183	1.175	
Time Period																							
PY 2007	0.343	0.630	0.027																			1.008	
PY 2008		0.350	0.417	0.209	0.025																	1.019	
PY 2009			0.055	0.290	0.629	0.026																1.023	
PY 2010					0.332	0.641	0.027															1.022	
PY 2011						0.343	0.632															1.029	
PY 2012							0.341	0.025														1.038	
PY 2013								0.340	0.025													1.042	
PY 2014									0.340	0.408	0.228	0.025										1.048	
PY 2015										0.044	0.295	0.636	0.024									1.056	
PY 2016												0.340	0.636	0.025								1.065	
PY 2017													0.341	0.635	0.025							1.075	
PY 2018														0.335	0.640	0.025						1.086	
PY 2019															0.347	0.630	0.023					1.096	
PY 2020																0.334	0.641	0.025				1.109	
CPY 2020_07																	0.036	0.688	0.277	0.025		1.140	
CPY 2021_07																		0.051	0.693	0.256		1.124	
CPY 2022_07																			0.051	0.692	0.256	1.165	
CPY 2008_09																				0.051	0.693	0.256	
Prior Eff. Period			0.004	0.181	0.426	0.390																1.023	
Prosp. Eff. Period																					0.051	0.693	0.256
1/1/2024																					1.000	1.180	
																						1.160	

Indemnity All Injury Types - Average Benefit Level for Current Policy Period, Estimated at 7/1/2023 (using benefit level projections from prior filing).

Date of Change	10/1/2006	10/1/2007	10/1/2008	4/1/2009	10/1/2009	10/1/2010	10/1/2011	10/1/2012	10/1/2013	10/1/2014	3/24/2015	10/1/2015	10/1/2016	10/1/2017	10/1/2018	10/1/2019	10/1/2020	10/1/2021	10/1/2022	10/1/2023	10/1/2024	Weighted Average Benefit Level
Benefit Level Change	1.000	1.011	1.012	1.000	1.000	0.998	1.011	1.008	1.002	1.007	1.000	1.008	1.008	1.010	1.010	1.010	1.012	1.037	1.012	1.012	1.012	
Cumulative Level Change	1.000	1.011	1.023	1.023	1.023	1.021	1.032	1.041	1.043	1.050	1.050	1.059	1.068	1.079	1.089	1.100	1.113	1.154	1.168	1.182	1.196	1.185

Medical All Injury Types - Average Benefit Level for Current Policy Period, Estimated at 7/1/2023 (using benefit level projections from prior filing).

Date of Change	10/1/2006	10/1/2007	10/1/2008	4/1/2009	10/1/2009	10/1/2010	10/1/2011	10/1/2012	10/1/2013	10/1/2014	3/24/2015	10/1/2015	10/1/2016	10/1/2017	10/1/2018	10/1/2019	10/1/2020	10/1/2021	10/1/2022	10/1/2023	10/1/2024	Weighted Average Benefit Level
Benefit Level Change	1.000	1.000	1.000	1.032	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Cumulative Level Change	1.000	1.000	1.000	1.032	1.032	1.032	1.032	1.032	1.032	1.032	1.032	1.032	1.032	1.032	1.032	1.032	1.032	1.032	1.032	1.032	1.032	1.032

All Injury Types - Average Benefit Level for Current Policy Period, Estimated at 7/1/2023 (using benefit level projections from prior filing).

Date of Change	10/1/2006	10/1/2007	10/1/2008	4/1/2009	10/1/2009	10/1/2010	10/1/2011	10/1/2012	10/1/2013	10/1/2014	3/24/2015	10/1/2015	10/1/2016	10/1/2017	10/1/2018	10/1/2019	10/1/2020	10/1/2021	10/1/2022	10/1/2023	10/1/2024	Weighted Average Benefit Level
Benefit Level Change	1.000	1.007	1.007	1.013	1.000	0.999	1.007	1.005	1.001	1.005	1.000	1.005	1.005	1.007	1.006	1.006	1.008	1.025	1.008	1.008	1.008	
Cumulative Level Change	1.000	1.007	1.014	1.027	1.027	1.026	1.033	1.039	1.040	1.044	1.045	1.050	1.056	1.063	1.069	1.076	1.085	1.112	1.121	1.130	1.139	1.132

Index Factors for All Injury Types

Time Period	Death	Indemnity			All Injury Types	Medical All Injury Types	Total All Injury Types
		Permanent Total	Permanent Partial	Temporary Total			
PY 2007	1.004	1.006	1.010	1.003	1.008	1.000	1.005
PY 2008	1.010	1.014	1.024	1.008	1.019	1.007	1.015
PY 2009	1.012	1.017	1.029	1.010	1.023	1.030	1.026
PY 2010	1.012	1.017	1.028	1.009	1.022	1.032	1.027
PY 2011	1.015	1.022	1.037	1.012	1.029	1.032	1.031
PY 2012	1.020	1.028	1.048	1.015	1.038	1.032	1.037
PY 2013	1.022	1.031	1.054	1.017	1.042	1.032	1.039
PY 2014	1.027	1.035	1.061	1.019	1.048	1.032	1.043
PY 2015	1.039	1.041	1.071	1.023	1.056	1.032	1.048
PY 2016	1.045	1.048	1.082	1.027	1.065	1.032	1.054
PY 2017	1.051	1.056	1.095	1.032	1.075	1.032	1.061
PY 2018	1.058	1.065	1.109	1.038	1.086	1.032	1.067
PY 2019	1.065	1.073	1.122	1.043	1.096	1.032	1.074
PY 2020	1.074	1.084	1.138	1.050	1.109	1.032	1.083
PY 2021	1.082	1.107	1.179	1.066	1.140	1.032	1.103
CPY 2020_07	1.082	1.095	1.157	1.058	1.124	1.032	1.092
CPY 2021_07	1.101	1.119	1.199	1.073	1.155	1.032	1.113
CPY 2022_07	1.107	1.126	1.211	1.078	1.165	1.032	1.119
CPY 2008_09	1.012	1.017	1.029	1.010	1.023	1.026	1.025
Prior Eff. Period	1.108	1.127	1.213	1.079	1.166	1.032	1.120
Prosp. Eff. Period	1.117	1.138	1.231	1.086	1.180	1.032	1.129
1/1/2024	1.104	1.122	1.205	1.075	1.160	1.032	1.116

Notes:  
 1/1/2024 refers to a point in time. All other time periods refer to Policy Years.  
 Index Factors for All Injury Types Table is a Excel Data Table that repeats the calculation of the Weighted Average Benefit Level for all Injury Types.

# IV 000009

Section IV - Benefit Change Adjustments  
 Subsection A - Summary  
 7/1/2024

Section IV - A  
 Exhibit 3

## Historical and Estimated Benefit Level Changes

Effective Date (1)	Indemnity					Medical	Total
	Death (2)	Permanent Total (3)	Permanent Partial (4)	Temporary Total (5)	All Injury Types (6)	All Injury Types (7)	All Injury Types (8)
10/1/2002	-0.1%	-0.1%	-0.3%	-0.1%	-0.2%	0.0%	-0.1%
12/1/2002	0.0%	0.0%	0.0%	0.0%	0.0%	5.2%	2.0%
10/1/2003	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
9/1/2004	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	0.5%
10/1/2004	0.5%	0.7%	1.2%	0.4%	0.9%	0.0%	0.6%
10/1/2005	0.5%	0.8%	1.5%	0.4%	1.1%	0.0%	0.7%
10/1/2006	0.5%	0.7%	1.5%	0.4%	1.1%	0.0%	0.7%
10/1/2007	0.6%	0.9%	1.4%	0.5%	1.1%	0.0%	0.7%
10/1/2008	0.6%	0.8%	1.5%	0.5%	1.2%	0.0%	0.7%
4/1/2009	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	1.3%
10/1/2009	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10/1/2010	-0.1%	-0.1%	-0.2%	-0.1%	-0.2%	0.0%	-0.1%
10/1/2011	0.6%	0.8%	1.4%	0.4%	1.1%	0.0%	0.7%
10/1/2012	0.4%	0.6%	1.0%	0.3%	0.8%	0.0%	0.5%
10/1/2013	0.1%	0.1%	0.2%	0.1%	0.2%	0.0%	0.1%
10/1/2014	0.4%	0.5%	0.9%	0.3%	0.7%	0.0%	0.5%
3/24/2015	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10/1/2015	0.5%	0.6%	1.1%	0.3%	0.8%	0.0%	0.5%
10/1/2016	0.5%	0.7%	1.0%	0.4%	0.8%	0.0%	0.5%
10/1/2017	0.7%	0.8%	1.3%	0.6%	1.0%	0.0%	0.7%
10/1/2018	0.7%	0.8%	1.2%	0.5%	1.0%	0.0%	0.6%
10/1/2019	0.7%	0.8%	1.2%	0.5%	1.0%	0.0%	0.6%
10/1/2020	0.8%	1.0%	1.4%	0.7%	1.2%	0.0%	0.8%
10/1/2021	2.2%	2.8%	4.8%	1.9%	3.7%	0.0%	2.5%
10/1/2022	0.8%	1.0%	1.5%	0.7%	1.2%	0.0%	0.8%
10/1/2023	0.3%	0.4%	0.6%	0.3%	0.5%	0.0%	0.3%
10/1/2024	0.9%	1.0%	1.7%	0.8%	1.3%	0.0%	0.9%
10/1/2025	0.9%	0.9%	1.7%	0.8%	1.3%	0.0%	0.9%

**Notes:**

Estimated changes for 10/1/2024 and 10/1/2025 use projected SAWW values for 10/1/2024 and 10/1/2025.

Effects of SAWW Change

Person(s) Receiving Benefits (1)	Number of Cases (2)	Average Number of Dependents (3)	Average Arithmetic Age (4)	Annuity Symbol (5)	Annuity Value (6)	Effects of SAWW Change of 10/1/2023		Effects of SAWW Change of 10/1/2024		Effects of SAWW Change of 10/1/2025	
						10/1/2022 Cost (7)	10/1/2023 Cost (8)	10/1/2023 Cost (9)	10/1/2024 Cost (10)	10/1/2024 Cost (11)	10/1/2025 Cost (12)
None	204	0	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Spouse, No Children	212	1	40	$a_{40:\overline{Life}}$	24.81	271,828,409	272,718,837	283,054,652	285,586,646	296,410,327	299,061,834
Spouse with Children	407	1	38	$a_{38:\overline{Life}}$	24.82	522,072,535	523,782,687	543,633,612	548,496,549	569,284,466	574,376,941
Child(ren)		1.9	10	$a_{\overline{6}}$	7.38						
Orphan, No Sibling	21	1	13	$a_{13:\overline{5}}$	4.70	5,104,032	5,120,752	5,314,824	5,362,366	5,565,599	5,615,385
Orphan with Sibling(s)	15	2.5	12	$a_{\overline{6}}$	5.61	4,351,154	4,365,407	4,530,853	4,571,382	4,744,637	4,787,079
Other Dependents (No Spouse)	141	1.7	58	$a_{58:\overline{Life}}$	19.02	18,500,615	18,500,615	18,499,274	18,499,274	18,499,650	18,499,650
(15) Total Survivor Benefits	1,000					821,856,745	824,488,298	855,033,215	862,516,217	894,504,679	902,340,890
(16) Cost of Burial (1,000 cases)						14,122,720	14,373,760	14,373,760	15,052,223	15,052,223	15,762,710
(17) Total Monetary Cost [ = (15) + (16) ]						835,979,465	838,862,058	869,406,975	877,568,440	909,556,902	918,103,600
(18) Fatal Benefit Change Factors							1.003		1.009		1.009

Notes:

(2), (3): Section IV-D, Exhibit 2.

(4): Section IV-D, Exhibit 2, Column (4) rounded to nearest whole number.

(5): For two or more dependents, benefits are last-survivor contingent. An annuity certain is used to approximate the joint-survivor annuity for "Child(ren)" and "Orphan with Sibling(s)".

(6): Life annuity values from *Massachusetts Workers' Compensation Statistical Plan*, Part I, Section IX (Effective 7/1/2023).

Annuity certain values assume the same discount rate and elevation rate used in the derivation of the Pension Tables contained in the *Massachusetts Workers' Compensation Statistical Plan*.

(7), (9), (11), (13) =  $52 \times (2) \times (6) \times [ \text{Page 2, (14)} ]$  for Spouses and Orphans and =  $52 \times (2) \times (3) \times (6) \times [ \text{Page 2, (30)} ]$  for All Others Dependents

(8), (10), (12), (14) =  $52 \times (2) \times (6) \times [ \text{Page 2, (15)} ]$  for Spouses and Orphans and =  $52 \times (2) \times (3) \times (6) \times [ \text{Page 2, (31)} ]$  for All Others Dependents

(16) = 8 x SAWW

(18): Ratio of (17) for later date to (17) for earlier date.

IV 000010

# IV 000011

## Determination of the Average Weekly Survivor Benefit for Fatalities

### Fatal: Spouse and Orphans - Effective 10/1/2022

(1)	Nominal Rate of Compensation Based on Gross Wages ("Comp. Rate")	66.67%
(2)	Min Weekly Compensation	110.00
(3)	Max Weekly Compensation	1,765.34
(4)	Average Injured Worker Weekly Wage ("AIWWW") for 12 months starting 10/1/2023	1,592.75

Wage Intervals (5)	Benefit (6)	Wage Distribution Entry Ratios = (5) / (4)		Percentage in Interval		Average Wage in Interval = (9) / (8) x (4) (10)	Average Benefit in Interval (11)	
		(7)	(8)	(8)	(9)			
0.00	165.00	Statutory Minimum	0.00	0.10	0.35%	0.02%	101.59	110.00
165.00	2,648.01	Actual Wage x Comp. Rate	0.10	1.65	88.63%	75.22%	1,351.79	901.20
2,648.01	over	Statutory Maximum	1.65	over	11.03%	24.76%	3,576.10	1,765.34

(12) Average Weekly Benefit **993.75**

	Effects of SAWW Change		
	10/1/2023	10/1/2024	10/1/2025
(13) Starting date of 12 month period for AIWWW			
(14) Benefits Effective	10/1/2022	10/1/2023	10/1/2024
Average Weekly Benefits	<b>993.75</b>	1034.79	1083.61
(15) Benefits Effective	10/1/2023	10/1/2024	10/1/2025
Average Weekly Benefits	997.00	1044.04	1093.31
(16) Fatal: Spouse and Orphans Benefit Change Factors	1.003	1.009	1.009

### Fatal: All Others - Effective 10/1/2022

(17)	Nominal Rate of Compensation Based on Gross Wages ("Comp. Rate")	66.67%
(18)	Min Weekly Compensation	0.00
(19)	Max Weekly Compensation	80.00
(20)	Average Injured Worker Weekly Wage ("AIWWW") for 12 months starting 10/1/2023	1,592.75

Wage Intervals (21)	Benefit (22)	Wage Distribution Entry Ratios = (21) / (20)		Percentage in Interval		Average Wage in Interval = (25) / (24) x (20) (26)	Average Benefit in Interval (27)	
		(23)	(24)	(24)	(25)			
0.00	0.00	Statutory Minimum	0.00	0.00	0.00%	0.00%	0.00	0.00
0.00	120.00	Actual Wage x Comp. Rate	0.00	0.10	0.35%	0.02%	101.59	67.72
120.00	over	Statutory Maximum	0.10	over	99.65%	99.98%	1,597.93	80.00

(28) Average Weekly Benefit **79.96**

	Effects of SAWW Change		
	10/1/2023	10/1/2024	10/1/2025
(29) Starting date of 12 month period for AIWWW			
(30) Benefits Effective	10/1/2022	10/1/2023	10/1/2024
Average Weekly Benefits	<b>79.96</b>	79.95	79.95
(31) Benefits Effective	10/1/2023	10/1/2024	10/1/2025
Average Weekly Benefits	79.96	79.95	79.95
(32) Fatal: All Others Benefit Change Factors	1.000	1.000	1.000

**Notes:**

- (1)-(3), (17)-(19): Section IV-C, Exhibit 1.
- (4), (20): Section IV-D, Exhibit 3.
- (5), (21): Wage Intervals follow Massachusetts General Law.
- (7), (23): Rounded to nearest 0.05.
- (8), (24): Section IV-D, Exhibit 1, column (2).
- (9), (25): Section IV-D, Exhibit 1, column (3).
- (11) = (1) x (10), subject to a statutory maximum and statutory minimum
- (12) = Sum [ (8) x (11) ]
- (14), (15): Average Weekly Benefits results from an Excel Data Table that repeats the calculation of (12) for different dates.
- (16) = (15) / (14)
- (27) = (17) x (26), subject to a statutory maximum and statutory minimum
- (28) = Sum [ (24) x (27) ]
- (30), (31): Average Weekly Benefits results from an Excel Data Table that repeats the calculation of (28) for different dates.
- (32) = (31) / (30)

# IV 000012

Section IV - Benefit Change Adjustments  
 Subsection B - Effects of SAWW Change  
 7/1/2024

Section IV-B  
 Exhibit 2

## Determination of the Average Weekly Benefit for Permanent Totals

### Permanent Total - Effective 10/1/2022

(1)	Nominal Rate of Compensation Based on Gross Wages ("Comp. Rate")	66.67%
(2)	Min Weekly Compensation	353.07
(3)	Max Weekly Compensation	1,765.34
(4)	Average Injured Worker Weekly Wage ("AIWWW") for 12 months starting 10/1/2023	1,592.75

Wage Intervals (5)		Benefit (6)	Wage Distribution Entry Ratios = (5) / (4) (7)		Percentage in Interval		Average Wage in Interval = (9) / (8) x (4) (10)	Average Benefit in Interval (11)
					Workers (8)	Wages (9)		
0.00	529.60	Statutory Minimum	0.00	0.35	7.27%	1.83%	400.02	353.07
529.60	2,648.01	Actual Wage x Comp. Rate	0.35	1.65	81.70%	73.41%	1,431.18	954.12
2,648.01	over	Statutory Maximum	1.65	over	11.03%	24.76%	3,576.10	1,765.34

(12) Average Weekly Benefit **999.88**

	Effects of SAWW Change		
	10/1/2023	10/1/2024	10/1/2025
(13) Starting date of 12 month period for AIWWW	10/1/2023	10/1/2024	10/1/2025
(14) Benefits Effective	10/1/2022	10/1/2023	10/1/2024
Average Weekly Wage Loss Benefit	<b>999.88</b>	1003.59	1012.73
(15) Benefits Effective	10/1/2023	10/1/2024	10/1/2025
Average Weekly Wage Loss Benefit	1003.59	1012.73	1020.92
(16) Permanent Total Wage Loss Benefit Change Factors	1.004	1.009	1.008
(17) Specific Injury Benefits			
SAWW Effect on Specific Injury Benefits	1.018	1.047	1.047
(18) Benefit Proportions Associated with Permanent Total Claims			
(a) Permanent Total Wage Loss Benefits	96.50%	96.50%	96.50%
(b) Specific Injury Benefits	3.50%	3.50%	3.50%
(19) Permanent Total Benefit Change Factors	1.004	1.010	1.009
= [(16) x (18a)] + [(17) x (18b)]			

**Notes:**

(1), (2), (3): Section IV-C, Exhibit 1.

(4): Section IV-D, Exhibit 3.

(5): Wage Intervals follow Massachusetts General Law.

(7): Rounded to nearest 0.05.

(8): Section IV-D, Exhibit 1, column (2).

(9): Section IV-D, Exhibit 1, column (3).

(11) = (1) x (10), subject to a statutory maximum and statutory minimum

(12) = Sum [ (8) x (11) ]

(14), (15): Average Weekly Benefits results from an Excel Data Table that repeats the calculation of (12) for different dates.

(16) = (15) / (14)

(17): Ratio of SAWW from Section IV-D, Exhibit 3.

Example: Effect of SAWW Change of 10/1/2023 = SAWW 10/1/2023 / SAWW 10/1/2022 = 1.018 = 1,796.72 / 1,765.34

(18): Estimated Average Schedule Benefit compared to Average Indemnity Cost per Claim.

DCI data for Permanent Total Claims in Massachusetts.

# IV 000013

Section IV - Benefit Change Adjustments  
 Subsection B - Effects of SAWW Change  
 7/1/2024

Section IV-B  
 Exhibit 3

## Determination of the Average Weekly Benefit for Permanent Partial

### Permanent Partial - Effective 10/1/2022

(1)	Nominal Rate of Compensation Based on Gross Wages ("Comp. Rate")	37.20%
(2)	Min Weekly Compensation	0.00
(3)	Max Weekly Compensation	1,324.01
(4)	Average Injured Worker Weekly Wage ("AIWWW") for 12 months starting 10/1/2023	1,592.75
(5)	SAWW effective 10/1/2022	1,765.34

Wage Intervals (6)		Benefit (7)	Wage Distribution Entry Ratios = (6) / (4) (8)		Percentage in Interval		Average Wage in Interval =(10) / (9) x (4) (11)	Average Benefit in Interval (12)
					Workers (9)	Wages (10)		
0.00	3,559.15	Actual Wage x Comp. Rate	0.00	2.25	96.70%	89.80%	1,479.04	550.20
3,559.15	5,807.04	Statutory Maximum	2.25	3.65	2.74%	7.32%	4,260.32	1324.01
5,807.04	9,291.26	Statutorily Reduced	3.65	5.85	0.48%	2.11%	7,025.86	860.85
9,291.26	over	Exceeds Statutory Limit	5.85	over	0.08%	0.77%	14,522.99	0.00

(13) Average Weekly Benefit **572.41**

	Effects of SAWW Change		
	10/1/2023	10/1/2024	10/1/2025
(14) Starting date of 12 month period for AIWWW			
(15) Benefits Effective Average Weekly Wage Loss Benefit	10/1/2022 <b>572.41</b>	10/1/2023 597.74	10/1/2024 625.95
(16) Benefits Effective Average Weekly Wage Loss Benefit	10/1/2023 573.35	10/1/2024 600.41	10/1/2025 628.75
(17) Permanent Partial Wage Loss Benefit Change Factors	1.002	1.004	1.004
(18) Specific Injury Benefits SAWW Effect on Specific Injury Benefits	1.018	1.047	1.047
(19) Permanent Partial Healing Period Effect on Healing Period Benefits	1.003	1.008	1.008
(20) Benefit Proportions Associated with Permanent Partial Claims			
(a) Permanent Partial Wage Loss Benefits	27%	27%	27%
(b) Specific Injury Benefits	26%	26%	26%
(c) Healing Period - Temporary Total Benefits	47%	47%	47%
(21) Permanent Partial Benefit Change Factors = [(17) x (20a)] + [(18) x (20b)] + [(19) x (20c)]	1.006	1.017	1.017

**Notes:**

- (1), (2), (3): Section IV-C, Exhibit 1.
- (4), (5): Section IV-D, Exhibit 3.
- (6): Wage Intervals follow Massachusetts General Law.
- (7): Statutory Maximum: Insurer may reduce benefit to level at which benefits + earnings = 2 x SAWW.
- (8): Rounded to nearest 0.05.
- (9): Section IV-D, Exhibit 1, column (2).
- (10): Section IV-D, Exhibit 1, column (3).
- (12): Comp Rate x Average Wage in Interval, subject to a statutory maximum and a statutory limitation.
- (13) = Sum [ (9) x (12) ]
- (15), (16): Average Weekly Benefits results from an Excel Data Table that repeats the calculation of (13) for different dates.
- (17) = (16) / (15)
- (18): Ratio of SAWW from Section IV-D, Exhibit 3.  
 Example: Effect of SAWW Change of 10/1/2023 = 1.018 = 1,796.72 / 1,765.34
- (19): Temporary Total Benefit Change Factors, Exhibit 4.
- (20): DCI data for Permanent Partial Claims in Massachusetts.

# IV 000014

Section IV - Benefit Change Adjustments  
 Subsection B - Effects of SAWW Change  
 7/1/2024

Section IV-B  
 Exhibit 4

## Determination of the Average Weekly Benefit for Temporary Totals

Temporary Total - Effective 10/1/2022

(1)	Nominal Rate of Compensation Based on Gross Wages ("Comp. Rate")	60.00%
(2)	Min Weekly Compensation	353.07
(3)	Max Weekly Compensation	1,765.34
(4)	Average Injured Worker Weekly Wage ("AIWW") for 12 months starting 10/1/2023	1,592.75

Wage Intervals (5)		Benefit (6)	Wage Distribution Entry Ratios = (5) / (4) (7)		Percentage in Interval		Average Wage in Interval = (9) / (8) x (4) (10)	Average Benefit in Interval (11)
					Workers (8)	Wages (9)		
0.00	353.07	Actual Wage	0.00	0.20	1.71%	0.24%	222.78	222.78
353.07	588.45	Statutory Minimum	0.20	0.35	5.56%	1.59%	454.65	353.07
588.45	2,942.23	Actual Wage x Comp. Rate	0.35	1.85	85.49%	80.02%	1,490.82	894.49
2,942.23	over	Statutory Maximum	1.85	over	7.24%	18.15%	3,995.65	1,765.34

(12) Average Weekly Benefit **915.90**

	Effects of SAWW Change		
	10/1/2023	10/1/2024	10/1/2025
(13) Starting date of 12 month period for AIWW	10/1/2023	10/1/2024	10/1/2025
(14) Benefits Effective	10/1/2022	10/1/2023	10/1/2024
Average Weekly Benefits	<b>915.90</b>	954.57	999.63
(15) Benefits Effective	10/1/2023	10/1/2024	10/1/2025
Average Weekly Benefits	918.51	961.87	1007.27
(16) Temporary Total Benefit Change Factors	1.003	1.008	1.008

**Notes:**

- (1), (2), (3): Section IV-C, Exhibit 1.
- (4): Section IV-D, Exhibit 3.
- (5): Wage Intervals follow Massachusetts General Law.
- (7): Rounded to nearest 0.05.
- (8): Section IV-D, Exhibit 1, column (2).
- (9): Section IV-D, Exhibit 1, column (3).
- (11): Comp Rate x Average Wage in Interval, subject to a statutory maximum and statutory minimum, unless the actual wage is less than the statutory minimum.
- (12) = Sum [ (8) x (11) ]
- (14), (15): Average Weekly Benefits results from an Excel Data Table that repeats the calculation of (12) for different dates.
- (16) = (15) / (14)

Summary of Principal Benefit Changes Due to the Increase in the Maximum and Minimum Weekly Benefits

	10/1/2022	10/1/2023	10/1/2024	10/1/2025
(1) Fatal				
% Rate of Compensation	66.67%	66.67%	66.67%	66.67%
Minimum Weekly Benefit				
Widow/Orphan	\$110.00	\$110.00	\$110.00	\$110.00
Others	\$0.00	\$0.00	\$0.00	\$0.00
Maximum Weekly Benefit				
Widow/Orphan	\$1,765.34	\$1,796.72	<b>\$1,881.53</b>	<b>\$1,970.34</b>
Others	\$80.00	\$80.00	\$80.00	\$80.00
Each Additional Child	\$6.00, if benefit under \$150.00			
Maximum Aggregate Payable	250 x SAWW	250 x SAWW	250 x SAWW	250 x SAWW
Burial Allowance	8 X SAWW	8 X SAWW	8 X SAWW	8 X SAWW
Cost of Living Adjustment - benefits increase annually by:	Each October 1 after 2 years after injury. Based on the lesser of 5%, N.E. region urban area CPI, and the % change in the SAWW	Each October 1 after 2 years after injury. Based on the lesser of 5%, N.E. region urban area CPI, and the % change in the SAWW	Each October 1 after 2 years after injury. Based on the lesser of 5%, N.E. region urban area CPI, and the % change in the SAWW	Each October 1 after 2 years after injury. Based on the lesser of 5%, N.E. region urban area CPI, and the % change in the SAWW
(2) Total Disability				
Permanent Total				
% Rate of Compensation	66.67%	66.67%	66.67%	66.67%
Minimum Weekly Benefit	\$353.07	\$359.34	<b>\$376.31</b>	<b>\$394.07</b>
Maximum Weekly Benefit	\$1,765.34	\$1,796.72	<b>\$1,881.53</b>	<b>\$1,970.34</b>
Duration	Lifetime	Lifetime	Lifetime	Lifetime
Cost of Living Adjustment - benefits increase annually by:	Same as Fatal	Same as Fatal	Same as Fatal	Same as Fatal
Temporary Total				
% Rate of Compensation	60.00%	60.00%	60.00%	60.00%
Minimum Weekly Benefit	\$353.07	\$359.34	<b>\$376.31</b>	<b>\$394.07</b>
Maximum Weekly Benefit	\$1,765.34	\$1,796.72	<b>\$1,881.53</b>	<b>\$1,970.34</b>
Waiting Period/Retroactive After	5 days/21 days	5 days/21 days	5 days/21 days	5 days/21 days
(3) Permanent Partial Disability				
% Rate of Compensation	37.20%	37.20%	37.20%	37.20%
Minimum Weekly Benefit	\$0.00	\$0.00	\$0.00	\$0.00
Maximum Weekly Benefit	\$1,324.01	\$1,347.54	<b>\$1,411.15</b>	<b>\$1,477.75</b>
(4) Specific Injury Payments				
Scheduled Injuries	According to the injury, a scheduled number multiplied by the SAWW	According to the injury, a scheduled number multiplied by the SAWW	According to the injury, a scheduled number multiplied by the SAWW	According to the injury, a scheduled number multiplied by the SAWW
Non-Scheduled Injuries	32 x SAWW	32 x SAWW	32 x SAWW	32 x SAWW
Disfigurement				
Maximum Benefit	\$15,000	\$15,000	\$15,000	\$15,000
Benefit	As determined by the reviewing board			

Notes:

Source: The General Laws of Massachusetts, Chapter 152, Sections 31-36.

(1), (2): Maximum Weekly Benefit for Fatalities and Total Disabilities is 100% of the SAWW.

(2): Minimum Weekly Benefit for Total Disability is 20% of the SAWW.

(3): Maximum Weekly Benefit for Permanent Partial is 75% of the SAWW. There is no Minimum Weekly Benefit for Permanent Partial Disability.

(3): Permanent Partial % Rate of Compensation is 60% of 62%, the lost wage-earning capacity, Section IV-D, Exhibit 4.

*Values in Italics are Projected*

# IV 000016

Section IV - Benefit Change Adjustments  
 Subsection D - Massachusetts Data  
 7/1/2024

Section IV-D  
 Exhibit 1

Standard Wage Distribution Table

R = Ratio to Average Wage  
 A = Cumulative Percentage of Workers  
 B = Cumulative Percentage of Wages

R (1)	A (2)	B (3)	R (1)	A (2)	B (3)	R (1)	A (2)	B (3)
0.05	0.1035	0.0031	2.40	97.4598	91.5605	4.75	99.7840	98.5435
0.10	0.3465	0.0221	2.45	97.6612	92.0487	4.80	99.7930	98.5865
0.15	0.8421	0.0854	2.50	97.8414	92.4948	4.85	99.8017	98.6281
0.20	1.7130	0.2396	2.55	98.0031	92.9029	4.90	99.8099	98.6684
0.25	3.0495	0.5424	2.60	98.1483	93.2767	4.95	99.8178	98.7074
0.30	4.8994	1.0533	2.65	98.2789	93.6197	5.00	99.8254	98.7452
0.35	7.2702	1.8259	2.70	98.3968	93.9349	5.05	99.8327	98.7817
0.40	10.1357	2.9025	2.75	98.5033	94.2251	5.10	99.8397	98.8171
0.45	13.4453	4.3108	2.80	98.5998	94.4929	5.15	99.8463	98.8513
0.50	17.1314	6.0631	2.85	98.6875	94.7405	5.20	99.8527	98.8844
0.55	21.1178	8.1571	2.90	98.7673	94.9700	5.25	99.8589	98.9165
0.60	25.3249	10.5770	2.95	98.8402	95.1832	5.30	99.8648	98.9475
0.65	29.6752	13.2963	3.00	98.9069	95.3817	5.35	99.8704	98.9775
0.70	34.0956	16.2803	3.05	98.9682	95.5670	5.40	99.8758	99.0065
0.75	38.5205	19.4883	3.10	99.0246	95.7404	5.45	99.8810	99.0346
0.80	42.8927	22.8764	3.15	99.0767	95.9031	5.50	99.8859	99.0618
0.85	47.1638	26.3995	3.20	99.1249	96.0561	5.55	99.8907	99.0881
0.90	51.2943	30.0131	3.25	99.1696	96.2003	5.60	99.8953	99.1135
0.95	55.2534	33.6745	3.30	99.2112	96.3365	5.65	99.8996	99.1381
1.00	59.0180	37.3442	3.35	99.2500	96.4654	5.70	99.9038	99.1619
1.05	62.5721	40.9863	3.40	99.2862	96.5878	5.75	99.9078	99.1848
1.10	65.9060	44.5693	3.45	99.3202	96.7041	5.80	99.9117	99.2071
1.15	69.0152	48.0662	3.50	99.3521	96.8149	5.85	99.9154	99.2286
1.20	71.8995	51.4543	3.55	99.3821	96.9206	5.90	99.9189	99.2493
1.25	74.5623	54.7154	3.60	99.4103	97.0216	5.95	99.9223	99.2694
1.30	77.0100	57.8353	3.65	99.4370	97.1183	6.00	99.9255	99.2888
1.35	79.2510	60.8038	3.70	99.4622	97.2110	6.05	99.9287	99.3076
1.40	81.2954	63.6140	3.75	99.4861	97.2999	6.10	99.9316	99.3257
1.45	83.1542	66.2621	3.80	99.5087	97.3853	6.15	99.9345	99.3432
1.50	84.8392	68.7468	3.85	99.5302	97.4674	6.20	99.9372	99.3601
1.55	86.3625	71.0693	3.90	99.5506	97.5465	6.25	99.9399	99.3765
1.60	87.7363	73.2324	3.95	99.5700	97.6227	6.30	99.9424	99.3923
1.65	88.9725	75.2406	4.00	99.5885	97.6961	6.35	99.9448	99.4075
1.70	90.0825	77.0995	4.05	99.6061	97.7670	6.40	99.9471	99.4223
1.75	91.0777	78.8156	4.10	99.6229	97.8354	6.45	99.9493	99.4365
1.80	91.9684	80.3962	4.15	99.6389	97.9014	6.50	99.9514	99.4502
1.85	92.7646	81.8489	4.20	99.6542	97.9653	6.55	99.9535	99.4635
1.90	93.4755	83.1815	4.25	99.6688	98.0270	6.60	99.9554	99.4763
1.95	94.1096	84.4019	4.30	99.6827	98.0866	6.65	99.9573	99.4887
2.00	94.6749	85.5181	4.35	99.6961	98.1443	6.70	99.9591	99.5007
2.05	95.1785	86.5377	4.40	99.7088	98.2001	6.75	99.9608	99.5122
2.10	95.6272	87.4684	4.45	99.7210	98.2541	6.80	99.9624	99.5233
2.15	96.0267	88.3172	4.50	99.7327	98.3064	6.85	99.9640	99.5341
2.20	96.3826	89.0911	4.55	99.7439	98.3569	6.90	99.9655	99.5445
2.25	96.6997	89.7965	4.60	99.7546	98.4059	6.95	99.9670	99.5545
2.30	96.9824	90.4395	4.65	99.7648	98.4533	7.00	99.9684	99.5642
2.35	97.2346	91.0257	4.70	99.7746	98.4991			

Notes:  
 Source: NCCI - The 2019 Standard Wage Distribution Table.

# IV 000017

Section IV - Benefit Change Adjustments  
 Subsection D - Massachusetts Data  
 7/1/2024

Section IV-D  
 Exhibit 2

Dependency Table

Dependency Class (1)	Number of Cases (2)	Average Number of Dependents (3)	Average Dependent Age (4)
No Dependents	<b>204</b>	<b>0</b>	N/A
Spouse, No Children	<b>212</b>	<b>1</b>	40
Spouse with Children	153	1	38
1 Child		1	11
Spouse with Children	166	1	38
2 Children		2	10
Spouse with Children	63	1	37
3 Children		3	10
Spouse with Children	18	1	37
4 Children		4	10
Spouse with Children	5	1	37
5 Children		5	10
Spouse with Children	2	1	38
More than 5 Children		7	10
<b>Spouse with Children</b>	<b>407</b>	<b>1</b>	<b>38</b>
<b>Summary</b>		<b>1.9</b>	<b>10</b>
<b>Orphan, No Sibling</b>	<b>21</b>	<b>1</b>	<b>13</b>
1 Child			
Orphans with Sibling(s)	10	2	12
2 Children		3	12
3 Children		1	12
4 Children		1	12
More than 4 Children		5	12
<b>Orphans with Sibling(s)</b>	<b>15</b>	<b>2.5</b>	<b>12</b>
<b>Summary</b>			
Other Dependents (No Spouse)	41	1	62
1 Parent			
2 Parents		2	58
Sibling		7	37
Other		2	31
<b>Other Dependents</b>	<b>141</b>	<b>1.7</b>	<b>58</b>
<b>Summary</b>			

Notes:

Source: NCCI, CPS data, 1989-1993, reweighted using DCI Data for Fatalities, 1984-1993.

(2): Dependent count includes working adult household members standardized to a total of 1,000 cases.

Derivation of Estimated SAWW (Statewide Average Weekly Wage) and AIWWW (Average Injured Worker Weekly Wage)

SAWW Effective Date (1)	SAWW Based on Data (2)	Midpoint of the SAWW Data (3)	Actual SAWW (4)	Estimated Annual SAWW Trend Factor (5)	Actual and Projected SAWW (6)	AIWWW Period (7)	Actual and Projected Effective AIWWW (8)
10/1/2022	4/1/21 to 4/1/22	10/1/2021	1,765.34		1,765.34	10/1/22 to 10/1/23	1,520.96
10/1/2023	4/1/22 to 4/1/23	10/1/2022	1,796.72		1,796.72	10/1/23 to 10/1/24	1,592.75
10/1/2024	4/1/23 to 4/1/24	10/1/2023		1.047	1,881.53	10/1/24 to 10/1/25	1,667.93
10/1/2025	4/1/24 to 4/1/25	10/1/2024		1.047	1,970.34	10/1/25 to 10/1/26	1,746.66

Notes:

(4): Source: Department of Unemployment Assistance (DUA); previously this data was compiled by the Division of Employment and Training (DET).

(5): 4.7% Estimated Annual Trend in SAWW, Section V-A, Exhibit 1.

(6): For SAWW Effective Date 10/1/2022 - 10/1/2023, (6) = (4)

For SAWW Effective Date 10/1/2024, (6) = (5) x (6) from prior period

For SAWW Effective Date 10/1/2025, (6) = (5) x (6) from prior period

(8): For the AIWWW Period 10/1/22 to 10/1/23, (8) is the product of .827 and the average of the SAWWs effective 10/1/2023 and 10/1/2024, respectively.

For the AIWWW Period 10/1/23 to 10/1/24, (8) is the product of .827 and the average of the SAWWs effective 10/1/2024 and 10/1/2025, respectively.

For the AIWWW Periods 10/1/24 to 10/1/25 and 10/1/25 to 10/1/26, (8) = (5) x (8 from Prior Period).

Historical Relationship of .827 for the ratio of AIWWW to SAWW is selected based on DCI data.

4/1/1996: SAWW = 648, AIWWW = 536

4/1/1994: SAWW = 595, AIWWW = 492

# IV 000019

Section IV - Benefit Change Adjustments  
 Subsection D - Massachusetts Data  
 7/1/2024

Section IV-D  
 Exhibit 4

## Average Wage Loss for Permanent Partial Claimants

DCI Report Level	(Pre-Injury - Post-Injury) / Pre-Injury Wage					Average
	1979 (1)	1980 (2)	1981 (3)	1982 (4)	1983 (5)	
<b>Average Wage Loss for Major Permanent Partial Claimants</b>						
1	0.61	0.62	0.60	0.62	0.60	0.61
2	0.62	0.62	0.59	0.63	0.62	0.62
3	0.64	0.60	0.65	0.60		0.62
4	0.60	0.64	0.62			0.62
<b>(6) Selected Average Wage Loss for Major Permanent Partial Claimants</b>						<b>0.62</b>

<b>Average Wage Loss for Minor Permanent Partial Claimants</b>						
1	0.58	0.58	0.58	0.60	0.59	0.59
2	0.62	0.60	0.59	0.58	0.64	0.61
3	0.66	0.64	0.65	0.56		0.63
4	0.62	0.70	0.66			0.66
<b>(7) Selected Average Wage Loss for Minor Permanent Partial Claimants</b>						<b>0.62</b>

**Notes:**

Source: Detail Claim Information ("DCI") Data, compiled as of 10/1/1985.

(6), (7): These data were compiled prior to Chapter 398. To be consistent with Chapter 398, 62% will be used as the wage loss as a percent of pre-injury wage.

The percent of that that is paid is 60% subject to maximums.

Post-Chapter 398 Injury Type Weights at 5th Report

Injury Type (1)	Policy Year (2)	Indemnity - Likely to Develop			Indemnity - Not Likely to Develop			Indemnity On-level Losses at Fifth Report = (5) + (8) (9)	Weights at 5th report (10)
		Losses at Fifth Report (3)	Benefit On-Level Factor to Prosp. Eff. Period (4)	On-level Losses at Fifth Report = (3) x (4) (5)	Losses at Fifth Report (6)	Benefit On-Level Factor to Prosp. Eff. Period (7)	On-level Losses at Fifth Report = (6) x (7) (8)		
Death	2013	1,592,212	1.093	1,740,425	7,813,083	1.093	8,540,373	10,280,798	
Death	2014	6,153,067	1.087	6,690,561	2,550,363	1.087	2,773,147	9,463,708	
Death	2015	1,142,621	1.075	1,228,776	13,439,677	1.075	14,453,049	15,681,826	
Death	2016	327,800	1.069	350,519	11,350,071	1.069	12,136,730	12,487,249	
Death	2017	2,850,155	1.063	3,028,591	10,020,705	1.063	10,648,060	13,676,651	
<b>Total Death</b>		<b>12,065,855</b>		<b>13,038,873</b>	<b>45,173,899</b>		<b>48,551,359</b>	<b>61,590,233</b>	<b>1.75%</b>
Permanent Total	2013	56,048,829	1.103	61,838,160	0	1.103	0	61,838,160	
Permanent Total	2014	66,850,998	1.099	73,469,495	0	1.099	0	73,469,495	
Permanent Total	2015	61,991,745	1.093	67,726,694	0	1.093	0	67,726,694	
Permanent Total	2016	68,367,571	1.085	74,210,297	0	1.085	0	74,210,297	
Permanent Total	2017	81,790,234	1.077	88,104,457	0	1.077	0	88,104,457	
<b>Total Permanent Total</b>		<b>335,049,377</b>		<b>365,349,101</b>	<b>0</b>		<b>0</b>	<b>365,349,101</b>	<b>10.38%</b>
Permanent Partial	2013	72,274,957	1.169	84,479,237	123,591,719	1.169	144,461,298	228,940,535	
Permanent Partial	2014	86,913,384	1.161	100,911,262	135,591,998	1.161	157,429,835	258,341,097	
Permanent Partial	2015	84,546,825	1.149	97,177,275	133,957,929	1.149	153,969,904	251,147,179	
Permanent Partial	2016	77,175,811	1.138	87,802,917	132,986,178	1.138	151,298,370	239,101,287	
Permanent Partial	2017	77,284,746	1.125	86,909,634	142,135,111	1.125	159,836,333	246,745,967	
<b>Total Permanent Partial</b>		<b>398,195,723</b>		<b>457,280,325</b>	<b>668,262,935</b>		<b>766,995,740</b>	<b>1,224,276,065</b>	<b>34.77%</b>
Temporary Total	2013	31,913,520	1.068	34,093,833	83,117,382	1.068	88,795,914	122,889,747	
Temporary Total	2014	41,075,747	1.066	43,778,769	85,817,095	1.066	91,464,358	135,243,127	
Temporary Total	2015	41,005,500	1.062	43,560,429	91,990,458	1.062	97,722,106	141,282,536	
Temporary Total	2016	47,362,285	1.058	50,108,985	99,876,876	1.058	105,669,076	155,778,062	
Temporary Total	2017	50,575,014	1.053	53,235,138	123,282,392	1.053	129,766,748	183,001,886	
<b>Total Temporary Total</b>		<b>211,932,066</b>		<b>224,777,155</b>	<b>484,084,203</b>		<b>513,418,203</b>	<b>738,195,358</b>	<b>20.96%</b>
<b>(11) Total Indemnity</b>		<b>957,243,021</b>		<b>1,060,445,455</b>	<b>1,197,521,037</b>		<b>1,328,965,301</b>	<b>2,389,410,756</b>	<b>67.86%</b>

- (12) Aggregate Financial Policy Year Call, Indemnity Fifth to Ultimate Development Factor Paid + Case 1.041
- (13) Tail Development Attributed to Likely to Develop Claims 0.8
- (14) Percentage Likely to Develop 0.444
- (15) Indemnity Likely to Develop - Loss Development Factor from 5th Report to Ultimate =  $1.0 + \{ [(12) - 1.0] \times (13) \} / (14)$  1.074
- (16) Indemnity Not Likely to Develop - Loss Development Factor from 5th Report to Ultimate =  $1.0 + \{ [(12) - 1.0] \times [1.0 - (13)] \} / [1.0 - (14)]$  1.015

Notes:

- (3), (6): Unit Statistical Data, excluding Large Deductibles.
- (4), (7): Section IV - A, Exhibit 1
- (10) = (9), Total / Page 2, Column (9), Total Medical & Indemnity
- (12) =  $1.025 \times 1.015 \times 1$  where 1.025 is the loss development factor from Section II - B, Exhibit 1, 1.015 is the tail factor from Section II - C, Exhibit 2, Page 1.  
and 1 is the escalation factor from Section II - D, Exhibit 2, Page 1.
- (14) = (5), Total Indemnity / (9), Total Indemnity

IV 000020

Post-Chapter 398 Injury Type Weights at 5th Report

Injury Type (1)	Policy Year (2)	Medical - Likely to Develop			Medical - Not Likely to Develop			Medical On-level Losses at Fifth Report = (5) + (8) (9)	Weights at 5th report (10)
		Losses at Fifth Report (3)	Benefit On-Level Factor to Prosp. Eff. Period (4)	On-level Losses at Fifth Report = (3) x (4) (5)	Losses at Fifth Report (6)	Benefit On-Level Factor to Prosp. Eff. Period (7)	On-level Losses at Fifth Report = (6) x (7) (8)		
Death	2013	277,312	1.000	277,312	397,815	1.000	397,815	675,127	
Death	2014	2,281,813	1.000	2,281,813	198,777	1.000	198,777	2,480,590	
Death	2015	179,725	1.000	179,725	1,246,106	1.000	1,246,106	1,425,831	
Death	2016	25,420	1.000	25,420	511,622	1.000	511,622	537,042	
Death	2017	2,528,710	1.000	2,528,710	632,430	1.000	632,430	3,161,140	
Total Death		5,292,980		5,292,980	2,986,750		2,986,750	8,279,730	0.24%
Permanent Total	2013	27,822,902	1.000	27,822,902	0	1.000	0	27,822,902	
Permanent Total	2014	39,532,179	1.000	39,532,179	0	1.000	0	39,532,179	
Permanent Total	2015	41,791,028	1.000	41,791,028	0	1.000	0	41,791,028	
Permanent Total	2016	35,155,167	1.000	35,155,167	0	1.000	0	35,155,167	
Permanent Total	2017	49,994,309	1.000	49,994,309	0	1.000	0	49,994,309	
Total Permanent Total		194,295,585		194,295,585	0		0	194,295,585	5.52%
Permanent Partial	2013	27,488,644	1.000	27,488,644	48,209,981	1.000	48,209,981	75,698,625	
Permanent Partial	2014	37,799,432	1.000	37,799,432	49,491,431	1.000	49,491,431	87,290,863	
Permanent Partial	2015	32,492,984	1.000	32,492,984	44,780,206	1.000	44,780,206	77,273,190	
Permanent Partial	2016	31,550,296	1.000	31,550,296	43,509,200	1.000	43,509,200	75,059,496	
Permanent Partial	2017	29,203,641	1.000	29,203,641	40,647,312	1.000	40,647,312	69,850,953	
Total Permanent Partial		158,534,997		158,534,997	226,638,130		226,638,130	385,173,127	10.94%
Temporary Total	2013	13,041,779	1.000	13,041,779	59,602,247	1.000	59,602,247	72,644,026	
Temporary Total	2014	21,417,862	1.000	21,417,862	60,891,354	1.000	60,891,354	82,309,216	
Temporary Total	2015	19,096,703	1.000	19,096,703	62,996,247	1.000	62,996,247	82,092,950	
Temporary Total	2016	21,874,716	1.000	21,874,716	67,367,802	1.000	67,367,802	89,242,518	
Temporary Total	2017	18,019,723	1.000	18,019,723	71,514,792	1.000	71,514,792	89,534,515	
Total Temporary Total		93,450,783		93,450,783	322,372,442		322,372,442	415,823,225	11.81%
Medical Only	2013	0	1.000	0	25,634,750	1.000	25,634,750	25,634,750	
Medical Only	2014	0	1.000	0	25,480,132	1.000	25,480,132	25,480,132	
Medical Only	2015	0	1.000	0	25,458,156	1.000	25,458,156	25,458,156	
Medical Only	2016	0	1.000	0	24,819,828	1.000	24,819,828	24,819,828	
Medical Only	2017	0	1.000	0	26,924,520	1.000	26,924,520	26,924,520	
Total Medical Only		0		0	128,317,386		128,317,386	128,317,386	3.64%
(11) Total Medical		451,574,345		451,574,345	680,314,708		680,314,708	1,131,889,053	32.14%
(12) Total Medical & Indemnity		1,408,817,366		1,512,019,800	1,877,835,745		2,009,280,009	3,521,299,809	

- (13) Medical Only fraction of Total Medical 11.34%
- (14) Aggregate Financial Policy Year Call, Medical Fifth to Ultimate Development Factor Paid + Case 0.929
- (15) Tail Development Attributed to Likely to Develop Claims 0.8
- (16) Percentage Likely to Develop 0.399
- (17) Medical Likely to Develop - Loss Development Factor from 5th Report to Ultimate =  $1.0 + \{[(14) - 1.0] \times (15)\} / (16)$  0.859
- (18) Medical Not Likely to Develop - Loss Development Factor from 5th Report to Ultimate =  $1.0 + \{[(14) - 1.0] \times [1.0 - (15)]\} / [1.0 - (16)]$  0.977
- (19) Indemnity Likely Weight at 5th Report 30.12%
- (20) Indemnity Not Likely Weight at 5th Report 37.74%
- (21) Medical Likely Weight at 5th Report 12.82%
- (22) Medical Not Likely Weight at 5th Report 19.32%

Notes:

- (3), (6): Unit Statistical Data, excluding Large Deductibles.
- (4), (7): Section IV - A, Exhibit 1
- (10) = (9), Total / (9), Total Medical & Indemnity
- (13) = (10), Total Medical Only / (10), Total Medical
- (14) =  $0.948 \times 0.981$  where 0.948 is the loss development factor from Section II - B, Exhibit 1, 0.981 is the tail factor from Section II - C, Exhibit 2, Page 1.
- (16) = (5), Total Medical / (9), Total Medical
- (19) = Page 1, (5), Total Indemnity / (9), Total Medical & Indemnity
- (20) = Page 1, (8), Total Indemnity / (9), Total Medical & Indemnity
- (21) = (5), Total Medical / (9), Total Medical & Indemnity
- (22) = (8), Total Medical / (9), Total Medical & Indemnity

IV 000021

Post-Chapter 398 Injury Type Weights at Ultimate

Injury Type (1)	Policy Year (2)	Indemnity - Likely to Develop			Indemnity - Not Likely to Develop			Indemnity Ult. On-level Losses at Ultimate = (5) + (8) (9)	Weights at Ultimate (10)
		On-level Losses at Fifth Report (3)	Development Factors 5th to Ultimate (4)	Est. Ult On-level Losses = (3) x (4) (5)	On-level Losses at Fifth Report (6)	Development Factors 5th to Ultimate (7)	Est. Ult On-level Losses = (6) x (7) (8)		
Death	2013	1,740,425	1.074	1,868,723	8,540,373	1.015	8,665,964	10,534,687	1.79%
Death	2014	6,690,561	1.074	7,183,767	2,773,147	1.015	2,813,928	9,997,694	
Death	2015	1,228,776	1.074	1,319,358	14,453,049	1.015	14,665,589	15,984,946	
Death	2016	350,519	1.074	376,358	12,136,730	1.015	12,315,206	12,691,565	
Death	2017	3,028,591	1.074	3,251,849	10,648,060	1.015	10,804,645	14,056,494	
<b>Total Death</b>		<b>13,038,873</b>		<b>14,000,055</b>	<b>48,551,359</b>		<b>49,265,331</b>	<b>63,265,386</b>	
Permanent Total	2013	61,838,160	1.074	66,396,658	0	1.015	0	66,396,658	11.08%
Permanent Total	2014	73,469,495	1.074	78,885,416	0	1.015	0	78,885,416	
Permanent Total	2015	67,726,694	1.074	72,719,275	0	1.015	0	72,719,275	
Permanent Total	2016	74,210,297	1.074	79,680,827	0	1.015	0	79,680,827	
Permanent Total	2017	88,104,457	1.074	94,599,218	0	1.015	0	94,599,218	
<b>Total Permanent Total</b>		<b>365,349,101</b>		<b>392,281,394</b>	<b>0</b>		<b>0</b>	<b>392,281,394</b>	
Permanent Partial	2013	84,479,237	1.074	90,706,759	144,461,298	1.015	146,585,675	237,292,433	35.86%
Permanent Partial	2014	100,911,262	1.074	108,350,097	157,429,835	1.015	159,744,920	268,095,017	
Permanent Partial	2015	97,177,275	1.074	104,340,853	153,969,904	1.015	156,234,109	260,574,962	
Permanent Partial	2016	87,802,917	1.074	94,275,450	151,298,370	1.015	153,523,289	247,798,739	
Permanent Partial	2017	86,909,634	1.074	93,316,316	159,836,333	1.015	162,186,808	255,503,124	
<b>Total Permanent Partial</b>		<b>457,280,325</b>		<b>490,989,475</b>	<b>766,995,740</b>		<b>778,274,800</b>	<b>1,269,264,276</b>	
Temporary Total	2013	34,093,833	1.074	36,607,115	88,795,914	1.015	90,101,703	126,708,817	21.54%
Temporary Total	2014	43,778,769	1.074	47,005,991	91,464,358	1.015	92,809,387	139,815,379	
Temporary Total	2015	43,560,429	1.074	46,771,556	97,722,106	1.015	99,159,160	145,930,715	
Temporary Total	2016	50,108,985	1.074	53,802,849	105,669,076	1.015	107,222,994	161,025,843	
Temporary Total	2017	53,235,138	1.074	57,159,451	129,766,748	1.015	131,675,034	188,834,485	
<b>Total Temporary Total</b>		<b>224,777,155</b>		<b>241,346,962</b>	<b>513,418,203</b>		<b>520,968,277</b>	<b>762,315,240</b>	
<b>(11) Total Indemnity</b>		<b>1,060,445,455</b>		<b>1,138,617,886</b>	<b>1,328,965,301</b>		<b>1,348,508,409</b>	<b>2,487,126,295</b>	<b>70.27%</b>

IV 000022

Notes:

- (3): Exhibit 1, Page 1, Column (5)
- (4): Exhibit 1, Page 1, Row (15)
- (6): Exhibit 1, Page 1, Column (8)
- (7): Exhibit 1, Page 1, Row (16)
- (10) = (9), Total / Page 2, Column (9), Total Medical & Indemnity

Post-Chapter 398 Injury Type Weights at Ultimate

Injury Type (1)	Policy Year (2)	Medical - Likely to Develop			Medical - Not Likely to Develop			Medical On-level Losses at Ultimate = (5) + (8) (9)	Weights at Ultimate (10)
		On-level Losses at Fifth Report (3)	Development Factors 5th to Ultimate (4)	Est. Ult On-level Losses = (3) x (4) (5)	On-level Losses at Fifth Report (6)	Development Factors 5th to Ultimate (7)	Est. Ult On-level Losses = (6) x (7) (8)		
Death	2013	277,312	0.859	238,107	397,815	0.977	388,482	626,590	
Death	2014	2,281,813	0.859	1,959,225	198,777	0.977	194,114	2,153,339	
Death	2015	179,725	0.859	154,317	1,246,106	0.977	1,216,872	1,371,189	
Death	2016	25,420	0.859	21,826	511,622	0.977	499,619	521,446	
Death	2017	2,528,710	0.859	2,171,217	632,430	0.977	617,593	2,788,810	
<b>Total Death</b>		<b>5,292,980</b>		<b>4,544,692</b>	<b>2,986,750</b>		<b>2,916,681</b>	<b>7,461,373</b>	<b>0.21%</b>
Permanent Total	2013	27,822,902	0.859	23,889,477	0	0.977	0	23,889,477	
Permanent Total	2014	39,532,179	0.859	33,943,371	0	0.977	0	33,943,371	
Permanent Total	2015	41,791,028	0.859	35,882,879	0	0.977	0	35,882,879	
Permanent Total	2016	35,155,167	0.859	30,185,153	0	0.977	0	30,185,153	
Permanent Total	2017	49,994,309	0.859	42,926,432	0	0.977	0	42,926,432	
<b>Total Permanent Total</b>		<b>194,295,585</b>		<b>166,827,313</b>	<b>0</b>		<b>0</b>	<b>166,827,313</b>	<b>4.71%</b>
Permanent Partial	2013	27,488,644	0.859	23,602,475	48,209,981	0.977	47,078,975	70,681,450	
Permanent Partial	2014	37,799,432	0.859	32,455,589	49,491,431	0.977	48,330,363	80,785,952	
Permanent Partial	2015	32,492,984	0.859	27,899,333	44,780,206	0.977	43,729,663	71,628,996	
Permanent Partial	2016	31,550,296	0.859	27,089,916	43,509,200	0.977	42,488,475	69,578,391	
Permanent Partial	2017	29,203,641	0.859	25,075,016	40,647,312	0.977	39,693,726	64,768,743	
<b>Total Permanent Partial</b>		<b>158,534,997</b>		<b>136,122,329</b>	<b>226,638,130</b>		<b>221,321,202</b>	<b>357,443,530</b>	<b>10.10%</b>
Temporary Total	2013	13,041,779	0.859	11,198,015	59,602,247	0.977	58,203,979	69,401,994	
Temporary Total	2014	21,417,862	0.859	18,389,941	60,891,354	0.977	59,462,843	77,852,785	
Temporary Total	2015	19,096,703	0.859	16,396,933	62,996,247	0.977	61,518,356	77,915,288	
Temporary Total	2016	21,874,716	0.859	18,782,208	67,367,802	0.977	65,787,354	84,569,562	
Temporary Total	2017	18,019,723	0.859	15,472,209	71,514,792	0.977	69,837,056	85,309,265	
<b>Total Temporary Total</b>		<b>93,450,783</b>		<b>80,239,306</b>	<b>322,372,442</b>		<b>314,809,588</b>	<b>395,048,894</b>	<b>11.16%</b>
Medical Only	2013	0	0.859	0	25,634,750	0.977	25,033,359	25,033,359	
Medical Only	2014	0	0.859	0	25,480,132	0.977	24,882,368	24,882,368	
Medical Only	2015	0	0.859	0	25,458,156	0.977	24,860,908	24,860,908	
Medical Only	2016	0	0.859	0	24,819,828	0.977	24,237,555	24,237,555	
Medical Only	2017	0	0.859	0	26,924,520	0.977	26,292,871	26,292,871	
<b>Total Medical Only</b>		<b>0</b>		<b>0</b>	<b>128,317,386</b>		<b>125,307,061</b>	<b>125,307,061</b>	<b>3.54%</b>
<b>(11) Total Medical</b>		<b>451,574,345</b>		<b>387,733,640</b>	<b>680,314,708</b>		<b>664,354,532</b>	<b>1,052,088,172</b>	<b>29.73%</b>
<b>(12) Total Medical &amp; Indemnity</b>		<b>1,512,019,800</b>		<b>1,526,351,526</b>	<b>2,009,280,009</b>		<b>2,012,862,941</b>	<b>3,539,214,467</b>	

- (13) Medical Only fraction of Total Medical 11.91%
- (14) Indemnity Likely to Develop at Ultimate 32.17%
- (15) Indemnity Not Likely to Develop at Ultimate 38.10%
- (16) Medical Likely to Develop at Ultimate 10.96%
- (17) Medical Not Likely to Develop at Ultimate 18.77%

Notes:

- (3): Exhibit 1, Page 2, Column (5)
- (4): Exhibit 1, Page 2, Row (17)
- (6): Exhibit 1, Page 2, Column (8)
- (7): Exhibit 1, Page 2, Row (18)
- (10) = (9), Total / Total Medical & Indemnity
- (12) = (11), Total Medical + Page 1, (11) Total Indemnity
- (13) = (10), Total Medical Only / (10), Total Medical

IV 000023

**NET TREND****The Role of Trend**

The rate level indication in this filing is based on recent historical Massachusetts premium and loss data. Since the filing develops rates for a future period (beginning with policies issued July 1, 2024), basic principles of ratemaking require that historical losses and premiums be adjusted to the levels expected during the prospective rate period. The trend factors used represent the expected change from the experience period (in this filing, policy years 2020 and 2021) to July 1, 2025, the midpoint of the policy period for which rates are being set. The trend factors reflect expected movements in the frequency of claims, the average cost of claims (also called “severity”), and payroll levels (which drive the amount of premium collected). Trend factors exclude certain other changes over time such as statutorily-mandated changes in benefits and on-level factors for historical rate changes, which are considered elsewhere in the filing.

**WCRIBMA Recommendation**

The composite trend factor developed in this section is expressed as a “net” trend. It incorporates the combined effects on loss ratios of claim frequency movements, claim severity movements, and wage inflation – which may offset one another. Net trends are developed in this section separately for indemnity losses and medical losses (including medical only claims and medical on lost-time claims). Based on the methodology documented in this section, the WCRIBMA

# V 000002

Section V - Trend  
Subsection A - Summary  
7/1/2024

Section V - A  
Page 2

has used net trend factors of -2.5% per year for indemnity losses, and -5.6% per year for medical losses.<sup>1</sup> The indicated trend factors and their key components are summarized in Section V-A Exhibit 1, Page 1.

Indemnity Net Trend	-2.5%
Medical Net Trend	-5.6%

We are projecting that average claim costs for workers' compensation will continue to rise, as they have in recent years in both Massachusetts and elsewhere, at annual rates of 3.8% and 0.6% for indemnity and lost-time medical benefits, respectively and 2.4% for medical-only benefits. We are projecting downward movement in claim frequency per worker week, at a pace of 1.6% annually for lost-time indemnity and medical claims and 5.1% for medical-only claims. Finally, we are projecting an increase of 4.7% annually in average wages.

Trend	Indemnity	Lost-time Medical	Medical Only
Severity	3.8%	0.6%	2.4%
Frequency	-1.6%	-1.6%	-5.1%
SAWW	4.7%		
Net	-2.5%	-5.6%	

The annual net trends used in this filing reflect our expectations about the extent to which growth in the average cost of claims will be offset by declining claim frequencies and by the growth of premium that results from wage inflation.

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<sup>1</sup> Based on NCCI's latest pending and approved filings as of December 1, 2023, with respect to medical net trend, twenty-eight NCCI states filed higher medical trends than the WCRIBMA is proposing in this filing. With respect to indemnity net trend, four NCCI states filed higher indemnity trends than the WCRIBMA is proposing in this filing.

**General Methodology**

The WCRIBMA separately calculates claim severity trends (for indemnity benefits, for medical on lost-time claims, and for medical only claims); claim frequency trends (for lost-time claims and for medical only claims); and average weekly wage trends.

The WCRIBMA recommends that the calculation of trend factors be based on movement in the underlying factors of claim severity, claim frequency, and wages – rather than fitting time trends to loss ratios. Given the differences in the behavior of claim severity, claim frequency and wage trends, analyzing them separately provides better insights into the drivers of net trend.

For each component, our primary method of measuring trends is an exponential least squares regression fit to the historical Massachusetts Unit Statistical Data. As in prior filings, we continue to rely on paid data for measuring our loss trends. Paid data tends to reduce the volatility in the development of ultimate severities and therefore results in better fits of the data, higher credibility and better predictive power. Due to higher credibility of the Massachusetts fitted data there is also less reliance on the complement of credibility. We performed regressions using data series of varying lengths, spanning from five to ten policy years, all ending with Policy Year 2021. A summary of the results is shown in the attached exhibits, Section V-A. The results of each of these regressions indicate an annual rate of change. Next, we tested the credibility of each of these indicated trends on the basis of the consistency between the historical data and the fitted

exponential curves. Using a methodology from the actuarial literature,<sup>2</sup> we assigned higher credibility to the indicated trend if the trend line more closely fit the data, and a lower credibility if the data displayed wide departures from the fitted trend line. Third, to the extent that this credibility test suggested that the indicated trend from the historical data sets should be given less than 100% weight, we complemented the Massachusetts indication with an indicated trend from a larger database. In the case of claim frequency trends, claim severity trends, and average weekly wage trends, we looked to longer term (i.e., 15 years) Massachusetts trends to provide the complement to the Massachusetts trend indications. For each of the components of claim severity trend detailed above, the process generates six trend estimates, one each for the 5, 6, 7, 8, 9, and 10 year data series underlying the Massachusetts indicated trends. We then selected the shortest series with the best fit of these six trend indications for each component of the net trend. The various results of our calculations and the selections we have made are summarized in Exhibits 1 through 3 of Section V-A for claim severity, claim frequency, and average weekly wage, respectively.

**Section V-A – Net Trend Calculation**

Section V-A documents the calculation of the separate trends for claim severity, claim frequency, and average weekly wage.

Exhibit 1 in this section summarizes and combines all of the trend components, beginning with the indicated trend based on the historical

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<sup>2</sup> Venter, Gary, "Classical Partial Credibility with Application to Trend," *PCAS LXXIII* (the "Venter Paper") (1986) pp. 27-51.

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Massachusetts data and its credibility parameter (Row (1)), applying the credibility parameter to each based on how well the indicated trend fits the underlying data (Row (10), Exhibits 2 and 3), and applying the complement of the credibility to the trend indications that are based on longer data series (Row (3)). The claim severity trend and the claim frequency trend are then combined to produce total loss trends (Row (8)). The medical trends for lost-time claims and medical only claims are weighted together, based on the relative volume of claim dollars by type of claim, to produce an overall medical loss trend (Row (7)). Finally, the loss trends for indemnity and medical losses are offset by the credibility-weighted average weekly wage trend to produce the total net annual trend (Row (10)).

Exhibits 2 and 3 of Section V-A document the calculation of the severity trends, frequency trends, and average weekly wage trends. In each of these exhibits, the first step is to calculate the exponential fits to the historical Massachusetts data, using data series of varying lengths, spanning from five to ten policy years, all ending with Policy Year 2021. The exponential method yields fitted values for each year in the data series and also an indicated annual rate of change in the data series. The exponential fits here and elsewhere in this section were calculated using a standard function within Microsoft Excel, the LOGEST function returns statistics that describes an exponential curve matching known data points.

Next, these exhibits document the calculation of the credibility associated with each of the fitted annual trends. This calculation uses a procedure described in the Venter Paper, which requires that the parameters of a confidence interval

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be chosen. Based on the Venter Paper, actuarial judgment, and sensitivity testing, we defined the confidence interval to achieve at least a 90% probability that the trend observed in the future will be within 6% of the projected trend in this filing. Selecting a higher required degree of confidence (probability) or a lower tolerance for error would reduce the amount of credibility assigned to the trend estimates derived from the historical Massachusetts data, while a lower required degree of confidence (probability) or higher tolerance for error would increase the credibility assigned to indications derived from historical Massachusetts data.

The specific steps and calculations that implement Venter's procedure to calculate the credibility assigned to the historical Massachusetts trend (Row (1)) are detailed in Exhibits 2 and 3 of Section V-A, in Rows numbered (3) through (10). Row (2), denoted "n," is the number of years, data points, used in the exponential fitting of the historical data. Row (3), denoted "s," quantifies the goodness of fit of the exponential curve to the "n" years of Massachusetts data.  $S = \text{SQRT} ( \text{SSR} / (n-2) )$ , where SSR is the sum of the squared differences between the observed and fitted points over the years of Massachusetts data analyzed, and n-2 is an adjustment for degrees of freedom. Row (4), denoted "t," is the 95<sup>th</sup> percentile of the t-distribution with n-2 degrees of freedom. We use the 95<sup>th</sup> percentile one-sided distribution to correspond to the selected 90% probability of being within a specified tolerance in either direction. Row (6) implements the formula that Venter provides for a component element of the standard deviation of the projected point, given the distance into the future that we are projecting, and Row (7) then calculates the confidence interval for the projection. The confidence interval

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incorporates both the uncertainty about the parameters of the trend line and the potential variability of the actual future point from its expected value on the line. Row (9) expresses this confidence interval as a percentage of the projected value of frequency, severity, or average weekly wage, which is calculated in Row (8). If Row (9) is less than the selected error tolerance (i.e., 6% in this filing), then there is at least 90% probability that the actual value is within 6% of the fitted value, and the credibility procedure assigns 100% to the indicated historical Massachusetts trend. If the ratio in Row (9) is greater than the selected error tolerance, then the credibility assigned to the historical Massachusetts trend must be less than 100%. Specifically, the credibility is calculated in Row (10) as the ratio of the selected error tolerance divided by the calculated confidence interval.

To the extent that the credibility assigned to each of the fitted trends based on the historical Massachusetts data is less than 100%, the balance of the credibility is assigned to a longer-term Massachusetts trend for frequency, claim severity and average weekly wage. The calculations of the annual trend rates from these complementary data series are documented in Section V-B (frequency), Sections V-C (indemnity severity), Section V-D (medical severity) and Section V-G (average weekly wage), and use the same exponential fit function (LOGEST) within Microsoft Excel.

The complementary data set to be given weight when the historical Massachusetts indications are not fully credible provides a trend indication for a particular component (severity, frequency, average weekly wage) that would be reasonable to use if we had no recent local data. For severity, the WCRIBMA is

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continuing to use a longer term Massachusetts trend as the severity complement as it is more specific to Massachusetts economic cycles and business environment than a countrywide severity trend<sup>3</sup>. The WCRIBMA expects trends observed over a longer period of time (i.e., 15 years) using Massachusetts data will provide relevant predictive information related to variation in the claim data resulting from the Great Recession of 2008 and the ensuing economic recovery specific to Massachusetts<sup>4</sup>. The 15 years of severities and supporting information are provided in Section V-C and V-D.

For claim frequency and average weekly wages, it is our expectation that Massachusetts trends observed in the short-term will tend to revert to long-term Massachusetts averages, and that these long-term Massachusetts averages would thus represent a reasonable expectation of future trends in the absence of recent observations. Consequently, we selected a long-term Massachusetts trend as the complement of credibility for the historical Massachusetts frequency and average weekly wage trends. We then selected fifteen years of data to calculate the long-term Massachusetts trends.

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<sup>3</sup> Prior to the 2020 rate filing, the complement relied on adjusted NCCI severities. NCCI no longer calculates the on-level factors previously used for the adjustment.

<sup>4</sup> According to Massachusetts Labor Market Statistics, <https://www.mass.gov/find-other-labor-market-information> (January 2001 to August 2022), Massachusetts experienced lower unemployment rates than the U.S. as a whole during the 2008 recession and recovered more quickly (higher participation rates).

Finally, Section V-A, Exhibits 2 and 3 Row (12) calculate the credibility-weighted annual trend, which is:

Credibility-weighted annual trend =

[Z] x [indicated annual trend based on historical n-years of Massachusetts data]

+ [1.0 minus Z] x [indicated annual trend based on complementary data],

Where Z = credibility

These various components of the final net trend calculation are shown graphically on Exhibits 4 through 5 of Section V-A. In Exhibit 1, we demonstrate the selection process of choosing the shortest series of Massachusetts trend with the greatest credibility.

### **Data Used in the WCRIBMA Trend Analysis**

For the trend analysis, the WCRIBMA has continued to use Unit Statistical Data. The WCRIBMA selected this data source because it provides detailed, matching payroll, claim count, and claim dollar data that can be used to calculate historical claim frequencies and claim severities. Unit Statistical Data are reported on a policy-by-policy basis and in individual claim detail (except for the smallest claims, which previously could be reported in a batch for an individual employer and policy period).

Unit Statistical Data used in this trend analysis is available for policies written through December 31, 2021 and has been compiled on a "policy year"

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basis. Policy year 2021, for example, includes all policies with inception dates between January 1, 2021 and December 31, 2021. For policy year 2021, the average policy inception date is assumed to be July 1, 2021 and the average accident date is assumed to be January 1, 2022.

Unit Statistical Data include coding that designates the “injury type” of a claim (i.e., fatal, permanent total, permanent partial, temporary total, medical only). We have used separate data for lost-time claims and medical only claims as the starting point for our analysis because the medical only claims are quite numerous but small in average severity, and thus could mask important trends if combined with the lost-time claims. The Unit Statistical Data also report medical loss dollars separately from indemnity loss dollars, and we have preserved this separation in the data we used in our analysis.

The Unit Statistical Data for a particular policy are first reported to the WCRIBMA eighteen months after policy inception (i.e., six months after a twelve month policy expires). Subsequent experience on each policy is reported at successive twelve month intervals, 30, 42, 54, 66, 78, 90, 102, 114, and 126 months after policy inception.<sup>5</sup> These successive reports are compiled in order to evaluate each policy year at various maturities. This in turn enables us to aggregate loss development histories that allow us to develop the most recent, least mature policy years to the same tenth-report maturity as the older, more

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<sup>5</sup> The Unit Statistical Data reporting timeline thus differs from some other policy year data in which all policies are reported at a common calendar date, such as December 31. Assuming an average written date of 7/1, all policy years would be developed from an average evaluation date of 12/31/2022.

mature policy years. For this rate filing, policy year data is developed from the most recent report. For example, the most recent Policy Year 2021 is developed from the 18 month report.

Unit Statistical Data have been compiled out to tenth report for each of the years included in the analysis. For purposes of the trend analysis, we have used each of the policy years developed to tenth report. While it is possible to use other data sources to derive development factors from tenth report to ultimate, the same (or very similar) tenth-to-ultimate development factors would likely apply to all policy years, and thus would not produce a different trend indication. Consequently, we use the data for all policy years at tenth report in the interest of not adding unnecessary complexity to the filing.

### **Overview of Sections V-B – V-D**

Section V-B documents the calculation of historical claim counts developed to tenth report, which are used in the calculation of claim frequencies and average claim severities. Section V-C and Section V-D document the calculation of historical loss dollars for indemnity and medical, respectively, developed to tenth report and adjusted to current benefit levels; the resulting on-level developed losses are used in the calculation of average claim severities.

These sections use standard loss development techniques to develop the claim counts and losses to a tenth-report basis. We have developed indemnity losses separately from medical, and medical only losses separately from lost-time medical.

Consistent with the loss development factors in Section II - Loss Development used to determine the overall indication, paid data relies on two years of data to calculate age-to-age factors and paid plus case relies on five years of data.

For purposes of the trend calculations, we have developed the claim counts and loss dollars to tenth report, since the Unit Statistical Data provides information as far as a tenth report.

After the losses and claim counts are developed to tenth report, as described above, Sections V-B, V-C and V-D of the filing describe the historical year-by-year average claim severities and claim frequencies that are used in the calculation of the indicated Massachusetts loss trends in Section V-A.

## **Section V-B – Massachusetts Claim Frequency**

The historical claim frequencies derived in Section V-B for each year are the ratio of:

- (a) the reported claim counts from Unit Statistical Data, developed to tenth report, and adjusted to the current mix of Massachusetts payrolls by employment classification, divided by
- (b) estimated worker weeks underlying the Unit Statistical Data (described below in Section V-E).

For purposes of the trend calculations, we calculate claim frequencies separately for lost-time claims and for medical only claims.

The adjustment to the current mix of Massachusetts payrolls by employment classification is intended to remove any trend in claim frequency that

is attributable to historical shifts in the mix of employment in Massachusetts. We make this adjustment because our objective is to estimate the level of premiums that would be adequate for the *current* mix of classes, not the historical mix of classes. Any future shifts in the mix of employment would be adjusted for automatically in the premium base because these shifts would move payroll to differently-rated classifications. Details of the class mix adjustment calculations are provided in Section V-F.

Section V-B also displays the indicated claim frequency trend based on the exponential fit to fifteen years of Massachusetts data, calculated using the claim frequencies as shown, and the standard LOGEST function in Microsoft Excel. This long-term claim frequency trend is used as the complement of credibility in Section V-A.

### **Sections V-C and V-D – Massachusetts Average Claim Severities**

The historical average claim severities derived in Section V-C and Section V-D for each year are simply the ratio of: reported losses as of the most recent Unit Statistical Data compilation, developed to tenth report, and adjusted to July 1, 2024 benefit levels, divided by reported claim counts as of the most recent Unit Statistical Data compilation, developed to tenth report.

The reported Unit Statistical Data reflect the statutory benefit provisions that applied to each individual claim. Thus, claims from the 2013 policy year were handled and reported based on the benefits in effect at that time. Similarly, claims from the 2021 policy year were handled and reported based on the benefits in

effect at that time. The changes in statutory benefits over time would contribute to a trend in the average claim severity data. However, the statutory benefit changes are specifically addressed in Section IV of the filing and their impact should not be reflected here. Therefore, before the Unit Statistical Data are used in our trend analysis, the losses are all adjusted to a common benefit level. In Sections V-C and V-D the developed loss dollars are placed “on-level” to the July 1, 2024 Massachusetts benefit levels. By placing all of the loss data on July 1, 2024 benefit level, we avoid a distortion in the trend analysis.

The resulting Massachusetts historical average claim severities in the final columns of Sections V-C and V-D are carried forward to Section V-A for use in calculating the historical fitted Massachusetts trends.

Section V-C and V-D also display the indicated loss severity trend based on an exponential fit to fifteen years of Massachusetts data, calculated using the loss severities as shown, and the standard (LOGEST) function in Microsoft Excel. This long-term loss severity trend is used as the complement of credibility in Section V-A.

## **Section V-E – Payroll Development and Worker-Weeks**

Section V-E documents the estimation of worker weeks, which is used as the denominator of the claim frequency calculation in Section V-B, as described above.

The historical worker weeks estimated in Section V-E for each policy year are derived as the ratio of: the reported payroll as of the most recent Unit Statistical

Data compilation, developed to tenth report, divided by the state average weekly wage corresponding to the same period.<sup>6</sup>

As with claim counts and frequency, we have consistently developed the payrolls to tenth report.

The state average weekly wage is based on Massachusetts wage data compiled by the Department of Unemployment Assistance (DUA). Although it is not compiled for workers' compensation purposes and is defined in a slightly different way than payrolls used in workers' compensation calculations, the overall movement over time in this series is reasonably representative of the overall movement to be expected in the average wages used to calculate workers' compensation premiums. The underlying Massachusetts average wage series is documented in Section V-G.

## **Section V-F – Adjustment Factor for Class Mix**

Section V-F documents the quantification of the estimated effect of a shifting mix of payrolls by classification over time. This effect is estimated by examining the proportion of payrolls that are in high-rated classifications versus low-rated classifications; specifically by calculating a weighted average of the current average rates, weighted by each year's payrolls by classification. For example, using the 2021 distribution of payrolls by classification, the weighted average of the current rates is \$0.668, while using the 2007 distribution of payrolls by

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<sup>6</sup> We have used the actual values for the state average weekly wage in the corresponding periods, as opposed to utilizing a smoothed value. The WCRIBMA has estimated that the 10/1/2023 SAWW reflects data underlying the period from 4/1/2022 to 3/31/2023.

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classification against the same current rates produces an average rate of \$0.695. Since the average rate in each classification is based on the workers' compensation claims experience within that classification, this movement in average rates indicates that the insured employment mix in Massachusetts has shifted towards less hazardous occupations. The claim trends caused by this shift should not be included in the trend factors because other sections of the filing (specifically the classification rate section, Section IX) incorporate an explicit distribution of payrolls. Any further movement in the insured employment mix towards less hazardous occupations will automatically produce premium reductions by means of the lower rates that apply to those less hazardous occupations.

While the class mix change may affect the average severity of claims as well as the frequency of claims, we have made the assumption that all of the effect is related to claim frequency, and we have applied the class mix adjustment to the claim frequency series developed in Section V-B.

## **Section V-G – External Data**

Section V-G displays the Massachusetts average weekly wage data used in our analysis.

**Section V-H – Expense Trends**

Section V-H displays fixed expenses trended over two separate time periods. Fixed expenses are first trended from the historical periods for which they are reported to the periods on which the rate indication is based. Next, fixed expenses are trended forward to the period for which the rates are being set. For the first trend period, reported external index values (such as the CPI) are available that span the time period over which the WCRIBMA is trending. Consequently, the first trend factor is taken as a ratio of index values for the corresponding time periods, Section V-H, Exhibit 1. We projected values for the proposed effective period of the rates since comparable index values are not yet available. The WCRIBMA used an exponential least squares regression to project expense trends into the future.

The trends in the individual components of insurance company expenses have been estimated by using government indices that reflect changes in the prices of the goods and services used in operating an insurance company. With regards to the Average Weekly Earnings, the WCRIBMA believes using the Average Weekly Earnings of Massachusetts Private Fire, Marine, and Casualty Insurance Employees in estimating expense trends is preferable to using SAWW because it more accurately reflects insurers' expenses, as opposed to payroll trends in the market as a whole.

Specifically, the selected indices are:

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Expense	Index
Average Weekly Earnings	Average Weekly Earnings of Massachusetts Private Fire, Marine, and Casualty Insurance Employees. This series is provided on an annual basis.
Food Away From Home	Consumer Price Index for Food Away from Home
Private Transportation	Consumer Price Index for Private Transportation
Telephone Services	Consumer Price Index for Telephone
Postage	Consumer Price Index for Postage
Office and Store Machines and Equipment	Producer Price Index for Office and Store Machines and Equipment
Paper	Producer Price Index for Paper

First, we calculate the year-to-year changes in each of the component economic indices. We then calculate the yearly weighted averages of the percentage changes in the economic indices, using the weights shown in Section V-H, Exhibit 2, Page 3 for calendar year 2021, Exhibit 2, Page 4 for calendar year 2022, and weights from prior filings for all other years to derive the overall average percentage change in costs. The weights attributed to the various components of insurance company expenses for the workers' compensation line are based on the experience of the "Commercial Casualty" line as compiled in Best's Aggregates and Averages. These are then accumulated into indices that are normalized to a value of 100 with calendar year 2022 serving as the base, for the calculation of expense trend. Premium taxes, which are not incorporated in the expenses to which the expense trends and projection factors apply, are excluded from the determination of the component weights.

**Paid Trend Summary**

	Indemnity				Medical								SAWW	
	Severity		Frequency		Lost-Time Medical		Frequency		Medical Only		Frequency		Trend	Credibility
	Trend	Credibility	Trend	Credibility	Trend	Credibility	Trend	Credibility	Trend	Credibility	Trend	Credibility		
(1) Massachusetts Trend														
5 Year	3.0%	39.7%	-1.9%	32.4%	-1.2%	28.6%	-1.9%	32.4%	2.4%	100.0%	-9.6%	11.2%	6.5%	49.8%
6 Year	3.9%	51.4%	-1.6%	46.1%	-0.3%	37.2%	-1.6%	46.1%	2.6%	100.0%	-7.7%	12.6%	6.1%	70.7%
7 Year	4.0%	66.6%	-1.4%	59.8%	0.1%	47.2%	-1.4%	59.8%	2.7%	100.0%	-6.7%	15.3%	5.7%	85.2%
8 Year	3.8%	79.1%	-1.6%	71.0%	0.0%	57.3%	-1.6%	71.0%	2.8%	100.0%	-6.1%	18.5%	5.3%	95.0%
9 Year	3.9%	91.8%	-1.6%	83.0%	0.8%	49.2%	-1.6%	83.0%	2.6%	100.0%	-5.7%	21.6%	5.0%	99.1%
10 Year	3.8%	100.0%	-1.6%	94.4%	1.1%	54.5%	-1.6%	94.4%	2.4%	100.0%	-5.5%	24.4%	4.7%	100.0%
(2) Selected Trend	3.8%		-1.6%		0.0%		-1.6%		2.4%		-5.5%		4.7%	
(3) 15 Year Massachusetts Complement of Credibility	3.1%		-1.7%		1.5%		-1.7%		2.1%		-4.9%		3.7%	
(4) <b>Credibility Weighted Trend</b>	<b>3.8%</b>		<b>-1.6%</b>		<b>0.6%</b>		<b>-1.6%</b>		<b>2.4%</b>		<b>-5.1%</b>		<b>4.7%</b>	
(5) Medical Loss Trend					Lost-Time Medical				Medical Only					
(6) Fraction of Total Medical					-1.0%				-2.8%					
(7) Total Medical Loss Trend					88.1%				11.9%					
(7) Total Medical Loss Trend					-1.2%									
(8) Total Loss Trend	Indemnity				Medical									
(9) SAWW Trend	2.1%				-1.2%									
(9) SAWW Trend	4.7%				4.7%									
(10) Total Net Trend	-2.5%				-5.6%									

Notes:

- (1), (3): Section V, Exhibit 2 Severity; Exhibit 3 Frequency and SAWW.
- (2): Selection based on the fit with the highest credibility and least number of years.
- (4) = Credibility Weighted Selected Trend
- (5) =  $[(1.0 + \text{Credibility Weighted Severity Trend}) \times (1.0 + \text{Credibility Weighted Frequency Trend})] - 1.0$
- (6) Medical Only = Medical Only Fraction of Total Medical from Section IV-E, Exhibit 2  
 Lost Time Medical = 1.0 - Medical Only
- (7) = Weighted Average of (5) using (6) as weights
- (8): Indemnity =  $(1.0 + \text{Credibility Weighted Severity Trend}) \times (1.0 + \text{Credibility Weighted Frequency Trend}) - 1.0$   
 Medical = Row (7)
- (9): (4) for SAWW.
- (10) =  $\{ [1.0 + (8)] / [1.0 + (9)] \} - 1.0$

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**Indemnity Paid Severity Trend Calculation**

Policy Year	Massachusetts Indemnity Severity	5 Year		6 Year		7 Year		8 Year		9 Year		10 Year	
		Exponential Fit	Difference Squared										
2012	28,847												
2013	28,730												
2014	30,886							30,390	246,311	29,068	114,530	29,331	361,606
2015	31,013					31,256	59,105	31,546	284,922	31,402	151,307	31,579	320,574
2016	31,817			32,690	762,442	32,520	494,834	32,747	864,903	32,637	673,412	32,766	901,433
2017	33,872	34,703	691,071	33,960	7,699	33,836	1,280	33,993	14,686	33,922	2,517	33,999	16,032
2018	35,812	35,759	2,741	35,279	284,264	35,205	367,902	35,287	275,609	35,257	307,457	35,277	285,842
2019	38,883	36,848	4,142,355	36,649	4,991,924	36,630	5,077,519	36,630	5,077,519	36,645	5,008,698	36,604	5,194,902
2020	37,406	37,969	316,603	38,072	443,039	38,112	497,408	38,024	380,908	38,087	463,545	37,980	329,274
2021	38,502	39,125	388,041	39,551	1,100,267	39,654	1,327,142	39,471	938,788	39,586	1,176,435	39,408	822,320
(1)	<b>Massachusetts Trend</b>		<b>3.0%</b>		<b>3.9%</b>		<b>4.0%</b>		<b>3.8%</b>		<b>3.9%</b>		<b>3.8%</b>
(2)	n		5		6		7		8		9		10
(3)	s		1359.02		1377.46		1251.01		1160.72		1092.30		1047.07
(4)	t		2.35		2.13		2.02		1.94		1.89		1.86
(5)	m		5.50		6.00		6.50		7.00		7.50		8.00
(6)	$[1 + 1/n + 12 \times m^2/(n^3-n)]^{.5}$		2.05		1.80		1.63		1.51		1.43		1.37
(7)	Confidence Interval		6,571.93		5,273.32		4,103.93		3,414.59		2,961.31		2,666.69
(8)	Projected Value Prospective Period	43,449.87		45,203.33		45,553.34		44,991.71		45,306.57		44,851.49	
(9)	CI/Projected Severity		0.15		0.12		0.09		0.08		0.07		0.06
(10)	<b>Credibility - MA Trend (Z)</b>		<b>40%</b>		<b>51%</b>		<b>67%</b>		<b>79%</b>		<b>92%</b>		<b>100%</b>
(11)	<b>Complement of Credibility</b>							<b>3.1%</b>					
(12)	<b>Credibility Weighted Severity Trend</b>		<b>3.1%</b>		<b>3.5%</b>		<b>3.7%</b>		<b>3.7%</b>		<b>3.9%</b>		<b>3.8%</b>

- Notes:
- (1): Massachusetts Trend from exponential fit to Severities.
  - (2): Number of data points used in the exponential fitting of the severities.
  - (3):  $\sqrt{SSR/(n - 2)}$  where SSR is the sum of squared residuals and n is the number of data points used in the exponential fitting of the data.
  - (4): T-value based on a two-tailed t-test with probability parameter, p, of 90% and a t-distribution with n - 2 degrees of freedom.
  - (5): Number of years between midpoint of data and projected point.
  - (7) = (3) x (4) x (6)
  - (8): Severity projected to policy effective period using exponential fit to data.
  - (9) = (7) / (8)
  - (10): The credibility is the ratio of the target value, k, to the quotient of the confidence interval and the projected frequency, capped at 100%. Numerically, (10) = the minimum of k / (9) and 100%.
  - (11): Complement of credibility is based on a fifteen-year exponential fit to the MA Indemnity Paid Severities. Section C, Exhibit 1, Page 3
  - (12) = [ (1) x (10) ] + { (11) x [ 1.0 - (10) ] }

V 000020

Lost Time Medical Paid Severity Trend Calculation

Policy Year	Lost Time Medical Severity	5 Year		6 Year		7 Year		8 Year		9 Year		10 Year	
		Exponential Fit	Difference Squared										
2012	10,606											10,923	100,207
2013	10,382									11,186	646,431	11,041	433,945
2014	11,754							11,708	2,096	11,280	225,051	11,161	352,307
2015	11,456					11,686	52,889	11,712	65,570	11,374	6,749	11,282	30,518
2016	11,501			11,853	123,525	11,697	38,199	11,716	46,236	11,469	1,025	11,404	9,490
2017	11,683	12,104	177,394	11,816	17,738	11,707	581	11,720	1,381	11,565	13,903	11,527	24,224
2018	12,114	11,958	24,196	11,780	111,678	11,717	157,174	11,724	152,035	11,662	204,496	11,652	213,200
2019	12,331	11,814	266,558	11,743	344,808	11,728	363,312	11,728	363,312	11,759	326,579	11,778	304,971
2020	11,876	11,672	41,721	11,707	28,585	11,738	19,045	11,732	20,894	11,857	356	11,906	880
2021	11,106	11,531	181,349	11,671	319,828	11,749	413,594	11,736	396,925	11,956	724,043	12,035	863,607
(1)	<b>Massachusetts Trend</b>		<b>-1.2%</b>		<b>-0.3%</b>		<b>0.1%</b>		<b>0.0%</b>		<b>0.8%</b>		<b>1.1%</b>
(2)	n		5		6		7		8		9		10
(3)	s		480.01		486.35		457.12		418.02		554.03		540.06
(4)	t		2.35		2.13		2.02		1.94		1.89		1.86
(5)	m		5.50		6.00		6.50		7.00		7.50		8.00
(6)	$[1 + 1/n + 12 \times m^2 / (n^3 - n)]^{.5}$		2.05		1.80		1.63		1.51		1.43		1.37
(7)	Confidence Interval		2,321.21		1,861.90		1,499.57		1,229.73		1,502.02		1,375.44
(8)	Projected Value Prospective Period		11,052.96		11,545.70		11,785.28		11,749.23		12,309.53		12,497.55
(9)	CI/Projected Severity		0.21		0.16		0.13		0.10		0.12		0.11
(10)	<b>Credibility - MA Trend (Z)</b>		<b>29%</b>		<b>37%</b>		<b>47%</b>		<b>57%</b>		<b>49%</b>		<b>55%</b>
(11)	<b>Complement of Credibility</b>						<b>1.5%</b>						
(12)	<b>Credibility Weighted Severity Trend</b>		<b>0.7%</b>		<b>0.8%</b>		<b>0.8%</b>		<b>0.6%</b>		<b>1.2%</b>		<b>1.3%</b>

- Notes:
- (1): Massachusetts Trend from exponential fit to Severities.
  - (2): Number of data points used in the exponential fitting of the severities.
  - (3):  $\sqrt{SSR / (n - 2)}$  where SSR is the sum of squared residuals and n is the number of data points used in the exponential fitting of the data.
  - (4): T-value based on a two-tailed t-test with probability parameter, p, of 90% and a t-distribution with n - 2 degrees of freedom.
  - (5): Number of years between midpoint of data and projected point.
  - (7) = (3) x (4) x (6)
  - (8): Severity projected to policy effective period using exponential fit to data.
  - (9) = (7) / (8)
  - (10): The credibility is the ratio of the target value, k, to the quotient of the confidence interval and the projected frequency, capped at 100%. Numerically, (10) = the minimum of k / (9) and 100%.
  - (11): Complement of credibility is based on a fifteen-year exponential fit to the MA Lost Time Medical Paid Severities. Section D, Exhibit 1, Page 3.
  - (12) =  $[ (1) \times (10) ] + \{ (11) \times [ 1.0 - (10) ] \}$

V 000021

Medical Only Paid Severity Trend Calculation

Policy Year	Massachusetts Medical Only Severity	5 Year		6 Year		7 Year		8 Year		9 Year		10 Year	
		Exponential Fit	Difference Squared										
2012	850											837	165
2013	873											858	238
2014	852											879	716
2015	893					895	1					900	48
2016	913			919	42	918	32					922	93
2017	951	949	4	943	55	943	64	939	134	943	55	945	34
2018	975	971	12	968	48	968	53	966	83	968	55	968	49
2019	978	995	294	993	247	993	245	993	245	992	218	992	194
2020	1,034	1,019	245	1,019	223	1,020	217	1,022	164	1,018	269	1,016	344
2021	1,039	1,043	14	1,046	46	1,047	52	1,051	125	1,044	22	1,041	1
(1)	<b>Massachusetts Trend</b>		<b>2.4%</b>		<b>2.6%</b>		<b>2.7%</b>		<b>2.8%</b>		<b>2.6%</b>		<b>2.4%</b>
(2)	n		5		6		7		8		9		10
(3)	s		13.78		12.86		11.54		12.30		15.16		15.34
(4)	t		2.35		2.13		2.02		1.94		1.89		1.86
(5)	m		5.50		6.00		6.50		7.00		7.50		8.00
(6)	$[1 + 1/n + 12 \times m^2 / (n^3 - n)]^{.5}$		2.05		1.80		1.63		1.51		1.43		1.37
(7)	Confidence Interval		66.63		49.23		37.85		36.18		41.10		39.07
(8)	Projected Value Prospective Period		1,133.60		1,145.52		1,146.92		1,159.04		1,141.13		1,132.44
(9)	CI/Projected Severity		0.06		0.04		0.03		0.03		0.04		0.03
(10)	<b>Credibility - MA Trend (Z)</b>		<b>100%</b>										
(11)	<b>Complement of Credibility</b>							<b>2.1%</b>					
(12)	<b>Credibility Weighted Severity Trend</b>		<b>2.4%</b>		<b>2.6%</b>		<b>2.7%</b>		<b>2.8%</b>		<b>2.6%</b>		<b>2.4%</b>

- Notes:
- (1): Massachusetts Trend from exponential fit to Severities.
  - (2): Number of data points used in the exponential fitting of the severities.
  - (3):  $\sqrt{SSR / (n - 2)}$  where SSR is the sum of squared residuals and n is the number of data points used in the exponential fitting of the data.
  - (4): T-value based on a two-tailed t-test with probability parameter, p, of 90% and a t-distribution with n - 2 degrees of freedom.
  - (5): Number of years between midpoint of data and projected point.
  - (7) = (3) x (4) x (6)
  - (8): Severity projected to policy effective period using exponential fit to data.
  - (9) = (7) / (8)
  - (10): The credibility is the ratio of the target value, k, to the quotient of the confidence interval and the projected frequency, capped at 100%. Numerically, (10) = the minimum of k / (9) and 100%.
  - (11): Complement of credibility is based on a fifteen-year exponential fit to the MA Medical Only Paid Severities. Section D, Exhibit 2, Page 2.
  - (12) = [ (1) x (10) ] + { (11) x [ 1.0 - (10) ] }

V 000022

Lost Time Frequency Trend Calculation

Policy Year	Adjusted Claim Frequency	5 Year		6 Year		7 Year		8 Year		9 Year		10 Year	
		Exponential Fit	Difference Squared										
2012	174.65											175	0
2013	171.95											172	0
2014	170.37											169	2
2015	164.13					165	1	166	4	166	4	166	4
2016	161.61			163	3	163	1	163	3	163	4	164	4
2017	165.49	162	11	161	22	160	26	161	22	161	21	161	21
2018	160.39	159	2	158	4	158	6	158	5	158	4	158	4
2019	148.34	156	61	156	56	156	55	156	55	156	55	156	55
2020	153.08	153	0	153	0	153	0	153	0	153	0	153	0
2021	153.99	150	14	151	9	151	7	151	10	151	10	151	11
(1)	<b>Massachusetts Trend</b>		<b>-1.9%</b>		<b>-1.6%</b>		<b>-1.4%</b>		<b>-1.6%</b>		<b>-1.6%</b>		<b>-1.6%</b>
(2)	n		5		6		7		8		9		10
(3)	s		5.38		4.86		4.39		4.10		3.80		3.55
(4)	t		2.35		2.13		2.02		1.94		1.89		1.86
(5)	m		5.50		6.00		6.50		7.00		7.50		8.00
(6)	$[1 + 1/n + 12 \times m^2 / (n^3 - n)]^{.5}$		2.05		1.80		1.63		1.51		1.43		1.37
(7)	Confidence Interval		26.01		18.60		14.41		12.06		10.29		9.05
(8)	Projected Value Prospective Period		140.61		142.84		143.73		142.63		142.47		142.41
(9)	CI/Projected Frequency		0.18		0.13		0.10		0.08		0.07		0.06
(10)	<b>Credibility - MA Trend (Z)</b>		<b>32%</b>		<b>46%</b>		<b>60%</b>		<b>71%</b>		<b>83%</b>		<b>94%</b>
(11)	<b>Complement of Credibility</b>								<b>-1.7%</b>				
(12)	<b>Credibility Weighted Frequency Trend</b>		<b>-1.7%</b>		<b>-1.6%</b>		<b>-1.5%</b>		<b>-1.6%</b>		<b>-1.6%</b>		<b>-1.6%</b>

- Notes:
- (1): Massachusetts Trend from exponential fit to Adjusted Claim Frequencies
  - (2): Number of data points used in the exponential fitting of the adjusted claim frequencies.
  - (3):  $\sqrt{SSR / (n - 2)}$  where SSR is the sum of squared residuals and n is the number of data points used in the exponential fitting of the data.
  - (4): T-value based on a two-tailed t-test with probability parameter, p, of 90% and a t-distribution with n - 2 degrees of freedom.
  - (5): Number of years between midpoint of data and projected point.
  - (7) = (3) x (4) x (6)
  - (8): Frequency projected to policy effective period using exponential fit to data.
  - (9) = (7) / (8)
  - (10): The credibility is the ratio of the target value, k, to the quotient of the confidence interval and the projected frequency, capped at 100%. Numerically, (10) = the minimum of k / (9) and 100%.
  - (11): Complement of credibility is based on a fifteen-year exponential fit to the Adjusted Claim Frequencies. Section B, Exhibit 1.
  - (12) = [(1) x (10)] + [(11) x [1.0 - (10)]]

V 000023

Medical Only Frequency Trend Calculation

Policy Year	Adjusted Med Only Claim Frequency	5 Year		6 Year		7 Year		8 Year		9 Year		10 Year	
		Exponential Fit	Difference Squared										
2012	353.90											367	164
2013	339.68											347	49
2014	324.31											328	11
2015	306.51					325	338	317	117	313	40	310	11
2016	295.01			315	411	303	68	298	9	295	0	293	5
2017	298.77	307	63	291	63	283	247	280	362	278	434	277	481
2018	291.99	277	213	268	560	264	773	263	861	262	901	262	917
2019	256.11	251	28	248	73	247	91	247	91	247	85	247	76
2020	207.34	227	382	228	443	230	521	232	585	233	644	234	704
2021	214.47	205	87	211	14	215	0	217	8	219	24	221	44
(1)	<b>Massachusetts Trend</b>		<b>-9.6%</b>		<b>-7.7%</b>		<b>-6.7%</b>		<b>-6.1%</b>		<b>-5.7%</b>		<b>-5.5%</b>
(2)	n		5		6		7		8		9		10
(3)	s		16.04		19.77		20.19		19.24		18.29		17.54
(4)	t		2.35		2.13		2.02		1.94		1.89		1.86
(5)	m		5.50		6.00		6.50		7.00		7.50		8.00
(6)	$[1 + 1/n + 12 \times m^2 / (n^3 - n)]^{.5}$		2.05		1.80		1.63		1.51		1.43		1.37
(7)	Confidence Interval		77.57		75.68		66.23		56.59		49.60		44.67
(8)	Projected Value Prospective Period		144.34		159.01		168.80		174.41		178.35		181.67
(9)	CI/Projected Frequency		0.54		0.48		0.39		0.32		0.28		0.25
(10)	<b>Credibility - MA Trend (Z)</b>		<b>11%</b>		<b>13%</b>		<b>15%</b>		<b>18%</b>		<b>22%</b>		<b>24%</b>
(11)	<b>Complement of Credibility</b>								<b>-4.9%</b>				
(12)	<b>Credibility Weighted Frequency Trend</b>		<b>-5.5%</b>		<b>-5.3%</b>		<b>-5.2%</b>		<b>-5.2%</b>		<b>-5.1%</b>		<b>-5.1%</b>

Notes:

- (1): Massachusetts Trend from exponential fit to Adjusted Claim Frequencies
- (2): Number of data points used in the exponential fitting of the adjusted claim frequencies.
- (3):  $\sqrt{SSR / (n - 2)}$  where SSR is the sum of squared residuals and n is the number of data points used in the exponential fitting of the data.
- (4): T-value based on a two-tailed t-test with probability parameter, p, of 90% and a t-distribution with n - 2 degrees of freedom.
- (5): Number of years between midpoint of data and projected point.
- (7) = (3) x (4) x (6)
- (8): Frequency projected to policy effective period using exponential fit to data.
- (9) = (7) / (8)
- (10): The credibility is the ratio of the target value, k, to the quotient of the confidence interval and the projected frequency, capped at 100%. Numerically, (10) = the minimum of k / (9) and 100%.
- (11): Complement of credibility is based on a fifteen-year exponential fit to the Adjusted Claim Frequencies. Section B, Exhibit 2.
- (12) = [(1) x (10)] + [(11) x [1.0 - (10)]]

V 000024

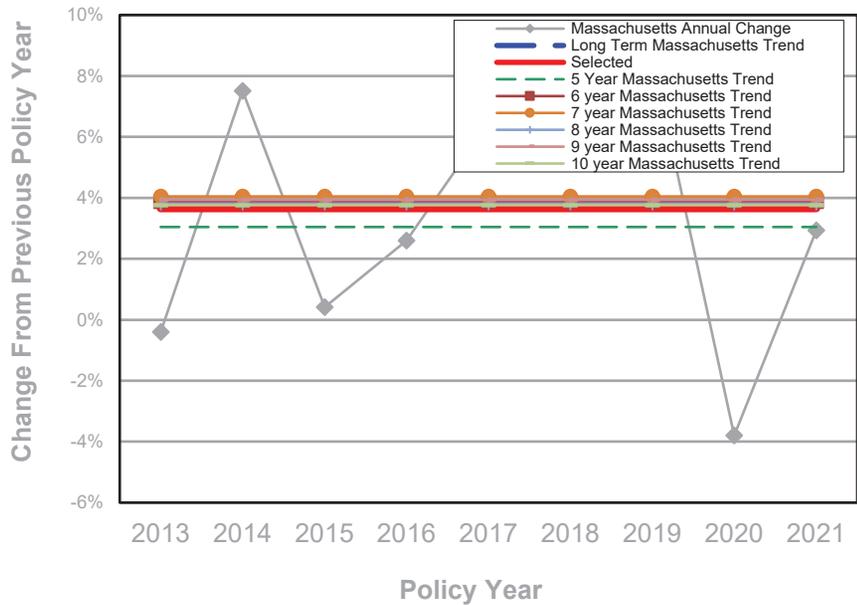
Statewide Average Weekly Wage Trend Calculation

Data Period	Statewide Average Weekly Wage	5 Year		6 Year		7 Year		8 Year		9 Year		10 Year	
		Exponential Fit	Difference Squared										
4/1/13 to 4/1/14	1,214.99											1,180	1,209
4/1/14 to 4/1/15	1,256.47											1,236	422
4/1/15 to 4/1/16	1,291.74											1,294	6
4/1/16 to 4/1/17	1,338.05					1,312	704	1,329	81	1,344	41	1,355	299
4/1/17 to 4/1/18	1,383.41			1,367	260	1,386	5	1,400	260	1,411	780	1,419	1,290
4/1/18 to 4/1/19	1,431.66	1,437	27	1,450	352	1,464	1,048	1,474	1,774	1,482	2,488	1,486	2,988
4/1/19 to 4/1/20	1,487.78	1,530	1,748	1,539	2,581	1,547	3,486	1,552	4,120	1,555	4,549	1,556	4,720
4/1/20 to 4/1/21	1,694.24	1,628	4,349	1,632	3,860	1,634	3,593	1,634	3,593	1,633	3,802	1,630	4,133
4/1/21 to 4/1/22	1,765.34	1,733	1,023	1,731	1,157	1,727	1,492	1,721	1,967	1,714	2,658	1,707	3,417
4/1/22 to 4/1/23	1,796.72	1,845	2,352	1,837	1,589	1,824	764	1,812	242	1,799	5	1,787	86
(1)	<b>Massachusetts Trend</b>		<b>6.5%</b>		<b>6.1%</b>		<b>5.7%</b>		<b>5.3%</b>		<b>5.0%</b>		<b>4.7%</b>
(2)	n		5		6		7		8		9		10
(3)	s		56.27		49.49		47.10		46.40		47.46		48.18
(4)	t		2.35		2.13		2.02		1.94		1.89		1.86
(5)	m		5.75		6.25		6.75		7.25		7.75		8.25
(6)	$[1 + 1/n + 12 \times m^2/(n^3-n)]^{.5}$		2.12		1.84		1.66		1.54		1.45		1.39
(7)	Confidence Interval		281.10		194.51		157.97		138.99		130.68		124.31
(8)	Projected Value Prospective Period		2,332.84		2,292.51		2,242.32		2,200.67		2,158.20		2,125.51
(9)	CI/Projected Wage		0.12		0.08		0.07		0.06		0.06		0.06
(10)	<b>Credibility - MA Trend (Z)</b>		<b>50%</b>		<b>71%</b>		<b>85%</b>		<b>95%</b>		<b>99%</b>		<b>100%</b>
(11)	<b>Complement of Credibility</b>								<b>3.7%</b>				
(12)	<b>Credibility Weighted Wage Trend</b>		<b>5.1%</b>		<b>5.4%</b>		<b>5.4%</b>		<b>5.2%</b>		<b>5.0%</b>		<b>4.7%</b>

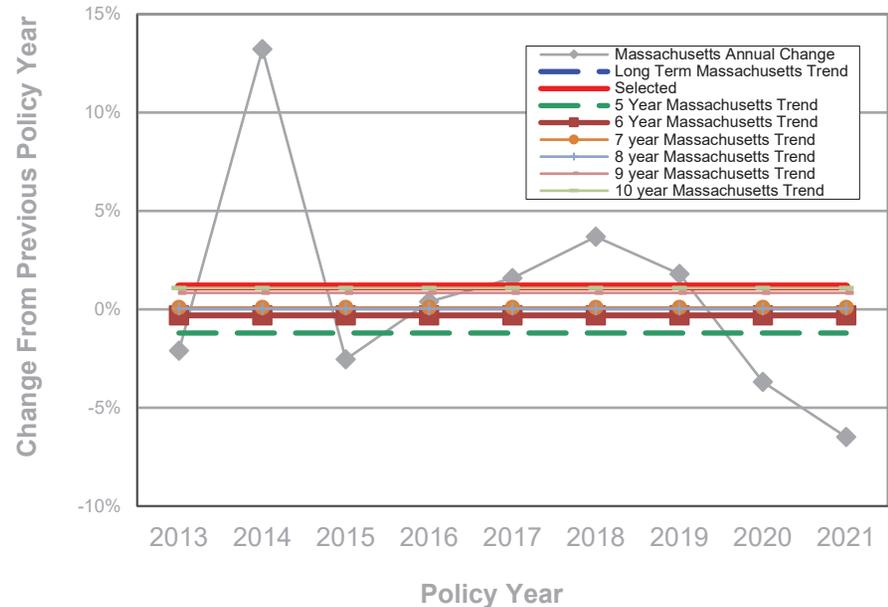
- Notes:
- (1): Massachusetts Trend from exponential fit to the SAWW.
  - (2): Number of data points used in the exponential fitting of the statewide average weekly wages.
  - (3):  $\sqrt{SSR/(n - 2)}$  where SSR is the sum of squared residuals and n is the number of data points used in the exponential fitting of the data.
  - (4): T-value based on a two-tailed t-test with probability parameter, p, of 90% and a t-distribution with n - 2 degrees of freedom.
  - (5): Number of years between midpoint of data and projected point.
  - (7) = (3) x (4) x (6)
  - (8): SAWW projected to policy effective period using exponential fit to data.
  - (9) = (7) / (8)
  - (10): The credibility is the ratio of the target value, k, to the quotient of the confidence interval and the projected frequency, capped at 100%. Numerically, (10) = the minimum of k / (9) and 100%.
  - (11): Complement of credibility is based on a fifteen-year exponential fit to the SAWWs. Section G, Exhibit 1.
  - (12) = [(1) x (10)] + [(11) x [1.0 - (10)]]

V 000025

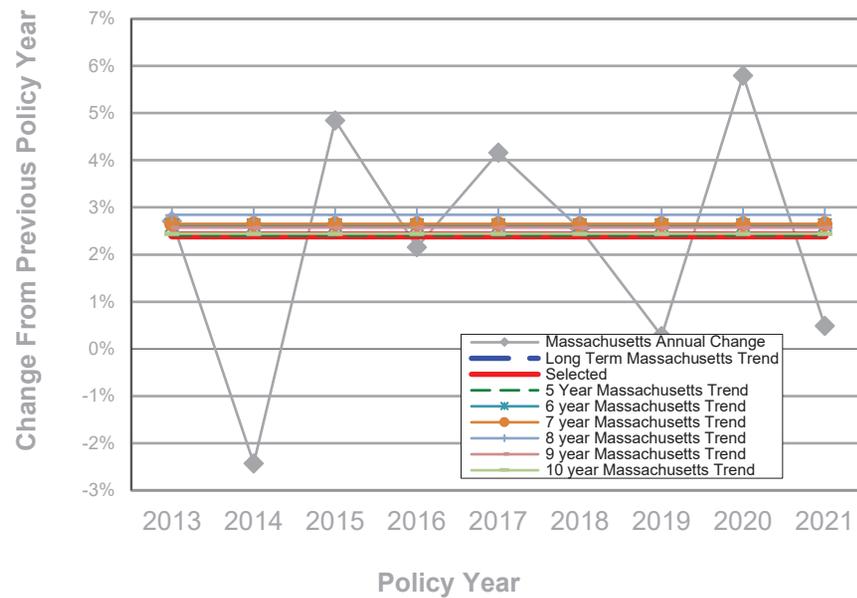
**Indemnity Severity Trend**



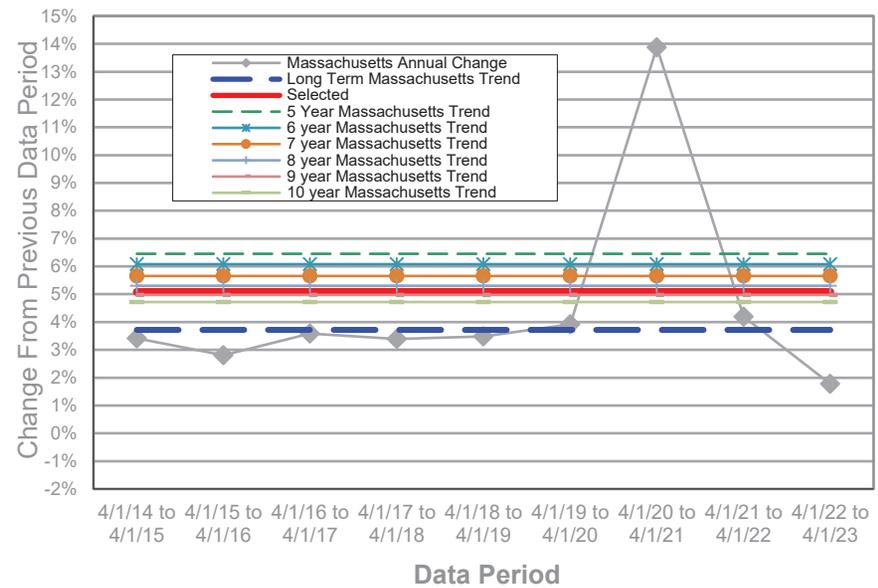
**Lost Time Medical Severity Trend**



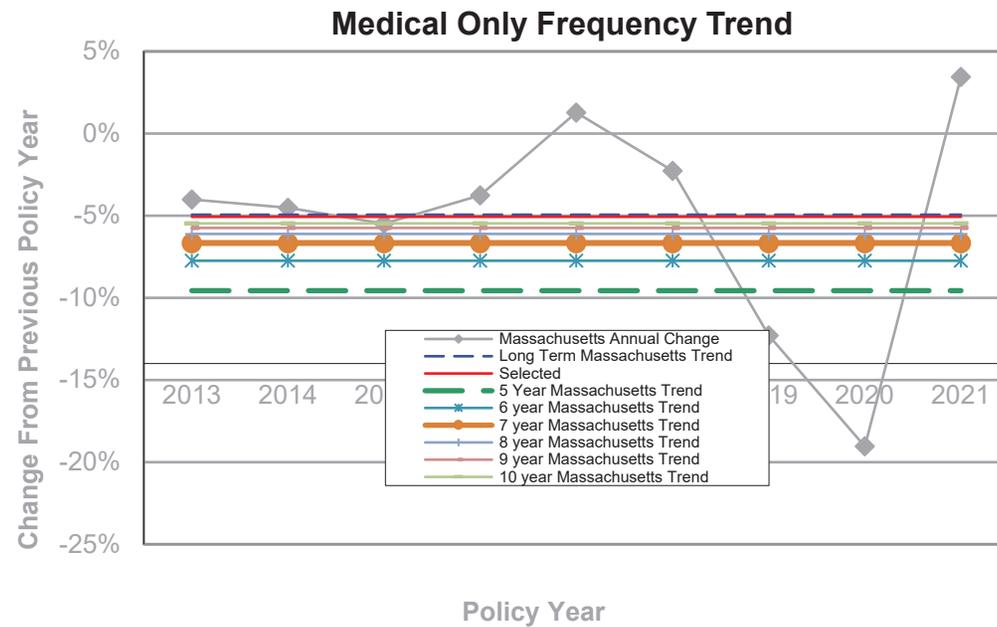
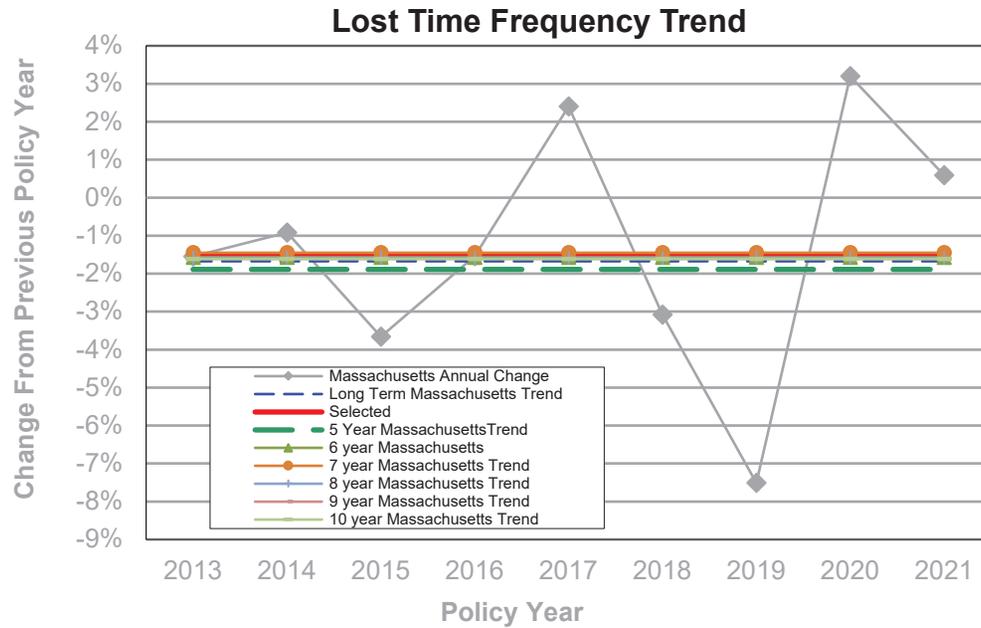
**Medical Only Severity Trend**



**SAWW Trend**



V 000026



V 000027

Lost Time Reported Claim Counts - Industrywide

Policy Year (1)	Lost Time Reported Claim Counts Age of Development											Developed to Tenth Report (3)	Estimated Million Worker-Weeks (4)	Unadjusted Claim Frequency = (3) / (4) (5)	Class Mix Adjustment (6)	Adjusted Claim Frequency = (5) x (6) (7)	Percent Change = (7)/previous year (7)-1 (8)
	18	30	42	54	66	78	90	102	114	126							
	(2)																
2007_01	15,211	15,548	15,655	15,698	15,720	15,729	15,733	15,740	15,752	15,756	15,756	78.30	201.23	0.960	193.26		
2008_01	13,908	14,174	14,264	14,313	14,352	14,365	14,367	14,374	14,381	14,387	14,387	78.57	183.11	0.990	181.32	-6.2%	
2009_01	12,975	13,210	13,270	13,305	13,317	13,327	13,334	13,336	13,346	13,345	13,345	75.29	177.25	0.997	176.77	-2.5%	
2010_01	14,379	14,656	14,725	14,773	14,799	14,814	14,817	14,816	14,816	14,817	14,817	79.76	185.77	1.002	186.09	5.3%	
2011_01	14,468	14,697	14,790	14,830	14,865	14,878	14,878	14,882	14,888	14,889	14,889	82.97	179.46	1.005	180.38	-3.1%	
2012_01	14,207	14,462	14,532	14,562	14,587	14,590	14,596	14,602	14,601	14,603	14,603	83.65	174.58	1.000	174.65	-3.2%	
2013_01	14,411	14,672	14,748	14,798	14,819	14,823	14,823	14,832	14,834		14,836	85.14	174.24	0.987	171.95	-1.5%	
2014_01	14,801	15,073	15,158	15,196	15,213	15,222	15,222	15,226			15,228	87.14	174.75	0.975	170.37	-0.9%	
2015_01	14,850	15,070	15,149	15,189	15,215	15,223	15,235				15,244	90.36	168.69	0.973	164.13	-3.7%	
2016_01	14,627	14,848	14,935	14,962	14,981	15,001					15,015	90.20	166.47	0.971	161.61	-1.5%	
2017_01	15,262	15,538	15,620	15,655	15,681						15,711	91.70	171.32	0.966	165.49	2.4%	
2018_01	14,900	15,158	15,227	15,282							15,333	92.65	165.50	0.969	160.39	-3.1%	
2019_01	13,345	13,553	13,644								13,730	92.26	148.81	0.997	148.34	-7.5%	
2020_01	12,694	12,928									13,082	85.70	152.65	1.003	153.08	3.2%	
2021_01	13,382										13,771	89.43	153.99	1.000	153.99	0.6%	
	Age-to-Age Development Factors											Selected Complement of Credibility			-1.7%		
	18 - 30	30 - 42	42 - 54	54 - 66	66 - 78	78 - 90	90 - 102	102 - 114	114 - 126								
2 Yr Weighted Average	1.017	1.006	1.003	1.001	1.001	1.000	1.000	1.000	1.000								
Selected	1.017	1.006	1.003	1.001	1.001	1.000	1.000	1.000	1.000								
Cumulative	1.029	1.012	1.006	1.003	1.002	1.001	1.001	1.000	1.000								

Notes:  
 Development factors are claim count weighted averages from latest two years.  
 (4): Section V-E, Exhibit 1.  
 (6): Section V-F, Exhibit 1.

V 000028



Indemnity Paid Losses (in 000's)

Policy Year (1)	Developed to Tenth Report (2)	Indemnity On-Level Factor (3)	On-Level Indemnity Losses (in 000's) Developed to Tenth Report = (2) x (3) (4)	Developed Claim Counts (5)	Severity = 1,000 x (4) / (5) (6)
2007_01	342,885	1.171	401,422	15,756	25,477
2008_01	332,279	1.158	384,674	14,387	26,738
2009_01	321,646	1.153	370,840	13,345	27,789
2010_01	343,817	1.154	396,795	14,817	26,780
2011_01	370,362	1.147	424,685	14,889	28,523
2012_01	370,628	1.137	421,248	14,603	28,847
2013_01	376,566	1.132	426,222	14,836	28,730
2014_01	417,816	1.126	470,336	15,228	30,886
2015_01	423,360	1.117	472,745	15,244	31,013
2016_01	431,353	1.108	477,744	15,015	31,817
2017_01	485,017	1.097	532,149	15,711	33,872
2018_01	505,403	1.086	549,115	15,333	35,812
2019_01	496,101	1.076	533,856	13,730	38,883
2020_01	460,235	1.063	489,344	13,082	37,406
2021_01	512,563	1.034	530,209	13,771	38,502

15 Year Indemnity Trend

3.1%

Notes:

- (2): (3) Exhibit 1, Page 2
- (3): Section IV-A, Exhibit 1.
- (5): Section V-B, Exhibit 1.

V 000030

Indemnity Paid Losses (in 000's)  
 Industrywide

Policy Year (1)	Age of Development										Developed to Tenth Report (3)
	18	30	42	54	66	78	90	102	114	126	
	(2)										
2007_01	106,029	195,075	253,709	293,152	314,356	325,087	333,860	339,052	341,169	342,885	342,885
2008_01	103,033	194,337	253,244	288,542	309,174	320,808	324,438	327,815	329,773	332,279	332,279
2009_01	96,346	181,298	241,870	281,307	301,938	311,416	316,235	318,413	320,696	321,646	321,646
2010_01	101,956	196,131	261,018	302,564	325,334	333,604	337,047	339,468	342,181	343,817	343,817
2011_01	108,820	209,336	285,745	327,104	346,063	355,377	362,544	365,695	369,451	370,362	370,362
2012_01	109,327	213,031	283,651	327,274	348,815	359,104	365,269	367,776	368,668	370,628	370,628
2013_01	117,509	223,219	293,927	335,187	355,944	365,346	369,380	373,230	375,107		376,566
2014_01	127,392	247,170	333,960	379,133	397,039	404,209	411,213	414,647			417,816
2015_01	132,099	250,833	331,007	376,553	395,196	409,150	416,265				423,360
2016_01	132,936	253,540	331,763	376,584	399,446	416,888					431,353
2017_01	140,755	268,003	352,841	410,240	450,936						485,017
2018_01	142,919	264,589	362,944	434,769							505,403
2019_01	139,470	257,189	361,504								496,101
2020_01	128,276	241,547									460,235
2021_01	144,418										512,563
Age-to-Age Development Factors											
	18 - 30	30 - 42	42 - 54	54 - 66	66 - 78	78 - 90	90 - 102	102 - 114	114 - 126		
2007_01	1.840	1.301	1.155	1.072	1.034	1.027	1.016	1.006	1.005		
2008_01	1.886	1.303	1.139	1.072	1.038	1.011	1.010	1.006	1.008		
2009_01	1.882	1.334	1.163	1.073	1.031	1.015	1.007	1.007	1.003		
2010_01	1.924	1.331	1.159	1.075	1.025	1.010	1.007	1.008	1.005		
2011_01	1.924	1.365	1.145	1.058	1.027	1.020	1.009	1.010	1.002		
2012_01	1.949	1.331	1.154	1.066	1.029	1.017	1.007	1.002	1.005		
2013_01	1.900	1.317	1.140	1.062	1.026	1.011	1.010	1.005			
2014_01	1.940	1.351	1.135	1.047	1.018	1.017	1.008				
2015_01	1.899	1.320	1.138	1.050	1.035	1.017					
2016_01	1.907	1.309	1.135	1.061	1.044						
2017_01	1.904	1.317	1.163	1.099							
2018_01	1.851	1.372	1.198								
2019_01	1.844	1.406									
2020_01	1.883										
2 Yr Weighted Average	1.863	1.388	1.181	1.081	1.040	1.017	1.009	1.004	1.004		
5 Yr Weighted Average	1.877	1.345	1.155	1.064	1.031	1.017	1.008	1.007	1.005		
Selected	1.863	1.388	1.181	1.081	1.040	1.017	1.009	1.004	1.004		
Cumulative	3.549	1.905	1.372	1.162	1.076	1.035	1.017	1.008	1.004		

Notes:  
 Development factors are loss weighted average, paid data uses two years.

V 000031

Lost Time Medical Paid Losses (in 000's)

Policy Year (1)	Developed to Tenth Report (2)	Medical On-Level Factor (3)	On-Level Lost Time Medical Losses (in 000's) Developed to Tenth Report = (2) x (3) (4)	Developed Claim Counts (5)	Severity = 1,000 x (4) / (5) (6)
2007_01	152,795	1.032	157,684	15,756	10,008
2008_01	135,151	1.024	138,443	14,387	9,623
2009_01	139,906	1.002	140,147	13,345	10,502
2010_01	148,597	1.000	148,597	14,817	10,029
2011_01	157,802	1.000	157,802	14,889	10,599
2012_01	154,882	1.000	154,882	14,603	10,606
2013_01	154,027	1.000	154,027	14,836	10,382
2014_01	178,994	1.000	178,994	15,228	11,754
2015_01	174,635	1.000	174,635	15,244	11,456
2016_01	172,695	1.000	172,695	15,015	11,501
2017_01	183,546	1.000	183,546	15,711	11,683
2018_01	185,747	1.000	185,747	15,333	12,114
2019_01	169,297	1.000	169,297	13,730	12,331
2020_01	155,363	1.000	155,363	13,082	11,876
2021_01	152,936	1.000	152,936	13,771	11,106

15 Year Lost Time Medical Trend

1.5%

Notes:

- (2): (3) Exhibit 1, Page 2
- (3): Section IV-A, Exhibit 1.
- (5): Section V-B, Exhibit 1.

V 000032

Lost Time Medical Paid Losses (in 000's)  
 Industrywide

Policy Year (1)	Age of Development										Developed to Tenth Report (3)
	18	30	42	54	66	78	90	102	114	126	
	(2)										
2007_01	92,238	120,976	132,565	138,596	142,037	144,973	147,725	149,794	151,366	152,795	152,795
2008_01	84,096	110,557	122,487	127,169	129,750	131,263	132,319	133,517	134,272	135,151	135,151
2009_01	86,941	113,382	124,678	129,710	132,469	134,607	135,955	137,559	138,929	139,906	139,906
2010_01	88,055	116,161	127,772	133,970	137,178	141,219	143,573	145,595	147,536	148,597	148,597
2011_01	93,517	121,633	136,257	142,710	146,925	149,825	152,043	153,922	155,844	157,802	157,802
2012_01	96,025	126,297	136,900	142,666	145,901	147,908	150,128	152,007	153,616	154,882	154,882
2013_01	95,986	124,337	136,411	142,877	145,926	148,165	149,437	150,737	152,439		154,027
2014_01	107,724	140,999	155,096	163,482	168,366	171,174	173,060	175,232			178,994
2015_01	105,849	139,657	152,401	158,034	163,056	165,294	169,144				174,635
2016_01	108,435	137,679	151,284	158,055	161,921	164,462					172,695
2017_01	113,468	146,666	160,262	168,343	172,262						183,546
2018_01	116,293	148,462	162,842	170,267							185,747
2019_01	102,592	133,710	148,081								169,297
2020_01	96,258	123,327									155,363
2021_01	93,918										152,936
	Age-to-Age Development Factors										
	18 - 30	30 - 42	42 - 54	54 - 66	66 - 78	78 - 90	90 - 102	102 - 114	114 - 126		
2007_01	1.312	1.096	1.045	1.025	1.021	1.019	1.014	1.010	1.009		
2008_01	1.315	1.108	1.038	1.020	1.012	1.008	1.009	1.006	1.007		
2009_01	1.304	1.100	1.040	1.021	1.016	1.010	1.012	1.010	1.007		
2010_01	1.319	1.100	1.049	1.024	1.029	1.017	1.014	1.013	1.007		
2011_01	1.301	1.120	1.047	1.030	1.020	1.015	1.012	1.012	1.013		
2012_01	1.315	1.084	1.042	1.023	1.014	1.015	1.013	1.011	1.008		
2013_01	1.295	1.097	1.047	1.021	1.015	1.009	1.009	1.011			
2014_01	1.309	1.100	1.054	1.030	1.017	1.011	1.013				
2015_01	1.319	1.091	1.037	1.032	1.014	1.023					
2016_01	1.270	1.099	1.045	1.024	1.016						
2017_01	1.293	1.093	1.050	1.023							
2018_01	1.277	1.097	1.046								
2019_01	1.303	1.107									
2020_01	1.281										
2 Yr Weighted Average	1.293	1.102	1.048	1.024	1.015	1.017	1.011	1.011	1.010		
5 Yr Weighted Average	1.285	1.097	1.046	1.026	1.015	1.015	1.012	1.012	1.008		
Selected	1.293	1.102	1.048	1.024	1.015	1.017	1.011	1.011	1.010		
Cumulative	1.628	1.260	1.143	1.091	1.066	1.050	1.032	1.021	1.010		

Notes:  
 Development factors are loss weighted averages, paid data uses two years

V 000033

Medical Only Paid Losses (in 000's)

Policy Year (1)	Developed to Tenth Report (2)	Medical On-Level Factor (3)	On-Level Medical Only Losses (in 000's) Developed to Tenth Report = (2) x (3) (4)	Developed Claim Counts (5)	Severity = 1,000 x (4) / (5) (6)
2007_01	28,845	1.032	29,768	37,159	801
2008_01	26,531	1.024	27,177	33,194	819
2009_01	23,784	1.002	23,825	30,187	789
2010_01	25,481	1.000	25,481	31,970	797
2011_01	25,428	1.000	25,428	31,428	809
2012_01	25,159	1.000	25,159	29,591	850
2013_01	25,594	1.000	25,594	29,308	873
2014_01	24,700	1.000	24,700	28,988	852
2015_01	25,431	1.000	25,431	28,467	893
2016_01	25,015	1.000	25,015	27,410	913
2017_01	26,964	1.000	26,964	28,364	951
2018_01	27,215	1.000	27,215	27,914	975
2019_01	23,174	1.000	23,174	23,704	978
2020_01	18,326	1.000	18,326	17,718	1,034
2021_01	19,935	1.000	19,935	19,180	1,039

15 Year Medical Only Trend

2.1%

Notes:

- (2): (3) Exhibit 2, Page 2
- (3): Section IV-A, Exhibit 1.
- (5): Section V-B, Exhibit 2.

V 000034

Medical Only Paid Losses (in 000's)  
 Industrywide

Policy Year (1)	Age of Development											Developed to Tenth Report (3)
	18	30	42	54	66	78	90	102	114	126		
	(2)											
2007_01	26,357	28,208	28,474	28,642	28,693	28,681	28,714	28,837	28,837	28,845	28,845	
2008_01	24,281	25,926	26,165	26,213	26,321	26,367	26,412	26,528	26,536	26,531	26,531	
2009_01	21,701	23,376	23,513	23,670	23,777	23,851	23,870	23,891	23,768	23,784	23,784	
2010_01	23,381	25,035	25,324	25,363	25,424	25,457	25,475	25,486	25,475	25,481	25,481	
2011_01	23,243	25,043	25,329	25,448	25,412	25,440	25,421	25,415	25,426	25,428	25,428	
2012_01	22,797	24,517	24,893	25,045	25,031	25,075	25,095	25,161	25,141	25,159	25,159	
2013_01	23,729	24,876	25,212	25,279	25,332	25,400	25,542	25,558	25,584		25,594	
2014_01	22,813	24,294	24,679	24,573	24,595	24,661	24,691	24,687			24,700	
2015_01	22,944	24,744	25,079	25,202	25,296	25,366	25,412				25,431	
2016_01	22,497	24,276	24,648	24,813	24,759	24,959					25,015	
2017_01	24,415	25,867	26,099	26,553	26,759						26,964	
2018_01	24,424	26,312	26,742	26,927							27,215	
2019_01	20,593	22,315	22,656								23,174	
2020_01	16,197	17,636									18,326	
2021_01	17,667										19,935	
	Age-to-Age Development Factors											
	18 - 30	30 - 42	42 - 54	54 - 66	66 - 78	78 - 90	90 - 102	102 - 114	114 - 126			
2007_01	1.070	1.009	1.006	1.002	1.000	1.001	1.004	1.000	1.000			
2008_01	1.068	1.009	1.002	1.004	1.002	1.002	1.004	1.000	1.000			
2009_01	1.077	1.006	1.007	1.005	1.003	1.001	1.001	0.995	1.001			
2010_01	1.071	1.012	1.002	1.002	1.001	1.001	1.000	1.000	1.000			
2011_01	1.077	1.011	1.005	0.999	1.001	0.999	1.000	1.000	1.000			
2012_01	1.075	1.015	1.006	0.999	1.002	1.001	1.003	0.999	1.001			
2013_01	1.048	1.013	1.003	1.002	1.003	1.006	1.001	1.001				
2014_01	1.065	1.016	0.996	1.001	1.003	1.001	1.000					
2015_01	1.078	1.014	1.005	1.004	1.003	1.002						
2016_01	1.079	1.015	1.007	0.998	1.008							
2017_01	1.059	1.009	1.017	1.008								
2018_01	1.077	1.016	1.007									
2019_01	1.084	1.015										
2020_01	1.089											
2 Yr Weighted Average	1.086	1.016	1.012	1.003	1.005	1.002	1.000	1.000	1.000			
5 Yr Weighted Average	1.077	1.014	1.006	1.003	1.004	1.002	1.001	0.999	1.000			
Selected	1.086	1.016	1.012	1.003	1.005	1.002	1.000	1.000	1.000			
Cumulative	1.128	1.039	1.023	1.011	1.008	1.002	1.001	1.001	1.000			

Notes:  
 Development factors are loss weighted averages, paid data uses two years

V 000035

Worker Weeks by Policy Year

Policy Year (1)	Payroll (in millions of dollars)									Developed to Tenth Report (3)	State Average Weekly Wage (4)	Estimated Million Worker-Weeks = (3) / (4) (5)	
	Age of Development												
	18	30	42	54	66	78	90	102	114				126
	(2)												
2007_01										85,512	85,512	1,092.12	78.30
2008_01										85,859	85,859	1,092.79	78.57
2009_01										82,944	82,944	1,101.70	75.29
2010_01								91,311		91,311	91,311	1,144.80	79.76
2011_01							97,419	97,419		97,419	97,419	1,174.21	82.97
2012_01						99,579	99,582	99,582		99,580	99,580	1,190.50	83.65
2013_01					104,352	104,351	104,352	104,350	104,350	104,350	104,350	1,225.60	85.14
2014_01				110,230	110,227	110,228	110,237	110,243		110,242	110,242	1,265.09	87.14
2015_01				117,798	117,799	117,798	117,808	117,802		117,803	117,803	1,303.66	90.36
2016_01			121,733	121,711	121,703	121,708	121,706			121,710	121,710	1,349.36	90.20
2017_01	127,651	127,946	127,989	127,984	127,971					127,978	127,978	1,395.56	91.70
2018_01	133,812	133,981	133,986	133,965						133,968	133,968	1,445.94	92.65
2019_01	141,917	142,882	142,473							142,463	142,463	1,544.09	92.26
2020_01	147,056	146,575								146,350	146,350	1,707.79	85.70
2021_01	158,437									158,459	158,459	1,771.94	89.43
Age-to-Age Development Factors													
	18 - 30	30 - 42	42 - 54	54 - 66	66 - 78	78 - 90	90 - 102	102 - 114	114 - 126				
2 Yr Weighted Average	1.002	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
Selected	1.002	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
Cumulative	1.000	0.998	1.000	1.000	1.000	1.000	1.000	1.000	1.000				

Notes:  
 Development factors are payroll weighted average from latest two years.  
 (4): Section V-G, Exhibit 1.  
 For all policy years the following class codes are excluded from reported Schedule Z payrolls: 0012, 0059, 0065, 0066, 0067, 0088, 0770, 0771, 0773, 0774, 0775, 0776, 0779, 0799, 0908, 0909, 0912, 0913, 7445, 7453, and 9985.

V 000036

# V 000037

Section V - Trend  
Subsection F - Calculation of Class Mix Adjustment Factor  
7/1/2024

Section V - F  
Exhibit 1

## Class Mix Adjustment Factors

Policy Year (1)	Average Rates Based on Rates Effective 7/1/23 (2)	Class Mix Adjustment Factor = 0.668 / (2) (3)
2007_01	0.695	0.960
2008_01	0.674	0.990
2009_01	0.669	0.997
2010_01	0.666	1.002
2011_01	0.664	1.005
2012_01	0.667	1.000
2013_01	0.676	0.987
2014_01	0.685	0.975
2015_01	0.686	0.973
2016_01	0.688	0.971
2017_01	0.691	0.966
2018_01	0.689	0.969
2019_01	0.670	0.997
2020_01	0.666	1.003
2021_01	0.668	1.000

Notes:

(2): Current rates (Effective 7/1/23) averaged over class payrolls (excluding large deductibles) by Policy Year.

(3): Adjustment to 2021\_01 Policy Year level.

# V 000038

Section V - Trend  
 Subsection G - External Data  
 7/1/2024

Section V - G  
 Exhibit 1

Summary of Statewide Average Weekly Wage (SAWW) Data

Date Promulgated by DUA (1)	Period of Data Used by DUA (2)	SAWW (3)
10/1/05	4/1/04 to 4/1/05	958.58
10/1/06	4/1/05 to 4/1/06	1,000.43
10/1/07	4/1/06 to 4/1/07	1,043.54
10/1/08	4/1/07 to 4/1/08	1,093.27
10/1/09	4/1/08 to 4/1/09	1,094.70
10/1/10	4/1/09 to 4/1/10	1,088.06
10/1/11	4/1/10 to 4/1/11	1,135.82
10/1/12	4/1/11 to 4/1/12	1,173.06
10/1/13	4/1/12 to 4/1/13	1,181.28
10/1/14	4/1/13 to 4/1/14	1,214.99
10/1/15	4/1/14 to 4/1/15	1,256.47
10/1/16	4/1/15 to 4/1/16	1,291.74
10/1/17	4/1/16 to 4/1/17	1,338.05
10/1/18	4/1/17 to 4/1/18	1,383.41
10/1/19	4/1/18 to 4/1/19	1,431.66
10/1/20	4/1/19 to 4/1/20	1,487.78
10/1/21	4/1/20 to 4/1/21	1,694.24
10/1/22	4/1/21 to 4/1/22	1,765.34
10/1/23	4/1/22 to 4/1/23	1,796.72
<b>15 Year Exponential Fit, Trend =</b>		<b>3.7%</b>

Policy Year (4)	SAWW (5)
2007_01	1,092.12
2008_01	1,092.79
2009_01	1,101.70
2010_01	1,144.80
2011_01	1,174.21
2012_01	1,190.50
2013_01	1,225.60
2014_01	1,265.09
2015_01	1,303.66
2016_01	1,349.36
2017_01	1,395.56
2018_01	1,445.94
2019_01	1,544.09
2020_01	1,707.79
2021_01	1,771.94

Notes:

(5):  $SAWW \text{ for Policy Year } i = [ 0.03125 \times SAWW \text{ during period } 4/1/(i-1) \text{ to } 4/1/i ] + [ 0.6875 \times SAWW \text{ during period } 4/1/i \text{ to } 4/1/(i+1) ] + [ 0.28125 \times SAWW \text{ during period } 4/1/(i+1) \text{ to } 4/1/(i+2) ]$

The DUA is the Department of Unemployment Assistance; previously this data was compiled by the DET (Division of Employment and Training).

# V 000039

Section V - Trend  
 Subsection H - Expense Trends  
 7/1/2024

Section V - H  
 Exhibit 1

## Calculation of Expense Trend Index

Time Interval (1)	Time Index (2)	Expense Trend Index (3)	Expense Trend Factors		
			PY2020 (4)	PY2021 (5)	7/1/2024 (6)
CY2008	7/1/2008	69.18			
CY2009	7/1/2009	69.47			
CY2010	7/1/2010	71.43			
CY2011	7/1/2011	68.86			
CY2012	7/1/2012	69.08			
CY2013	7/1/2013	73.19			
CY2014	7/1/2014	73.49			
CY2015	7/1/2015	77.99			
CY2016	7/1/2016	79.31			
CY2017	7/1/2017	80.22			
CY2018	7/1/2018	83.84			
CY2019	7/1/2019	86.58			
CY2020	7/1/2020	90.86	1.018	1.069	1.238
CY2021	7/1/2021	94.19	0.982	1.031	1.194
CY2022	7/1/2022	100.00	0.925	0.971	1.125

**15 Year Exponential Fit, Trend:** 2.7%

PY2020	1/1/2021	92.53			1.216
PY2021	1/1/2022	97.10			1.158
7/1/2023	7/1/2024	108.16			1.040
7/1/2024	7/1/2025	112.48			

**Notes:**

- (1): 7/1/23 and 7/1/24 are time intervals comparable to the policy years.
- (2): Midpoint of the time interval used for determination of Expense Trend Index exponential trend rate of 4.0%.
- (3): Calendar Years: Exhibit 2, Page 2, col (17), Converted to Index with 2022 = 100.  
 PY2020 - Average of indices for CY2020 and CY2021.  
 PY2021 - Average of indices for CY2021 and CY2022.  
 The exponential trend rate derived from an exponential regression of the Expense Trend Index for CY2016 - CY2022 is applied to the CY2022 Expense Trend Index value to derive the Expense Trend Index values for 7/1/2023 and 7/1/2024.
- (4) = [ (3) for PY2020 ] / (3)
- (5) = [ (3) for PY2021 ] / (3)
- (6) = [ (3) for 7/1/2024 ] / (3)

# V 000040

Section V - Trend  
 Subsection H - Expense Trends  
 7/1/2024

Section V - H  
 Exhibit 2  
 Page 1

## Calculation of Credibility Weighted Expense Trend

Calendar Year (1)	Expense Index (2)	7 Year Exponential Fit (3)	Difference Squared (4)
2016	79.31	77.87	2.07
2017	80.22	80.98	0.58
2018	83.84	84.21	0.14
2019	86.58	87.58	1.00
2020	90.86	91.08	0.05
2021	94.19	94.72	0.28
2022	100.00	98.50	2.24

(5)	7 Year Expense Index Trend	4.0%
(6)	n	7
(7)	s	1.13
(8)	t	2.02
(9)	m	6.00
(10)	$[1 + 1/n + 12 \times m^2 / (n^3 - n)]^{.5}$	1.56
(11)	Confidence Interval	3.54
(12)	Projected Value Prospective Period	110.80
(13)	CI/Projected Expense Index	0.03
(14)	<b>Credibility - 7 Year Expense Index Trend (Z)</b>	<b>100%</b>
(15)	<b>Complement of Credibility - 15 year</b>	<b>2.7%</b>
(16)	<b>Credibility Weighted Expense Trend</b>	<b>4.0%</b>

### Notes:

(2): Exhibit 1.

(5): 7 Year Massachusetts Trend from seven-year exponential fit to expense trend indices.

(6): Number of data points used in the exponential fitting of the 7 Year Massachusetts Trend.

(7):  $\sqrt{SSR / (n - 2)}$  where SSR is the sum of squared residuals and n is the number of data points used in the exponential fitting of the data.

(8): T-value based on a two-tailed t-test with probability parameter, p, of 90% and a t-distribution with 5 (= n - 2) degrees of freedom.

(9): Number of years between midpoint of data and projected point.

(11) = (7) x (8) x (10)

(12): Projected to prospective effective period using exponential fit to data.

(13) = (11) / (12)

(14): The credibility is the ratio of the target value, k, to the quotient of the confidence interval and the projected frequency, capped at 100%. Numerically, (14) = the minimum of k / (13) and 100%.

(15): Complement of credibility is based on a 15-year exponential fit, Exhibit 1.

(16) = [(5) x (14)] + [(15) x [1.0 - (14)]]

# V 000041

Section V - Trend  
 Subsection H - Expense Trends  
 7/1/2024

Section V - H  
 Exhibit 2  
 Page 2

## Calculation of Expense Trend Index

Economic Indices							
Calendar Year (1)	Average Weekly Earnings (2)	Food (3)	Private Transportation (4)	Phone (5)	Postage (6)	Machines & Equipment (7)	Paper (8)
2008	1,865.00	215.61	192.49	100.50	213.86	122.10	184.30
2009	1,873.00	223.38	173.49	102.34	224.22	123.50	179.60
2010	1,940.00	226.20	189.26	102.09	230.14	121.00	182.10
2011	1,842.00	231.50	209.94	100.63	239.40	122.20	191.20
2012	1,847.00	238.19	215.46	100.96	247.83	121.20	191.60
2013	1,985.00	243.13	214.71	100.64	263.37	117.60	190.80
2014	1,990.00	249.00	212.77	99.93	274.08	118.80	192.70
2015	2,136.00	256.18	193.84	97.74	274.84	122.70	189.80
2016	2,180.00	262.91	188.94	97.17	276.56	123.10	186.70
2017	2,212.00	269.03	196.44	89.56	283.79	122.50	186.40
2018	2,338.00	276.13	207.10	88.00	289.73	121.10	197.60
2019	2,430.00	284.61	206.11	86.61	305.97	121.50	200.60
2020	2,579.00	294.34	198.23	89.08	319.56	121.30	195.40
2021	2,686.00	308.02	232.43	91.00	332.10	121.75	214.28
2022	2,869.00	331.14	269.63	91.08	341.97	124.36	241.70

Economic Indices, Percentage Changes from Prior Calendar Year								
Calendar Year (9)	Average Weekly Earnings (10)	Food (11)	Private Transportation (12)	Phone (13)	Postage (14)	Machines & Equipment (15)	Paper (16)	Weighted Average (17)
2008								
2009	0.4%	3.6%	-9.9%	1.8%	4.8%	1.1%	-2.6%	0.4%
2010	3.6%	1.3%	9.1%	-0.2%	2.6%	-2.0%	1.4%	2.8%
2011	-5.1%	2.3%	10.9%	-1.4%	4.0%	1.0%	5.0%	-3.6%
2012	0.3%	2.9%	2.6%	0.3%	3.5%	-0.8%	0.2%	0.3%
2013	7.5%	2.1%	-0.3%	-0.3%	6.3%	-3.0%	-0.4%	6.0%
2014	0.3%	2.4%	-0.9%	-0.7%	4.1%	1.0%	1.0%	0.4%
2015	7.3%	2.9%	-8.9%	-2.2%	0.3%	3.3%	-1.5%	6.1%
2016	2.1%	2.6%	-2.5%	-0.6%	0.6%	0.3%	-1.6%	1.7%
2017	1.5%	2.3%	4.0%	-7.8%	2.6%	-0.5%	-0.2%	1.2%
2018	5.7%	2.6%	5.4%	-1.7%	2.1%	-1.1%	6.0%	4.5%
2019	3.9%	3.1%	-0.5%	-1.6%	5.6%	0.3%	1.5%	3.3%
2020	6.1%	3.4%	-3.8%	2.8%	4.4%	-0.2%	-2.6%	4.9%
2021	4.1%	4.6%	17.3%	2.2%	3.9%	0.4%	9.7%	3.7%
2022	6.8%	7.5%	16.0%	0.1%	3.0%	2.1%	12.8%	6.2%

Weights							
Calendar Year (18)	Average Weekly Earnings (19)	Food (20)	Private Transportation (21)	Phone (22)	Postage (23)	Machines & Equipment (24)	Paper (25)
2008	78.3%	2.1%	2.1%	1.9%	1.9%	11.9%	1.8%
2009	79.5%	1.6%	1.6%	1.8%	1.8%	12.3%	1.4%
2010	80.3%	1.8%	1.8%	1.8%	2.0%	10.7%	1.4%
2011	81.8%	1.8%	1.8%	1.7%	1.7%	9.9%	1.1%
2012	82.0%	1.8%	1.8%	1.6%	1.6%	10.0%	1.1%
2013	81.2%	1.9%	1.9%	1.5%	1.5%	11.0%	0.9%
2014	80.9%	2.1%	2.1%	1.5%	1.5%	10.9%	0.9%
2015	80.7%	1.9%	1.9%	1.4%	1.4%	12.0%	0.8%
2016	80.0%	1.7%	1.7%	1.3%	1.3%	13.3%	0.7%
2017	79.0%	1.7%	1.7%	1.3%	1.3%	14.4%	0.6%
2018	79.2%	1.7%	1.7%	1.3%	1.3%	14.4%	0.6%
2019	79.9%	1.7%	1.7%	1.2%	1.2%	13.6%	0.6%
2020	80.7%	0.6%	0.6%	1.3%	1.3%	14.9%	0.6%
2021	80.7%	1.1%	1.1%	1.2%	1.2%	14.2%	0.6%
2022	81.9%	0.4%	0.4%	1.2%	1.2%	14.5%	0.5%

Notes:

- (2): Average Weekly Earnings, Covered Employment and Wages, Private Fire, Marine, and Casualty Insurers - Massachusetts Unadjusted for Seasonality  
 Years CY2016 - CY2022: Bureau of Labor Statistics, Series ID ENU25000405524126 (Direct Property and Casualty Insurers Average Weekly Wage.)
- (3): Food Away From Home, Consumer Price Index, Urban Wage Earners and Clerical Workers - U.S.  
 Unadjusted for Seasonality, Base: 1982 - 1984 = 100. Bureau of Labor Statistics, Series ID CWUR0000SEFV.
- (4): Private Transportation, Consumer Price Index, Urban Wage Earners and Clerical Workers - U.S.  
 Unadjusted for Seasonality, Base: 1982 - 1984 = 100. Bureau of Labor Statistics, Series ID CWUR0000SAT1.
- (5): Telephone Services, Consumer Price Index, Urban Wage Earners and Clerical Workers - U.S.  
 Unadjusted for Seasonality, Base: December 1997= 100. Bureau of Labor Statistics, Series ID CWUR0000SEED.
- (6): Postage, Consumer Price Index, Urban Wage Earners and Clerical Workers - U.S.  
 Unadjusted for Seasonality, Base: 1982 - 1984 = 100. Bureau of Labor Statistics, Series ID CWUR0000SEEC01.
- (7): Office and Store Machines and Equipment, Producer Price Index  
 Unadjusted for Seasonality, Base: 1982 = 100. Bureau of Labor Statistics, Series ID WPU1193.
- (8): Paper, Producer Price Index  
 Unadjusted for Seasonality, Base: 1982 - 1984 = 100. Bureau of Labor Statistics, Series ID WPU0913.
- (17) Weighted average of (10)-(16) using weights for prior year from columns (19)-(25)
- (19)-(25): Section V-H, Exhibit 2, Page 3 and Page 4 for Calendar Year 2021-2022. Prior Filings for all other years.

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Section V - Trend  
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 7/1/2024

Section V - H  
 Exhibit 2  
 Page 3

Calendar Year 2021  
 Weights for Expense Trends

Expense Component (1)	Percentage of Net Written Premium (2)	% of Total = (2) / Total (2) (3)	Corresponding Index (4)	Weights (5)
Salaries	7.03%	66.3%	Average Weekly Earnings Covered Employment and Wages; Private Fire, Marine, Casualty Massachusetts	80.7%
Payroll Taxes	0.46%	4.3%		
Employee Relations	1.06%	10.0%		
Travel & Travel Items	0.23%	2.2%	Food Away From Home-CPI-US	1.1%
			Private Transportation-CPI-US	1.1%
Postage & Telephone	0.26%	2.5%	Postage-CPI-US	1.2%
			Telephone-CPI-US	1.2%
Equipment	1.50%	14.2%	Office & Stores Machines & Equipment-PPI	14.2%
Printing & Stationery	0.06%	0.6%	Paper-PPI	0.6%
<b>Total</b>	<b>10.60%</b>	<b>100.0%</b>		<b>100.0%</b>

Notes:

(2): 2022 Best's Aggregates and Averages, Property-Casualty, Totals for Commercial Casualty

Companies with Written Premium Net of Reinsurance Ceded over \$15 million.

(5) = Based on (3)

# V 000043

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 Subsection H - Expense Trends  
 7/1/2024

Section V - H  
 Exhibit 2  
 Page 4

Calendar Year 2022  
 Weights for Expense Trends

Expense Component (1)	Percentage of Net Written Premium (2)	% of Total = (2) / Total (2) (3)	Corresponding Index (4)	Weights (5)
Salaries	6.65%	67.7%	Average Weekly Earnings Covered Employment and Wages; Private Fire, Marine, Casualty Massachusetts	81.9%
Payroll Taxes	0.43%	4.4%		
Employee Relations	0.96%	9.8%		
Travel & Travel Items	0.07%	0.7%	Food Away From Home-CPI-US	0.4%
			Private Transportation-CPI-US	0.4%
Postage & Telephone	0.24%	2.4%	Postage-CPI-US	1.2%
			Telephone-CPI-US	1.2%
Equipment	1.42%	14.5%	Office & Stores Machines & Equipment-PPI	14.5%
Printing & Stationary	0.05%	0.5%	Paper-PPI	0.5%
<b>Total</b>	<b>9.82%</b>	<b>100.0%</b>		<b>100.0%</b>

Notes:

(2): 2023 Best's Aggregates and Averages, Property-Casualty, Totals for Commercial Casualty

Companies with Written Premium Net of Reinsurance Ceded over \$15 million.

(5) = Based on (3)

# V 000044

Section V - Trend  
 Subsection H - Expense Trends  
 7/1/2024

Section V - H  
 Exhibit 3

## Exposure Growth Estimate Based on Trend in Million Worker-Weeks

Policy Year (1)	Estimated Million Worker-Weeks (2)	5 Year Exponential Fit (3)	Difference Squared (4)
2007	78.30		
2008	78.57		
2009	75.29		
2010	79.76		
2011	82.97		
2012	83.65		
2013	85.14		
2014	87.14		
2015	90.36		
2016	90.20		
2017	91.70	92.66	0.91
2018	92.65	91.48	1.38
2019	92.26	90.31	3.81
2020	85.70	89.16	11.99
2021	89.43	88.02	1.97

15 Year Million Worker-Weeks Trend

**1.3%**

(5)	<b>5 Year MA Trend</b>	<b>-1.3%</b>
(6)	n	5
(7)	s	2.59
(8)	t	2.35
(9)	m	5.50
(10)	$[1 + 1/n + 12 \times m^2 / (n^3 - n)]^{.5}$	2.05
(11)	Confidence Interval	12.51
(12)	Projected	84.16
(13)	CI / Projected	0.15
(14)	<b>Credibility - 5 Year MA Trend (Z)</b>	<b>40%</b>
(15)	<b>Complement of Credibility</b>	<b>1.3%</b>
(16)	<b>Credibility-Weighted Overall Exposure Growth</b>	<b>0.3%</b>

### Notes:

(2): Section V-E, Exhibit 1.

(5): 5 Year Massachusetts Trend from five-year exponential fit to estimated million worker-weeks.

(6): Number of data points used in the exponential fitting of the 5 Year Massachusetts Trend.

(7):  $\sqrt{SSR/(n-2)}$  where SSR is the sum of squared residuals and n is the number of data points used in the exponential fitting of the data.

(8): T-value based on a two-tailed t-test with probability parameter, p, of 90% and a t-distribution with 3 (= n - 2) degrees of freedom.

(9): Number of years between midpoint of data and projected point.

(11) = (7) x (8) x (10)

(12): Million Worker-Weeks projected to prospective effective period using exponential fit to data.

(13) = (11) / (12)

(14): The credibility is the ratio of the target value, k, to the quotient of the confidence interval and the projected frequency, capped at 100%.

Numerically, (14) = the minimum of k / (13) and 100%.

(15): Complement of credibility is based on a 15-year exponential fit.

(16) = [(5) x (14)] + [(15) x [1.0 - (14)]]

## EXPENSES

In this filing, the WCRIBMA has used the same methods to calculate expenses as it did in the 2023 rate filing. These methods are described below.

### **Fixed Expenses**

The provision for fixed expenses has three components: general expenses, Massachusetts Workers' Compensation Assigned Risk (Pool) expenses, and other taxes; and was calculated using the same methods used to calculate these expenses in the rate filings since 2011.

The determination of the general expense allowance involves estimating general expenses from calendar years 2020, 2021, and 2022<sup>1</sup> (Section VI-B, Exhibit 2, Page 2). For each of the three years, a general expense ratio calculated from industrywide data is applied to Massachusetts standard earned premium plus ARAP, excluding expense constant revenue, to obtain an estimate of Massachusetts general expenses for all companies (Section VI-B, Exhibit 2, Page 1). These estimated general expense dollars are trended and adjusted for exposure growth to be consistent with the data periods on which the rate indication in Section I is based (the midpoint of the experience period, 7/1/2025). The three years of estimated general expenses are averaged to obtain an estimate of Massachusetts general expense requirements for all companies. As in all of the filings from 2003 forward, general expenses relating to Boards and Bureaus were estimated using the actual WCRIBMA expenses taken from WCRIBMA Financial

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<sup>1</sup> Expenses are less affected by COVID-19 data anomalies, due to the stability of the calculated expense ratios in our methodology. Accordingly, the WCRIBMA is using the latest available expense data in this filing.

# VI 000002

Statements and Expense Analysis Report rather than the Incurred Boards and Bureaus expense item from the Expense Call.

Calendar year data (2020-2022), taken from the Massachusetts Workers' Compensation Assigned Risk Pool (Pool) Annual Report and the WCRIBMA Financial Statements and Expense Analysis Report, is used to determine the Pool expense allowance (Section VI-B, Exhibit 1). The estimated Pool expense dollars are trended and adjusted for exposure growth to be consistent with the data periods on which the rate indication in Section I is based (the midpoint of the experience period, 7/1/2025). The three years of estimated Pool expenses are averaged to obtain an estimate of Pool expense requirements for all companies.

The WCRIBMA used the “Other Tax” percentage for the “Commercial Casualty” line as compiled in Best's Aggregates and Averages (2023) to estimate the allowance for miscellaneous taxes in Massachusetts. The resulting allowance for other taxes is then trended and adjusted for exposure growth to be consistent with the experience periods on which the rate indication in Section I is based (the midpoint of the experience period, 7/1/2025) (Section VI-C).

## **Variable Expenses**

As in the past, the variable expense ratio is comprised of the following components: commissions, other acquisition expenses, premium discounts and premium taxes. As in recent filings, the WCRIBMA has also considered two additional variable expenses which are described below: earned but uncollectible premium net of incidental income and the “frictional costs” of reinsurance.

### **Commissions**

The provision for commission expenses is calculated in this filing using the same method as has been used since the 2012 rate filing. The WCRIBMA calculated ratios of

# VI 000003

direct commission expenses to direct written premium for three calendar years (2020-2022) using data reported on carriers' Annual Statements. A three-year average is used to derive the commission expense ratio (Section VI-G, Exhibit 3). The provision for commission expenses could also be evaluated using data that excludes large deductible policies, for which producers are often compensated directly by an insured resulting in no commissions or very small commissions paid by the insurer.<sup>2</sup>

Commissions associated with retrospective premium adjustments do not create any distortion in the WCRIBMA estimation of the provision for commission expense because commissions are not paid (or returned) in response to retrospective rating adjustments and premium in a balanced retrospective plan should approximate guaranteed cost premium.

## **Other Acquisition Expense**

The WCRIBMA calculates the other acquisition expense load by taking the ratios of reported other acquisition expenses to reported standard earned premium for three calendar years (2020-2022). The WCRIBMA then averages these three ratios to determine the other acquisition expense ratio (Section VI-G, Exhibit 2).

## **Premium Discounts**

The average premium discount is calculated from the Premium Discount Schedules using the methodology used in the 1999 Rate Decision and used in each of the WCRIBMA's subsequent rate filings. For interstate-rated risks, the Massachusetts portion of the interstate-rated premium is based on actual historical rating data which is considered more accurate and representative of the market.

Insurers in Massachusetts may elect to use either the Type A or the Type B premium discount table. Based on the projected distribution of policy size and the two

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<sup>2</sup> The Massachusetts Division of Insurance published a regulatory bulletin that addresses this trend on October 4, 2013. Bulletin 2013-09; Fees Charged by Insurance Producers Relative to the Sale of Insurance in the Commonwealth.

# VI 000004

available premium discount tables, the WCRIBMA estimated an average premium discount for the Type A and Type B tables, separately. These two averages are weighted using the percentages of voluntary market premium written by Type A insurers and Type B insurers (Section VI-E, Exhibit 1) as weights. The resulting average premium discount for the voluntary market is used, in turn, to obtain the premium discount used in the overall rate indication in Section I.

## **Premium Taxes**

The premium tax rate is 2.28% of net premiums (Section VI-B, Exhibit 3). To put this expense on a “standard premium plus ARAP” basis, the WCRIBMA multiplies the premium tax rate by one minus the “average premium discount for the total market” in Section VI-A, Exhibit 1.

## **Incidental Income and Earned but Uncollectible Premium**

The WCRIBMA treats incidental income as a negative expense item which is applied as an offset to earned but uncollectible premium (“EBUP”). The calculation used by the WCRIBMA, which accounts for both incidental income and EBUP, is based upon the average of the experience reported in calendar years 2020, 2021, and 2022. This year, the selected net effect of including both incidental income and EBUP is zero (Section VI-G, Exhibit 5).

## **Frictional Costs of Reinsurance**

Fundamental to the business of insurance is the concept of sharing underwriting risk among risk bearers. Examples include the sharing of large property risks across a syndicate of primary insurers; self-insureds participating in group self-insurance funds; and reinsurers assuming risks from primary carriers. In workers’ compensation, primary insurers utilize reinsurance to reduce their overall underwriting risk, and reinsurers (not

unlike primary insurers) must commit capital (surplus) to support the underwriting risk they assume from primary insurers. Reinsurance allows primary insurers to underwrite risks that, but for the existence of a risk-sharing business partner, they would not be able to insure.

Primary insurers must cover their costs of purchasing reinsurance and provide an opportunity for reinsurers to earn a fair rate of return on their invested capital. Since the 2005 rate filing, the WCRIBMA has calculated an expense load intended to recognize the “frictional costs” of reinsurance. Frictional costs, as that term is used in this filing, are the sum of the acquisition expenses (reduced for recognition of ceding commissions), general expenses and taxes associated with providing reinsurance coverage that must be borne by the primary carriers. The estimation of the load for frictional costs associated with the purchase of reinsurance is detailed in Section VI-G, Exhibit 4.

### **Expense Constants**

The current expense constants<sup>3</sup> are \$159 for risk sizes less than \$200, \$250 for risk sizes greater than or equal to \$200 but less than \$1,000, and \$338 for risk sizes greater than or equal to \$1,000. The WCRIBMA is seeking no change in the existing expense constants.

### **Loss Adjustment Expense**

Loss adjustment expense is made up of two components, Defense and Cost Containment Expense (“DCCE”) and Adjusting and Other Expense (“AO”). In this filing, the WCRIBMA continues to use Aggregate Financial data, specifically the Policy Year Call (Call #2) which excludes data for large deductible policies and therefore is not subject

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<sup>3</sup> WCRIBMA introduced a three tiered expense constants system in the 2008 rate filing.

# VI 000006

to any distortion created by the various treatments of DCCE that exist in the large deductible market.<sup>4</sup> Using the Policy Year Call, the WCRIBMA calculated policy year ratios of paid DCCE to paid loss (this is consistent with the policy year ratios calculated in the 2023 filing). Deriving ratios provides a more stable and predictive estimate that allowed the utilization of the most recent partial policy year. In this filing, the WCRIBMA developed these ratios to twenty-first report (252 months) utilizing historical policy year paid DCCE to paid loss ratio development factors. The WCRIBMA selected age-to-age development factors based on the average of the latest three indicated age-to-age link ratios. To be consistent with other portions of the filing, we are developing policy year ratios from the most recent report, evaluated as of 12/31/2022. Evaluating this expense on a policy year basis, aligns the dollar spend of DCCE with the losses being paid and claims being adjudicated. (Section VI-H, Exhibit 1 Page 2). The average of three policy year ratios (2020-2022) was selected as the DCCE load (Section VI-H, Exhibit 1, Page 1).<sup>5</sup>

The WCRIBMA calculates the AO load by taking the ratios of adjusted AO to adjusted losses for three calendar years (2020-2022). The AO portion of the LAE ratio is adjusted for the effects of losses eliminated by large deductibles. The reported AO for large deductible policies is assumed to be less than it would have been had the policies been written on a full coverage basis, but more than it would have been as a percentage

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<sup>4</sup> The DOI has historically approved large deductible filings that allow for the allocation of DCCE expense between insurer and insured in a number of different ways. DCCE expense may be paid entirely by the insurer or the insured. Alternatively, the DCCE expense may be included with loss before the application of the deductible resulting in a pro rata sharing of DCCE expense based on the respective amounts for which the insured and the insurer are responsible in accordance with the deductible agreement.

<sup>5</sup> The WCRIBMA has previously analyzed alternative approaches to this method, including (1) the development of calendar year paid DCCE to paid loss ratios and (2) the development of policy year paid plus case DCCE to paid plus case loss ratios. The resulting estimates using the paid to paid policy year ratios were more stable than the alternative methods and stability lends itself to better predictability.

# VI 000007

Section VI – Expenses  
Subsection A – Summary  
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of net losses.<sup>6</sup> In other words, AO is assumed to be partially variable and partially fixed with respect to large deductible losses. The selected adjustment factor is an average of that which would result from assuming all AO is fixed and from assuming all AO is variable (Section VI-I, Exhibit 1, Page 1).

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<sup>6</sup> “*The Role of Large Deductible Policies for PEO’s in the Failures of Small Workers’ Compensation Insurers*,” a white paper available at [www.NAIC.org](http://www.NAIC.org), provides some insight as to why, for a certain insureds, AO expense incurred by the insurer is less when the insured is issued a large deductible policy instead of a guaranteed cost policy. The white paper, on page 6, states, “[t]he intention of insurance regulators and workers’ compensation administrators is that the large deductible workers’ compensation policies should provide employees with exactly the same coverage for accidents and injuries as policies that do not have deductibles. The reality is that side agreements made outside of the policy contract may make these policies perform more like self-insurance with an excess policy. The difference between large deductible policies and excess insurance is that with large deductibles the insurer is presumed to adjust the claims, report the loss data to statistical agents, and assume the risk of not being paid in a timely manner by the employer. With excess policies the insurer only steps in when the losses occur above the agreed-upon attachment point (losses in excess of preset amount).”  
[www.naic.org/documents/committees\\_c\\_wctf\\_related\\_150819\\_lg\\_deduct\\_policy\\_role\\_in\\_failures.pdf](http://www.naic.org/documents/committees_c_wctf_related_150819_lg_deduct_policy_role_in_failures.pdf).

# VI 000008

Section VI - Expenses  
Subsection A - Summary  
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Exhibit 1

## Summary of Expense Ratios

(1)	Commission and Other Acquisition Expense Ratio	11.5%
(2)	Average Premium Discount as a % of Standard Premium + ARAP	5.4%
(3)	Premium Tax Ratio = 2.28% x [ 1.0 - (2) ]	2.2%
(4)	Variable Expense Ratio = (1) + (2) + (3)	19.0%
(5)	Fixed Expense Ratio	5.1%
(6)	Total Loss Adjustment Expense Ratio (LAE / Loss)	19.5%

### Notes:

(1): Section VI-G, Exhibit 1.

(2): Section VI-E, Exhibit 1.

(3): 2.28% from Section VI-B, Exhibit 3.

(5): Section VI-B, Exhibit 1.

(6): Section VI-H, Exhibit 1, Page 1.

Calculation of Fixed Expenses

Calendar Year (1)	General Expense Exclusive of Expense Constant Premium (2)	Total Pool Expenses for non-Large Deductible (3)	Total General Expense = (2) + (3) (4)	Projected to PY 2020			Projected to PY 2021		
				Expense Trend Factor (5)	Exposure Growth Factor (6)	Projected General Expense = (4) x (5) x (6) (7)	Expense Trend Factor (8)	Exposure Growth Factor (9)	Projected General Expense = (4) x (8) x (9) (10)
2020	44,007,056	1,455,593	45,462,649	1.018	1.001	46,355,598	1.069	1.004	48,768,207
2021	44,766,360	1,574,443	46,340,803	0.982	0.999	45,462,915	1.031	1.001	47,829,063
2022	38,831,291	1,791,071	40,622,362	0.925	0.996	37,444,721	0.971	0.999	39,393,557
Average			44,141,938			43,087,745			45,330,276

Policy Year (11)	Three Year Average Projected General Expense to PY (12)	Provision for Other Taxes (13)	Provision for Fixed Expenses = (12) + (13) (14)	Expense Trends from PYs to 7/1/2025 (15)	Trended Fixed Expenses = (14) x (15) (16)	Standard Earned Premium plus ARAP Projected to Prospective Effective Period (17)	Fixed Expense Ratio to Standard Earned Premium plus ARAP = (16) / (17) (18)
2020	43,087,745	3,235,741	46,323,486	1.216	56,312,040	1,076,028,284	5.2%
2021	45,330,276	3,404,148	48,734,423	1.158	56,453,945	1,140,286,520	5.0%
Average							5.1%

Notes:

- (2): Exhibit 2, Page 1.
- (3): Exhibit 2, Page 3.
- (5): Section V-H, Exhibit 1.
- (6): 0.3% annual growth in worker-weeks, from Section V-H, Exhibit 3; 0.5 years from CY 2020 to PY 2020, -0.5 years from CY 2021 to PY 2020, -1.5 years from CY 2022 to PY 2020.
- (8): Section V-H, Exhibit 1.
- (9): 0.3% annual growth in worker-weeks, from Section V-H, Exhibit 3; 1.5 years from CY 2020 to PY 2021, 0.5 years from CY 2021 to PY 2021, -0.5 years from CY 2022 to PY 2021.
- (13): Section VI-C, Exhibit 1.
- (15): Section V-H, Exhibit 1.
- (17): These premium amounts do not match those displayed in Section I. This is due to the exclusion of data from company groups included in the Section I data. The premium amounts displayed have been adjusted by the same development, trend, and premium level factors shown in Section I and off-balance factors shown in Section III. The ARAP premium has been adjusted from company level to DSR level premium using the policy year adjustment factors from Section III-B, Exhibit 2.

VI 000009

# VI 000010

Section VI - Expenses  
 Subsection B - Fixed Expenses  
 7/1/2024

Section VI - B  
 Exhibit 2  
 Page 1

## General Expense Exclusive of Proposed Expense Constant

	Calendar Year		
	2020	2021	2022
(1) Standard Earned Premium Including Expense Constant Premium	1,005,923,243	1,008,573,094	1,122,037,503
(2) ARAP Premium at Company Level	44,272,610	43,914,179	45,667,072
(3) Adjustment Factor to Adjust from Company Level to DSR Level Premium	1.059	1.047	1.053
(4) Standard Earned Premium plus Adjusted ARAP = (1) + [ (2) x (3) ]	1,052,806,855	1,054,538,256	1,170,111,168
(5) Adjustment for Experience and Merit Rating, ARAP, and Construction Credit Off-balance	1.032	1.031	1.032
(6) Adjustment Factor to Remove the Impact of Loading for Recoupment of Insolvency Fund Assessments	0.998	1.005	1.004
(7) Adjusted Standard Earned Premium plus ARAP = (4) x (5) x (6)	1,085,033,040	1,092,661,575	1,211,940,480
(8) Ratio of Adjusted General Expense to Adjusted Standard Earned Premium plus ARAP	5.9%	6.1%	5.1%
(9) General Expenses = (7) x (8)	63,984,439	66,291,673	61,683,308
(10) Expense Constant Premium	47,056,652	48,448,116	48,569,340
(11) General Expense Portion of Expense Constant	51.0%	51.0%	51.0%
(12) Average Expense Constant in Effect	224.54	222.43	222.99
(13) Proposed Average Expense Constant	231.51	231.51	231.51
(14) Expense Trend Factor - Calendar Year XXXX to 7/1/25, the midpoint of the Prospective Effective Period	1.238	1.194	1.125
(15) Trend Factor to Adjust Proposed Average Expense Constant to Calendar Year XXX = 1.0 / (14)	0.808	0.837	0.889
(16) Detrended Proposed Average Expense Constant = (13) x (15)	187.01	193.88	205.83
(17) Adjusted General Expenses Generated by the Expense Constant = [ (10) x (11) ] x [ (16) / (12) ]	19,977,383	21,525,313	22,852,016
(18) General Expenses Exclusive of Expense Constant Premium = (9) - (17)	44,007,056	44,766,360	38,831,291

### Notes:

- (1), (2): Aggregate Financial Policy Year Call, excludes large deductible policies.
- (3): Section III-B, Exhibit 2.
- (5): Section III-B, Exhibit 1.
- (6): Section III-C, Exhibit 1.
- (8): Page 2.
- (10): Calculated expense constant premium based on historical Unit Statistical Data.
- (11): Exhibit 3.
- (12): Calculated average expense constant in effect based on historical Unit Statistical Data.
- (13): Section VI-D, Exhibit 1.
- (14): Section V-H, Exhibit 1.

# VI 000011

Section VI - Expenses  
 Subsection B - Fixed Expenses  
 7/11/2024

Section VI - B  
 Exhibit 2  
 Page 2

## Calculation of General Expense

	Calendar Year		
	2020	2021	2022
(1) Standard Earned Premium Including Expense Constant Premium	1,299,048,660	1,276,417,435	1,440,080,370
(2) ARAP Premium at Company Level	56,260,938	56,272,120	59,009,001
(3) Adjustment Factor to Adjust from Company Level to DSR Level Premium	1.059	1.047	1.053
(4) Standard Earned Premium plus Adjusted ARAP = (1) + [ (2) x (3) ]	1,358,627,618	1,335,317,707	1,502,199,066
(5) Adjustment for Experience and Merit Rating, ARAP, and Construction Credit Off-balance	1.032	1.031	1.032
(6) Adjustment Factor to Remove the Impact of Loading for Recoupment of Insolvency Fund Assessments	0.998	1.005	1.004
(7) Adjusted Standard Earned Premium plus ARAP = (4) x (5) x (6)	1,400,214,910	1,383,591,673	1,555,899,906
(8) Actual WCRIBMA Expenses	11,412,118	12,368,731	12,342,791
(9) General Expenses (excluding Boards & Bureaus Expenses)	71,158,607	71,573,643	66,846,785
(10) Adjusted General Expense = (8) + (9)	82,570,725	83,942,374	79,189,576
(11) Ratio of Adjusted General Expense to Adjusted Standard Earned Premium plus ARAP (including expense constants) = (10) / (7)	5.9%	6.1%	5.1%

### Notes:

- (1), (2): Aggregate Financial Reconciliation Report Calls, Calendar Years 2020 - 2022, including large deductible policies.  
 (3): Section III-B, Exhibit 2.  
 (5): Section III-B, Exhibit 1.  
 (6): Section III-C, Exhibit 1.  
 (8): WCRIBMA Financial Statements and Expense Analysis Report. Excludes Workers' Compensation Bureau Pool Expenses.  
 (9): Aggregate Financial Expense Calls, Calendar Years 2020 - 2022.

# VI 000012

Section VI - Expenses  
 Subsection B - Fixed Expenses  
 7/1/2024

Section VI - B  
 Exhibit 2  
 Page 3

## Calculation of Pool Expense

	Calendar Year		
	2020	2021	2022
(1) Administrative Expenses	551,604	550,546	503,228
(2) Other Expense Allowances	-	-	-
(3) Workers' Compensation Bureau Pool Expenses	1,857,197	2,031,265	2,393,927
(4) Total Pool Expenses = (1) + (2) + (3)	2,408,801	2,581,811	2,897,155
(5) Target Pool Expenses for Excluded Companies	367,590	373,934	385,496
(6) Total Pool Expenses, Excluding 2 Company(ies) = (4) - (5)	2,041,211	2,207,877	2,511,659
(7) Proportion of Voluntary Assessable Premium Not from Large Deductibles (U)	0.713	0.713	0.713
(8) Total Pool Expenses for Non-Large Deductibles = (6) x (7)	1,455,593	1,574,443	1,791,071

### Notes:

(1),(2): Massachusetts Workers' Compensation Assigned Risk Pool Annual Report and WCRIBMA Financial Statements and Expense Analysis Report, adjusted for non-large deductible policies.

(3): From the WCRIBMA Financial Statements and Expense Analysis Report

(5): Refer to Section XIII for excluded companies.

(7): Section I-E, Exhibit 2.

# VI 000013

Section VI - Expenses  
Subsection B - Fixed Expenses  
7/1/2024

Section VI - B  
Exhibit 3

## Expense Constant Components

(1)	Portion of Expense Constant for General Expenses Loaded for Premium Taxes	52.2%
(2)	Current Premium Tax Rate	2.28%
(3)	General Expense Portion of Expense Constant = (1) x [ 1.0 - (2) ]	51.0%
(4)	Other Acquisition Portion of Expense Constant = [ 1.0 - (1) ] x [ 1.0 - (2) ]	46.7%

### Notes:

(1): NCCI 1991 Calendar Year Expense database.

(2): Massachusetts Department of Revenue, 2021 Form 63-23P.

2.28% is Premium Tax as % of Net Premium.

# VI 000014

Section VI - Expenses  
 Subsection C - Other Taxes  
 7/1/2024

Section VI - C  
 Exhibit 1

## Calculation of Other Taxes

(1)	Calendar Year 2022 Standard Earned Premium Including Expense Constant Premium	1,122,037,503	
(2)	Calendar Year 2022 ARAP Premium at Company Level	45,667,072	
(3)	Adjustment Factor to Adjust from Company Level to DSR Level Premium	1.053	
(4)	Calendar Year 2022 Standard Earned Premium plus Adjusted ARAP = (1) + [ (2) x (3) ]	1,170,111,168	
(5)	Calendar Year 2022 Other Taxes Ratio	0.30%	
(6)	Calendar Year 2022 Other Taxes = (4) x (5)	3,510,334	
		<u>PY2020</u>	<u>PY2021</u>
(7)	Other Tax Trend Factor from CY 2022 to PY XXXX	0.925	0.971
(8)	Annual Exposure Growth	0.3%	0.3%
(9)	Trend Length	-1.5	-0.5
(10)	Provision for Other Taxes = (6) x (7) x { [ 1.0 + (8) ] ^ (9) }	3,235,741	3,404,148

**Notes:**

(1),(2): Based on Aggregate Financial Policy Year Call.

(3): Section III-B, Exhibit 2.

(5): 2023 Best's Aggregates and Averages.

(7): Section V-H, Exhibit 1.

(8): Section V-H, Exhibit 3.

(9): -1.5 years from CY 2022 to PY 2020, -0.5 years from CY 2022 to PY 2021.

# VI 000015

Section VI - Expenses  
 Subsection D - Expense Constant  
 7/1/2024

Section VI - D  
 Exhibit 1

## Calculation of Expense Constant

Standard Premium Ranges		PY 2021 Adjusted Policy Count	Adjusted Policy Distribution	Current Expense Constant	Trend Factor from 7/1/24 to 7/1/25	Selected Trend Factor	Proposed Expense Constant = (5) x (7) (8)
Unadjusted	Adjusted						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Less than \$200	Less Than \$208	113,159	51%	\$159.00	1.040	1.000	\$159.00
\$200 to \$1,000	\$208 to \$1,042	37,696	17%	\$250.00	1.040	1.000	\$250.00
\$1,000 or more	\$1,042 or more	70,504	32%	\$338.00	1.040	1.000	\$338.00
Total		221,358	100%	\$231.51			\$231.51

**Notes:**

Risk sizes in terms of Massachusetts Standard Premium.

(2): Instead of projecting the premiums for all policies forward to the prospective effective period, the end points of the Standard Premium Ranges are adjusted. This is done by dividing the end points by the Premium Adjustment Factor, 0.96, from Section III-E, Exhibit 1.

(3): Unit Statistical Data PY 2021 (excluding Large Deductible policies).

(4) = (3) / Total (3)

Total (5) = (5) weighted by (4)

(6): Section V-H, Exhibit 1.

Total (8) = (8) weighted by (4)

# VI 000016

Section VI - Expenses  
Subsection E - Expenses Net of Premium Discount  
7/1/2024

Section VI - E  
Exhibit 1

## Calculation of Average Premium Discount

	<u>Elected Premium Discount Table</u>	
	<u>Type A</u>	<u>Type B</u>
(1) Average Premium Discount as a % of Standard Premium	7.4%	3.5%
(2) Percentage of Voluntary Written Premium by Discount Type	76.9%	23.1%
(3) Weighted Average Premium Discount as a % of Standard Premium in Voluntary Market = (1) weighted by (2)	<hr/>	
	6.5%	
(4) Voluntary Market Share	87.1%	
(5) Average Premium Discount in Total Market = (3) x (4)	5.7%	
(6) Average ARAP Surcharge for Prospective Effective Period as a % of Standard Premium	5.4%	
(7) Average Premium Discount as a % of Standard Premium + ARAP = (5) / [ 1.0 + (6) ]	<b>5.4%</b>	

### Notes:

(1): Type "A" - Exhibit 2, Total (10).

Type "B" - Exhibit 3, Total (10).

(2): Exhibit 4.

(4): Market Share is estimated using Standard Premium plus ARAP.

(6): Section IX-K, Exhibit 3.

# VI 000017

Section VI - Expenses  
 Subsection E - Expenses Net of Premium Discount  
 7/1/2024

Section VI - E  
 Exhibit 2

## Average Premium Discount Voluntary Market Risks - Type "A" Discounts

Intrastate Intervals					
Layer of Standard Premium (1)	Standard Premium Ranges - PY 2021				Total = [ Sum of (2) ] (3)
	0 - 10,000	10,000 - 200,000	200,000 - 1,750,000	1,750,000 & Over	
0 - 10,000	106,811,280	71,060,000	2,460,000	70,000	180,401,280
10,000 - 200,000		176,715,434	46,740,000	1,330,000	224,785,434
200,000 - 1,750,000			46,755,432	10,850,000	57,605,432
1,750,000 - & Over				15,441,367	15,441,367
Total	106,811,280	247,775,434	95,955,432	27,691,367	478,233,513

Interstate Intervals					
Layer of Standard Premium (4)	Standard Premium Ranges - PY 2021				Total Premium in Layer (6)
	0 - 10,000	10,000 - 200,000	200,000 - 1,750,000	1,750,000 & Over	
0 - 10,000	173,246	4,348,261	1,708,140	175,881	6,405,528
10,000 - 200,000		25,966,147	32,454,654	3,341,740	61,762,541
200,000 - 1,750,000			58,588,107	27,261,561	85,849,668
1,750,000 - & Over				59,460,813	59,460,813
Total	173,246	30,314,408	92,750,901	90,239,995	213,478,550

Total		Proportion of Premium in Layer (9)	% Premium Discount Type A Company (10)
Layer of Standard Premium (7)	Total = (3) + (6) (8)		
0 - 10,000	186,806,808	27.0%	0.0%
10,000 - 200,000	286,547,975	41.4%	9.1%
200,000 - 1,750,000	143,455,100	20.7%	11.3%
1,750,000 - & Over	74,902,180	10.8%	12.3%
Total	691,712,063	100.0%	<b>7.4%</b>

Notes:

Unit Statistical Data.

Layers correspond to the Premium Discount layers.

For interstate rated policies, the ratio of Massachusetts Standard Premium to Countrywide Standard Premium is assumed to equal the ratio of Massachusetts Expected Losses (used in an interstate experience modification) to Countrywide Expected Losses.

(9) = (8) / Total (8)

(10): Section XI-C, Exhibit 4, Page 2

Total (10) = (10) weighted by (9)

# VI 000018

Section VI - Expenses  
 Subsection E - Expenses Net of Premium Discount  
 7/1/2024

Section VI - E  
 Exhibit 3

## Average Premium Discount Voluntary Market Risks - Type "B" Discounts

Intrastate Intervals					
Layer of Standard Premium (1)	Standard Premium Ranges - PY 2021				Total = [ Sum of (2) ] (3)
	0 - 10,000	10,000 - 200,000	200,000 - 1,750,000	1,750,000 & Over	
0 - 10,000	61,579,070	28,010,000	660,000	10,000	90,259,070
10,000 - 200,000		47,208,107	12,540,000	190,000	59,938,107
200,000 - 1,750,000			10,073,976	1,550,000	11,623,976
1,750,000 - & Over				470,382	470,382
Total	61,579,070	75,218,107	23,273,976	2,220,382	162,291,535

Interstate Intervals					
Layer of Standard Premium (4)	Standard Premium Ranges - PY 2021				Total Premium in Layer (6)
	0 - 10,000	10,000 - 200,000	200,000 - 1,750,000	1,750,000 & Over	
0 - 10,000	88,893	1,750,779	469,761	36,843	2,346,276
10,000 - 200,000		9,116,657	8,925,469	700,022	18,742,148
200,000 - 1,750,000			15,926,752	5,710,698	21,637,450
1,750,000 - & Over				24,639,170	24,639,170
Total	88,893	10,867,436	25,321,982	31,086,733	67,365,044

Layer of Standard Premium (7)	Total = (3) + (6) (8)	Proportion of Premium in Layer (9)	% Premium Discount Type B Company (10)
0 - 10,000	92,605,346	40.3%	0.0%
10,000 - 200,000	78,680,255	34.3%	5.1%
200,000 - 1,750,000	33,261,426	14.5%	6.5%
1,750,000 - & Over	25,109,552	10.9%	7.5%
Total	229,656,579	100.0%	<b>3.5%</b>

**Notes:**

Unit Statistical Data.

Layers correspond to the Premium Discount layers.

For interstate rated policies, the ratio of Massachusetts Standard Premium to Countrywide Standard Premium is assumed to equal the ratio of Massachusetts Expected Losses (used in an interstate experience modification) to Countrywide Expected Losses.

(9) = (8) / Total (8)

(10): Section XI-C, Exhibit 4, Page 2

Total (10) = (10) weighted by (9)

# VI 000019

Section VI - Expenses

Subsection E - Expenses Net of Premium Discount

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Section VI - E

Exhibit 4

Calendar Year 2023 Direct Written Premiums by Premium Discount Election - Type "A" or Type "B"

NAIC Company Number	Company Name	Elected Discount Schedule	Direct Written Premium	Residual Market Written Premium	Adjusted Voluntary Written Premium		
					Total Written Premium	Type A Written Premium	Type B Written Premium
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
33758	ASSOCIATED INDUSTRIES OF MASS. MUTUAL INS. CO.	A	89,748,475	51,473,143	38,275,332	38,275,332	0
22667	ACE AMERICAN INSURANCE COMPANY	A	62,420,540	23,613,764	38,806,776	38,806,776	0
25682	TRAVELERS INDEMNITY COMPANY OF CONNECTICUT	A	49,602,956	0	49,602,956	49,602,956	0
16535	ZURICH AMERICAN INSURANCE COMPANY	A	43,268,196	0	43,268,196	43,268,196	0
40142	AMERICAN ZURICH INSURANCE COMPANY	A	41,705,057	13,060,138	28,644,919	28,644,919	0
11104	ASSOCIATED EMPLOYERS INSURANCE COMPANY	B	39,121,002	0	39,121,002	0	39,121,002
30104	HARTFORD UNDERWRITERS INSURANCE COMPANY	A	37,741,513	18,425,306	19,316,207	19,316,207	0
25658	TRAVELERS INDEMNITY COMPANY	A	34,968,291	0	34,968,291	34,968,291	0
44326	ATLANTIC CHARTER INSURANCE COMPANY	A	34,485,785	9,279,005	25,206,780	25,206,780	0
23035	LIBERTY MUTUAL FIRE INSURANCE COMPANY	A	31,147,820	21,276,584	9,871,236	9,871,236	0
25011	WESCO INSURANCE COMPANY	A	29,772,824	0	29,772,824	29,772,824	0
33600	LM INSURANCE CORPORATION	A	27,976,922	26,542,018	1,434,904	1,434,904	0
31470	NORGUARD INSURANCE COMPANY	A	26,977,969	0	26,977,969	26,977,969	0
42404	LIBERTY INSURANCE CORPORATION	A	26,894,375	0	26,894,375	26,894,375	0
25666	TRAVELERS INDEMNITY COMPANY OF AMERICA	A	25,142,687	21,935,971	3,206,716	3,206,716	0
42390	AMGUARD INSURANCE COMPANY	A	22,997,828	12,973,950	10,023,878	10,023,878	0
29459	TWIN CITY FIRE INSURANCE COMPANY	B	22,897,665	0	22,897,665	0	22,897,665
19682	HARTFORD FIRE INSURANCE COMPANY	B	22,586,160	0	22,586,160	0	22,586,160
25674	TRAVELERS PROPERTY CASUALTY COMPANY OF AMERICA	A	20,318,314	18,230,479	2,087,835	2,087,835	0
11984	INDEPENDENCE CASUALTY INSURANCE COMPANY	A	20,088,285	0	20,088,285	20,088,285	0
22357	HARTFORD ACCIDENT AND INDEMNITY COMPANY	A	19,649,025	0	19,649,025	19,649,025	0
37478	HARTFORD INSURANCE COMPANY OF THE MIDWEST	B	18,607,208	0	18,607,208	0	18,607,208
12262	PENNSYLVANIA MANUFACTURERS' ASSOCIATION INS. CO.	A	18,069,127	12,500,783	5,568,344	5,568,344	0
20281	FEDERAL INSURANCE COMPANY	A	15,417,902	0	15,417,902	15,417,902	0
31325	ACADIA INSURANCE COMPANY	B	14,277,764	18,814	14,258,950	0	14,258,950
24147	OLD REPUBLIC INSURANCE COMPANY	A	14,033,492	0	14,033,492	14,033,492	0
19399	AIU INSURANCE COMPANY	B	13,797,901	0	13,797,901	0	13,797,901
12886	MASSACHUSETTS EMPLOYERS INSURANCE COMPANY	A	13,794,332	0	13,794,332	13,794,332	0
41360	ARBELLA PROTECTION INSURANCE COMPANY, INC.	A	12,374,141	0	12,374,141	12,374,141	0
29424	HARTFORD CASUALTY INSURANCE COMPANY	B	12,044,760	0	12,044,760	0	12,044,760
23841	NEW HAMPSHIRE INSURANCE COMPANY	B	10,924,451	0	10,924,451	0	10,924,451
39926	SELECTIVE INSURANCE COMPANY OF THE SOUTHEAST	A	10,825,795	0	10,825,795	10,825,795	0
42376	TECHNOLOGY INSURANCE COMPANY INC.	A	10,422,435	0	10,422,435	10,422,435	0
19038	TRAVELERS CASUALTY AND SURETY COMPANY	A	10,278,783	0	10,278,783	10,278,783	0
11150	ARCH INSURANCE COMPANY	A	9,820,246	0	9,820,246	9,820,246	0
24074	OHIO CASUALTY INSURANCE COMPANY (THE)	B	9,712,903	0	9,712,903	0	9,712,903
12777	CHUBB INDEMNITY INSURANCE COMPANY	A	9,648,067	0	9,648,067	9,648,067	0
13083	NEW HAMPSHIRE EMPLOYERS INSURANCE COMPANY	A	9,392,092	0	9,392,092	9,392,092	0
20443	CONTINENTAL CASUALTY COMPANY	B	9,357,280	3,170,471	6,186,809	0	6,186,809
22292	HANOVER INSURANCE COMPANY (THE)	A	9,059,321	0	9,059,321	9,059,321	0
19445	NATIONAL UNION FIRE INS. CO. OF PITTSBURGH PA	B	8,985,328	0	8,985,328	0	8,985,328
11030	MEMIC INDEMNITY COMPANY	A	8,520,166	0	8,520,166	8,520,166	0
38318	STARR INDEMNITY & LIABILITY COMPANY	A	8,021,851	0	8,021,851	8,021,851	0
14164	MEMIC CASUALTY COMPANY	A	7,986,939	0	7,986,939	7,986,939	0
39217	QBE INSURANCE CORPORATION	B	7,688,171	0	7,688,171	0	7,688,171
12416	PROTECTIVE INSURANCE COMPANY	A	7,458,818	0	7,458,818	7,458,818	0
23965	NORFOLK & DEDHAM MUTUAL FIRE INSURANCE COMPANY	A	7,441,362	0	7,441,362	7,441,362	0
20052	NATIONAL LIABILITY & FIRE INSURANCE COMPANY	A	7,426,394	0	7,426,394	7,426,394	0
13935	FEDERATED MUTUAL INSURANCE COMPANY	A	7,143,372	0	7,143,372	7,143,372	0
28258	CONTINENTAL INDEMNITY COMPANY	B	6,894,301	0	6,894,301	0	6,894,301
21458	EMPLOYERS INSURANCE COMPANY OF WAUSAU	B	6,314,153	0	6,314,153	0	6,314,153
18023	STAR INSURANCE COMPANY	A	6,249,598	0	6,249,598	6,249,598	0
13374	ARROW MUTUAL LIABILITY INSURANCE COMPANY	B	6,130,326	0	6,130,326	0	6,130,326
11000	SENTINEL INSURANCE COMPANY, LTD.	A	6,083,822	0	6,083,822	6,083,822	0

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Section VI - Expenses

Subsection E - Expenses Net of Premium Discount

7/1/2024

Section VI - E

Exhibit 4

Calendar Year 2023 Direct Written Premiums by Premium Discount Election - Type "A" or Type "B"

NAIC Company Number	Company Name	Elected Discount Schedule	Direct Written Premium	Residual Market Written Premium	Adjusted Voluntary Written Premium		
					Total Written Premium	Type A Written Premium	Type B Written Premium
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
19259	SELECTIVE INSURANCE COMPANY OF SOUTH CAROLINA	A	5,852,698	0	5,852,698	5,852,698	0
19801	ARGONAUT INSURANCE COMPANY	A	5,836,385	0	5,836,385	5,836,385	0
20478	NATIONAL FIRE INSURANCE COMPANY OF HARTFORD	B	5,712,856	0	5,712,856	0	5,712,856
13803	FARM FAMILY CASUALTY INSURANCE COMPANY	A	5,653,166	0	5,653,166	5,653,166	0
15105	SAFETY NATIONAL CASUALTY CORPORATION	A	5,614,505	0	5,614,505	5,614,505	0
25976	UTICA MUTUAL INSURANCE COMPANY	A	5,541,983	0	5,541,983	5,541,983	0
25224	GREAT DIVIDE INSURANCE COMPANY	A	5,243,016	0	5,243,016	5,243,016	0
39152	SERVICE AMERICAN INDEMNITY COMPANY	A	5,235,918	0	5,235,918	5,235,918	0
37257	PRAETORIAN INSURANCE COMPANY	A	4,799,518	0	4,799,518	4,799,518	0
24988	SENTRY INSURANCE A MUTUAL COMPANY	A	4,660,365	0	4,660,365	4,660,365	0
10017	ARBELLA INDEMNITY INSURANCE COMPANY, INC.	A	4,637,536	0	4,637,536	4,637,536	0
25615	CHARTER OAK FIRE INSURANCE COMPANY, (THE)	A	4,581,238	0	4,581,238	4,581,238	0
21784	FIREMEN'S INSURANCE COMPANY OF WASHINGTON, D.C.	B	4,417,267	0	4,417,267	0	4,417,267
21261	ELECTRIC INSURANCE COMPANY	A	4,114,670	0	4,114,670	4,114,670	0
31534	CITIZENS INSURANCE COMPANY OF AMERICA	A	4,075,413	0	4,075,413	4,075,413	0
21415	EMPLOYERS MUTUAL CASUALTY COMPANY	A	4,036,736	0	4,036,736	4,036,736	0
31348	CRUM & FORSTER INDEMNITY COMPANY	B	4,010,128	0	4,010,128	0	4,010,128
20508	VALLEY FORGE INSURANCE COMPANY	B	3,993,664	0	3,993,664	0	3,993,664
20427	AMERICAN CASUALTY COMPANY OF READING, PENNSYLVANIA	B	3,942,234	0	3,942,234	0	3,942,234
14788	NGM INSURANCE COMPANY	A	3,805,496	0	3,805,496	3,805,496	0
10052	CHUBB NATIONAL INSURANCE COMPANY	A	3,792,823	0	3,792,823	3,792,823	0
16109	STARR SPECIALTY INSURANCE COMPANY	A	3,762,250	0	3,762,250	3,762,250	0
10510	CAROLINA CASUALTY INSURANCE COMPANY	A	3,682,378	0	3,682,378	3,682,378	0
21113	UNITED STATES FIRE INSURANCE COMPANY	A	3,593,652	0	3,593,652	3,593,652	0
22306	MASSACHUSETTS BAY INSURANCE COMPANY	A	3,556,089	0	3,556,089	3,556,089	0
36064	HANOVER AMERICAN INSURANCE COMPANY (THE)	A	3,448,994	0	3,448,994	3,448,994	0
20044	BERKSHIRE HATHAWAY HOMESTATE INSURANCE COMPANY	A	3,363,996	0	3,363,996	3,363,996	0
15563	CLEAR SPRING PROPERTY AND CASUALTY COMPANY	A	3,345,715	0	3,345,715	3,345,715	0
10391	BERKSHIRE HATHAWAY DIRECT INSURANCE COMPANY	A	3,322,949	0	3,322,949	3,322,949	0
10664	ENDEAVOUR INSURANCE COMPANY	B	3,231,888	0	3,231,888	0	3,231,888
40045	STARNET INSURANCE COMPANY	A	3,220,987	0	3,220,987	3,220,987	0
41840	ALLMERICA FINANCIAL BENEFIT INSURANCE COMPANY	A	3,190,674	0	3,190,674	3,190,674	0
25844	UNION INSURANCE COMPANY	B	3,156,348	0	3,156,348	0	3,156,348
20346	PACIFIC INDEMNITY COMPANY	A	3,131,031	0	3,131,031	3,131,031	0
35289	CONTINENTAL INSURANCE COMPANY, (THE)	B	3,044,995	0	3,044,995	0	3,044,995
21172	VANLINER INSURANCE COMPANY	A	3,034,226	0	3,034,226	3,034,226	0
23434	MIDDLESEX INSURANCE COMPANY	A	3,016,016	0	3,016,016	3,016,016	0
36897	MANUFACTURERS ALLIANCE INSURANCE COMPANY	A	2,921,125	0	2,921,125	2,921,125	0
30830	ARCH INDEMNITY INSURANCE COMPANY	B	2,792,615	0	2,792,615	0	2,792,615
20494	TRANSPORTATION INSURANCE COMPANY	B	2,745,437	0	2,745,437	0	2,745,437
31232	WORK FIRST CASUALTY COMPANY	A	2,742,361	0	2,742,361	2,742,361	0
24082	OHIO SECURITY INSURANCE COMPANY	B	2,734,354	0	2,734,354	0	2,734,354
31003	TRI-STATE INSURANCE COMPANY OF MINNESOTA	A	2,729,880	0	2,729,880	2,729,880	0
20230	CENTRAL MUTUAL INSURANCE COMPANY	B	2,663,773	0	2,663,773	0	2,663,773
12475	REPUBLIC FRANKLIN INSURANCE COMPANY	A	2,596,374	0	2,596,374	2,596,374	0
25496	STARSTONE NATIONAL INSURANCE COMPANY	A	2,467,425	0	2,467,425	2,467,425	0
25623	PHOENIX INSURANCE COMPANY, (THE)	A	2,456,148	0	2,456,148	2,456,148	0
10687	UTICA NATIONAL ASSURANCE COMPANY	A	2,425,866	0	2,425,866	2,425,866	0
41424	PENNSYLVANIA MANUFACTURERS INDEMNITY COMPANY	A	2,254,158	0	2,254,158	2,254,158	0
25984	GRAPHIC ARTS MUTUAL INSURANCE COMPANY	A	2,231,176	0	2,231,176	2,231,176	0
16045	EVEREST PREMIER INSURANCE COMPANY	A	2,205,274	0	2,205,274	2,205,274	0
23329	MERCHANTS MUTUAL INSURANCE COMPANY	A	2,182,255	0	2,182,255	2,182,255	0
33588	FIRST LIBERTY INSURANCE CORPORATION (THE)	A	2,110,266	0	2,110,266	2,110,266	0
28460	SENTRY CASUALTY COMPANY	A	2,106,242	0	2,106,242	2,106,242	0

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Section VI - Expenses  
 Subsection E - Expenses Net of Premium Discount  
 7/1/2024

Section VI - E  
 Exhibit 4

Calendar Year 2023 Direct Written Premiums by Premium Discount Election - Type "A" or Type "B"

NAIC Company Number (1)	Company Name (2)	Elected Discount Schedule (3)	Direct Written Premium (4)	Residual Market Written Premium (5)	Adjusted Voluntary Written Premium		
					Total Written Premium (6)	Type A Written Premium (7)	Type B Written Premium (8)
18767	CHURCH MUTUAL INSURANCE COMPANY	B	2,087,446	0	2,087,446	0	2,087,446
10346	EMPLOYERS PREFERRED INSURANCE COMPANY	A	2,054,978	0	2,054,978	2,054,978	0
43478	UTICA NATIONAL INSURANCE COMPANY OF TEXAS	A	2,004,088	0	2,004,088	2,004,088	0
28932	MARKEL AMERICAN INSURANCE COMPANY	A	2,002,012	0	2,002,012	2,002,012	0
29939	MAIN STREET AMERICA ASSURANCE COMPANY	A	1,980,245	0	1,980,245	1,980,245	0
25135	STATE AUTOMOBILE MUTUAL INSURANCE COMPANY	A	1,963,752	0	1,963,752	1,963,752	0
41394	BENCHMARK INSURANCE COMPANY	A	1,913,640	0	1,913,640	1,913,640	0
37885	XL SPECIALTY INSURANCE COMPANY	A	1,913,018	0	1,913,018	1,913,018	0
25402	EMPLOYERS ASSURANCE COMPANY	A	1,908,975	0	1,908,975	1,908,975	0
19879	SECURITY NATIONAL INSURANCE COMPANY	A	1,896,539	0	1,896,539	1,896,539	0
21407	EMCASCO INSURANCE COMPANY	A	1,779,551	0	1,779,551	1,779,551	0
11126	SOMPO JAPAN INSURANCE COMPANY OF AMERICA	A	1,763,635	0	1,763,635	1,763,635	0
16608	NEW YORK MARINE AND GENERAL INSURANCE COMPANY	A	1,759,976	0	1,759,976	1,759,976	0
35408	IMPERIUM INSURANCE COMPANY	A	1,725,715	0	1,725,715	1,725,715	0
11149	MAINE EMPLOYERS' MUTUAL INSURANCE COMPANY	B	1,645,577	0	1,645,577	0	1,645,577
42552	NOVA CASUALTY COMPANY	A	1,634,713	0	1,634,713	1,634,713	0
38970	MARKEL INSURANCE COMPANY	A	1,488,207	0	1,488,207	1,488,207	0
21105	NORTH RIVER INSURANCE COMPANY	A	1,474,784	0	1,474,784	1,474,784	0
23280	CINCINNATI INDEMNITY COMPANY	A	1,444,550	0	1,444,550	1,444,550	0
11512	EMPLOYERS COMPENSATION INSURANCE COMPANY	A	1,436,106	0	1,436,106	1,436,106	0
38997	SOMPO AMERICAN FIRE AND MARINE INSURANCE COMPANY	A	1,371,700	0	1,371,700	1,371,700	0
10804	CONTINENTAL WESTERN INSURANCE COMPANY	B	1,353,344	0	1,353,344	0	1,353,344
41106	TRIUMPHE CASUALTY COMPANY	A	1,351,781	0	1,351,781	1,351,781	0
26662	MILWAUKEE CASUALTY INSURANCE CO.	A	1,344,592	0	1,344,592	1,344,592	0
24449	REGENT INSURANCE COMPANY	A	1,325,183	0	1,325,183	1,325,183	0
29157	UNITED WISCONSIN INSURANCE COMPANY	A	1,310,040	0	1,310,040	1,310,040	0
16356	CHIRON INSURANCE COMPANY	A	1,302,911	0	1,302,911	1,302,911	0
14702	EASTGUARD INSURANCE COMPANY	A	1,285,593	0	1,285,593	1,285,593	0
16024	FEDERATED RESERVE INSURANCE COMPANY	A	1,206,401	0	1,206,401	1,206,401	0
28304	FEDERATED SERVICE INSURANCE COMPANY	A	1,197,622	0	1,197,622	1,197,622	0
27855	ZURICH AMERICAN INSURANCE COMPANY OF ILLINOIS	A	1,176,115	0	1,176,115	1,176,115	0
11673	REDWOOD FIRE AND CASUALTY INSURANCE COMPANY	A	1,162,002	0	1,162,002	1,162,002	0
40460	SAGAMORE INSURANCE COMPANY	A	1,146,030	0	1,146,030	1,146,030	0
32620	NATIONAL INTERSTATE INSURANCE COMPANY	A	1,131,151	0	1,131,151	1,131,151	0
28665	CINCINNATI CASUALTY COMPANY	A	1,105,090	0	1,105,090	1,105,090	0
16044	EVEREST DENALI INSURANCE COMPANY	A	1,095,266	0	1,095,266	1,095,266	0
24414	GENERAL CASUALTY COMPANY OF WISCONSIN	A	1,086,138	0	1,086,138	1,086,138	0
24554	XL INSURANCE AMERICA, INC.	A	1,053,657	0	1,053,657	1,053,657	0
11991	NATIONAL CASUALTY COMPANY	A	1,043,660	0	1,043,660	1,043,660	0
20303	GREAT NORTHERN INSURANCE COMPANY	A	1,010,760	0	1,010,760	1,010,760	0
23809	GRANITE STATE INSURANCE COMPANY	B	993,503	0	993,503	0	993,503
22748	PACIFIC EMPLOYERS INSURANCE COMPANY	A	967,539	0	967,539	967,539	0
13706	DORCHESTER MUTUAL INSURANCE COMPANY	A	949,661	0	949,661	949,661	0
38911	BERKLEY NATIONAL INSURANCE COMPANY	A	910,157	0	910,157	910,157	0
18279	BANKERS STANDARD INSURANCE COMPANY	A	884,675	0	884,675	884,675	0
23396	AMERISURE MUTUAL INSURANCE COMPANY	B	883,598	0	883,598	0	883,598
12831	STATE NATIONAL INSURANCE COMPANY INC.	A	869,889	0	869,889	869,889	0
12901	MERCHANTS PREFERRED INSURANCE COMPANY	A	808,371	0	808,371	808,371	0
20397	VIGILANT INSURANCE COMPANY	A	802,322	0	802,322	802,322	0
12304	ACCIDENT FUND GENERAL INSURANCE COMPANY	A	801,087	0	801,087	801,087	0
10166	ACCIDENT FUND INSURANCE COMPANY OF AMERICA	A	786,869	0	786,869	786,869	0
33723	GREAT AMERICAN SPIRIT INSURANCE COMPANY	A	765,232	0	765,232	765,232	0
26247	AMERICAN GUARANTEE AND LIABILITY INSURANCE COMPANY	A	749,403	0	749,403	749,403	0
20222	ALL AMERICA INSURANCE COMPANY	A	747,368	0	747,368	747,368	0

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Section VI - Expenses  
 Subsection E - Expenses Net of Premium Discount  
 7/1/2024

Section VI - E  
 Exhibit 4

Calendar Year 2023 Direct Written Premiums by Premium Discount Election - Type "A" or Type "B"

NAIC Company Number	Company Name	Elected Discount Schedule	Direct Written Premium	Residual Market Written Premium	Adjusted Voluntary Written Premium		
					Total Written Premium	Type A Written Premium	Type B Written Premium
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
14190	OBI NATIONAL INSURANCE COMPANY	A	746,273	0	746,273	746,273	0
10677	CINCINNATI INSURANCE COMPANY	A	742,738	0	742,738	742,738	0
15954	AMTRUST INSURANCE COMPANY	A	693,884	0	693,884	693,884	0
13714	PHARMACISTS MUTUAL INSURANCE COMPANY	A	690,671	0	690,671	690,671	0
27154	ATLANTIC SPECIALTY INSURANCE COMPANY	A	688,816	0	688,816	688,816	0
43575	INDEMNITY INSURANCE COMPANY OF NORTH AMERICA	A	675,969	0	675,969	675,969	0
10120	EVEREST NATIONAL INSURANCE COMPANY	B	655,551	0	655,551	0	655,551
44393	WEST AMERICAN INSURANCE COMPANY	B	645,166	0	645,166	0	645,166
15911	AMERICAN MINING INSURANCE COMPANY	A	623,222	0	623,222	623,222	0
13978	FLORISTS' MUTUAL INSURANCE COMPANY	A	614,064	0	614,064	614,064	0
14923	PATRONS MUTUAL INSURANCE COMPANY OF CONNECTICUT	A	613,905	0	613,905	613,905	0
25127	STATE AUTO PROPERTY & CASUALTY INSURANCE COMPANY	A	584,672	0	584,672	584,672	0
23582	HARLEYSVILLE INSURANCE COMPANY	A	575,806	0	575,806	575,806	0
15032	GUIDEONE MUTUAL INSURANCE COMPANY	A	562,122	0	562,122	562,122	0
27626	FIRSTCOMP INSURANCE COMPANY	A	551,150	0	551,150	551,150	0
13998	UTICA NATIONAL INSURANCE COMPANY OF OHIO	A	549,494	0	549,494	549,494	0
20362	MITSUI SUMITOMO INSURANCE COMPANY OF AMERICA	A	521,890	0	521,890	521,890	0
29580	BERKLEY REGIONAL INSURANCE COMPANY	A	495,751	0	495,751	495,751	0
10749	INTREPID INS CO	A	481,147	0	481,147	481,147	0
23612	MIDWEST EMPLOYERS CASUALTY COMPANY	A	479,652	0	479,652	479,652	0
26832	GREAT AMERICAN ALLIANCE INSURANCE COMPANY	A	442,806	0	442,806	442,806	0
24139	OLD REPUBIC GENERAL INSURANCE CORPORATION	A	396,268	0	396,268	396,268	0
26182	HARLEYSVILLE WORCESTER INSURANCE COMPANY	A	380,384	0	380,384	380,384	0
20931	ATLANTA INTERNATIONAL INSURANCE COMPANY	B	369,199	0	369,199	0	369,199
22551	MITSUI SUMITOMO INSURANCE USA INC.	A	368,200	0	368,200	368,200	0
10945	TOKIO MARINE AMERICA INSURANCE COMPANY	A	354,015	0	354,015	354,015	0
13269	ZENITH INSURANCE COMPANY	A	320,628	0	320,628	320,628	0
10885	KEY RISK INSURANCE COMPANY	A	317,312	0	317,312	317,312	0
19984	ACIG INSURANCE COMPANY	A	308,267	0	308,267	308,267	0
21180	SENTRY SELECT INSURANCE COMPANY	A	305,691	0	305,691	305,691	0
32280	WELLFLEET INSURANCE COMPANY	A	303,637	0	303,637	303,637	0
27847	INSURANCE COMPANY OF THE WEST	A	303,055	0	303,055	303,055	0
23442	PATRIOT GENERAL INSURANCE COMPANY	A	296,524	0	296,524	296,524	0
19410	COMMERCE AND INDUSTRY INSURANCE COMPANY	B	289,964	0	289,964	0	289,964
11242	ALLIED EASTERN INDEMNITY COMPANY	A	289,201	0	289,201	289,201	0
21423	UNION INSURANCE COMPANY OF PROVIDENCE	A	284,072	0	284,072	284,072	0
23787	NATIONWIDE MUTUAL INSURANCE COMPANY	A	276,757	0	276,757	276,757	0
41238	TRANS PACIFIC INSURANCE COMPANY	A	240,150	0	240,150	240,150	0
13528	BROTHERHOOD MUTUAL INSURANCE COMPANY	B	216,485	0	216,485	0	216,485
10665	AMERITRUST INSURANCE CORPORATION	A	214,084	0	214,084	214,084	0
10006	CERITY INSURANCE COMPANY	A	206,634	0	206,634	206,634	0
40517	ADVANTAGE WORKERS COMPENSATION INSURANCE COMPANY	A	198,475	0	198,475	198,475	0
35696	HARLEYSVILLE PREFERRED INSURANCE COMPANY	A	186,741	0	186,741	186,741	0
28223	NATIONWIDE AGRIBUSINESS INSURANCE COMPANY	B	185,190	0	185,190	0	185,190
10642	CHEROKEE INSURANCE COMPANY	A	177,620	0	177,620	177,620	0
19828	ARGONAUT-MIDWEST INSURANCE COMPANY	A	163,476	0	163,476	163,476	0
10800	PREMIER GROUP INSURANCE COMPANY	A	161,586	0	161,586	161,586	0
19216	(blank)	A	145,548	0	145,548	145,548	0
13056	RLI INSURANCE COMPANY	A	143,379	0	143,379	143,379	0
31895	AMERICAN INTERSTATE INSURANCE COMPANY	A	139,826	0	139,826	139,826	0
27740	NORTH POINTE INSURANCE COMPANY	A	123,086	0	123,086	123,086	0
24066	AMERICAN FIRE AND CASUALTY COMPANY	B	122,284	0	122,284	0	122,284
10340	STONINGTON INSURANCE COMPANY	A	111,508	0	111,508	111,508	0
19488	AMERISURE INSURANCE COMPANY	B	110,395	0	110,395	0	110,395

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Section VI - Expenses  
 Subsection E - Expenses Net of Premium Discount  
 7/1/2024

Section VI - E  
 Exhibit 4

Calendar Year 2023 Direct Written Premiums by Premium Discount Election - Type "A" or Type "B"

NAIC Company Number (1)	Company Name (2)	Elected Discount Schedule (3)	Direct Written Premium (4)	Residual Market Written Premium (5)	Adjusted Voluntary Written Premium		
					Total Written Premium (6)	Type A Written Premium (7)	Type B Written Premium (8)
20699	ACE PROPERTY AND CASUALTY INSURANCE COMPANY	A	105,506	0	105,506	105,506	0
23043	LIBERTY MUTUAL INSURANCE COMPANY	B	97,883	0	97,883	0	97,883
11050	AMERISURE PARTNERS INSURANCE COMPANY	B	90,898	0	90,898	0	90,898
25186	EMC PROPERTY & CASUALTY COMPANY	A	87,727	0	87,727	87,727	0
12866	T.H.E INSURANCE COMPANY	B	78,304	0	78,304	0	78,304
10212	ALLMERICA FINANCIAL ALLIANCE INSURANCE COMPANY	A	67,037	0	67,037	67,037	0
16691	GREAT AMERICAN INSURANCE COMPANY	A	66,040	0	66,040	66,040	0
12305	ACCIDENT FUND NATIONAL INSURANCE COMPANY	A	65,635	0	65,635	65,635	0
24767	ST. PAUL FIRE & MARINE INSURANCE COMPANY	A	64,702	0	64,702	64,702	0
15645	OBI AMERICA INS CO	A	62,937	0	62,937	62,937	0
21849	AMERICAN AUTOMOBILE INSURANCE COMPANY	A	60,328	0	60,328	60,328	0
20702	ACE FIRE UNDERWRITERS INSURANCE COMPANY	A	50,917	0	50,917	50,917	0
10030	WESTCHESTER FIRE INSURANCE COMPANY	A	48,877	0	48,877	48,877	0
20672	CONCORD GENERAL MUTUAL INSURANCE COMPANY	A	44,682	0	44,682	44,682	0
25453	NATIONWIDE INSURANCE COMPANY OF AMERICA	A	43,889	0	43,889	43,889	0
28886	TRANSGUARD INSURANCE COMPANY OF AMERICA, INC.	A	41,226	0	41,226	41,226	0
34630	OAK RIVER INSURANCE COMPANY	A	40,694	0	40,694	40,694	0
14982	PENN MILLERS INSURANCE COMPANY	A	35,504	0	35,504	35,504	0
10724	EASTERN ALLIANCE INSURANCE COMPANY	A	34,100	0	34,100	34,100	0
21881	NATIONAL SURETY CORPORATION	A	33,174	0	33,174	33,174	0
13110	VERMONT ACCIDENT INSURANCE COMPANY INC	A	33,100	0	33,100	33,100	0
25143	STATE FARM FIRE AND CASUALTY COMPANY	A	26,586	0	26,586	26,586	0
37877	NATIONWIDE PROPERTY & CASUALTY INSURANCE COMPANY	A	24,616	0	24,616	24,616	0
26344	GREAT AMERICAN ASSURANCE COMPANY	A	20,292	0	20,292	20,292	0
19402	AIG PROPERTY CASUALTY COMPANY	B	19,614	0	19,614	0	19,614
23760	NATIONWIDE GENERAL INSURANCE COMPANY	A	18,121	0	18,121	18,121	0
23663	NATIONAL AMERICAN INSURANCE COMPANY	A	17,011	0	17,011	17,011	0
36684	RIVERPORT INSURANCE COMPANY	A	14,884	0	14,884	14,884	0
21709	TRUCK INSURANCE EXCHANGE	A	14,610	0	14,610	14,610	0
41343	HDI GLOBAL INSURANCE COMPANY	A	11,125	0	11,125	11,125	0
13019	EASTERN ADVANTAGE ASSURANCE COMPANY	A	11,002	0	11,002	11,002	0
20680	GREEN MOUNTAIN INSURANCE COMPANY	A	10,788	0	10,788	10,788	0
38300	SAMSUNG FIRE & MARINE INSURANCE CO. LTD (U.S. BRANCH)	A	10,750	0	10,750	10,750	0
15350	WEST BEND MUTUAL INSURANCE COMPANY	A	9,588	0	9,588	9,588	0
22136	GREAT AMERICAN INSURANCE COMPANY OF NEW YORK	A	9,112	0	9,112	9,112	0
31925	FALLS LAKE NATIONAL INSURANCE COMPANY	A	7,615	0	7,615	7,615	0
10723	NATIONWIDE ASSURANCE COMPANY	A	5,098	0	5,098	5,098	0
22713	INSURANCE COMPANY OF NORTH AMERICA	A	4,831	0	4,831	4,831	0
28479	SUNAPEE MUTUAL FIRE INSURNACE COMPANY	A	3,856	0	3,856	3,856	0
14990	PENNSYLVANIA NATIONAL MUTUAL CASUALTY INS. CO.	B	1,304	0	1,304	0	1,304
42803	GUIDEONE ELITE INSURANCE COMPANY	B	1,266	0	1,266	0	1,266
16020	STATE MUTUAL INSURANCE COMPANY	A	1,151	0	1,151	1,151	0
10499	COREPOINTE INSURANCE COMPANY	A	978	0	978	978	0
36307	GRAY INSURANCE COMPANY (THE)	A	690	0	690	690	0
21857	PIE INSURANCE COMPANY, (THE)	A	642	0	642	642	0
11123	SAFETY FIRST INSURANCE COMPANY	A	551	0	551	551	0
22187	GREATER NEW YORK MUTUAL INSURANCE COMPANY	B	414	0	414	0	414
20095	BITCO GENERAL INSURANCE CORPORATION	A	367	0	367	367	0
34690	PROPERTY AND CASUALTY INSURANCE CO. OF HARTFORD	A	97	0	97	97	0
12297	PETROLEUM CASUALTY COMPANY	A	65	0	65	65	0
27120	TRUMBULL INSURANCE COMPANY	A	41	0	41	41	0
42617	MAG MUTUAL INSURANCE COMPANY	A	16	0	16	16	0
Total			1,352,739,670	232,500,426	1,120,239,244	861,796,212	258,443,032

# VI 000024

Section VI - Expenses  
 Subsection E - Expenses Net of Premium Discount  
 7/1/2024

Section VI - E  
 Exhibit 4

Calendar Year 2023 Direct Written Premiums by Premium Discount Election - Type "A" or Type "B"

NAIC Company Number (1)	Company Name (2)	Elected Discount Schedule (3)	Direct Written Premium (4)	Residual Market Written Premium (5)	Adjusted Voluntary Written Premium		
					Total Written Premium (6)	Type A Written Premium (7)	Type B Written Premium (8)

Percentage of Voluntary written premium electing Type A Discount: 76.9%  
 Percentage of Voluntary written premium electing Type B Discount: 23.1%

Notes:  
 (4) = Annual Statement Exhibit of Premium and Losses  
 (5) = consistent with the Annual Statement Exhibit of Premium and Losses  
 (6) = (4) - (5), subject to a minimum of 0

# VI 000025

Section VI - Expenses  
Subsection F - Expense Constant Offset  
7/1/2024

Section VI - F  
Exhibit 1

## Calculation of Expense Constant as Percent of Premium for Prospective Effective Period

(1) Expense Constant Offset for Policy Year 2021	0.956
(2) Expense Constant as Percent of Premium for Policy Year 2021 = 1.0 - (1)	4.4%
(3) Calculated Expense Constant for Policy Year 2021	\$222.56
(4) Factor to Bring Policy Year 2021 Premium to Premium Level of Prospective Effective Period	0.96
(5) Estimated Expense Constant for Prospective Effective Period	\$231.51
(6) Expense Constant as Percent of Premium for Prospective Effective Period = { (2) x [ (5) / (3) ] } / { [ (1) x (4) ] + [ (2) x ( (5) / (3) ) ] }	4.7%

### Notes:

(1): Exhibit 2.

(3): Based on Unit Statistical Data

(4): Section III-E, Exhibit 1.

(5): Section VI-D, Exhibit 1.

# VI 000026

Section VI - Expenses  
 Subsection F - Expense Constant Offset  
 7/1/2024

Section VI - F  
 Exhibit 2

## Expense Constant Offsets

Used in Section I and Section III

Policy Year (1)	Standard Premium Excluding Expense Constant (2)	ARAP at Company Level (3)	Factor to Adjust ARAP from Company Level to DSR Level Premium (4)	Expense Constant (5)	Expense Constant Offset (6)
2020	1,106,941,852	51,324,387	1.055	49,537,824	0.959
2021	1,155,047,519	51,953,593	1.047	51,673,082	0.959

Used in the Calculation of Expense Constant as Percent of Premium for Prospective Effective Period

Policy Year (7)	Standard Premium Excluding Expense Constant (8)	ARAP at Company Level (9)	Factor to Adjust ARAP from Company Level to DSR Level Premium (10)	Expense Constant (11)	Expense Constant Offset (12)
2021	1,023,077,278	45,824,398	1.047	49,148,265	0.956

### Notes:

Based on Unit Statistical Data, excluding Large Deductible Policies.

(4) Section III-B, Exhibit 2.

(6) =  $\{ (2) + [ (3) * (4) ] \} / [ \{ (2) + [ (3) * (4) ] \} + (5) ]$

(10) Section III-B, Exhibit 2.

(12) =  $\{ (8) + [ (9) * (10) ] \} / [ \{ (8) + [ (9) * (10) ] \} + (11) ]$

The Standard Premium excluding Expense Constant values for Policy Year 2021 used in Section I and Section III differ from those used in the calculation of the Expense Constant because of a differing company mixes.

# VI 000027

Section VI - Expenses  
Subsection G - Acquisition Expenses  
7/1/2024

Section VI - G  
Exhibit 1

## Provision for Commission and Other Acquisition Expense Including Frictional Reinsurance Expenses

(1)	Other Acquisition and Field Supervision Expense Ratio, Excluding Expense Constants	1.4%
(2)	Selected Average Commission Ratio, Excluding Expense Constants	9.0%
(3)	Selected Frictional Reinsurance Expenses Ratio (relative to Standard plus ARAP premiums, excluding expense constants)	1.0%
(4)	Selected Effect of Incidental Income and EBUP Expense, Excluding Expense Constants	0.0%
(5)	Commission and Other Acquisition Expense Ratio = (1) + (2) + (3) + (4)	<b>11.5%</b>

### Notes:

(1): Exhibit 2.

(2): Exhibit 3.

(3): Exhibit 4, Page 1.

(4): Exhibit 5.

# VI 000028

Section VI - Expenses  
 Subsection G - Acquisition Expenses  
 7/1/2024

Section VI - G  
 Exhibit 2

## Calculation of Other Acquisition Expense

	Calendar Year		
	2020	2021	2022
(1) Standard Earned Premium Including Expense Constant Premium	1,299,048,660	1,276,417,435	1,440,080,370
(2) ARAP Premium at Company Level	56,260,938	56,272,120	59,009,001
(3) Adjustment Factor to Adjust from Company Level to DSR Level Premium	1.059	1.047	1.053
(4) Standard Earned Premium plus Adjusted ARAP = (1) + [ (2) x (3) ]	1,358,627,618	1,335,317,707	1,502,199,066
(5) Adjustment for Experience and Merit Rating, ARAP, and Construction Credit Off-balance	1.032	1.031	1.032
(6) Adjustment Factor to Remove the Impact of Loading for Recoupment of Insolvency Fund Assessments	0.998	1.005	1.004
(7) Adjusted Standard Earned Premium plus ARAP = (4) x (5) x (6)	1,400,214,910	1,383,591,673	1,555,899,906
(8) Other Acquisition, Field Supervision, Collection Expenses for Home Office and Branch Office, excluding Commissions	49,302,974	50,866,572	54,123,698
(9) Other Acquisition Expense Ratio = (8) / (7)	3.5%	3.7%	3.5%
(10) Three Year Average		3.6%	
(11) Expense Constant as Percent of Premium for Prospective Effective Period		4.7%	
(12) Other Acquisition Portion of Expense Constant		46.7%	
(13) Percent of Premium due to Portion of Expense Constant for Other Acquisition Expense = (11) x (12)		2.2%	
(14) Other Acquisition and Field Supervision Expense Ratio, Excluding Expense Constants = [ (10) - (13) ] / [ 1.0 - (11) ]		1.4%	

### Notes:

- (1), (2): Aggregate Financial Reconciliation Report Calls, Calendar Years 2020 - 2022.  
 Reported Premium, plus ARAP, and including Large Deductible Policies at Standard Premium.
- (3): Section III-B, Exhibit 2.
- (5): Section III-B, Exhibit 1.
- (6): Section III-C, Exhibit 1.
- (8): Aggregate Financial Expense Calls, Calendar Years 2020 - 2022.
- (11): Section VI-F, Exhibit 1.
- (12): Section VI-B, Exhibit 3.

# VI 000029

Section VI - Expenses  
Subsection G - Acquisition Expenses  
7/1/2024

Section VI - G  
Exhibit 3

## Calculation of Average Commission Rate

	Calendar Year		
	2020	2021	2022
(1) Direct Written Premium	1,066,795,710	1,080,970,777	1,230,734,059
(2) Total Commissions for Agents and Brokers	89,121,234	94,628,937	107,635,884
(3) Average Commission Rate = (2) / (1)	8.4%	8.8%	8.7%
(4) Three Year Average		8.6%	
(5) Expense Constant as Percent of Premium for Prospective Effective Period		4.7%	
(6) Average Commission Ratio, Excluding Expense Constants = (4) / [ 1.0 - (5) ]		<b>9.0%</b>	
(7) Selected Average Commission Ratio, Excluding Expense Constants		<b>9.0%</b>	

### Notes:

(1), (2): Annual Statement, Statutory Page 14, Exhibit of Premium and Losses, Calendar Years 2020 - 2022.

(5): Section VI-F, Exhibit 1.

# VI 000030

Section VI - Expenses  
 Subsection G - Acquisition Expenses  
 7/1/2024

Section VI - G  
 Exhibit 4  
 Page 1

## Frictional Reinsurance Expenses

Calendar Year	Reinsurer Underwriting Expenses as Percentage of Net Written Premium				
	Commission and Brokerage	Other Acquisition	General Expenses	Taxes	Total Underwriting Expenses = (2) + (3) + (4) + (5)
(1)	(2)	(3)	(4)	(5)	(6)
2008	18.4%	4.3%	3.9%	0.6%	27.2%
2009	19.8%	2.9%	3.4%	0.2%	26.3%
2010	17.7%	3.2%	3.8%	0.2%	24.9%
2011	19.2%	3.0%	2.8%	0.2%	25.2%
2012	19.1%	3.1%	2.7%	0.3%	25.2%
2013	17.4%	3.6%	3.5%	0.3%	24.8%
2014	18.1%	3.5%	5.3%	0.4%	27.3%
2015	18.5%	3.2%	3.2%	0.3%	25.2%
2016	18.2%	3.0%	3.4%	0.3%	24.9%
2017	18.8%	2.6%	3.0%	0.3%	24.7%
2018	20.9%	2.0%	2.1%	0.2%	25.2%
2019	19.8%	1.8%	2.7%	0.3%	24.6%
2020	19.8%	1.4%	2.3%	0.2%	23.7%
2021	19.3%	1.3%	2.0%	0.2%	22.8%
2022	19.5%	1.2%	2.5%	0.1%	23.3%
(7) Average	19.0%	2.7%	3.1%	0.3%	25.0%
(8) Estimated Ceding Commission & Brokerage Rate for Workers' Compensation Non-Proportional Reinsurance	15.9%				
(9) Adjusted Average = (7) - (8)	3.1%	2.7%	3.1%	0.3%	9.1%
(10) Estimated % of Direct Premium Ceded for Workers' Compensation Non-Proportional Reinsurance					14.9%
(11) Implied Frictional Reinsurance Expenses Relative to Direct Premiums (as a %) = Total (9) x (10)					1.36%
(12) Selected Frictional Reinsurance Expenses Ratio (relative to Standard plus ARAP premiums, excluding expense constants)					1.0%

**Notes:**

(2)-(5): Insurance Expense Exhibit database - By Line Underwriting Experience from Best's Aggregates & Averages for Reinsurance Editions 2009 - 2023.

(8): Page 2, (10).

(10): Page 2, (11).

# VI 000031

Section VI - Expenses  
 Subsection G - Acquisition Expenses  
 7/1/2024

Section VI - G  
 Exhibit 4  
 Page 2

## Estimate of Ceding Commission & Brokerage Rate for Workers' Compensation Non-Proportional Reinsurance

Calendar Year	Written Premiums (000's)			Ratio of Commission & Brokerage Incurred to Written Premium		Commission & Brokerage Expenses Incurred (000's)		
	Direct	Net	Direct - Net = (2) - (3)	Direct	Net	Direct = (2) x (5)	Net = (3) x (6)	Direct - Net = (7) - (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2008	42,686,615	37,535,546	5,151,069	0.077	0.060	3,286,869	2,252,133	1,034,737
2009	37,879,014	32,642,883	5,236,131	0.079	0.060	2,992,442	1,958,573	1,033,869
2010	37,180,836	32,184,623	4,996,213	0.079	0.060	2,937,286	1,931,077	1,006,209
2011	41,651,380	35,751,070	5,900,310	0.084	0.068	3,498,716	2,431,073	1,067,643
2012	44,555,061	37,992,643	6,562,418	0.084	0.070	3,742,625	2,659,485	1,083,140
2013	49,384,867	41,250,232	8,134,635	0.084	0.068	4,148,329	2,805,016	1,343,313
2014	52,613,735	44,053,515	8,560,220	0.084	0.066	4,419,554	2,907,532	1,512,022
2015	54,522,916	45,090,969	9,431,947	0.088	0.073	4,798,017	3,291,641	1,506,376
2016	58,255,242	47,961,376	10,293,866	0.085	0.067	4,951,696	3,213,412	1,738,283
2017	55,749,285	45,032,688	10,716,597	0.092	0.075	5,128,934	3,377,452	1,751,483
2018	54,900,760	47,963,539	6,937,221	0.091	0.085	4,995,969	4,076,901	919,068
2019	54,118,597	47,105,490	7,013,107	0.091	0.086	4,924,792	4,051,072	873,720
2020	51,302,048	44,142,946	7,159,102	0.088	0.082	4,514,580	3,619,722	894,859
2021	52,153,460	44,870,161	7,283,299	0.093	0.087	4,850,272	3,903,704	946,568
2022	56,891,071	49,090,756	7,800,315	0.092	0.087	5,233,979	4,270,896	963,083
<b>Total</b>	<b>743,844,887</b>	<b>632,668,437</b>	<b>111,176,450</b>	<b>0.087</b>	<b>0.074</b>	<b>64,424,060</b>	<b>46,749,687</b>	<b>17,674,372</b>

- (10) Estimated Ceding Commission & Brokerage Rate for Workers' Compensation Non-Proportional Reinsurance = Total (9) / Total (4) 15.9%
- (11) Estimated % of Direct Premium Ceded for Workers' Compensation Non-Proportional Reinsurance = Total (4) / Total (2) 14.9%

**Notes:**

(2), (3), (5), (6): Insurance Expense Exhibit database - By Line Underwriting Experience from Best's Aggregates & Averages for Workers' Comp Editions 2009 - 2023.

# VI 000032

Section VI - Expenses  
 Subsection G - Acquisition Expenses  
 7/1/2024

Section VI - G  
 Exhibit 5

## Effect of Incidental Income and Earned but Uncollected Premium

	Calendar Year		
	2020	2021	2022
(1) Standard Earned Premium Including Expense Constant Premium	1,299,048,660	1,276,417,435	1,440,080,370
(2) ARAP Premium at Company Level	56,260,938	56,272,120	59,009,001
(3) Adjustment Factor to Adjust from Company Level to DSR Level Premium	1.059	1.047	1.053
(4) Standard Earned Premium plus Adjusted ARAP = (1) + [ (2) x (3) ]	1,358,627,618	1,335,317,707	1,502,199,066
(5) Adjustment for Experience and Merit Rating, ARAP, and Construction Credit Off-balance	1.032	1.031	1.032
(6) Adjustment Factor to Remove the Impact of Loading for Recoupment of Insolvency Fund Assessments	0.998	1.005	1.004
(7) Adjusted Standard Earned Premium plus ARAP = (4) x (5) x (6)	1,400,214,910	1,383,591,673	1,555,899,906
(8) Earned But Uncollected Premium ("EBUP")	6,936,170	8,838,351	6,529,825
(9) Incidental Income	1,840,056	1,269,569	1,231,369
(10) Net Effect of Incidental Income and EBUP Expense = [ (8) - (9) ] / (7)	0.4%	0.5%	0.3%
(11) Three Year Average		0.4%	
(12) Expense Constant as Percent of Premium for Prospective Effective Period		4.7%	
(13) Effect of Incidental Income and EBUP Expense, Excluding Expense Constants = (11) / [ 1.0 - (12) ]		0.4%	
(14) Selected Effect of Incidental Income and EBUP Expense, Excluding Expense Constants		0.0%	

### Notes:

- (1), (2): Aggregate Financial Reconciliation Report Calls, Calendar Years 2020 - 2022.  
 Reported Premium and ARAP, including Large Deductible Policies at Standard Premium.  
 (3): Section III-B, Exhibit 2.  
 (5): Section III-B, Exhibit 1.  
 (6): Section III-C, Exhibit 1.  
 (8),(9): Aggregate Financial Expense Call.  
 (12): Section VI-F, Exhibit 1.

# VI 000033

Section VI - Expenses  
Subsection H - Loss Adjustment Expense  
7/1/2024

Section VI - H  
Exhibit 1  
Page 1

## Defense and Cost Containment Expense ("DCCE") Ratio and Total Loss Adjustment Expense ("LAE") Ratio

	Policy Year		
	2020	2021	2022
(1) Defense and Cost Containment Expense Ratio	8.6%	8.9%	9.6%
(2) Three Year Average Defense and Cost Containment Expense Ratio = Average of (1)		9.0%	
(3) Selected Three Year Average Defense and Cost Containment Expense Ratio		9.0%	
(4) Total Loss Adjustment Expense Ratio (LAE / Loss)		<b>19.5%</b>	

### Notes:

(1): Section VI-H, Exhibit 1, Page 3

(4): (3) + [ (9) from Section VI-H, Exhibit 2 ]

Paid Defense and Cost Containment ("DCCE") (\$000s)

Policy Year (1)	Age of Development																				
	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252
2001																					
2002																					
2003																					
2004																					
2005																					
2006																					
2007																					
2008																					
2009																					
2010																					
2011																					
2012																					
2013																					
2014																					
2015																					
2016																					
2017																					
2018																					
2019																					
2020																					
2021																					
2022																					

Paid Losses

Policy Year (1)	Age of Development																				
	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252
2001																					
2002																					
2003																					
2004																					
2005																					
2006																					
2007																					
2008																					
2009																					
2010																					
2011																					
2012																					
2013																					
2014																					
2015																					
2016																					
2017																					
2018																					
2019																					
2020																					
2021																					
2022																					

Notes:  
 (2), (3): Aggregate Financial Policy Year Calls.

VI 000034

Paid Defense and Cost Containment ("DCCE") Ratios

Policy Year (1)	Age of Development																			Developed to 252 (3)		
	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228		240	252
2001													0.101	0.100	0.100	0.100	0.100	0.100	0.099	0.099	0.099	0.099
2002												0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101
2003											0.103	0.103	0.103	0.103	0.103	0.103	0.103	0.104	0.104	0.104	0.104	0.104
2004										0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101
2005									0.101	0.101	0.101	0.101	0.101	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102
2006								0.100	0.099	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
2007								0.103	0.102	0.102	0.102	0.102	0.102	0.102	0.103	0.103	0.103	0.103	0.103	0.103	0.103	0.103
2008						0.104	0.104	0.105	0.105	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106
2009					0.099	0.098	0.099	0.099	0.100	0.100	0.100	0.100	0.100	0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099
2010				0.102	0.100	0.100	0.100	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.102	0.102	0.102	0.102	0.102	0.102
2011			0.114	0.108	0.105	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106
2012		0.120	0.114	0.109	0.106	0.105	0.105	0.105	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106	0.106
2013	0.114	0.123	0.117	0.112	0.110	0.109	0.109	0.109	0.109	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110
2014	0.115	0.121	0.115	0.107	0.105	0.105	0.107	0.107	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108
2015	0.086	0.099	0.097	0.092	0.092	0.092	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091
2016	0.084	0.099	0.096	0.094	0.092	0.093	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092
2017	0.083	0.097	0.096	0.093	0.090	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089
2018	0.084	0.095	0.097	0.093	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
2019	0.076	0.092	0.092	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087
2020	0.071	0.091	0.092	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087
2021	0.073	0.094	0.094	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087
2022	0.081	0.094	0.094	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087

Policy Year	Age-to-Age Development Factors																				
	12 - 24	24 - 36	36 - 48	48 - 60	60 - 72	72 - 84	84 - 96	96 - 108	108 - 120	120 - 132	132 - 144	144 - 156	156 - 168	168 - 180	180 - 192	192 - 204	204 - 216	216 - 228	228 - 240	240 - 252	
2001													0.999	1.000	0.995	0.999	0.999	0.999	0.999	0.999	0.999
2002												1.001	0.999	1.001	1.001	0.999	1.002	0.998	0.999	1.002	1.002
2003											0.998	0.999	0.998	1.001	0.999	1.006	1.002	1.000	1.002	1.002	1.002
2004									0.999	1.000	1.000	1.000	0.998	0.996	1.001	0.999	1.001	1.001	1.001	1.001	1.001
2005								1.003	1.002	0.999	1.000	1.006	1.000	1.000	0.999	1.002	1.002	1.002	1.002	1.002	1.002
2006							0.998	1.004	0.998	1.003	0.999	0.998	1.001	1.000	1.001	1.001	1.001	1.001	1.001	1.001	1.001
2007							0.998	0.996	1.001	0.998	1.003	1.000	1.003	1.001	0.999	1.001	1.001	1.001	1.001	1.001	1.001
2008						1.005	1.006	1.003	1.006	0.994	1.005	1.002	0.999	0.999	1.001	1.001	1.001	1.001	1.001	1.001	1.001
2009					0.990	1.008	1.001	1.005	1.002	0.999	0.998	0.995	0.999	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001
2010				0.984	0.999	1.000	1.003	1.004	1.000	1.003	1.002	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2011			0.943	0.979	1.001	1.006	1.001	0.999	1.001	1.001	0.999	0.999	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001
2012		0.951	0.953	0.979	0.989	1.000	1.004	1.001	1.003	0.998	0.998	0.998	1.001	1.001	1.003	0.998	0.998	0.998	0.998	0.998	0.998
2013	1.071	0.953	0.961	0.975	0.997	0.995	1.005	0.999	1.006	1.006	1.006	1.006	1.006	1.006	1.006	1.006	1.006	1.006	1.006	1.006	1.006
2014	1.055	0.947	0.928	0.986	0.999	1.016	1.005	1.004	1.004	1.004	1.004	1.004	1.004	1.004	1.004	1.004	1.004	1.004	1.004	1.004	1.004
2015	1.153	0.981	0.946	0.996	1.003	0.991	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
2016	1.183	0.969	0.975	0.985	1.001	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993
2017	1.167	0.987	0.974	0.964	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985
2018	1.132	1.018	0.955	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971
2019	1.208	1.006	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944
2020	1.284	1.008	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944
2021	1.274	1.008	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944
2 Yr Weighted Average	1.279	1.007	0.950	0.968	0.993	0.992	1.001	1.001	1.005	1.000	1.000	0.999	0.999	1.000	1.000	1.000	1.000	1.001	1.000	1.001	1.001
3 Yr Weighted Average	1.255	1.011	0.958	0.973	0.996	1.000	1.003	1.001	1.003	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.000	1.000	1.001	1.001
5 Yr Weighted Average	1.213	0.998	0.959	0.980	0.997	0.999	1.003	1.001	1.002	0.999	1.001	1.000	1.001	1.000	0.999	1.001	1.001	0.999	1.000	1.000	1.001
Selected	1.255	1.011	0.958	0.973	0.996	1.000	1.003	1.001	1.003	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.000	1.000	1.001	1.001
Cumulative	1.190	0.948	0.938	0.979	1.006	1.010	1.010	1.007	1.006	1.002	1.001	1.002	1.002	1.002	1.001	1.002	1.001	1.001	1.001	1.001	1.001

Notes:  
 (2): [(2) Exhibit 1, Page 1] / [(3) Exhibit 1, Page 1]  
 Paid DCCE Ratios are calculated as Paid DCCE/(Paid Medical + Paid Indemnity)

VI 000035

# VI 000036

Section VI - Expenses  
 Subsection H - Loss Adjustment Expense  
 7/1/2024

Section VI - H  
 Exhibit 2

## Adjusting and Other ("AO") Expense Ratio

	Calendar Year		
	2020	2021	2022
(1) Direct Incurred Losses	634,475,384	609,136,779	669,284,666
(2) Factor to Adjust the Direct Losses to Full Coverage Losses	1.242	1.235	1.251
(3) Estimated Full Coverage Incurred Losses = (1) x (2)	788,250,915	752,545,909	837,010,829
(4) Direct Incurred Adjusting and Other Expense	73,380,875	59,652,235	92,541,637
(5) Factor to Adjust the Direct Adjusting and Other Expense to Full Coverage AO Expense	1.108	1.105	1.111
(6) Estimated Full Coverage Adjusting and Other Expense = (4) x (5)	81,312,255	65,934,664	102,846,158
(7) Adjusted Adjusting and Other Expense Ratio = (6) / (3)	10.32%	8.76%	12.29%
(8) Three Year Average Adjusted Adjusting and Other Expense Ratio = Average of (7)		10.5%	
(9) Selected Three Year Average Adjusted Adjusting and Other Expense Ratio		10.5%	

### Notes:

(1): Annual Statement, Statutory Page 14, Exhibit of Premium and Losses.

(4): Aggregate Financial Calendar Year Expense Data Calls, 2020 - 2022.

(2), (5): Section VI-I, Exhibit 1, Page 1.

# VI 000037

Section VI - Expenses  
Subsection I - Adjustment for Large Deductible Policies  
7/1/2024

Section VI - I  
Exhibit 1  
Page 1

## Adjustment to the Adjusting and Other Expense Provision

	Calendar Year		
	2020	2021	2022
(1) Average Premium Reduction Factor for Large Deductible Policies	0.811	0.806	0.815
(2) Loss Elimination Ratio (LER) for Large Deductible Policies = (1) x 1.104	89.6%	89.0%	90.0%
(3) Market Share (Standard Premium Basis) of Large Deductible Policies	21.8%	21.4%	22.3%
(4) LER for Full Coverage plus Large Deductible Policies = [ (2) x (3) ] + { 0.0 x [ 1.0 - (3) ] }	19.5%	19.1%	20.0%
(5) Factor to Adjust the Direct Losses to Full Coverage Losses = 1.0 / [ 1.0 - (4) ]	1.242	1.235	1.251
(6) Factor to Adjust the Direct AO Expense to Full Coverage AO Expense = 1.0 / { 1.0 - [ 0.5 x (4) ] }	1.108	1.105	1.111

### Notes:

(1), (3): Exhibit 2.

(2): 1.104 from Exhibit 1, Page 2.

(6): Assumes 50% of Adjusting & Other expense varies directly with losses.

# VI 000038

Section VI - Expenses  
Subsection I - Adjustment for Large Deductible Policies  
7/1/2024

Section VI - I  
Exhibit 1  
Page 2

## Loss Elimination Ratio for Large Deductible Policies

	<u>As a % of Standard Premium plus ARAP</u>
(1) Commission and Other Acquisition Expense Ratio	12.6%
(2) Average Premium Discount as a % of Standard Premium + ARAP	5.6%
(3) Premium Tax Ratio = 2.28% x [ 1.0 - (2) ]	2.2%
(4) Profit Provision	-5.1%
(5) Insolvency Fund Assessment	0.0%
(6) Residual Market Subsidy (Retrospectively-rated policies)	1.4%
(7) Variable Expense Ratio = (1) + (2) + (3) + (4) + (5) + (6)	16.6%
(8) Expected Loss Ratio without LAE	66.6%
(9) Defense and Cost Containment Expense ("DCC")	5.6%
(10) Adjusting and Other Expenses ("AO")	6.5%
(11) Variable Adjusting and Other Expenses = 0.5 x (10)	3.3%
(12) Portion of Expected Loss + LAE Ratio that varies with deductible (ELARD) = (8) + (9) + (11)	75.5%
(13) LER / D = [ 1.0 - (7) ] / (12)	1.104

D = Average Premium Reduction Factor for Large Deductible Policies

LER = Loss Elimination Ratio

ELARD = Loss + DCC + ( 1/2 x AO )

$D = [ LER \times ELARD ] / [ 100\% - (\text{Variable Expense}) ]$

$LER = D \times [ 1.0 - (\text{Variable Expense}) ] / LER \times ( 1.0 + DCC + 1/2 \times AO )$

### Notes:

Values approved for rates effective 7/1/2023.

(1) - (6) = From prior Rate Decision/Stipulation

(8) = From prior Rate Decision/Stipulation

(9) = 8.4% x (8), ratio of DCC to Losses from the 7/1/2023 filing.

(10) = 9.8% x (8), ratio of AO to Losses from the 7/1/2023 filing.

# VI 000039

Section VI - Expenses  
 Subsection I - Adjustment for Large Deductible Policies  
 7/1/2024

Section VI - I  
 Exhibit 2

## Average Large Deductible Premium Reduction Factor and Large Deductible Market Share

		Policy Year												
		2019	2020	2021	2022*									
(1)	Standard Earned Premium Excluding Large Deductible Policies	1,024,778,288	1,012,475,812	1,062,840,075	595,167,488									
(2)	Earned Premium Net of Deductible Credit for Large Deductible Policies	53,774,721	53,472,422	55,895,787	31,614,217									
(3)	Standard Earned Premium for Large Deductible Policies	285,557,656	281,869,603	282,978,487	182,985,222									
(4)	Standard Earned Premium for All Policies = (1) + (3)	1,310,335,944	1,294,345,415	1,345,818,562	778,152,710									
(5)	Average Premium Reduction Factor for Large Deductible Policies = $1.0 - [(2) / (3)]$	0.812	0.810	0.802	0.827									
(6)	Market Share (Standard Premium Basis) of Large Deductible Policies = (3) / (4)	21.8%	21.8%	21.0%	23.5%									
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">Calendar Year</th> </tr> <tr> <th style="text-align: center;">2020</th> <th style="text-align: center;">2021</th> <th style="text-align: center;">2022</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0.811</td> <td style="text-align: center;">0.806</td> <td style="text-align: center;">0.815</td> </tr> </tbody> </table>				Calendar Year			2020	2021	2022	0.811	0.806	0.815
Calendar Year														
2020	2021	2022												
0.811	0.806	0.815												
(7)	Average Premium Reduction Factor for Large Deductible Policies = Average of PY-1 and PY													
(8)	Market Share (Standard Premium Basis) of Large Deductible Policies = Average of PY-1 and PY	21.8%	21.4%	22.3%										

**Notes:**

- (1): Aggregate Financial Policy Year Call, Policy Year Accumulated Earned Premium – Standard at Bureau DSR Level.
- (2): Aggregate Financial Policy Year Large Deductible Call, Policy Year Accumulated Earned Premium – Net.
- (3): Aggregate Financial Policy Year Large Deductible Call, Policy Year Accumulated Earned Premium – Standard at Bureau DSR Level.
- \* Policy Year 2022 is an incomplete Policy Year, valued as of 12/31/2022

# VI 000040

Section VI - Expenses  
Subsection J - Expected Loss Ratios Underlying the Proposed Rates & Rating Values  
7/1/2024

Section VI - J  
Exhibit 1

## Expected Loss Ratios Underlying the Proposed Rates & Rating Values

	<u>As a % of Standard Premium plus Adjusted ARAP</u>
(1) Commission and Other Acquisition Expense Ratio	11.5%
(2) Average Premium Discount as a % of Standard Premium + ARAP	5.4%
(3) Premium Tax Ratio = 2.28% x [ 1.0 - (2) ]	2.2%
(4) Variable Expense Ratio = (1) + (2) + (3)	19.0%
(5) Underwriting Profit Provision	-2.2%
(6) Permissible Loss, LAE, and Fixed Expense Ratio = 1.0 - [ (4) + (5) ]	83.2%
(7) Fixed Expense Ratio	5.6%
(8) Expected Loss and Loss Adjustment Expense Ratio = (6) - (7)	77.6%
(9) Total Loss Adjustment Expense Ratio (LAE / Loss)	19.5%
(10) Expected Loss Ratio without Loss Adjustment Expense = (8) / [ 1.0 + (9) ]	65.0%

### Notes:

(1): Section VI-G, Exhibit 1.

(2): Section VI-E, Exhibit 1.

(3): 2.28% from Section VI-B, Exhibit 3.

(5): Section VII-A, Exhibit 1.

(7): Section VI-B, Exhibit 1. The Average Fixed Expense Ratio, 5.1%, is divided by [1.0 + indicated rate change], -8.3%, to derive the Fixed Expense Ratio underlying the proposed rates.

(9): Section VI-H, Exhibit 1, Page 1.

## UNDERWRITING PROFIT PROVISION

### Background

The Commissioner approved the use of the IRR for purposes of estimating underwriting profit provisions in the decision on 2003 rates, and the WCRIBMA continues to rely on that model in this filing.<sup>1</sup> Additionally, consistent with filings since 2014, the WCRIBMA is using a secondary analysis, the insurer capital cost (ICC) model, to augment the IRR that is used to set the profit provision in the filing. The ICC model is not a replacement for the IRR; rather, it provides an alternative view of the cash flows from the insurance transaction, taken from the perspective of the insurance company (as opposed to the investor).

Both the IRR and ICC models are variants of the generic discounted cash flow (DCF) methodology that is the standard investment decision tool relied upon in corporate and managerial finance. Such models have several features that make them particularly appealing for use in rate regulation.

Fundamental principles of economics tell us that the price of insurance should be set to cover the expected value of future costs associated with the risk transfer under consideration.<sup>2</sup> In addition to losses and expenses, one of the costs of insurance is the cost of capital: there must be a provision in the rates that compensates investors for the

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<sup>1</sup> See, 2003 Decision, page 40: “For the following reasons, we conclude that use of an IRR model for the underwriting profits provisions will be superior to the M-C model.”

<sup>2</sup> This is simply the insurance specific application of the general proposition that price should equal marginal cost. This is not only a principle of economics; basic precepts of actuarial science require the same thing. See, for example, the CAS Statement of Principles on Property Casualty Insurance Ratemaking or the Standard of Practice on Rate of Return in Ratemaking.

## VII 000002

opportunity cost of the capital committed to the insurance activity. The underwriting profit provision is the component of the rates that, taken along with investment income, should provide insurers with a fair rate of return.

This suggests that to set an underwriting profit provision in insurance rates, one should first establish a fair and reasonable rate of return, and then select a profit provision that produces that fair return. Such an analysis is consistent with the traditional practice in other regulated industries, where rates include allowances for the expected costs of providing the regulated product or service, along with a provision for a fair rate of return on the capital required to produce the regulated product or service. This type of procedure comports with the legal standard under which fair regulation is applied, as articulated in the Hope Natural Gas decision of the U.S. Supreme Court.<sup>3</sup> It is also consistent with the procedures relied upon in Massachusetts for the regulation of public utilities.

To that end, the WCRIBMA requested that George Zanjani, Professor of Finance and Frank Park Samford Chair of Insurance at the University of Alabama, assist the WCRIBMA staff in developing a procedure for setting the profit factor in workers' compensation rates that will yield insurers a fair and reasonable return on the capital invested in support of the insurance transaction. Dr. Zanjani has performed the following work for the WCRIBMA:

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<sup>3</sup> The Hope decision states, in part, that "...the return to the equity owner should be commensurate with the returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital." Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591, 603 (1944).

# VII 000003

1. He has assisted the WCRIBMA in refining and applying a methodology to estimate the cost of capital, or fair rate of return, insurers should be allowed for bearing the risk of underwriting workers' compensation insurance in Massachusetts.
2. He has assisted the WCRIBMA in refining and applying the two DCF models (IRR and ICC) used in this filing to estimate the underwriting profit factor required to yield the indicated fair rate of return.
3. He has assisted the WCRIBMA in refining and applying the portfolio rate of return analysis.
4. He has reviewed the critical inputs to these models, particularly the leverage ratios, returns on assets, tax rates, and cost of capital, and the underwriting profit factors they produce. He has assessed the suitability of these models, and the inputs and outputs for the Massachusetts workers' compensation market.

In this filing, the calculated underwriting profit provision is -2.19%. The DCF models and the cost of capital calculation are financially sound and produce a rate in the statutorily required range of reasonableness. We therefore recommend that the Commissioner approve their use.

## **Section VII-A – Summary**

Table A1 summarizes the main parameters needed for the calculation of the profit provision.

## **VII-B– Discounted Cash Flow Models**

In Section VII-B, we present the DCF models. Exhibit 1 presents the IRR model and the relevant cash flows to investors. Exhibit 2 presents the ICC model and the relevant cash flows to insurers. This section also includes a detailed appendix that shows that the IRR and ICC models are mathematical equivalents and yield the same results.

## **VII-C – Underwriting Cash Flows**

In Section VII-C, we estimate the actual underwriting cash flows that accrue to the insurer in each time period. These cash flows include premium, losses and LAE, other expenses, taxes, investment income and surplus. Each one of these cash flows is estimated quarterly over a period of 36 years to calculate the final flow of funds related to the insurance transaction.

Tables C5\_1 and C5\_2 provide cash flow patterns and amounts for premium collection, payment of losses, LAE and expenses calculated by the WCRIBMA. In this filing, consistent with rate filings since 2014, the WCRIBMA made distinct assumptions (detailed below) for the payment pattern of each of these various types of expenses. The cash flow patterns for a single policy were converted to a policy year basis for use in DCF models.

## **General Expenses**

We assume that the payment pattern for general expenses is equal to the average of the written premium flow and earned premium flow. This corresponds to an assumption

that, on average, half of the general expense payments are made as premium is written and half are made as premium is earned.

## **Commission & Brokerage**

We assume that the commission and brokerage flow pattern coincides with the collected premium flow.

## **Other Acquisition Expense**

Other acquisition costs are assumed to be paid as follows: one sixth in the period preceding the writing of premium, and five sixths in the period the premium is written.

## **Premium Taxes**

The distribution of premium taxes is assumed to be equal to the written premium pattern with a single period lag.

## **Miscellaneous and Other Taxes**

We assume that the miscellaneous and other taxes flow pattern coincides with written premium flow.

## **Reinsurance Expenses**

We assume that the reinsurance expense flow pattern coincides with the written premium flow.

## **Premium Discount**

We assume that the premium discount flow pattern coincides with the collected premium flow.

## **VII-D – Capital Needed From Investors**

Table D1 derives the amount of capital required to be supplied from investors.

## **VII-E – Cost of Capital**

In Section VII-E we present the cost of capital analysis including a detailed appendix describing the methods used. In the 2020 rate filing, the WCRIBMA relied exclusively on Value Line sample of companies to calculate the cost of capital. The sample included data from Value Line Investment Survey, Part 3 – The Ratings and Report and from Value Line Investment Survey, Mid Cap Edition. In the 2022 rate filing, consistent with the sample of companies used in the calculation of the leverage ratio and the portfolio composition, the WCRIBMA instead based its estimates on groups writing workers' compensation insurance in Massachusetts. The motivation for this change was to obtain a better assessment of the risk and required returns for capital that is actually supporting the business of workers compensation in Massachusetts, since industry composites may be affected by carriers that are serving other lines or geographic areas. In this filing, the WCRIBMA continue to use the same sample of companies as in the prior filing.

Consistent with filings since 2016, the WCRIBMA has implemented a three-stage dividend growth model to reflect the assumption that, in the long run, the industry's dividend growth rate will revert to a level equal to the growth rate of the economy as a

whole. The calculation of the three-stage dividend growth model is shown in Section VII-E, Exhibit 2, Page 1.

## **VII-F – Leverage Ratio**

Consistent with rate filings since 2020, in an effort to add more accuracy in the calculations, the WCRIBMA relies on the total of 79 groups that write workers' compensation in Massachusetts. The motivation for this change was to obtain a better assessment of the average surplus leverage of the companies that are actually bearing the workers compensation risks in Massachusetts, since industry composites may be affected by carriers that are serving other lines or geographic areas and thus less representative of the carriers covered by this rate filing proceeding. This data is obtained from A.M. Best's Global Insurance Database using BestLink, an online service that allows you to access data, including data from statutory filings, from Best's Financial Suite and Best's Insurance Reports via the Internet.

The mechanics of the model calculations (see Section VII-D, Exhibit 1) take the leverage ratio input as a reserves-to-surplus ratio, and divide reserves at each point in time by that ratio to obtain an allocation of surplus. In the 2020 and 2022 rate filings, we calculated a premium-weighted average of company-level reserves-to-surplus ratios for the leverage ratio input. We re-evaluated this approach in the 2023 filing and noted that when implied surplus is aggregated across companies, the aggregation is not consistent with that which would be obtained when applying individual company reserve-to-surplus ratios to the reserves generated by the premium and subsequently aggregating.<sup>4</sup>

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<sup>4</sup> A detailed mathematical explanation of the aggregation problem and an example is presented in the accompanying appendix.

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In this filing, consistent with last year's filing, we address this problem by basing the leverage ratio input on a premium-weighted average of company-level surplus-to-reserves ratios, which is then inverted before being used in the model calculation of Section VII-D, Exhibit 1. In this case, the impact is to increase allocated surplus: that is, the use of the premium-weighted average reserves-to-surplus ratio in the previous filing understated the amount of needed surplus and thus resulted in an understated profit provision. Specifically, we calculate premium weighted average of group-level surplus-to-reserves ratios (surplus divided by the sum of loss and LAE reserves and unearned premium reserves) for each of the past five years. We use Massachusetts workers' compensation direct premiums written in each respective year for the weights. We then take a straight average of the five years of figures. The calculation is shown in Exhibit 1.

## **VII-G - Premium Flow**

The WCRIBMA continues to rely on the 2007 special premium payment data call with underlying premium cash flow pattern from a representative group of carriers. Each company group was asked to obtain a random sample of fifty complete-year guaranteed cost (non-large deductible) policies with policy effective dates in 2004 that include premiums related to Massachusetts' workers' compensation exposures. The 50 randomly selected policies were stratified, based on the total premium for all states covered by the policy, as follows:

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Policy Premium Range	Number of Policies in Sample
0 – 9,999	10
10,000 – 199,999	24
Over 200,000	16

If the population of policies in any of the premium ranges was not sufficient to allow for the recommended sample size, the size of the samples for the other premium layers was increased so that 50 policies were sampled in total. The premium flow used in the profit model is shown in Exhibit 1.

### **VII-H - Expense Weights**

In the current filing, separate policy year 2020 and policy year 2021 weights are calculated for general expenses, miscellaneous and other taxes, and loss and loss adjustment expenses. The weights used to combine the various expense flow patterns into final expense flows are calculated using the expense provisions from Section VI. The average of the two policy year weights is used in the DCF models.

Acquisition expenses, premium taxes and premium discounts are treated as varying in proportion to standard premium plus ARAP. Loss adjustment expenses are treated as varying in proportion to losses. General expenses and other taxes are treated as fixed expenses.

Since the total premium amount will vary with the profit provision, and since losses, loss adjustment expenses and fixed expense amounts are all treated as not varying with

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premium levels, the proportion of premium attributable to losses, LAE and fixed expenses depends on the underwriting profit provision. Thus their weights relative to those items that vary in proportion to total premium will change as the profit provision does but their weights relative to each other will not.

## **VII-I - Loss and LAE Flow**

The WCRIBMA has updated the data underlying both the medical and the indemnity loss flows used in determining the profit provision. The WCRIBMA has used Aggregate Financial Data to derive estimates of the patterns of loss payments. Loss development factors used in Exhibit 2 for the calculation of the combined loss flow, are from Section II-E, Exhibit 1, Page 1.

Exhibit 1 shows the calculation of loss and LAE payout pattern used in the DCF models. The Defense and Cost Containment Expense (DCC) flow is assumed to have the same pattern as the loss flow. This corresponds to an assumption that on average DCC payments occur at approximately the same time as claim payments.

The pattern of the Adjusting and Other Expense (AO) flow is assumed to be the same as the average of the loss flow and an earned premium flow. This corresponds to an assumption that on average half of the AO payments are made as accidents occur over the course of the policy effective period and that the other half of the AO payments are made as claims are paid.

The combined loss and LAE flow on a single policy basis used in the profit model, which reflects a weighted average of the medical and indemnity flows, is shown in Exhibit 1.

This is then converted to a full policy year basis and appears in Table C5\_1 (Section VII-C, Exhibit 5, Page 1).

## **VII-J - Portfolio Rate of Return**

### **Portfolio Composition**

The mix of securities in the insurance industry asset portfolio is based on data compiled in A.M. Best's Aggregates & Averages. A.M. Best is the single most widely recognized source of insurer financial data, and is the source that is routinely relied upon for insurer asset information. These data are compiled directly from insurer annual statements, and they contain substantial detail on the mix and maturity of bonds. Hence this is a preferred source for estimating the mix of securities in the insurer asset portfolio.

Prior to the 2020 rate filing, the WCRIBMA relied on A.M. Best's aggregation of the total US Property and Casualty Industry, taken from the latest annual edition of A.M. Best's Aggregates and Averages, to estimate the proportion of assets in the portfolio. As in the rate filings since 2020, and consistent with the calculation of the leverage ratio (Section VII – F, Exhibit 1), and Cost of Capital (Section VII - E) the WCRIBMA instead bases its estimates on the portfolios of the groups writing workers' compensation insurance in Massachusetts. The motivation for this change was to obtain a better assessment of the asset portfolio that is actually supporting the business of workers compensation in Massachusetts, as the industry portfolio allocations reflect the investments of personal lines underwriters and other companies that do not underwrite workers compensation in Massachusetts. These data are taken from A.M. Best's Global Insurance Database using BestLink.

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We begin our calculation of the portfolio rate of return by assigning weights to each asset category. In this filing, consistent with filings since 2022, in addition to the categories used in the past that include: cash and short-term investments, government securities and other taxable bonds including industrials, tax exempt bonds including bonds issued by states and territories and special revenue bonds, common stocks, real estate (the sum of real estate investments, offices and sales), preferred stocks and other assets, we include a mortgage loans category in our portfolio composition. The proportion of each asset (shown in column (2) of Exhibit 1, Page 1) is based on a premium weighted average of the corresponding proportions from each of the 79 company groups in the sample. The data is sourced from the latest available annual statement for each group, with the premium weights again being based on Massachusetts workers compensation premiums. Supporting data for the calculation are provided in Exhibit 1, Page 3.

## **Investment Yields**

Prior to its 2005 rate filing, the WCRIBMA relied on 12-month average yields to estimate expected future investment income. It is more appropriate, however, to rely on more recent data for this purpose, as it is more likely to be predictive of future investment earnings for investments made today or in the near future. In the DCF models used this year (and in the rate filings from 2005 to present), the WCRIBMA has relied on yields averaged over the last 3 months.<sup>5</sup>

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<sup>5</sup> Following the Commissioner's Decision in the 2012 rate case, the WCRIBMA studied the distribution of bonds held by insurers, to identify whether the bond maturities that impact the yield calculations were reasonably proxied by the Schedule D data used in the filing. Although there were small differences in the maturities of newly purchased compared to existing bonds, they did not appear to have a material impact on the yield calculation.

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Using yields developed from the data shown on Exhibit 2, Page 3 (calculated on Exhibit 2, Page 2), we calculate an average yield (based on a 3-month average of yields) for each of the bond categories included in the Best's data (Exhibit 2, Page 1). We use the return on 1-month T-bill to estimate the pre-tax return for cash and short-term investments (3-month average from Exhibit 2, Page 3). We derive the pre-tax return on common stocks using a three horizon CAPM calculation, assuming that these assets have a beta of 1.0. In this filing, consistent with rate filings since 2022, the pre-tax return on real estate is calculated using data from Damodaran Online for the real estate investment trusts (REIT) sector. This approach provides a more current projection of real estate returns than the approach it replaced--- which was the sum of the 3-month treasury rate and the real estate differential of 3.94% taken from the 1984 paper by Ibbotson and Siegel, "Real Estate Returns: A Comparison with Other Investments." The pre-tax return on preferred stocks is taken from the yield data in Exhibit 2, Page 3.

As in the rate filings since 2022, the WCRIBMA is calculating the pretax return on other assets by looking at Schedule BA for the same Massachusetts workers' compensation group of companies. For purpose of classification, we used the NAIC assignments and classified the various Schedule BA categories into four groups: hedge funds, private equity, real estate and fixed income. Similarly, in this filing the WCRIBMA is calculating the tax rate on other assets using the same categories. The calculations of the pretax return and tax rate on other assets are shown in Exhibit 2, Page 4.

In all cases, the goal is to obtain feasible estimates of prospective yields for the period for which the rates will be in effect and beyond. The general principle of selecting investment

yields matched to the time periods relevant for the future cash flows is enshrined in actuarial guidance on ratemaking such as ASOP 30.

## **Market Risk Premium**

We use market returns from 1926-2022 to calculate the short term, intermediate term and long term market risk premiums used to calculate the yield on stocks. (As discussed in Section VII-E, these are the same risk premiums used to calculate the cost of capital, which is required for internal consistency in the rate filing.) The calculation, shown on Exhibit 4, uses data drawn from the *2023 SBB I Yearbook*.

## **Investment Expenses**

The WCRIBMA has relied on the same data source and sample for this value as for the asset portfolio and leverage ratio, A.M. Best's Global Insurance Database. This is appropriate. Since investment yields are estimated based on the actual portfolios held by insurers, it is consistent to estimate the reported investment expenses that are associated with those portfolios.

We subtract after-tax investment expenses from after-tax returns in Exhibit 1. In Exhibit 5, Page 1 we calculate investment expenses using data from the annual statement for all Massachusetts Workers' Compensation group of companies. In this filing, consistent with the 2014 and subsequent filings, the WCRIBMA did not include interest expense and depreciation of real estate in the calculation of total invested expenses.<sup>6</sup> The pre-tax

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<sup>6</sup> In the 2012 Filing, the State Rating Bureau contested the inclusion of depreciation, interest expense, and aggregate write-ins for investment expenses in the estimation of an investment expense allowance. With respect to depreciation and interest expense, we anticipate objections to their inclusion on the grounds that it would result in double counting. However, we know of no reason to believe including aggregate write-ins

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average investment expense is estimated using an average of ten years of premium weighted data, with the premium weights again based on Massachusetts workers' compensation direct premiums written.

## **Tax Rate on Common Stocks**

We calculate the effective tax rate on common stock in Exhibit 6. The effective tax rate for capital gains on common stocks is shown in Exhibit 6, Page 2. That rate is based on a 36% turnover ratio, taken from an AIB study of Massachusetts auto insurers' portfolio stock sales. The interest rate used in calculating the present value of the taxes is the weighted average cost of capital from Section VII-E, Exhibit 1. In this filing, consistent with the 2010 and subsequent rate filings, the WCRIBMA relied on capital gains and dividend data since 1926. Combining a tax rate of 13.13% for common stock dividends and 14.58% on capital gains, we derive an overall average tax rate of 14.10% (Exhibit 6, Page 1).

Exhibit 6, Page 3 displays the calculation of common stock tax rate for different discount rates and turnover rates.

## **Overall Result**

The after-tax portfolio rate of return used in this filing is 4.76%. The tax rates used in these calculations reflect the changes implemented pursuant to the Tax Cut and Jobs Act of 2017 and their potential impact on the after-tax portfolio rate of return, including the

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presents a double counting problem. For purposes of limiting the debate on investment expenses, the WCRIBMA has opted in this filing to exclude depreciation and interest expense.

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reduction in the base corporate rate, as well as the adjustments to the proration provision and the dividends received deduction.

## APPENDIX: LEVERAGE RATIO

The purpose of this appendix is to demonstrate the two possible methods to allocate surplus in the model using weighted averages and a simple example to illustrate that.

Consider  $N$  companies indexed by  $i$ . Each company has premium volume  $p_i$ . As assumed in the model, each premium dollar generates a certain reserve at each point in time. To keep things simple, we will consider a single point in time, and take the reserve generated at that point in time as  $k$  dollars for each premium dollar. Thus, each company's reserve is:

$$r_i = kp_i$$

Companies vary in how much surplus they carry per dollar of reserve. Denote this by  $s_i$ .

This means that the total surplus allocated by the industry to reserves is given by:

$$\sum_{i=1}^N s_i r_i = S$$

Denote premium-weighted surplus-to-reserve and reserve-to-surplus ratios as  $\bar{x}$  and  $\bar{y}$ , respectively, defined as:

$$\bar{x} = \frac{\sum_{i=1}^N p_i s_i}{\sum_{i=1}^N p_i}, \quad \bar{y} = \frac{\sum_{i=1}^N p_i \left(\frac{1}{s_i}\right)}{\sum_{i=1}^N p_i}$$

Now consider applying these ratios to the individual company reserves implied by the pricing model and aggregating. Starting with  $\bar{x}$ :

$$\sum_{i=1}^N \bar{x} r_i = \sum_{i=1}^N \frac{\sum_{j=1}^N p_j s_j}{\sum_{j=1}^N p_j} r_i = \sum_{i=1}^N \frac{\sum_{j=1}^N p_j s_j}{\sum_{j=1}^N p_j} kp_i = \sum_{i=1}^N p_i \frac{\sum_{j=1}^N kp_j s_j}{\sum_{i=1}^N p_j} = \sum_{j=1}^N s_j r_j = S$$

Next:

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$$\sum_{i=1}^N \frac{r_i}{\bar{y}} = \sum_{i=1}^N \frac{r_i}{\frac{\sum_{j=1}^N p_j \left(\frac{1}{s_j}\right)}{\sum_{i=1}^N p_j}} = \sum_{i=1}^N \frac{r_i \sum_{j=1}^N p_j}{\sum_{j=1}^N p_j \left(\frac{1}{s_j}\right)}$$

Thus, aggregation using  $\bar{x}$ , the average surplus-to-reserve ratio, always works as expected. Aggregation when using  $\bar{y}$ , the average reserve-to-surplus ratio, works only in specific circumstances, such as when the ratio is constant across companies. This feature of aggregation relates to the nonlinearity introduced by the inversion of the ratio.

Example:

Massachusetts Data				Full Company Data			
Company	MA WC DPW	MA WC Reserves = (1) x 50%	Allocated Surplus = (2) / (6) = (2) x (7)	Total Reserves	Total Surplus	Ratios	
						Reserves to Surplus = (4) / (5)	Surplus to Reserves = (5) / (4)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A	800	400	50	8,000	1,000	8	0.125
B	150	75	12.5	6,000	1,000	6	0.167
C	50	25	25	10,000	10,000	1	1
Aggregate	1,000	500	<b>87.5</b>	24,000	12,000		
Weighted Average (MA WC DPW Weights)						7.35	0.175

Assumptions:

- Each MA WC premium dollar written produces a reserve profile in the current and future quarters that is the same across companies (implicit in model).
- We use a 50% reserves-to-premium ratio for illustration, but in the model this ratio would vary over time.

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- The surplus allocated to a MA WC reserve in any company is based on that company's overall reserves-to-surplus ratio.

For the industry, how much surplus allocation is embedded in the premium?

- When using a weighted-average reserves-to-surplus ratio:

$$(1,000 \times 50\%) / 7.35 = 68.03$$

- When using a weighted-average surplus-to-reserves ratio:

$$(1,000 \times 50\%) / (1 / 0.175) = 1,000 \times 50\% \times 0.175 = \mathbf{87.5}$$

- When using the aggregate of all full company data

$$(1,000 \times 50\%) / (24,000/12,000) = 250$$

Thus, premiums developed with the weighted-average surplus-to-reserves ratio are consistent with the given assumptions that 1) each MA WC premium dollar generates the same reserves across companies (in a prospective sense) and 2) each company allocates surplus to reserves based on its own reserves-to-surplus ratio.

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Section VII-A  
Exhibit 1

**TABLE A1: ASSUMPTIONS AND PROFIT PROVISION CALCULATION**

Underwriting Assumptions:		
(1)	Written Premium	
(a)	Gross - Before Premium Discount	1,000.00
(b)	Net - After Premium Discount	945.98
(2)	Collected Premium Net - After Premium Discount	945.98
(3)	Loss & LAE Ratio	77.66%
(4)	Commission Ratio	9.05%
(5)	Premium Discount	5.40%
(6)	General Expense Ratio	5.13%
(7)	Other Acquisition Expense Ratio	1.41%
(8)	Premium Tax Rate	2.16%
(9)	Reinsurance Expense Ratio	1.00%
(10)	Miscellaneous and Other Taxes	0.39%
Cost of Capital:		
(11)	Weighted Average Cost of Capital	9.48%
Portfolio Rate of Return:		
(12)	After Tax Portfolio Rate of Return	4.76%
Leverage Ratio:		
(13)	Reserves to Surplus Ratio	1.55
Profit Provision:		
(14)	Profit Provision Calculation	-2.19%

Notes:

(1b) = (1a) x [ 1.0 - (5) ]

(2) = (1b), assumed that all premium is collectible.

(3) - (10): Section VII-H, Exhibit 1 (weighted average of the two policy years).

(3), (6), (10) are divided by (1.0 + Rate Change).

(11): Section VII-E, Exhibit 1.

(12): Section VII-J, Exhibit 1, page 1.

(13): Section VII-F, Exhibit 1.

(14) = 1.0 - [ (3) + (4) + (5) + (6) + (7) + (8) + (9) + (10) ]

**DISCOUNTED CASH FLOW (DCF) MODELS:****INTERNAL RATE OF RETURN (IRR) AND INSURER CAPITAL COST (ICC)****General Considerations**

For more than a decade, the WCRIBMA has relied on an internal rate of return (IRR) model to estimate the profit provision that should be included in Massachusetts workers' compensation insurance rates. Once we establish the fair rate of return based on the cost of capital analyses presented in the filing, we determine the underwriting profit provision so that the total return on equity, including both underwriting and investment income, equals the fair return.

The WCRIBMA's IRR model projects the cash flows attributable to the sale of workers' compensation insurance coverage and calculates the implied rate of return on those cash flows. Many insurers rely on IRR models to estimate the expected rate of return associated with alternative insurance transactions.

Since the 2014 rate filing, the WCRIBMA has used an additional analysis, the Insurer Capital Cost (ICC) model, to augment the IRR model used to set the profit provision in the filing. The ICC model is not a replacement for the IRR model. The ICC model provides an alternative view of the cash flows derived from the insurance transaction, taken from the perspective of the insurance company (as opposed to the investor). The purpose of the ICC model is to clarify the sources and uses of funds related to the sale of workers' compensation policies; detail the capital contributions by investors

that are required to finance the underwriting of insurance; and properly recognize the cost of that capital to the insurer. It produces exactly the same results as the IRR model.

## **The IRR and ICC Models**

Both the IRR and ICC models are variants of the more general discounted cash flow (DCF) methodology, a standard investment decision tool relied upon in corporate and managerial finance. DCF models have several features that make them particularly appealing for use in rate regulation:

1. DCF models are prospective and therefore consistent with both actuarial principles and regulatory standards.

Discounted cash flow models, such as IRR and ICC, attempt to estimate the rate of return attributable to policies sold in the future. From a financial perspective, this is the essence of the rate approval process: to set a price that yields a fair rate of return on the insurance contracts expected to be sold under the proposed rates.

2. DCF analyses account for all investment income on both policyholder and investor supplied funds.

Both the IRR and ICC models account for investment income in ratemaking, and credit the investment income insurers expect to earn in the interval between

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the sale of policies and the payment of all losses and expenses against otherwise-indicated premium requirements.

Both the IRR and ICC models account for all such income based on the investment yields insurers can expect to earn when the investible funds are received. The ICC model is also designed so it explicitly identifies and tracks the investible funds derived from both investors and policyholders in order to avoid any confusion regarding the nature of the cash flows from the insurance transaction.

3. DCF analyses account for the time value of money.

The cash flows for some lines of insurance can extend for literally decades after the sale of the policy. In such a case, the relative value of the income stream that occurs in future years should be discounted to obtain its present value. Only in this fashion can insurers make rational decisions regarding alternative investment opportunities.

Textbooks on modern financial theory typically recommend discounted cash flow techniques for evaluating investments that pay returns over a period of years into the future. This is because such techniques place all investments on a common footing: that is, they evaluate the future cash flows in the context of the present. This is the only sound basis for comparing alternatives.

4. DCF analyses account for federal income taxes.

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Although they vary from insurer to insurer, the impact of taxes on insurance rates of return can be substantial, particularly given the special provisions of the Internal Revenue Code applied to insurers. These provisions generally affect the timing of taxable income. The only way to correctly account for them is to look at the flow of taxes over time, which can be readily accomplished using a DCF model.

The IRR and ICC models focus solely on the policy or block of policies that will be sold when the approved rates are actually in effect, as these policies are the ones to which the premium rates approved in this filing will apply. To calculate the rate of return, the models follow these policies through their lifetime, estimating in each time period the actual cash flows (both inflows and outflows) that accrue to the insurer. These cash flows include the following:

- Premiums
- Losses
- Loss Adjustment Expenses
- Other Expenses
- Taxes
- Investment Income
- Surplus

In principle, when an insurer sells a policy it sets into motion a series of events, including the collection of premium; the payment of losses, expenses and taxes; the earning of investment income; and the commitment and later release of surplus. Each one of these cash flows is estimated quarterly over a period of 36 years, to calculate the

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final flow of funds related to the insurance transaction. In essence the models produce an estimate of the "cash in, cash out" attributable to the policies sold at a given rate.

When a DCF model is developed from the perspective of the investor, as in the IRR model, the relevant cash flows are the ones in and out of the investor's equity account. These include the commitment of equity to support insurance reserves, the provision of additional funds to support the pre-payment of expenses and taxes, the flows of after-tax income arising from both underwriting and investment activities, and the ultimate release of equity as losses are paid and reserves are run-off. Once the final cash flows are known, the internal rate of return is then calculated. It is simply the interest rate that discounts the stream of final investor cash flows to yield a net present value of zero. This can be interpreted as the compound annual rate of return, or the yield to maturity, of the investment.

When a DCF model is developed from the perspective of the insurance company, we call it the ICC model. The main difference between the ICC and the IRR models is that in the ICC model, the final cash flows are those that accrue to the insurance company, as opposed to the insurance investor. From the vantage point of the insurance company, incoming cash flows are funds supplied by investors,<sup>1</sup> premium revenues from the sale of insurance policies and income from the investment of policyholder and investor supplied funds. Cash then flows out of the company due to the payment of insurance-related losses and expenses, as well as the payments to investors for the cost of the capital they have advanced to the company. Those payments are the product of the

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<sup>1</sup> Initial capital to support reserves, and additional capital to prepay expenses and taxes.

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amount of capital invested at the beginning of each quarter and the previously established cost of capital, or fair rate of return.

When the DCF model is configured as an IRR model (i.e., from the investor perspective), it solves for an underwriting profit factor that produces an internal rate of return equal to the cost of capital. This is appropriate, since an IRR equal to the cost of capital implies that investors earn a fair and reasonable return. However, when the model is configured as an ICC model (i.e., from the insurer perspective), the model solves for something different. In the ICC model, one of the cash outflows is the periodic payment of the cost of capital to investors. Since, unlike in the IRR model, the cost of capital is incorporated into the model, the residual cash flows accruing to the insurance company need not incorporate any additional provision for profit. Therefore, instead of solving for the underwriting profit factor that produces an IRR equal to the cost of capital, the ICC model solves for the underwriting profit factor that zeros out the net present value of the future insurance company cash flows. That profit factor is identical to the result obtained when solving for the underwriting profit factor that produces an IRR to the investor equal to the cost of capital.

### **IRR and ICC Model Examples:**

Although DCF models may appear complex, the underlying concepts are quite straightforward and are common to a wide range of financial analyses. A very simple example illustrates these concepts, beginning with the IRR model.

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Consider an investor placing \$120 at risk in support of an insurance policy. This is the initial contribution of equity, from which a series of cash flows will develop. Let us assume that after all the events have taken place this set of policies will pay the investor the following amounts at the end of each indicated time period:

Year	Capital Flow	Income Flow	Total Cash Flow
0	-120.00		-120.00
1	50.00	5.00	55.00
2	40.00	8.40	48.40
3	30.00	9.93	39.93

As indicated in the table, the cash flows are the result of an initial contribution of capital, followed by the earning of income and return of capital in subsequent periods. After year 3 the transaction is over; that is, it produces no further cash flows to the investor. In this case the internal rate of return on the investment is 10%. This is calculated as follows:

IRR Model					
Year	Capital Flow	Income Flow	Total Cash Flow	Discount Factor @ 10%	Total Cash Flow (NPV)
0	-120.00		-120.00	1.0000	-120.00
1	50.00	5.00	55.00	0.9091	50.00
2	40.00	8.40	48.40	0.8264	40.00
3	30.00	9.93	39.93	0.7513	30.00
Total			23.33		0.00

Ten percent is the interest rate that discounts the set of cash flows to a net present value of zero. Thus, for the investor who makes a \$120 investment today, with the expectation of future cash flows as indicated in the table above, the compound annual

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return on the equity investment in 10%. While the cash flows that derive from a real insurance transaction are substantially more complicated, the procedure for discounting them to present value is identical.

The same transaction can also be viewed from the perspective of the insurance company, as in the ICC model. In this case the cash flows from the insurance transaction are the same as in the IRR model, but the cost of capital is explicitly charged as an expense against earnings. Because the cost of capital is already recognized as an expense there is no additional return necessary, and therefore the net present value of the cash flows to the insurance company should be zero. That can be seen in the example below:

ICC Model							
Year	Capital Flow	Amount of Capital	Capital Charge	Income Flow	Net Flow To Insurer	Discount Factor @ 10%	Net Flow to Insurer (NPV)
0	-120.00	120.00				1.0000	0.00
1	50.00	70.00	12.00	5.00	-7.00	0.9091	-6.36
2	40.00	30.00	7.00	8.40	1.40	0.8264	1.16
3	30.00	0.00	3.00	9.93	6.93	0.7513	5.21
Total					1.33		0.00

In the ICC model, the 10% charge for the cost of the capital used during each period is explicitly counted as an expense, shown in the column entitled Capital Charge. That expense is charged against the income earned from the insurance transaction, resulting in the final cash flow to the insurer, shown as Net Flow to Insurer above. As can

be seen, the net present value of the flow to the insurer is zero, under the identical circumstances (i.e., cash flows) that produced an IRR of exactly 10%. This demonstrates the equivalence of the IRR and ICC models – the cash flows that produce an IRR of 10% also produce an NPV of zero to the insurer, after compensating investors for the cost of their capital.

### **The IRR and ICC Models for Massachusetts Workers' Compensation Insurance**

The IRR model is used in this filing to determine the underwriting profit provision that produces a return on equity equal to the current cost of capital. The ICC model views the insurance cash flows from a different perspective, and solves for the underwriting profit that produces a zero NPV for the insurer, after accounting for the cost of capital paid to the investor as an expense. Both of these DCF models use the cost of capital as the “target” rate of return. If the allowed rates produce an expected return at least equal to the cost of capital, insurers will “invest” by providing adequate capacity and offering coverage in the market. However, when the rate of return falls below the cost of capital, insurers have an incentive to restrict underwriting and withdraw capacity from the market. Thus, from the regulatory perspective, setting an underwriting profit that yields a rate of return equal to the cost of capital properly balances the interests of insurers and policyholders.

The section below briefly describes the Tables in the filing containing the detailed cash flows underlying the IRR and ICC models. The Tables present the assumptions and parameters underlying the models (Subsection A - Table A1); the development of the final

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cash flows associated with the alternative IRR/ICC perspectives (Subsection B - Tables B1 and B2); the detailed cash flow patterns and calculations that produce the flows in Tables B1 and B2 (Subsection C - Tables C1 through C5\_2); and the flow of capital needed from investors (Subsection D - Table D1).

Table A1 identifies the flows used by the WCRIBMA for premiums, losses and expenses, and summarizes the main parameters needed for the calculation of the profit provision. These inputs apply equally to both the IRR and ICC models.

Table B1 presents the final IRR cash flows; i.e., the cash flows that are relevant when the model is viewed from the perspective of the investor. The cash flow to investors is the sum of the after tax cash flow from underwriting (net of the tax deduction for debt interest), the flow of surplus and the flow of income expected from the investment of reserves and surplus.

Table B2 presents the final ICC cash flows, i.e., the cash flows that are relevant when the model is viewed from the perspective of the insurer. The cash flow to insurers is the sum of the capital charge paid to investors net of the tax deduction for debt interest, the investment return on capital contributed by investors, the investment return on policyholder funded investable reserves and the after tax underwriting cash flow (net of policyholder funded investable reserves).

Table C1 calculates the policyholder supplied underwriting cash flows, derived as the difference between collected premium and the sum of losses, LAE and total pretax underwriting expenses paid. In addition, federal income taxes on underwriting (calculated

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in Tables C2\_1 through C2\_7) are deducted to obtain the post-tax cash flows from underwriting.

Tables C2\_1 through C2\_7 present the tax credits and liabilities arising from insurance operations, with special attention to the provisions of the Internal Revenue Code applicable to property casualty insurers. The details supporting the acceleration of income and discounting of each accident year's losses are provided in Tables C2\_1 through C2\_4. Table C2\_5 calculates the total underwriting tax deductions used in Table C2\_6 to calculate the federal income tax expense on underwriting. Table C2\_7 then calculate the amount of admitted prepaid taxes (DTA's or Deferred Tax Assets. Admitted DTA's are non-cash assets that can be used to fund reserves, resulting in reduced investible balances attributable to reserves.)

Table C3 derives the amount of policyholder supplied funds available for investment, calculated as the sum of loss, LAE and unearned premium reserves less non-cash assets used to support reserves (admitted DTA's and admitted premium receivables). It also derives the additional funds required from investors to support the reserves (i.e., to the extent that the net revenues from underwriting fail to provide sufficient cash to fully fund required reserves, investors must contribute additional capital).

Table C4 displays the derivation of admitted and non-admitted premium receivables. Statutory accounting rules permit premium balances less than 90 days past due to be carried as balance sheet assets, but balances more than 90 days past due are non-admitted. As with DTA's, admitted assets can be used to support reserves, while non-admitted assets cannot.

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Tables C5\_1 and C5\_2 provide the underlying cash flow patterns from which all the calculations in the IRR and ICC models are derived. These include both cash flows (i.e., premiums collected, losses, LAE and all other expenses paid) as well as accounting flows (premium written and earned, and losses and LAE incurred). (These policy year patterns were developed by the WCRIBMA based on cash flow patterns for a single policy that were converted to a policy year basis.)

Finally, Table D1 derives the amount of capital required to be supplied from investors. Required capital includes the surplus that must stand behind total reserves along with any additional capital amounts required to fund cash shortfalls due to non-admitted DTA's and admitted premium receivables.

### **DCF Model Results**

As shown in Table A1 of this Section, given the assumptions in the filing regarding losses, expenses, investment yields and cash flow patterns, if the underwriting profit provision is set to -2.19%, as proposed by the WCRIBMA, Massachusetts workers' compensation insurance would be expected to produce a rate of return on equity equal to the cost of capital of 9.48%. Since the underwriting profit provision is set specifically to yield this fair and reasonable return on equity, if the actuarial projections underlying the rates are reasonable, the rates as filed must be reasonable and satisfy the regulatory requirement that they be neither excessive nor inadequate.

## APPENDIX – DCF MODELS

The purpose of this appendix is to demonstrate the equivalence between the two discounted cash flow models, the IRR model and the ICC model, which appear in Section VII – B, Exhibit 1 and Exhibit 2.

### IRR MODEL (investor’s perspective)

The relevant cash flows in the IRR model are the following:

- Debt Financing Deduction (DFD)
- Investment Return on Surplus (IR\_S)
- Investment Return on Reserves (IR\_R)
- After-Tax Underwriting Cash Flow Net of Investable Reserves (UWCF)
- Change in Surplus Contributed by Investor (S)

Given these cash flows, we solve for the profit provision that results in a net present value of cash flows of zero.

$$\text{“IRR” NPV} = \text{PV(DFD)} + \text{PV(IR\_S)} + \text{PV(IR\_R)} + \text{PV(UWCF)} - \text{PV(S)} = 0$$

### ICC MODEL (insurer’s perspective)

The relevant cash flows in the ICC model are the following:

- Debt Financing Deduction (DFD)
- Investment Return on Capital Contributed by Investors (IR\_INV)

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- Investment Return on Policyholder Funded Investable Reserves (IR\_PH)
- After-Tax Underwriting Cash Flow (Net of Policyholder Funded Investable Reserves) (UWCF)
- Capital Charge Paid to Investors (CC)

Given these cash flows, we solve for the profit provision that results in a net present value of cash flows of zero.

$$\text{“ICC” NPV} = \text{PV(DFD)} + \text{PV(IR\_INV)} + \text{PV(IR\_PH)} + \text{PV(UWCF)} - \text{PV(CC)}$$

## Model Equivalence

To prove that the IRR model and the ICC model are equivalent, we need to demonstrate that:

$$\text{“IRR” NPV} = \text{“ICC” NPV} = 0 \quad \text{for a given profit provision}$$

## Simplifying the Problem – Comparison of Relevant Cash Flows from the Two

### Models

#### ➤ Debt Financing Deduction:

Same for IRR and ICC:

$$\text{DFD}_{\text{IRR}} = \text{DFD}_{\text{ICC}}$$

➤ **Total Investable Funds:**

IRR:

- Investable Reserves = Unearned Premium Reserves + Loss & LAE Reserves  
 – Admitted Premium Receivables – Admitted Prepaid Taxes (DTA)
- Implied Surplus =  $\frac{\text{Unearned Premium Reserves} + \text{Loss \& LAE Reserves}}{\text{Reserves to Surplus Ratio}}$

ICC:

- Policyholder Supplied Investable Funds = Investable Reserves - Reserves  
 Funded by Investors
- Capital Contributed by Investors = Implied Surplus + Reserves Funded by  
 Investors

Consequently, total investable funds are equal in the two models. Hence, total investment returns are equal as well.

$$IR_{SIRR} + IR_{RIRR} = IR_{INVICC} + IR_{PHICC}$$

➤ **After-Tax Underwriting Cash Flow Net of Investable Reserves:**

IRR:

$UWCF_{IRR} = \text{Collected Premium} - \text{Losses \& LAE Paid} - \text{Total Pretax Underwriting Expenses} - \text{Federal Income Tax Expense on Underwriting} - \text{Investable Reserves}$

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ICC:

$UWCF_{ICC} = \text{Collected Premium} - \text{Losses \& LAE Paid} - \text{Total Pretax Underwriting Expenses} - \text{Federal Income Tax Expense on Underwriting} - \text{Investor Supplied Reserves}$

Consequently,

$UWCF_{IRR} = UWCF_{ICC} - \text{Change in Investor Supplied Reserves}$

Note: The sign convention is from perspective of the investor. If the investor has to contribute capital to fund reserves, that would be a negative cash flow to the investor. Subtracting a negative value effectively results in an addition.

Given the results from above, the comparison of the “IRR” NPV and the “ICC” NPV can be simplified to a comparison of:

$$PV(S) + PV(\text{Change in Investor Supplied Reserves}) = PV(CC)$$

Moreover, the sum of the surplus contributions and the investor supplied reserves is precisely the capital needed from investors, leaving you with:

$$PV(C) = PV(CC)$$

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where C is Change in Capital Provided by Investors and CC is Capital Charge Paid to Investors.

## **PV(C) = PV(CC)**

The IRR model and ICC model are mathematically equivalent if  $PV(C) = PV(CC)$ , where the Capital Charge Paid to Investors for a given period is equal to the contributed capital from the prior period time the cost of capital. This is demonstrated below.

Given:

- $C_i$  is the capital cash flow in period  $i$
- $r$  is the weighted average cost of capital

## PROOF OF EQUIVALENCE OF NPV OF CAPITAL CHARGES AND CAPITAL CONTRIBUTIONS

$$\begin{aligned}
 \sum_{i=1}^n \frac{C_i}{(1+r)^{i-1}} &= \sum_{i=1}^{n-1} \frac{(\sum_{j=1}^i C_j) \times r}{(1+r)^i} \\
 &= r \times \left[ \frac{C_1}{(1+r)} + \frac{C_1 + C_2}{(1+r)^2} + \frac{C_1 + C_2 + C_3}{(1+r)^3} + \dots + \frac{C_1 + C_2 + C_3 + \dots + C_{n-1}}{(1+r)^{n-1}} \right] \\
 &= r \times \left[ \left( \sum_{i=1}^{n-1} \frac{C_1}{(1+r)^i} \right) + \left( \sum_{i=2}^{n-1} \frac{C_2}{(1+r)^i} \right) + \dots + \left( \sum_{i=n-1}^{n-1} \frac{C_{n-1}}{(1+r)^i} \right) \right] \\
 &= r \times \left[ C_1 \left( \frac{1}{(1+r)} - \frac{1}{(1+r)^n} \right) + C_2 \left( \frac{1}{(1+r)^2} - \frac{1}{(1+r)^n} \right) + \dots \right. \\
 &\quad \left. + C_{n-1} \left( \frac{1}{(1+r)^{n-1}} - \frac{1}{(1+r)^n} \right) \right] \\
 &= r \times \left[ C_1 \left( \frac{1}{r} - \frac{1}{r(1+r)^{n-1}} \right) + C_2 \left( \frac{1}{r(1+r)} - \frac{1}{r(1+r)^{n-1}} \right) + \dots + C_{n-1} \left( \frac{1}{r(1+r)^{n-2}} - \frac{1}{r(1+r)^{n-1}} \right) \right] \\
 &= \left[ C_1 \left( 1 - \frac{1}{(1+r)^{n-1}} \right) + C_2 \left( \frac{1}{(1+r)} - \frac{1}{(1+r)^{n-1}} \right) + \dots + C_{n-1} \left( \frac{1}{(1+r)^{n-2}} - \frac{1}{(1+r)^{n-1}} \right) \right] \\
 &= C_1 + \frac{C_2}{(1+r)} + \dots + \frac{C_{n-1}}{(1+r)^{n-2}} - \frac{C_1}{(1+r)^{n-1}} - \frac{C_2}{(1+r)^{n-1}} - \dots - \frac{C_{n-1}}{(1+r)^{n-1}} \\
 &= \sum_{i=1}^{n-1} \frac{C_i}{(1+r)^{i-1}} - \frac{(\sum_{i=1}^{n-1} C_i)}{(1+r)^{n-1}} \quad \text{where } \sum_{i=1}^n C_i = 0 \rightarrow \sum_{i=1}^{n-1} C_i = -C_n \\
 &= \sum_{i=1}^{n-1} \frac{C_i}{(1+r)^{i-1}} + \frac{C_n}{(1+r)^{n-1}} \\
 &= \sum_{i=1}^n \frac{C_i}{(1+r)^{i-1}}
 \end{aligned}$$

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 Exhibit 1

**TABLE B1: INTERNAL RATE OF RETURN (IRR) MODEL - PRESENT VALUE (PV) NOMINAL CASH FLOWS TO INVESTORS**

TIME INTERVAL		POST TAX CASH FROM UW MINUS INVESTABLE RESERVES	BOND INTEREST TAX DEDUCTION FOR INSURERS	NET CASH FLOW FROM UNDERWRITING	CASH POST-TAX INCOME	NET FLOW FROM SURPLUS ACCOUNT	SURPLUS POST-TAX INCOME	CASH FLOWS TO INVESTORS (NOMINAL)	CASH FLOWS TO INVESTORS (PV NOMINAL)
FROM (1)	TO (2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
07/01/23	09/30/23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/01/23	12/31/23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01/01/24	03/31/24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/01/24	06/30/24	(4.03)	0.00	(4.03)	0.00	0.00	0.00	(4.03)	(3.76)
07/01/24	09/30/24	(5.96)	0.00	(5.96)	0.06	(139.26)	0.00	(145.16)	(132.58)
10/01/24	12/31/24	(15.13)	0.08	(15.06)	0.44	(114.16)	1.63	(127.14)	(113.53)
01/01/25	03/31/25	(16.58)	0.14	(16.43)	1.43	(141.23)	2.97	(153.27)	(133.80)
04/01/25	06/30/25	(9.03)	0.22	(8.81)	2.93	(108.67)	4.62	(109.93)	(93.82)
07/01/25	09/30/25	8.00	0.28	8.29	4.41	51.51	5.89	70.10	58.48
10/01/25	12/31/25	12.11	0.25	12.36	5.43	46.45	5.29	69.53	56.71
01/01/26	03/31/26	8.31	0.22	8.54	5.76	39.39	4.74	58.43	46.59
04/01/26	06/30/26	(13.58)	0.20	(13.38)	5.68	33.28	4.28	29.85	23.27
07/01/26	09/30/26	(9.65)	0.19	(9.47)	5.60	29.40	3.89	29.43	22.43
10/01/26	12/31/26	11.67	0.18	11.85	5.41	27.85	3.55	48.67	36.25
01/01/27	03/31/27	6.42	0.16	6.58	4.94	25.52	3.22	40.26	29.32
04/01/27	06/30/27	3.19	0.14	3.33	4.49	23.49	2.93	34.23	24.37
07/01/27	09/30/27	1.39	0.13	1.52	4.07	21.76	2.65	30.00	20.88
10/01/27	12/31/27	0.64	0.12	0.76	3.68	20.41	2.40	27.24	18.53
01/01/28	03/31/28	0.35	0.10	0.46	3.31	18.41	2.16	24.34	16.19
04/01/28	06/30/28	0.35	0.10	0.45	2.98	16.68	1.94	22.05	14.34
07/01/28	09/30/28	0.35	0.09	0.44	2.68	14.92	1.75	19.79	12.58
10/01/28	12/31/28	0.35	0.08	0.43	2.41	13.30	1.57	17.72	11.01
01/01/29	03/31/29	0.17	0.07	0.24	2.17	11.06	1.42	14.89	9.05
04/01/29	06/30/29	0.17	0.07	0.23	1.97	9.13	1.29	12.62	7.49
07/01/29	09/30/29	0.17	0.06	0.23	1.81	7.71	1.18	10.93	6.35
10/01/29	12/31/29	0.17	0.06	0.22	1.67	6.92	1.09	9.90	5.62
01/01/30	03/31/30	0.11	0.05	0.17	1.55	5.81	1.01	8.54	4.74
04/01/30	06/30/30	0.11	0.05	0.16	1.45	4.85	0.94	7.41	4.02
07/01/30	09/30/30	0.11	0.05	0.16	1.36	4.10	0.88	6.50	3.45
10/01/30	12/31/30	0.11	0.05	0.16	1.29	3.60	0.84	5.88	3.05
01/01/31	03/31/31	0.10	0.04	0.14	1.22	2.92	0.79	5.08	2.58
04/01/31	06/30/31	0.10	0.04	0.14	1.17	2.34	0.76	4.40	2.18
07/01/31	09/30/31	0.10	0.04	0.14	1.13	1.91	0.73	3.91	1.90
10/01/31	12/31/31	0.10	0.04	0.14	1.09	1.69	0.71	3.63	1.72
01/01/32	03/31/32	0.08	0.04	0.12	1.06	1.38	0.69	3.25	1.50
04/01/32	06/30/32	0.08	0.04	0.12	1.04	1.11	0.67	2.94	1.33
07/01/32	09/30/32	0.08	0.04	0.12	1.02	0.96	0.66	2.75	1.22
10/01/32	12/31/32	0.08	0.04	0.12	1.00	0.92	0.65	2.68	1.16
01/01/33	03/31/33	0.05	0.04	0.09	0.98	0.86	0.64	2.57	1.09
04/01/33	06/30/33	0.05	0.04	0.09	0.97	0.80	0.63	2.49	1.03
07/01/33	09/30/33	0.05	0.04	0.09	0.95	0.75	0.62	2.41	0.97
10/01/33	12/31/33	0.05	0.04	0.09	0.94	0.69	0.61	2.33	0.92
01/01/34	03/31/34	0.06	0.04	0.09	0.93	0.61	0.60	2.23	0.86
04/01/34	06/30/34	0.06	0.04	0.09	0.92	0.53	0.59	2.14	0.81
07/01/34	09/30/34	0.06	0.04	0.09	0.91	0.49	0.59	2.08	0.77
10/01/34	12/31/34	0.06	0.03	0.09	0.90	0.49	0.58	2.06	0.74
01/01/35	03/31/35	0.06	0.03	0.09	0.89	0.47	0.58	2.03	0.72
04/01/35	06/30/35	0.06	0.03	0.09	0.88	0.46	0.57	2.00	0.69
07/01/35	09/30/35	0.06	0.03	0.09	0.87	0.45	0.57	1.98	0.67
10/01/35	12/31/35	0.06	0.03	0.09	0.86	0.44	0.56	1.96	0.64
01/01/36	03/31/36	0.05	0.03	0.09	0.86	0.42	0.56	1.92	0.62
04/01/36	06/30/36	0.05	0.03	0.09	0.85	0.41	0.55	1.90	0.60
07/01/36	09/30/36	0.05	0.03	0.09	0.84	0.43	0.55	1.90	0.59
10/01/36	12/31/36	0.05	0.03	0.09	0.83	0.47	0.54	1.93	0.58
01/01/37	03/31/37	0.05	0.03	0.08	0.83	0.51	0.54	1.95	0.57
04/01/37	06/30/37	0.05	0.03	0.08	0.82	0.55	0.53	1.98	0.57
07/01/37	09/30/37	0.05	0.03	0.08	0.81	0.54	0.52	1.95	0.55
10/01/37	12/31/37	0.05	0.03	0.08	0.80	0.50	0.52	1.89	0.52
01/01/38	03/31/38	0.05	0.03	0.08	0.79	0.43	0.51	1.81	0.49
04/01/38	06/30/38	0.05	0.03	0.08	0.78	0.38	0.51	1.74	0.46
07/01/38	09/30/38	0.05	0.03	0.08	0.77	0.34	0.50	1.70	0.44
10/01/38	12/31/38	0.05	0.03	0.08	0.77	0.33	0.50	1.67	0.42
01/01/39	03/31/39	0.04	0.03	0.07	0.76	0.31	0.49	1.64	0.40
04/01/39	06/30/39	0.04	0.03	0.07	0.76	0.30	0.49	1.61	0.39
07/01/39	09/30/39	0.04	0.03	0.07	0.75	0.28	0.49	1.58	0.37
10/01/39	12/31/39	0.04	0.03	0.07	0.75	0.26	0.48	1.55	0.36
01/01/40	03/31/40	0.01	0.03	0.04	0.74	0.23	0.48	1.49	0.33
04/01/40	06/30/40	0.01	0.03	0.04	0.74	0.21	0.48	1.46	0.32
07/01/40	09/30/40	0.01	0.03	0.04	0.73	0.20	0.48	1.44	0.31
10/01/40	12/31/40	0.01	0.03	0.04	0.73	0.20	0.47	1.44	0.30
01/01/41	03/31/41	0.00	0.03	0.03	0.73	0.20	0.47	1.43	0.29
04/01/41	06/30/41	0.00	0.03	0.03	0.72	0.21	0.47	1.43	0.29
07/01/41	09/30/41	0.00	0.03	0.03	0.72	0.23	0.47	1.45	0.28
10/01/41	12/31/41	0.00	0.03	0.03	0.72	0.26	0.46	1.47	0.28
01/01/42	03/31/42	0.00	0.03	0.03	0.71	0.31	0.46	1.51	0.28
04/01/42	06/30/42	0.00	0.03	0.03	0.71	0.34	0.46	1.53	0.28
07/01/42	09/30/42	0.00	0.03	0.03	0.70	0.34	0.45	1.53	0.27
10/01/42	12/31/42	0.00	0.03	0.03	0.69	0.32	0.45	1.49	0.26
01/01/43	03/31/43	0.00	0.03	0.03	0.69	0.27	0.44	1.44	0.25
04/01/43	06/30/43	0.00	0.03	0.03	0.68	0.24	0.44	1.39	0.23
07/01/43	09/30/43	0.00	0.03	0.03	0.68	0.23	0.44	1.37	0.22
10/01/43	12/31/43	0.00	0.03	0.03	0.67	0.24	0.44	1.38	0.22
01/01/44	03/31/44	0.00	0.03	0.03	0.67	0.25	0.43	1.38	0.22
04/01/44	06/30/44	0.00	0.03	0.03	0.67	0.26	0.43	1.38	0.21
07/01/44	09/30/44	0.00	0.03	0.03	0.66	0.27	0.43	1.39	0.21

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**TABLE B1: INTERNAL RATE OF RETURN (IRR) MODEL - PRESENT VALUE (PV) NOMINAL CASH FLOWS TO INVESTORS**

TIME INTERVAL		POST TAX CASH FROM UW MINUS INVESTABLE RESERVES	BOND INTEREST TAX DEDUCTION FOR INSURERS	NET CASH FLOW FROM UNDERWRITING	CASH POST-TAX INCOME	NET FLOW FROM SURPLUS ACCOUNT	SURPLUS POST-TAX INCOME	CASH FLOWS TO INVESTORS (NOMINAL)	CASH FLOWS TO INVESTORS (PV NOMINAL)
FROM (1)	TO (2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
10/01/44	12/31/44	0.00	0.03	0.03	0.66	0.28	0.42	1.39	0.20
01/01/45	03/31/45	0.00	0.03	0.03	0.65	0.28	0.42	1.38	0.20
04/01/45	06/30/45	0.00	0.03	0.03	0.65	0.29	0.42	1.38	0.19
07/01/45	09/30/45	0.00	0.03	0.03	0.64	0.33	0.41	1.42	0.19
10/01/45	12/31/45	0.00	0.03	0.03	0.63	0.41	0.41	1.48	0.20
01/01/46	03/31/46	0.00	0.03	0.03	0.63	0.50	0.41	1.56	0.20
04/01/46	06/30/46	0.00	0.03	0.03	0.62	0.58	0.40	1.62	0.21
07/01/46	09/30/46	0.00	0.03	0.03	0.61	0.62	0.39	1.65	0.21
10/01/46	12/31/46	0.00	0.03	0.03	0.60	0.62	0.39	1.63	0.20
01/01/47	03/31/47	0.00	0.03	0.03	0.58	0.62	0.38	1.61	0.19
04/01/47	06/30/47	0.00	0.02	0.03	0.57	0.62	0.37	1.59	0.18
07/01/47	09/30/47	0.00	0.02	0.03	0.56	0.62	0.36	1.57	0.18
10/01/47	12/31/47	0.00	0.02	0.03	0.55	0.62	0.36	1.56	0.17
01/01/48	03/31/48	0.00	0.02	0.03	0.54	0.62	0.35	1.54	0.17
04/01/48	06/30/48	0.00	0.02	0.03	0.53	0.62	0.34	1.51	0.16
07/01/48	09/30/48	0.00	0.02	0.03	0.52	0.62	0.33	1.50	0.16
10/01/48	12/31/48	0.00	0.02	0.03	0.51	0.62	0.33	1.48	0.15
01/01/49	03/31/49	0.00	0.02	0.03	0.49	0.62	0.32	1.46	0.15
04/01/49	06/30/49	0.00	0.02	0.03	0.48	0.62	0.31	1.44	0.14
07/01/49	09/30/49	0.00	0.02	0.02	0.47	0.62	0.31	1.42	0.14
10/01/49	12/31/49	0.00	0.02	0.02	0.46	0.62	0.30	1.41	0.13
01/01/50	03/31/50	0.00	0.02	0.02	0.45	0.62	0.29	1.39	0.13
04/01/50	06/30/50	0.00	0.02	0.02	0.44	0.62	0.28	1.36	0.12
07/01/50	09/30/50	0.00	0.02	0.02	0.43	0.62	0.28	1.35	0.12
10/01/50	12/31/50	0.00	0.02	0.02	0.42	0.62	0.27	1.33	0.11
01/01/51	03/31/51	0.00	0.02	0.02	0.40	0.62	0.26	1.31	0.11
04/01/51	06/30/51	0.00	0.02	0.02	0.39	0.62	0.25	1.29	0.10
07/01/51	09/30/51	0.00	0.02	0.02	0.38	0.62	0.25	1.27	0.10
10/01/51	12/31/51	0.00	0.02	0.02	0.37	0.62	0.24	1.26	0.10
01/01/52	03/31/52	0.00	0.02	0.02	0.36	0.62	0.23	1.24	0.09
04/01/52	06/30/52	0.00	0.02	0.02	0.35	0.62	0.23	1.21	0.09
07/01/52	09/30/52	0.00	0.02	0.02	0.34	0.62	0.22	1.20	0.09
10/01/52	12/31/52	0.00	0.02	0.02	0.33	0.62	0.21	1.18	0.08
01/01/53	03/31/53	0.00	0.02	0.02	0.31	0.62	0.20	1.16	0.08
04/01/53	06/30/53	0.00	0.02	0.02	0.30	0.62	0.20	1.14	0.08
07/01/53	09/30/53	0.00	0.02	0.02	0.29	0.62	0.19	1.12	0.07
10/01/53	12/31/53	0.00	0.02	0.02	0.28	0.62	0.18	1.11	0.07
01/01/54	03/31/54	0.00	0.02	0.02	0.27	0.62	0.17	1.08	0.07
04/01/54	06/30/54	0.00	0.02	0.02	0.26	0.62	0.17	1.06	0.07
07/01/54	09/30/54	0.00	0.02	0.02	0.25	0.62	0.16	1.05	0.06
10/01/54	12/31/54	0.00	0.02	0.02	0.24	0.62	0.15	1.03	0.06
01/01/55	03/31/55	0.00	0.02	0.02	0.22	0.62	0.15	1.01	0.06
04/01/55	06/30/55	0.00	0.01	0.02	0.21	0.62	0.14	0.99	0.06
07/01/55	09/30/55	0.00	0.01	0.02	0.20	0.62	0.13	0.97	0.05
10/01/55	12/31/55	0.00	0.01	0.02	0.19	0.62	0.12	0.96	0.05
01/01/56	03/31/56	0.00	0.01	0.02	0.18	0.62	0.12	0.93	0.05
04/01/56	06/30/56	0.00	0.01	0.01	0.17	0.62	0.11	0.91	0.05
07/01/56	09/30/56	0.00	0.01	0.01	0.16	0.62	0.10	0.89	0.05
10/01/56	12/31/56	0.00	0.01	0.01	0.15	0.62	0.09	0.88	0.04
01/01/57	03/31/57	0.00	0.01	0.01	0.13	0.62	0.09	0.86	0.04
04/01/57	06/30/57	0.00	0.01	0.01	0.12	0.62	0.08	0.83	0.04
07/01/57	09/30/57	0.00	0.01	0.01	0.11	0.62	0.07	0.82	0.04
10/01/57	12/31/57	0.00	0.01	0.01	0.10	0.62	0.07	0.80	0.04
01/01/58	03/31/58	0.00	0.01	0.01	0.09	0.62	0.06	0.78	0.03
04/01/58	06/30/58	0.00	0.01	0.01	0.08	0.62	0.05	0.76	0.03
07/01/58	09/30/58	0.00	0.00	0.01	0.07	0.62	0.04	0.74	0.03
10/01/58	12/31/58	0.00	0.00	0.01	0.06	0.62	0.04	0.72	0.03
01/01/59	03/31/59	0.00	0.00	0.00	0.05	0.62	0.03	0.70	0.03
04/01/59	06/30/59	0.00	0.00	0.00	0.03	0.62	0.02	0.68	0.03
07/01/59	09/30/59	0.00	0.00	0.00	0.02	0.54	0.01	0.58	0.02
10/01/59	12/31/59	0.00	0.00	0.00	0.01	0.41	0.01	0.43	0.02
01/01/60	03/31/60	0.00	0.00	0.00	0.01	0.23	0.00	0.24	0.01
04/01/60	06/30/60	0.00	0.00	0.00	0.00	0.08	0.00	0.08	0.00
TOTAL		(17.34)	5.98	(11.35)	145.97	0.00	107.52	242.14	0.00

Notes:

(3) = Table C1, (14) - [ Table C3, (7), incremental ]

(4) = Table B2, (5)

(5) = (3) + (4)

(6) = Table C3, (7)<sub>t-1</sub> x { [ 1.0 + Table A1, (12) ] ^ 0.25 - 1.0 }

(7) = -1.0 X Table D1, (7), incremental

(8) = Table D1, (7)<sub>t-1</sub> x { [ 1.0 + Table A1, (12) ] ^ 0.25 - 1.0 }

(9) = (5) + (6) + (7) + (8)

(10) = (9) x (1 + WACC)<sup>time in years</sup>, based on the time interval with beginning date 07/01/23

WACC is the weighted average cost of capital from Section VII-E, Exhibit 1 which is equal to 9.48%.

The Total PV is equal to zero which implies that the profit provision derived from an investors prospective is equal to the profit provision derived from insurers prospective and is equal to -2.19% from Table A1, (14).

TABLE B2: INSURER CAPITAL COST (ICC) MODEL - PRESENT VALUE (PV) CASH FLOW TO INSURER

TIME INTERVAL		INVESTOR SUPPLIED	NET CAPITAL CHARGES			SOURCES TO PAY NET CAPITAL CHARGE				CASH FLOW TO INSURER (11)	PV CASH FLOW TO INSURER (12)
						INVESTOR SUPPLIED	POLICYHOLDER SUPPLIED				
							AFTER TAX INV INCOME ON INVESTOR SUPPLIED FUNDS (7)	POLICYHOLDER SUPPLIED INVESTABLE FUNDS (8)	AFTER TAX INV INCOME ON POLICYHOLDER SUPPLIED FUNDS (9)		
FROM (1)	TO (2)	CAPITAL NEEDED FROM INVESTORS (3)	INVESTOR REQUIRED RETURN CAPITAL CHARGE (4)	BOND INTEREST TAX DEDUCTION FOR INSURERS (5)	NET CAPITAL COST TO INSURERS (6)						
07/01/23	09/30/23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/01/23	12/31/23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01/01/24	03/31/24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/01/24	06/30/24	4.03	0.00	0.00	0.00	0.00	1.37	0.00	0.00	0.00	0.00
07/01/24	09/30/24	149.25	0.09	0.00	0.09	0.05	27.91	0.02	0.00	(0.03)	(0.02)
10/01/24	12/31/24	278.54	3.42	0.08	3.34	1.75	96.70	0.33	0.00	(1.27)	(1.13)
01/01/25	03/31/25	436.35	6.38	0.14	6.24	3.26	208.45	1.13	0.00	(1.85)	(1.61)
04/01/25	06/30/25	554.05	10.00	0.22	9.77	5.11	326.44	2.44	0.00	(2.23)	(1.90)
07/01/25	09/30/25	494.54	12.69	0.28	12.41	6.48	421.04	3.82	0.00	(2.10)	(1.76)
10/01/25	12/31/25	435.98	11.33	0.25	11.08	5.79	461.42	4.93	0.00	(0.36)	(0.29)
01/01/26	03/31/26	388.27	9.99	0.22	9.77	5.10	462.61	5.40	0.00	0.74	0.59
04/01/26	06/30/26	368.57	8.89	0.20	8.70	4.54	442.35	5.41	0.00	1.26	0.98
07/01/26	09/30/26	348.82	8.44	0.19	8.26	4.31	416.96	5.18	0.00	1.24	0.94
10/01/26	12/31/26	309.29	7.99	0.18	7.81	4.08	388.03	4.88	0.00	1.15	0.86
01/01/27	03/31/27	277.35	7.09	0.16	6.93	3.62	355.83	4.54	0.00	1.23	0.90
04/01/27	06/30/27	250.67	6.35	0.14	6.21	3.25	323.16	4.16	0.00	1.20	0.85
07/01/27	09/30/27	227.51	5.74	0.13	5.61	2.93	291.15	3.78	0.00	1.10	0.77
10/01/27	12/31/27	206.46	5.21	0.12	5.10	2.66	260.40	3.41	0.00	0.97	0.66
01/01/28	03/31/28	187.70	4.73	0.10	4.62	2.42	232.51	3.05	0.00	0.84	0.56
04/01/28	06/30/28	170.66	4.30	0.10	4.20	2.20	207.30	2.72	0.00	0.71	0.46
07/01/28	09/30/28	155.39	3.91	0.09	3.82	2.00	184.81	2.43	0.00	0.60	0.38
10/01/28	12/31/28	141.73	3.56	0.08	3.48	1.82	164.82	2.16	0.00	0.50	0.31
01/01/29	03/31/29	130.50	3.25	0.07	3.17	1.66	148.07	1.93	0.00	0.41	0.25
04/01/29	06/30/29	121.21	2.99	0.07	2.92	1.53	134.31	1.73	0.00	0.34	0.20
07/01/29	09/30/29	113.33	2.78	0.06	2.71	1.42	122.73	1.57	0.00	0.28	0.16
10/01/29	12/31/29	106.25	2.60	0.06	2.54	1.33	112.39	1.44	0.00	0.22	0.13
01/01/30	03/31/30	100.32	2.43	0.05	2.38	1.24	103.57	1.32	0.00	0.18	0.10
04/01/30	06/30/30	95.35	2.30	0.05	2.25	1.17	96.23	1.21	0.00	0.14	0.08
07/01/30	09/30/30	91.14	2.18	0.05	2.14	1.12	90.06	1.13	0.00	0.11	0.06
10/01/30	12/31/30	87.43	2.09	0.05	2.04	1.07	84.65	1.05	0.00	0.08	0.04
01/01/31	03/31/31	84.40	2.00	0.04	1.96	1.02	80.24	0.99	0.00	0.06	0.03
04/01/31	06/30/31	81.97	1.93	0.04	1.89	0.99	76.74	0.94	0.00	0.04	0.02
07/01/31	09/30/31	79.96	1.88	0.04	1.84	0.96	73.90	0.90	0.00	0.02	0.01
10/01/31	12/31/31	78.17	1.83	0.04	1.79	0.94	71.40	0.86	0.00	0.01	0.00
01/01/32	03/31/32	76.71	1.79	0.04	1.75	0.91	69.36	0.84	0.00	(0.00)	(0.00)
04/01/32	06/30/32	75.52	1.76	0.04	1.72	0.90	67.74	0.81	0.00	(0.01)	(0.00)
07/01/32	09/30/32	74.48	1.73	0.04	1.69	0.88	66.36	0.79	0.00	(0.01)	(0.01)
10/01/32	12/31/32	73.48	1.71	0.04	1.67	0.87	65.04	0.78	0.00	(0.02)	(0.01)
01/01/33	03/31/33	72.57	1.68	0.04	1.65	0.86	63.80	0.76	0.00	(0.02)	(0.01)
04/01/33	06/30/33	71.71	1.66	0.04	1.63	0.85	62.64	0.75	0.00	(0.03)	(0.01)
07/01/33	09/30/33	70.91	1.64	0.04	1.61	0.84	61.56	0.73	0.00	(0.03)	(0.01)
10/01/33	12/31/33	70.17	1.62	0.04	1.59	0.83	60.58	0.72	0.00	(0.04)	(0.01)
01/01/34	03/31/34	69.50	1.61	0.04	1.57	0.82	59.70	0.71	0.00	(0.04)	(0.02)
04/01/34	06/30/34	68.91	1.59	0.04	1.56	0.81	58.93	0.70	0.00	(0.04)	(0.02)
07/01/34	09/30/34	68.36	1.58	0.04	1.54	0.81	58.22	0.69	0.00	(0.05)	(0.02)
10/01/34	12/31/34	67.82	1.57	0.03	1.53	0.80	57.52	0.68	0.00	(0.05)	(0.02)
01/01/35	03/31/35	67.29	1.55	0.03	1.52	0.79	56.84	0.67	0.00	(0.05)	(0.02)
04/01/35	06/30/35	66.78	1.54	0.03	1.51	0.79	56.19	0.67	0.00	(0.05)	(0.02)
07/01/35	09/30/35	66.27	1.53	0.03	1.50	0.78	55.55	0.66	0.00	(0.06)	(0.02)
10/01/35	12/31/35	65.78	1.52	0.03	1.48	0.78	54.93	0.65	0.00	(0.06)	(0.02)
01/01/36	03/31/36	65.30	1.51	0.03	1.47	0.77	54.33	0.64	0.00	(0.06)	(0.02)
04/01/36	06/30/36	64.83	1.50	0.03	1.46	0.76	53.75	0.64	0.00	(0.06)	(0.02)
07/01/36	09/30/36	64.35	1.49	0.03	1.45	0.76	53.14	0.63	0.00	(0.06)	(0.02)
10/01/36	12/31/36	63.83	1.47	0.03	1.44	0.75	52.48	0.62	0.00	(0.07)	(0.02)
01/01/37	03/31/37	63.27	1.46	0.03	1.43	0.75	51.74	0.61	0.00	(0.07)	(0.02)
04/01/37	06/30/37	62.67	1.45	0.03	1.42	0.74	50.95	0.61	0.00	(0.07)	(0.02)
07/01/37	09/30/37	62.08	1.44	0.03	1.40	0.73	50.16	0.60	0.00	(0.07)	(0.02)
10/01/37	12/31/37	61.54	1.42	0.03	1.39	0.73	49.45	0.59	0.00	(0.08)	(0.02)
01/01/38	03/31/38	61.06	1.41	0.03	1.38	0.72	48.83	0.58	0.00	(0.08)	(0.02)
04/01/38	06/30/38	60.63	1.40	0.03	1.37	0.71	48.29	0.57	0.00	(0.08)	(0.02)
07/01/38	09/30/38	60.24	1.39	0.03	1.36	0.71	47.81	0.57	0.00	(0.08)	(0.02)
10/01/38	12/31/38	59.87	1.38	0.03	1.35	0.71	47.34	0.56	0.00	(0.08)	(0.02)
01/01/39	03/31/39	59.52	1.37	0.03	1.34	0.70	46.91	0.55	0.00	(0.09)	(0.02)
04/01/39	06/30/39	59.18	1.36	0.03	1.33	0.70	46.50	0.55	0.00	(0.09)	(0.02)
07/01/39	09/30/39	58.87	1.36	0.03	1.33	0.69	46.11	0.54	0.00	(0.09)	(0.02)
10/01/39	12/31/39	58.57	1.35	0.03	1.32	0.69	45.76	0.54	0.00	(0.09)	(0.02)
01/01/40	03/31/40	58.33	1.34	0.03	1.31	0.69	45.44	0.54	0.00	(0.09)	(0.02)
04/01/40	06/30/40	58.12	1.34	0.03	1.31	0.68	45.16	0.53	0.00	(0.09)	(0.02)
07/01/40	09/30/40	57.91	1.33	0.03	1.30	0.68	44.90	0.53	0.00	(0.09)	(0.02)
10/01/40	12/31/40	57.70	1.33	0.03	1.30	0.68	44.62	0.53	0.00	(0.09)	(0.02)
01/01/41	03/31/41	57.50	1.32	0.03	1.29	0.68	44.32	0.52	0.00	(0.09)	(0.02)
04/01/41	06/30/41	57.29	1.32	0.03	1.29	0.67	44.01	0.52	0.00	(0.10)	(0.02)
07/01/41	09/30/41	57.06	1.31	0.03	1.28	0.67	43.66	0.52	0.00	(0.10)	(0.02)
10/01/41	12/31/41	56.79	1.31	0.03	1.28	0.67	43.26	0.51	0.00	(0.10)	(0.02)
01/01/42	03/31/42	56.48	1.30	0.03	1.27	0.66	42.79	0.51	0.00	(0.10)	(0.02)
04/01/42	06/30/42	56.14	1.29	0.03	1.27	0.66	42.26	0.50	0.00	(0.10)	(0.02)
07/01/42	09/30/42	55.80	1.29	0.03	1.26	0.66	41.73	0.49	0.00	(0.11)	(0.02)
10/01/42	12/31/42	55.48	1.28	0.03	1.25	0.65	41.25	0.49	0.00	(0.11)	(0.02)
01/01/43	03/31/43	55.21	1.27	0.03	1.24	0.65	40.82	0.48	0.00	(0.11)	(0.02)
04/01/43	06/30/43	54.97	1.26	0.03	1.24	0.65	40.45	0.48	0.00	(0.11)	(0.02)

TABLE B2: INSURER CAPITAL COST (ICC) MODEL - PRESENT VALUE (PV) CASH FLOW TO INSURER

TIME INTERVAL		INVESTOR SUPPLIED	NET CAPITAL CHARGES			SOURCES TO PAY NET CAPITAL CHARGE				CASH FLOW TO INSURER (11)	PV CASH FLOW TO INSURER (12)
						INVESTOR SUPPLIED	POLICYHOLDER SUPPLIED				
			CAPITAL NEEDED FROM INVESTORS (3)	INVESTOR REQUIRED RETURN CAPITAL CHARGE (4)	BOND INTEREST TAX DEDUCTION FOR INSURERS (5)		NET CAPITAL COST TO INSURERS (6)	AFTER TAX INV INCOME ON INVESTOR SUPPLIED FUNDS (7)	POLICYHOLDER SUPPLIED INVESTABLE FUNDS (8)		
FROM (1)	TO (2)										
07/01/43	09/30/43	54.74	1.26	0.03	1.23	0.64	40.10	0.47	0.00	(0.11)	(0.02)
10/01/43	12/31/43	54.50	1.25	0.03	1.23	0.64	39.73	0.47	0.00	(0.12)	(0.02)
01/01/44	03/31/44	54.24	1.25	0.03	1.22	0.64	39.35	0.47	0.00	(0.12)	(0.02)
04/01/44	06/30/44	53.98	1.24	0.03	1.21	0.63	38.94	0.46	0.00	(0.12)	(0.02)
07/01/44	09/30/44	53.71	1.24	0.03	1.21	0.63	38.53	0.46	0.00	(0.12)	(0.02)
10/01/44	12/31/44	53.43	1.23	0.03	1.20	0.63	38.10	0.45	0.00	(0.12)	(0.02)
01/01/45	03/31/45	53.15	1.22	0.03	1.20	0.63	37.66	0.45	0.00	(0.13)	(0.02)
04/01/45	06/30/45	52.86	1.22	0.03	1.19	0.62	37.22	0.44	0.00	(0.13)	(0.02)
07/01/45	09/30/45	52.52	1.21	0.03	1.18	0.62	36.71	0.44	0.00	(0.13)	(0.02)
10/01/45	12/31/45	52.11	1.20	0.03	1.18	0.61	36.07	0.43	0.00	(0.13)	(0.02)
01/01/46	03/31/46	51.61	1.19	0.03	1.17	0.61	35.31	0.42	0.00	(0.14)	(0.02)
04/01/46	06/30/46	51.03	1.18	0.03	1.16	0.60	34.42	0.41	0.00	(0.14)	(0.02)
07/01/46	09/30/46	50.40	1.17	0.03	1.14	0.60	33.46	0.40	0.00	(0.14)	(0.02)
10/01/46	12/31/46	49.78	1.15	0.03	1.13	0.59	32.49	0.39	0.00	(0.15)	(0.02)
01/01/47	03/31/47	49.15	1.14	0.03	1.11	0.58	31.54	0.38	0.00	(0.15)	(0.02)
04/01/47	06/30/47	48.53	1.13	0.02	1.10	0.58	30.58	0.37	0.00	(0.16)	(0.02)
07/01/47	09/30/47	47.91	1.11	0.02	1.09	0.57	29.63	0.36	0.00	(0.16)	(0.02)
10/01/47	12/31/47	47.28	1.10	0.02	1.07	0.56	28.66	0.35	0.00	(0.17)	(0.02)
01/01/48	03/31/48	46.66	1.08	0.02	1.06	0.55	27.70	0.34	0.00	(0.17)	(0.02)
04/01/48	06/30/48	46.04	1.07	0.02	1.05	0.55	26.75	0.32	0.00	(0.17)	(0.02)
07/01/48	09/30/48	45.41	1.05	0.02	1.03	0.54	25.79	0.31	0.00	(0.18)	(0.02)
10/01/48	12/31/48	44.78	1.04	0.02	1.02	0.53	24.83	0.30	0.00	(0.18)	(0.02)
01/01/49	03/31/49	44.16	1.03	0.02	1.00	0.52	23.87	0.29	0.00	(0.19)	(0.02)
04/01/49	06/30/49	43.54	1.01	0.02	0.99	0.52	22.92	0.28	0.00	(0.19)	(0.02)
07/01/49	09/30/49	42.92	1.00	0.02	0.98	0.51	21.96	0.27	0.00	(0.20)	(0.02)
10/01/49	12/31/49	42.29	0.98	0.02	0.96	0.50	21.00	0.26	0.00	(0.20)	(0.02)
01/01/50	03/31/50	41.67	0.97	0.02	0.95	0.49	20.04	0.25	0.00	(0.21)	(0.02)
04/01/50	06/30/50	41.04	0.95	0.02	0.93	0.49	19.09	0.23	0.00	(0.21)	(0.02)
07/01/50	09/30/50	40.42	0.94	0.02	0.92	0.48	18.13	0.22	0.00	(0.22)	(0.02)
10/01/50	12/31/50	39.79	0.93	0.02	0.91	0.47	17.17	0.21	0.00	(0.22)	(0.02)
01/01/51	03/31/51	39.17	0.91	0.02	0.89	0.47	16.21	0.20	0.00	(0.22)	(0.02)
04/01/51	06/30/51	38.55	0.90	0.02	0.88	0.46	15.25	0.19	0.00	(0.23)	(0.02)
07/01/51	09/30/51	37.93	0.88	0.02	0.86	0.45	14.30	0.18	0.00	(0.23)	(0.02)
10/01/51	12/31/51	37.30	0.87	0.02	0.85	0.44	13.33	0.17	0.00	(0.24)	(0.02)
01/01/52	03/31/52	36.67	0.85	0.02	0.84	0.44	12.38	0.16	0.00	(0.24)	(0.02)
04/01/52	06/30/52	36.05	0.84	0.02	0.82	0.43	11.42	0.14	0.00	(0.25)	(0.02)
07/01/52	09/30/52	35.43	0.83	0.02	0.81	0.42	10.46	0.13	0.00	(0.25)	(0.02)
10/01/52	12/31/52	34.80	0.81	0.02	0.79	0.41	9.50	0.12	0.00	(0.26)	(0.02)
01/01/53	03/31/53	34.18	0.80	0.02	0.78	0.41	8.54	0.11	0.00	(0.26)	(0.02)
04/01/53	06/30/53	33.56	0.78	0.02	0.77	0.40	7.59	0.10	0.00	(0.27)	(0.02)
07/01/53	09/30/53	32.93	0.77	0.02	0.75	0.39	6.63	0.09	0.00	(0.27)	(0.02)
10/01/53	12/31/53	32.31	0.75	0.02	0.74	0.39	5.67	0.08	0.00	(0.27)	(0.02)
01/01/54	03/31/54	31.68	0.74	0.02	0.72	0.38	4.71	0.07	0.00	(0.28)	(0.02)
04/01/54	06/30/54	31.06	0.73	0.02	0.71	0.37	3.76	0.06	0.00	(0.28)	(0.02)
07/01/54	09/30/54	30.44	0.71	0.02	0.70	0.36	2.80	0.04	0.00	(0.29)	(0.02)
10/01/54	12/31/54	29.81	0.70	0.02	0.68	0.36	1.84	0.03	0.00	(0.29)	(0.02)
01/01/55	03/31/55	29.19	0.68	0.02	0.67	0.35	0.88	0.02	0.00	(0.30)	(0.02)
04/01/55	06/30/55	28.49	0.67	0.01	0.65	0.34	0.00	0.01	(0.07)	(0.38)	(0.02)
07/01/55	09/30/55	26.91	0.65	0.01	0.64	0.33	0.00	0.00	(0.96)	(1.26)	(0.07)
10/01/55	12/31/55	25.32	0.62	0.01	0.60	0.31	0.00	0.00	(0.96)	(1.25)	(0.07)
01/01/56	03/31/56	23.74	0.58	0.01	0.57	0.30	0.00	0.00	(0.96)	(1.23)	(0.06)
04/01/56	06/30/56	22.16	0.54	0.01	0.53	0.28	0.00	0.00	(0.95)	(1.21)	(0.06)
07/01/56	09/30/56	20.58	0.51	0.01	0.50	0.26	0.00	0.00	(0.96)	(1.20)	(0.06)
10/01/56	12/31/56	18.99	0.47	0.01	0.46	0.24	0.00	0.00	(0.96)	(1.18)	(0.06)
01/01/57	03/31/57	17.41	0.44	0.01	0.43	0.22	0.00	0.00	(0.96)	(1.16)	(0.06)
04/01/57	06/30/57	15.84	0.40	0.01	0.39	0.20	0.00	0.00	(0.95)	(1.14)	(0.05)
07/01/57	09/30/57	14.26	0.36	0.01	0.35	0.19	0.00	0.00	(0.96)	(1.13)	(0.05)
10/01/57	12/31/57	12.66	0.33	0.01	0.32	0.17	0.00	0.00	(0.96)	(1.12)	(0.05)
01/01/58	03/31/58	11.08	0.29	0.01	0.28	0.15	0.00	0.00	(0.96)	(1.09)	(0.05)
04/01/58	06/30/58	9.51	0.25	0.01	0.25	0.13	0.00	0.00	(0.95)	(1.07)	(0.05)
07/01/58	09/30/58	7.93	0.22	0.00	0.21	0.11	0.00	0.00	(0.96)	(1.06)	(0.04)
10/01/58	12/31/58	6.34	0.18	0.00	0.18	0.09	0.00	0.00	(0.96)	(1.05)	(0.04)
01/01/59	03/31/59	4.76	0.15	0.00	0.14	0.07	0.00	0.00	(0.96)	(1.03)	(0.04)
04/01/59	06/30/59	3.19	0.11	0.00	0.11	0.06	0.00	0.00	(0.95)	(1.00)	(0.04)
07/01/59	09/30/59	1.81	0.07	0.00	0.07	0.04	0.00	0.00	(0.83)	(0.87)	(0.03)
10/01/59	12/31/59	0.78	0.04	0.00	0.04	0.02	0.00	0.00	(0.63)	(0.65)	(0.02)
01/01/60	03/31/60	0.20	0.02	0.00	0.02	0.01	0.00	0.00	(0.36)	(0.36)	(0.01)
04/01/60	06/30/60	(0.00)	0.00	0.00	0.00	0.00	(0.00)	0.00	(0.12)	(0.12)	(0.00)
TOTAL		11,764.73	269.50	5.98	263.52	137.70	9,893.74	115.80	(17.34)	(27.36)	0.00

Notes:

- (3) = Table D1, (9)
- (4) =  $(3)_{t-1} \times [(1.0 + WACC)^{0.25} - 1.0]$ ,  
 where WACC is the weighted average cost of capital from Section VII-E, Exhibit 1 which is equal to 9.48%
- (5) =  $(3)_{t-1} \times [(1.0 + Debt Capital Cost)^{0.25} - 1.0] \times Debt Capital Share \times 0.21$ ,  
 where Debt Capital Cost=5.41% and Debt Capital Share=18%, from Section VII-E, Exhibit 1.
- (6) = (4) - (5)
- (7) =  $(3)_{t-1} \times [(1.0 + Table A1, (12))^{0.25} - 1.0]$
- (8) = Table C3, (10)
- (9) =  $(8)_{t-1} \times [(1.0 + Table A1, (12))^{0.25} - 1.0]$
- (10) = Table C3, (9)
- (11) =  $-1.0 \times [(6) - (7) - (9) - (10)]$
- (12) =  $(11) \times (1 + WACC)^{time in years}$ , based on the time interval with beginning date 07/01/23,  
 where WACC is the weighted average cost of capital from Section VII-E, Exhibit 1 which is equal to 9.48%

TABLE C1: POLICYHOLDER SUPPLIED - UNDERWRITING (UW) CASH FLOWS

TIME INTERVAL		COLLECTED PREMIUM NET (3)	LOSS & LAE PAYOUT (4)	UNDERWRITING EXPENSES							PRE TAX CASH FLOWS FROM UW (12)	FEDERAL INCOME TAX EXPENSE ON UW (13)	POST TAX CASH FLOWS FROM UW (14)
				COMMISS. & BROKER. (5)	GENERAL EXPENSES (6)	OTHER ACQ. EXPENSES (7)	PREMIUM TAXES (8)	MISC. AND OTHER TAXES (9)	REINS. EXPENSES (10)	TOTAL PRETAX UW EXPENSES (11)			
FROM (1)	TO (2)												
07/01/23	09/30/23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/01/23	12/31/23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01/01/24	03/31/24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/01/24	06/30/24	5.40	0.00	0.52	0.00	0.56	0.00	0.00	0.00	1.08	4.32	2.95	1.37
07/01/24	09/30/24	53.76	5.52	5.14	6.97	3.33	0.00	0.92	2.39	18.76	29.49	2.95	26.54
10/01/24	12/31/24	117.02	14.83	11.19	7.84	3.24	5.16	0.84	2.18	30.45	71.74	2.95	68.79
01/01/25	03/31/25	180.04	26.60	17.22	11.40	3.98	4.70	1.11	2.87	41.28	112.16	0.41	111.75
04/01/25	06/30/25	199.04	36.74	19.03	12.13	3.00	6.19	0.98	2.55	43.90	118.40	0.41	117.99
07/01/25	09/30/25	164.70	42.85	15.75	5.57	0.00	5.51	0.00	0.00	26.83	95.01	0.41	94.60
10/01/25	12/31/25	98.55	44.14	9.42	4.19	0.00	0.00	0.00	0.00	13.62	40.79	0.41	40.38
01/01/26	03/31/26	52.70	45.26	5.04	2.37	0.00	0.00	0.00	0.00	7.41	0.03	(1.16)	1.19
04/01/26	06/30/26	28.27	46.19	2.70	0.80	0.00	0.00	0.00	0.00	3.50	(21.42)	(1.16)	(20.26)
07/01/26	09/30/26	20.92	45.47	2.00	0.00	0.00	0.00	0.00	0.00	2.00	(26.56)	(1.16)	(25.39)
10/01/26	12/31/26	14.35	43.07	1.37	0.00	0.00	0.00	0.00	0.00	1.37	(30.09)	(1.16)	(28.93)
01/01/27	03/31/27	7.15	39.46	0.68	0.00	0.00	0.00	0.00	0.00	0.68	(33.00)	(0.81)	(32.19)
04/01/27	06/30/27	3.15	36.32	0.30	0.00	0.00	0.00	0.00	0.00	0.30	(33.48)	(0.81)	(32.67)
07/01/27	09/30/27	0.92	33.66	0.09	0.00	0.00	0.00	0.00	0.00	0.09	(32.82)	(0.81)	(32.02)
10/01/27	12/31/27	0.00	31.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(31.56)	(0.81)	(30.75)
01/01/28	03/31/28	0.00	28.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(28.48)	(0.59)	(27.89)
04/01/28	06/30/28	0.00	25.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(25.80)	(0.59)	(25.21)
07/01/28	09/30/28	0.00	23.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(23.08)	(0.59)	(22.49)
10/01/28	12/31/28	0.00	20.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(20.58)	(0.59)	(19.99)
01/01/29	03/31/29	0.00	17.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(17.11)	(0.35)	(16.76)
04/01/29	06/30/29	0.00	14.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(14.11)	(0.35)	(13.76)
07/01/29	09/30/29	0.00	11.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(11.93)	(0.35)	(11.57)
10/01/29	12/31/29	0.00	10.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(10.70)	(0.35)	(10.34)
01/01/30	03/31/30	0.00	8.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(8.99)	(0.17)	(8.82)
04/01/30	06/30/30	0.00	7.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(7.51)	(0.17)	(7.34)
07/01/30	09/30/30	0.00	6.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(6.34)	(0.17)	(6.17)
10/01/30	12/31/30	0.00	5.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(5.57)	(0.17)	(5.41)
01/01/31	03/31/31	0.00	4.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(4.52)	(0.11)	(4.41)
04/01/31	06/30/31	0.00	3.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(3.61)	(0.11)	(3.50)
07/01/31	09/30/31	0.00	2.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(2.96)	(0.11)	(2.85)
10/01/31	12/31/31	0.00	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(2.61)	(0.11)	(2.50)
01/01/32	03/31/32	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(2.13)	(0.10)	(2.03)
04/01/32	06/30/32	0.00	1.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(1.72)	(0.10)	(1.62)
07/01/32	09/30/32	0.00	1.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(1.48)	(0.10)	(1.38)
10/01/32	12/31/32	0.00	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(1.42)	(0.10)	(1.32)
01/01/33	03/31/33	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(1.33)	(0.08)	(1.24)
04/01/33	06/30/33	0.00	1.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(1.24)	(0.08)	(1.16)
07/01/33	09/30/33	0.00	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(1.15)	(0.08)	(1.07)
10/01/33	12/31/33	0.00	1.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(1.06)	(0.08)	(0.98)
01/01/34	03/31/34	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.94)	(0.05)	(0.88)
04/01/34	06/30/34	0.00	0.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.82)	(0.05)	(0.77)
07/01/34	09/30/34	0.00	0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.76)	(0.05)	(0.71)
10/01/34	12/31/34	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.75)	(0.05)	(0.70)
01/01/35	03/31/35	0.00	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.73)	(0.06)	(0.67)
04/01/35	06/30/35	0.00	0.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.71)	(0.06)	(0.65)
07/01/35	09/30/35	0.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.69)	(0.06)	(0.64)
10/01/35	12/31/35	0.00	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.68)	(0.06)	(0.62)
01/01/36	03/31/36	0.00	0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.66)	(0.06)	(0.60)
04/01/36	06/30/36	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.63)	(0.06)	(0.58)
07/01/36	09/30/36	0.00	0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.66)	(0.06)	(0.61)
10/01/36	12/31/36	0.00	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.72)	(0.06)	(0.67)
01/01/37	03/31/37	0.00	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.79)	(0.05)	(0.74)
04/01/37	06/30/37	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.85)	(0.05)	(0.79)
07/01/37	09/30/37	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.84)	(0.05)	(0.79)
10/01/37	12/31/37	0.00	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.77)	(0.05)	(0.72)
01/01/38	03/31/38	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.67)	(0.05)	(0.62)
04/01/38	06/30/38	0.00	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.58)	(0.05)	(0.54)
07/01/38	09/30/38	0.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.53)	(0.05)	(0.48)
10/01/38	12/31/38	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.51)	(0.05)	(0.46)
01/01/39	03/31/39	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.48)	(0.05)	(0.44)
04/01/39	06/30/39	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.46)	(0.05)	(0.41)
07/01/39	09/30/39	0.00	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.43)	(0.05)	(0.38)
10/01/39	12/31/39	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.40)	(0.05)	(0.35)
01/01/40	03/31/40	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.36)	(0.04)	(0.32)
04/01/40	06/30/40	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.32)	(0.04)	(0.28)
07/01/40	09/30/40	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.30)	(0.04)	(0.27)
10/01/40	12/31/40	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.31)	(0.04)	(0.27)
01/01/41	03/31/41	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.32)	(0.01)	(0.31)
04/01/41	06/30/41	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.32)	(0.01)	(0.31)
07/01/41	09/30/41	0.00	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.35)	(0.01)	(0.35)
10/01/41	12/31/41	0.00	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.41)	(0.01)	(0.40)
01/01/42	03/31/42	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.47)	(0.00)	(0.47)
04/01/42	06/30/42	0.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.53)	(0.00)	(0.53)
07/01/42	09/30/42	0.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.53)	(0.00)	(0.53)
10/01/42	12/31/42	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.49)	(0.00)	(0.49)
01/01/43	03/31/43	0.00	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.42)	(0.00)	(0.42)
04/01/43	06/30/43	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.37)	(0.00)	(0.37)
07/01/43	09/30/43	0.00	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.35)	(0.00)	(0.35)
10/01/43	12/31/43	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.37)	(0.00)	(0.37)
01/01/44	03/31/44	0.00	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.39)	(0.00)	(0.39)
04/01/44	06/30/44	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.40)	(0.00)	(0.40)
07/01/44	09/30/44												

TABLE C1: POLICYHOLDER SUPPLIED - UNDERWRITING (UW) CASH FLOWS

TIME INTERVAL		COLLECTED PREMIUM NET (3)	LOSS & LAE PAYOUT (4)	UNDERWRITING EXPENSES							PRE TAX CASH FLOWS FROM UW (12)	FEDERAL INCOME TAX EXPENSE ON UW (13)	POST TAX CASH FLOWS FROM UW (14)
				COMMISS. & BROKER. (5)	GENERAL EXPENSES (6)	OTHER ACQ. EXPENSES (7)	PREMIUM TAXES (8)	MISC. AND OTHER TAXES (9)	REINS. EXPENSES (10)	TOTAL PRETAX UW EXPENSES (11)			
FROM (1)	TO (2)												
10/01/44	12/31/44	0.00	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.43)	(0.00)	(0.43)
01/01/45	03/31/45	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.44)	(0.00)	(0.44)
04/01/45	06/30/45	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.44)	(0.00)	(0.44)
07/01/45	09/30/45	0.00	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.52)	(0.00)	(0.52)
10/01/45	12/31/45	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.63)	(0.00)	(0.63)
01/01/46	03/31/46	0.00	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.77)	(0.00)	(0.77)
04/01/46	06/30/46	0.00	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.89)	(0.00)	(0.89)
07/01/46	09/30/46	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
10/01/46	12/31/46	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.97)	(0.00)	(0.96)
01/01/47	03/31/47	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
04/01/47	06/30/47	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.95)
07/01/47	09/30/47	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
10/01/47	12/31/47	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.97)	(0.00)	(0.96)
01/01/48	03/31/48	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
04/01/48	06/30/48	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.95)
07/01/48	09/30/48	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
10/01/48	12/31/48	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.97)	(0.00)	(0.96)
01/01/49	03/31/49	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
04/01/49	06/30/49	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.95)
07/01/49	09/30/49	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
10/01/49	12/31/49	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.97)	(0.00)	(0.96)
01/01/50	03/31/50	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
04/01/50	06/30/50	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.95)
07/01/50	09/30/50	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
10/01/50	12/31/50	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.97)	(0.00)	(0.96)
01/01/51	03/31/51	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
04/01/51	06/30/51	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.95)
07/01/51	09/30/51	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
10/01/51	12/31/51	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.97)	(0.00)	(0.96)
01/01/52	03/31/52	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
04/01/52	06/30/52	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.95)
07/01/52	09/30/52	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
10/01/52	12/31/52	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.97)	(0.00)	(0.96)
01/01/53	03/31/53	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
04/01/53	06/30/53	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.95)
07/01/53	09/30/53	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
10/01/53	12/31/53	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.97)	(0.00)	(0.96)
01/01/54	03/31/54	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
04/01/54	06/30/54	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.95)
07/01/54	09/30/54	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
10/01/54	12/31/54	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.97)	(0.00)	(0.96)
01/01/55	03/31/55	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
04/01/55	06/30/55	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.95)
07/01/55	09/30/55	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
10/01/55	12/31/55	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.97)	(0.00)	(0.96)
01/01/56	03/31/56	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
04/01/56	06/30/56	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.95)
07/01/56	09/30/56	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
10/01/56	12/31/56	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.97)	(0.00)	(0.96)
01/01/57	03/31/57	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
04/01/57	06/30/57	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.95)
07/01/57	09/30/57	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
10/01/57	12/31/57	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.97)	(0.00)	(0.96)
01/01/58	03/31/58	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
04/01/58	06/30/58	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.95)
07/01/58	09/30/58	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
10/01/58	12/31/58	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.97)	(0.00)	(0.96)
01/01/59	03/31/59	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.96)
04/01/59	06/30/59	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.96)	(0.00)	(0.95)
07/01/59	09/30/59	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.84)	(0.00)	(0.83)
10/01/59	12/31/59	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.63)	(0.00)	(0.63)
01/01/60	03/31/60	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.36)	(0.00)	(0.36)
04/01/60	06/30/60	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.12)	(0.00)	(0.12)
TOTAL		945.98	776.64	90.46	51.29	14.11	21.57	3.85	10.00	191.28	(21.95)	(4.61)	(17.34)

Notes:  
 (3) = Table A1, (2) x Table C5\_1, (3)  
 (4) = Table A1, (3) x Table A1, (1a) x Table C5\_1, (4)  
 (5) = Table A1, (4) x Table A1, (1a) x Table C5\_1, (5)  
 (6) = Table A1, (6) x Table A1, (1a) x Table C5\_1, (6)  
 (7) = Table A1, (7) x Table A1, (1a) x Table C5\_1, (7)  
 (8) = Table A1, (8) x Table A1, (1a) x Table C5\_1, (8)  
 (9) = Table A1, (10) x Table A1, (1a) x Table C5\_1, (9)  
 (10) = Table A1, (9) x Table A1, (1a) x Table C5\_1, (10)  
 (11) = (5) + (6) + (7) + (8) + (9) + (10)  
 (12) = (3) - (4) - (11)  
 (13) = Table C2\_6, (6), annual tax expense allocated to the model time periods.  
 (14) = (12) - (13)

**TABLE C2\_1: FEDERAL INCOME TAXES - TAXABLE PREMIUM REVENUE**

TIME INTERVAL		WRITTEN PREMIUM NET (3)	UNEARNED PREMIUM RESERVES (4)	CHANGE IN UNEARNED PREMIUM RESERVES (5)	TAX DEDUCTIBLE CHANGE IN UNEARNED PREMIUM RESERVES (6)	NON TAX DEDUCTIBLE CHANGE IN UNEARNED PREMIUM RESERVES (7)	TAXABLE PREMIUM REVENUE (8)
FROM (1)	TO (2)						
01/01/23	12/31/23	0.00	0.00	0.00	0.00	0.00	0.00
01/01/24	12/31/24	432.65	316.95	316.95	253.56	63.39	179.09
01/01/25	12/31/25	513.32	114.82	(202.13)	(161.70)	(40.43)	675.03
01/01/26	12/31/26	0.00	0.00	(114.82)	(91.86)	(22.96)	91.86
01/01/27	12/31/27	0.00	0.00	0.00	0.00	0.00	0.00
01/01/28	12/31/28	0.00	0.00	0.00	0.00	0.00	0.00
01/01/29	12/31/29	0.00	0.00	0.00	0.00	0.00	0.00
01/01/30	12/31/30	0.00	0.00	0.00	0.00	0.00	0.00
01/01/31	12/31/31	0.00	0.00	0.00	0.00	0.00	0.00
01/01/32	12/31/32	0.00	0.00	0.00	0.00	0.00	0.00
01/01/33	12/31/33	0.00	0.00	0.00	0.00	0.00	0.00
01/01/34	12/31/34	0.00	0.00	0.00	0.00	0.00	0.00
01/01/35	12/31/35	0.00	0.00	0.00	0.00	0.00	0.00
01/01/36	12/31/36	0.00	0.00	0.00	0.00	0.00	0.00
01/01/37	12/31/37	0.00	0.00	0.00	0.00	0.00	0.00
01/01/38	12/31/38	0.00	0.00	0.00	0.00	0.00	0.00
01/01/39	12/31/39	0.00	0.00	0.00	0.00	0.00	0.00
01/01/40	12/31/40	0.00	0.00	0.00	0.00	0.00	0.00
01/01/41	12/31/41	0.00	0.00	0.00	0.00	0.00	0.00
01/01/42	12/31/42	0.00	0.00	0.00	0.00	0.00	0.00
01/01/43	12/31/43	0.00	0.00	0.00	0.00	0.00	0.00
01/01/44	12/31/44	0.00	0.00	0.00	0.00	0.00	0.00
01/01/45	12/31/45	0.00	0.00	0.00	0.00	0.00	0.00
01/01/46	12/31/46	0.00	0.00	0.00	0.00	0.00	0.00
01/01/47	12/31/47	0.00	0.00	0.00	0.00	0.00	0.00
01/01/48	12/31/48	0.00	0.00	0.00	0.00	0.00	0.00
01/01/49	12/31/49	0.00	0.00	0.00	0.00	0.00	0.00
01/01/50	12/31/50	0.00	0.00	0.00	0.00	0.00	0.00
01/01/51	12/31/51	0.00	0.00	0.00	0.00	0.00	0.00
01/01/52	12/31/52	0.00	0.00	0.00	0.00	0.00	0.00
01/01/53	12/31/53	0.00	0.00	0.00	0.00	0.00	0.00
01/01/54	12/31/54	0.00	0.00	0.00	0.00	0.00	0.00
01/01/55	12/31/55	0.00	0.00	0.00	0.00	0.00	0.00
01/01/56	12/31/56	0.00	0.00	0.00	0.00	0.00	0.00
01/01/57	12/31/57	0.00	0.00	0.00	0.00	0.00	0.00
01/01/58	12/31/58	0.00	0.00	0.00	0.00	0.00	0.00
01/01/59	12/31/59	0.00	0.00	0.00	0.00	0.00	0.00
01/01/60	12/31/60	0.00	0.00	0.00	0.00	0.00	0.00
<b>TOTAL</b>		<b>945.98</b>	<b>431.77</b>	<b>0.00</b>	<b>(0.00)</b>	<b>(0.00)</b>	<b>945.98</b>

Notes:  
 (3) = Table A1, (1b) x Percentage of Premium written in corresponding year  
 (4) = Table A1, (1b) x Percentage of Unearned Premium in corresponding year  
 (5) = (4), incremental  
 (6) = 0.8 x (5)  
 (7) = 0.2 x (5)  
 (8) = (3) - (6)

**TABLE C2\_2: DERIVATION OF DISCOUNTED LOSS & LAE RESERVES**

ACCIDENT YEAR									
2024									
TIME INTERVAL		IRS DISCOUNT FACTOR	UNDISCOUNTED			DISCOUNTED			LOSS & LAE PAID DURING PERIOD
			LOSS & LAE UNPAID BEG OF PERIOD	LOSS & LAE UNPAID END OF PERIOD	CHANGE IN UNDISCOUNTED LOSS & LAE RESERVES	LOSS & LAE UNPAID BEG OF PERIOD	LOSS & LAE UNPAID END OF PERIOD	CHANGE IN DISCOUNTED LOSS & LAE RESERVES	
FROM	TO		(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1)	(2)	(3)							
01/01/23	12/31/23	0.8973	0.00	81.10	81.10	0.00	72.78	72.78	13.89
01/01/24	12/31/24	0.8836	81.10	58.86	(22.24)	72.78	52.01	(20.77)	22.24
01/01/25	12/31/25	0.8782	58.86	39.80	(19.06)	52.01	34.95	(17.06)	19.06
01/01/26	12/31/26	0.8738	39.80	26.08	(13.72)	34.95	22.79	(12.16)	13.72
01/01/27	12/31/27	0.8766	26.08	17.96	(8.13)	22.79	15.74	(7.05)	8.13
01/01/28	12/31/28	0.8711	17.96	13.68	(4.28)	15.74	11.92	(3.82)	4.28
01/01/29	12/31/29	0.8766	13.68	11.55	(2.14)	11.92	10.12	(1.80)	2.14
01/01/30	12/31/30	0.8905	11.55	10.54	(1.01)	10.12	9.38	(0.74)	1.01
01/01/31	12/31/31	0.9036	10.54	9.89	(0.64)	9.38	8.94	(0.44)	0.64
01/01/32	12/31/32	0.9121	9.89	9.45	(0.45)	8.94	8.62	(0.32)	0.45
01/01/33	12/31/33	0.9239	9.45	9.09	(0.36)	8.62	8.40	(0.22)	0.36
01/01/34	12/31/34	0.9360	9.09	8.77	(0.32)	8.40	8.21	(0.19)	0.32
01/01/35	12/31/35	0.9482	8.77	8.38	(0.39)	8.21	7.94	(0.26)	0.39
01/01/36	12/31/36	0.9606	8.38	8.06	(0.32)	7.94	7.74	(0.20)	0.32
01/01/37	12/31/37	0.9732	8.06	7.82	(0.23)	7.74	7.61	(0.13)	0.23
01/01/38	12/31/38	0.9859	7.82	7.65	(0.17)	7.61	7.54	(0.07)	0.17
01/01/39	12/31/39	0.9868	7.65	7.50	(0.15)	7.54	7.40	(0.15)	0.15
01/01/40	12/31/40	0.9868	7.50	7.26	(0.24)	7.40	7.17	(0.23)	0.24
01/01/41	12/31/41	0.9868	7.26	7.06	(0.20)	7.17	6.97	(0.20)	0.20
01/01/42	12/31/42	0.9868	7.06	6.87	(0.19)	6.97	6.78	(0.19)	0.19
01/01/43	12/31/43	0.9868	6.87	6.65	(0.21)	6.78	6.57	(0.21)	0.21
01/01/44	12/31/44	0.9868	6.65	6.26	(0.39)	6.57	6.18	(0.38)	0.39
01/01/45	12/31/45	0.9868	6.26	5.79	(0.47)	6.18	5.72	(0.46)	0.47
01/01/46	12/31/46	0.9868	5.79	5.32	(0.47)	5.72	5.25	(0.46)	0.47
01/01/47	12/31/47	0.9868	5.32	4.85	(0.47)	5.25	4.79	(0.46)	0.47
01/01/48	12/31/48	0.9868	4.85	4.38	(0.47)	4.79	4.33	(0.46)	0.47
01/01/49	12/31/49	0.9868	4.38	3.91	(0.47)	4.33	3.86	(0.46)	0.47
01/01/50	12/31/50	0.9868	3.91	3.44	(0.47)	3.86	3.40	(0.46)	0.47
01/01/51	12/31/51	0.9868	3.44	2.97	(0.47)	3.40	2.94	(0.46)	0.47
01/01/52	12/31/52	0.9868	2.97	2.50	(0.47)	2.94	2.47	(0.46)	0.47
01/01/53	12/31/53	0.9868	2.50	2.03	(0.47)	2.47	2.01	(0.46)	0.47
01/01/54	12/31/54	0.9868	2.03	1.56	(0.47)	2.01	1.54	(0.46)	0.47
01/01/55	12/31/55	0.9868	1.56	1.09	(0.47)	1.54	1.08	(0.46)	0.47
01/01/56	12/31/56	0.9868	1.09	0.62	(0.47)	1.08	0.62	(0.46)	0.47
01/01/57	12/31/57	0.9868	0.62	0.15	(0.47)	0.62	0.15	(0.46)	0.47
01/01/58	12/31/58	0.9868	0.15	0.00	(0.15)	0.15	0.00	(0.15)	0.15
01/01/59	12/31/59	0.9868	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01/01/60	12/31/60	0.9868	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL			408.96	408.96	0.00	373.91	373.91	0.00	94.99

- Notes:
- (3): Discount factors specified in IRS Internal Revenue Bulletin 2023-3.
  - (4) = (5)<sub>t-1</sub>
  - (5) = (10), Total - (10), cumulative
  - (6) = (5) - (4)
  - (7) = (8)<sub>t-1</sub>
  - (8) = (3) x (5)
  - (9) = (8) - (7)
  - (10) = Table A1, (3) x Table A1, (1a) x Loss & LAE Flow (from Section VII-I, Exhibit 1) for each accident year

**TABLE C2\_3: DERIVATION OF DISCOUNTED LOSS & LAE RESERVES**

ACCIDENT YEAR 2025									
TIME INTERVAL		IRS DISCOUNT FACTOR	UNDISCOUNTED			DISCOUNTED			LOSS & LAE PAID DURING PERIOD (10)
			LOSS & LAE UNPAID BEG OF PERIOD (4)	LOSS & LAE UNPAID END OF PERIOD (5)	CHANGE IN UNDISCOUNTED LOSS & LAE RESERVES (6)	LOSS & LAE UNPAID BEG OF PERIOD (7)	LOSS & LAE UNPAID END OF PERIOD (8)	CHANGE IN DISCOUNTED LOSS & LAE RESERVES (9)	
FROM (1)	TO (2)								
01/01/23	12/31/23		0.00	0.00	0.00	0.00	0.00	0.00	
01/01/24	12/31/24								
01/01/25	12/31/25	0.8973	0.00	460.37	460.37	0.00	413.09	413.09	127.01
01/01/26	12/31/26	0.8836	460.37	318.14	(142.24)	413.09	281.09	(132.00)	142.24
01/01/27	12/31/27	0.8782	318.14	212.00	(106.14)	281.09	186.17	(94.92)	106.14
01/01/28	12/31/28	0.8738	212.00	137.29	(74.71)	186.17	119.96	(66.21)	74.71
01/01/29	12/31/29	0.8766	137.29	98.68	(38.61)	119.96	86.50	(33.46)	38.61
01/01/30	12/31/30	0.8711	98.68	77.97	(20.71)	86.50	67.92	(18.58)	20.71
01/01/31	12/31/31	0.8766	77.97	68.30	(9.68)	67.92	59.87	(8.05)	9.68
01/01/32	12/31/32	0.8905	68.30	63.67	(4.62)	59.87	56.70	(3.17)	4.62
01/01/33	12/31/33	0.9036	63.67	60.00	(3.67)	56.70	54.22	(2.48)	3.67
01/01/34	12/31/34	0.9121	60.00	57.65	(2.35)	54.22	52.59	(1.63)	2.35
01/01/35	12/31/35	0.9239	57.65	55.52	(2.13)	52.59	51.30	(1.29)	2.13
01/01/36	12/31/36	0.9360	55.52	53.62	(1.90)	51.30	50.19	(1.11)	1.90
01/01/37	12/31/37	0.9482	53.62	50.95	(2.67)	50.19	48.31	(1.88)	2.67
01/01/38	12/31/38	0.9606	50.95	49.30	(1.65)	48.31	47.35	(0.95)	1.65
01/01/39	12/31/39	0.9732	49.30	47.94	(1.35)	47.35	46.66	(0.70)	1.35
01/01/40	12/31/40	0.9859	47.94	47.03	(0.92)	46.66	46.36	(0.29)	0.92
01/01/41	12/31/41	0.9868	47.03	46.05	(0.98)	46.36	45.44	(0.92)	0.98
01/01/42	12/31/42	0.9868	46.05	44.36	(1.69)	45.44	43.77	(1.67)	1.69
01/01/43	12/31/43	0.9868	44.36	43.31	(1.05)	43.77	42.74	(1.03)	1.05
01/01/44	12/31/44	0.9868	43.31	42.06	(1.25)	42.74	41.51	(1.23)	1.25
01/01/45	12/31/45	0.9868	42.06	40.70	(1.36)	41.51	40.16	(1.35)	1.36
01/01/46	12/31/46	0.9868	40.70	37.80	(2.90)	40.16	37.30	(2.86)	2.90
01/01/47	12/31/47	0.9868	37.80	34.89	(2.91)	37.30	34.43	(2.87)	2.91
01/01/48	12/31/48	0.9868	34.89	31.99	(2.91)	34.43	31.57	(2.87)	2.91
01/01/49	12/31/49	0.9868	31.99	29.08	(2.91)	31.57	28.70	(2.87)	2.91
01/01/50	12/31/50	0.9868	29.08	26.17	(2.91)	28.70	25.83	(2.87)	2.91
01/01/51	12/31/51	0.9868	26.17	23.27	(2.91)	25.83	22.96	(2.87)	2.91
01/01/52	12/31/52	0.9868	23.27	20.36	(2.91)	22.96	20.09	(2.87)	2.91
01/01/53	12/31/53	0.9868	20.36	17.45	(2.91)	20.09	17.22	(2.87)	2.91
01/01/54	12/31/54	0.9868	17.45	14.55	(2.91)	17.22	14.36	(2.87)	2.91
01/01/55	12/31/55	0.9868	14.55	11.64	(2.91)	14.36	11.49	(2.87)	2.91
01/01/56	12/31/56	0.9868	11.64	8.74	(2.91)	11.49	8.62	(2.87)	2.91
01/01/57	12/31/57	0.9868	8.74	5.83	(2.91)	8.62	5.75	(2.87)	2.91
01/01/58	12/31/58	0.9868	5.83	2.92	(2.91)	5.75	2.88	(2.87)	2.91
01/01/59	12/31/59	0.9868	2.92	0.02	(2.91)	2.88	0.02	(2.87)	2.91
01/01/60	12/31/60	0.9868	0.02	0.00	(0.02)	0.02	0.00	(0.02)	0.02
TOTAL			2,339.62	2,339.62	0.00	2,143.13	2,143.13	0.00	587.38

Notes:

(3): Discount factors specified in IRS Internal Revenue Bulletin 2023-3.

(4) = (5)<sub>t-1</sub>

(5) = (10), Total - (10), cumulative

(6) = (5) - (4)

(7) = (8)<sub>t-1</sub>

(8) = (3) x (5)

(9) = (8) - (7)

(10) = Table A1, (3) x Table A1, (1a) x Loss & LAE Flow (from Section VII-I, Exhibit 1) for each accident year

**TABLE C2\_4: DERIVATION OF DISCOUNTED LOSS & LAE RESERVES**

ACCIDENT YEAR 2026									
TIME INTERVAL		IRS DISCOUNT FACTOR	UNDISCOUNTED			DISCOUNTED			LOSS & LAE PAID DURING PERIOD
			LOSS & LAE UNPAID BEG OF PERIOD	LOSS & LAE UNPAID END OF PERIOD	CHANGE IN UNDISCOUNTED LOSS & LAE RESERVES	LOSS & LAE UNPAID BEG OF PERIOD	LOSS & LAE UNPAID END OF PERIOD	CHANGE IN DISCOUNTED LOSS & LAE RESERVES	
FROM	TO		(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1)	(2)	(3)							
1/1/2023	12/31/2023								
1/1/2024	12/31/2024		0.00	0.00	0.00	0.00	0.00	0.00	
1/1/2025	12/31/2025		0.00	0.00	0.00	0.00	0.00	0.00	
1/1/2026	12/31/2026	0.8973	0.00	66.16	66.16	0.00	59.37	59.37	28.10
1/1/2027	12/31/2027	0.8836	66.16	45.27	(20.90)	59.37	40.00	(19.37)	20.90
1/1/2028	12/31/2028	0.8782	45.27	29.94	(15.32)	40.00	26.30	(13.70)	15.32
1/1/2029	12/31/2029	0.8738	29.94	19.91	(10.03)	26.30	17.40	(8.90)	10.03
1/1/2030	12/31/2030	0.8766	19.91	14.70	(5.21)	17.40	12.89	(4.51)	5.21
1/1/2031	12/31/2031	0.8711	14.70	11.98	(2.72)	12.89	10.44	(2.45)	2.72
1/1/2032	12/31/2032	0.8766	11.98	10.71	(1.27)	10.44	9.39	(1.05)	1.27
1/1/2033	12/31/2033	0.8905	10.71	10.02	(0.69)	9.39	8.92	(0.46)	0.69
1/1/2034	12/31/2034	0.9036	10.02	9.50	(0.52)	8.92	8.58	(0.34)	0.52
1/1/2035	12/31/2035	0.9121	9.50	9.14	(0.36)	8.58	8.33	(0.25)	0.36
1/1/2036	12/31/2036	0.9239	9.14	8.81	(0.33)	8.33	8.14	(0.20)	0.33
1/1/2037	12/31/2037	0.9360	8.81	8.46	(0.35)	8.14	7.92	(0.22)	0.35
1/1/2038	12/31/2038	0.9482	8.46	8.09	(0.37)	7.92	7.67	(0.25)	0.37
1/1/2039	12/31/2039	0.9606	8.09	7.84	(0.25)	7.67	7.53	(0.14)	0.25
1/1/2040	12/31/2040	0.9732	7.84	7.64	(0.19)	7.53	7.44	(0.09)	0.19
1/1/2041	12/31/2041	0.9859	7.64	7.49	(0.15)	7.44	7.39	(0.05)	0.15
1/1/2042	12/31/2042	0.9868	7.49	7.30	(0.20)	7.39	7.20	(0.19)	0.20
1/1/2043	12/31/2043	0.9868	7.30	7.06	(0.24)	7.20	6.97	(0.23)	0.24
1/1/2044	12/31/2044	0.9868	7.06	6.88	(0.18)	6.97	6.79	(0.18)	0.18
1/1/2045	12/31/2045	0.9868	6.88	6.68	(0.21)	6.79	6.59	(0.20)	0.21
1/1/2046	12/31/2046	0.9868	6.68	6.37	(0.30)	6.59	6.29	(0.30)	0.30
1/1/2047	12/31/2047	0.9868	6.37	5.91	(0.47)	6.29	5.83	(0.46)	0.47
1/1/2048	12/31/2048	0.9868	5.91	5.44	(0.47)	5.83	5.37	(0.46)	0.47
1/1/2049	12/31/2049	0.9868	5.44	4.98	(0.47)	5.37	4.91	(0.46)	0.47
1/1/2050	12/31/2050	0.9868	4.98	4.51	(0.47)	4.91	4.45	(0.46)	0.47
1/1/2051	12/31/2051	0.9868	4.51	4.04	(0.47)	4.45	3.99	(0.46)	0.47
1/1/2052	12/31/2052	0.9868	4.04	3.58	(0.47)	3.99	3.53	(0.46)	0.47
1/1/2053	12/31/2053	0.9868	3.58	3.11	(0.47)	3.53	3.07	(0.46)	0.47
1/1/2054	12/31/2054	0.9868	3.11	2.64	(0.47)	3.07	2.61	(0.46)	0.47
1/1/2055	12/31/2055	0.9868	2.64	2.18	(0.47)	2.61	2.15	(0.46)	0.47
1/1/2056	12/31/2056	0.9868	2.18	1.71	(0.47)	2.15	1.69	(0.46)	0.47
1/1/2057	12/31/2057	0.9868	1.71	1.24	(0.47)	1.69	1.23	(0.46)	0.47
1/1/2058	12/31/2058	0.9868	1.24	0.78	(0.47)	1.23	0.77	(0.46)	0.47
1/1/2059	12/31/2059	0.9868	0.78	0.31	(0.47)	0.77	0.31	(0.46)	0.47
1/1/2060	12/31/2060	0.9868	0.31	0.00	(0.31)	0.31	0.00	(0.31)	0.31
TOTAL			350.39	350.39	0.00	321.43	321.43	0.00	94.27

Notes:

(3): Discount factors specified in IRS Internal Revenue Bulletin 2023-3.

(4) = (5)<sub>t-1</sub>

(5) = (10), Total - (10), cumulative

(6) = (5) - (4)

(7) = (8)<sub>t-1</sub>

(8) = (3) x (5)

(9) = (8) - (7)

(10) = Table A1, (3) x Table A1, (1a) x Loss & LAE Flow (from Section VII-I, Exhibit 1) for each accident year

**TABLE C2\_5: FEDERAL INCOME TAXES - UNDERWRITING (UW) TAX DEDUCTIONS**

TIME INTERVAL		LOSS & LAE PAID DURING PERIOD	CHANGE IN DISCOUNTED LOSS & LAE RESERVES	TAX DEDUCTIBLE LOSS & LAE	TAX DEDUCTIBLE UW EXPENSES	TOTAL UW TAX DEDUCTIONS
FROM (1)	TO (2)	(3)	(4)	(5)	(6)	(7)
01/01/23	12/31/23	0.00	0.00	0.00	0.00	0.00
01/01/24	12/31/24	13.89	72.78	86.66	50.29	136.96
01/01/25	12/31/25	149.25	392.33	541.58	125.63	667.21
01/01/26	12/31/26	189.40	(89.69)	99.71	14.29	114.00
01/01/27	12/31/27	140.75	(126.46)	14.29	1.07	15.37
01/01/28	12/31/28	98.16	(86.96)	11.20	0.00	11.20
01/01/29	12/31/29	52.91	(46.18)	6.73	0.00	6.73
01/01/30	12/31/30	28.06	(24.89)	3.16	0.00	3.16
01/01/31	12/31/31	13.41	(11.24)	2.17	0.00	2.17
01/01/32	12/31/32	6.54	(4.66)	1.88	0.00	1.88
01/01/33	12/31/33	4.81	(3.27)	1.54	0.00	1.54
01/01/34	12/31/34	3.22	(2.18)	1.04	0.00	1.04
01/01/35	12/31/35	2.82	(1.73)	1.09	0.00	1.09
01/01/36	12/31/36	2.62	(1.57)	1.05	0.00	1.05
01/01/37	12/31/37	3.34	(2.30)	1.04	0.00	1.04
01/01/38	12/31/38	2.26	(1.33)	0.93	0.00	0.93
01/01/39	12/31/39	1.77	(0.90)	0.87	0.00	0.87
01/01/40	12/31/40	1.26	(0.53)	0.73	0.00	0.73
01/01/41	12/31/41	1.37	(1.21)	0.16	0.00	0.16
01/01/42	12/31/42	2.09	(2.06)	0.03	0.00	0.03
01/01/43	12/31/43	1.47	(1.45)	0.02	0.00	0.02
01/01/44	12/31/44	1.64	(1.62)	0.02	0.00	0.02
01/01/45	12/31/45	1.96	(1.93)	0.03	0.00	0.03
01/01/46	12/31/46	3.67	(3.62)	0.05	0.00	0.05
01/01/47	12/31/47	3.84	(3.79)	0.05	0.00	0.05
01/01/48	12/31/48	3.84	(3.79)	0.05	0.00	0.05
01/01/49	12/31/49	3.84	(3.79)	0.05	0.00	0.05
01/01/50	12/31/50	3.84	(3.79)	0.05	0.00	0.05
01/01/51	12/31/51	3.84	(3.79)	0.05	0.00	0.05
01/01/52	12/31/52	3.84	(3.79)	0.05	0.00	0.05
01/01/53	12/31/53	3.84	(3.79)	0.05	0.00	0.05
01/01/54	12/31/54	3.84	(3.79)	0.05	0.00	0.05
01/01/55	12/31/55	3.84	(3.79)	0.05	0.00	0.05
01/01/56	12/31/56	3.84	(3.79)	0.05	0.00	0.05
01/01/57	12/31/57	3.84	(3.79)	0.05	0.00	0.05
01/01/58	12/31/58	3.84	(3.79)	0.05	0.00	0.05
01/01/59	12/31/59	3.53	(3.48)	0.05	0.00	0.05
01/01/60	12/31/60	0.33	(0.32)	0.00	0.00	0.00
TOTAL		776.64	0.00	776.64	191.28	967.92

Notes:

(3) = Table C2\_2, (10) + Table C2\_3, (10) + Table C2\_4, (10)

(4) = Table C2\_2, (9) + Table C2\_3, (9) + Table C2\_4, (9)

(5) = (3) + (4)

(6) = Table C1, (11) by tax year

(7) = (5) + (6)

**TABLE C2\_6: FEDERAL INCOME TAX EXPENSE ON UNDERWRITING**

TIME INTERVAL		TAXABLE PREMIUM REVENUE	TOTAL UW TAX DEDUCTIONS	TAX BASIS NET UW GAIN	FEDERAL INCOME TAX EXPENSE ON UW
FROM (1)	TO (2)	(3)	(4)	(5)	(6)
01/01/23	12/31/23	0.00	0.00	0.00	0.00
01/01/24	12/31/24	179.09	136.96	42.14	8.85
01/01/25	12/31/25	675.03	667.21	7.82	1.64
01/01/26	12/31/26	91.86	114.00	(22.14)	(4.65)
01/01/27	12/31/27	0.00	15.37	(15.37)	(3.23)
01/01/28	12/31/28	0.00	11.20	(11.20)	(2.35)
01/01/29	12/31/29	0.00	6.73	(6.73)	(1.41)
01/01/30	12/31/30	0.00	3.16	(3.16)	(0.66)
01/01/31	12/31/31	0.00	2.17	(2.17)	(0.46)
01/01/32	12/31/32	0.00	1.88	(1.88)	(0.39)
01/01/33	12/31/33	0.00	1.54	(1.54)	(0.32)
01/01/34	12/31/34	0.00	1.04	(1.04)	(0.22)
01/01/35	12/31/35	0.00	1.09	(1.09)	(0.23)
01/01/36	12/31/36	0.00	1.05	(1.05)	(0.22)
01/01/37	12/31/37	0.00	1.04	(1.04)	(0.22)
01/01/38	12/31/38	0.00	0.93	(0.93)	(0.20)
01/01/39	12/31/39	0.00	0.87	(0.87)	(0.18)
01/01/40	12/31/40	0.00	0.73	(0.73)	(0.15)
01/01/41	12/31/41	0.00	0.16	(0.16)	(0.03)
01/01/42	12/31/42	0.00	0.03	(0.03)	(0.01)
01/01/43	12/31/43	0.00	0.02	(0.02)	(0.00)
01/01/44	12/31/44	0.00	0.02	(0.02)	(0.00)
01/01/45	12/31/45	0.00	0.03	(0.03)	(0.01)
01/01/46	12/31/46	0.00	0.05	(0.05)	(0.01)
01/01/47	12/31/47	0.00	0.05	(0.05)	(0.01)
01/01/48	12/31/48	0.00	0.05	(0.05)	(0.01)
01/01/49	12/31/49	0.00	0.05	(0.05)	(0.01)
01/01/50	12/31/50	0.00	0.05	(0.05)	(0.01)
01/01/51	12/31/51	0.00	0.05	(0.05)	(0.01)
01/01/52	12/31/52	0.00	0.05	(0.05)	(0.01)
01/01/53	12/31/53	0.00	0.05	(0.05)	(0.01)
01/01/54	12/31/54	0.00	0.05	(0.05)	(0.01)
01/01/55	12/31/55	0.00	0.05	(0.05)	(0.01)
01/01/56	12/31/56	0.00	0.05	(0.05)	(0.01)
01/01/57	12/31/57	0.00	0.05	(0.05)	(0.01)
01/01/58	12/31/58	0.00	0.05	(0.05)	(0.01)
01/01/59	12/31/59	0.00	0.05	(0.05)	(0.01)
01/01/60	12/31/60	0.00	0.00	(0.00)	(0.00)
TOTAL		945.98	967.92	(21.95)	(4.61)

Notes:

(3) = Table C2\_1, (8)

(4) = Table C2\_5, (7)

(5) = (3) - (4)

(6) = 0.21 x (5), where 0.21 is the Federal income tax rate.

**TABLE C2\_7: ADMITTED PREPAID TAX (DEFERRED TAX ASSET - DTA)**

TIME INTERVAL		AY 2024		AY 2025		AY 2026		DISCOUNT UNWOUND DURING PERIOD (9)	DTA ASSOCIATED WITH LOSS & LAE RESERVE (10)	UNEARNED PREMIUM RESERVE (11)	DTA ASSOCIATED WITH UNEARNED PREMIUM RESERVE (12)	ADMITTED PREPAID TAX (DTA) (13)
		CHANGE IN DISCOUNTED LOSS & LAE (3)	LOSS & LAE PAID DURING PERIOD (4)	CHANGE IN DISCOUNTED LOSS & LAE (5)	LOSS & LAE PAID DURING PERIOD (6)	CHANGE IN DISCOUNTED LOSS & LAE (7)	LOSS & LAE PAID DURING PERIOD (8)					
FROM (1)	TO (2)											
01/01/23	12/31/23							0.00	0.00			0.00
01/01/24	12/31/24							0.00	0.31	316.95	13.31	13.62
01/01/25	12/31/25	(20.77)	22.24					1.48	2.57	114.82	4.82	7.39
01/01/26	12/31/26	(17.06)	19.06	(132.00)	142.24			12.24	3.00	0.00	0.00	3.00
01/01/27	12/31/27	(12.16)	13.72	(94.92)	106.14	(19.37)	20.90	14.29	2.35	0.00	0.00	2.35
01/01/28	12/31/28	(7.05)	8.13	(66.21)	74.71	(13.70)	15.32	11.20	1.41	0.00	0.00	1.41
01/01/29	12/31/29	(3.82)	4.28	(33.46)	38.61	(8.90)	10.03	6.73	0.66	0.00	0.00	0.66
01/01/30	12/31/30	(1.80)	2.14	(18.58)	20.71	(4.51)	5.21	3.16	0.46	0.00	0.00	0.46
01/01/31	12/31/31	(0.74)	1.01	(8.05)	9.68	(2.45)	2.72	2.17	0.39	0.00	0.00	0.39
01/01/32	12/31/32	(0.44)	0.64	(3.17)	4.62	(1.05)	1.27	1.88	0.32	0.00	0.00	0.32
01/01/33	12/31/33	(0.32)	0.45	(2.48)	3.67	(0.46)	0.69	1.54	0.22	0.00	0.00	0.22
01/01/34	12/31/34	(0.22)	0.36	(1.63)	2.35	(0.34)	0.52	1.04	0.23	0.00	0.00	0.23
01/01/35	12/31/35	(0.19)	0.32	(1.29)	2.13	(0.25)	0.36	1.09	0.22	0.00	0.00	0.22
01/01/36	12/31/36	(0.26)	0.39	(1.11)	1.90	(0.20)	0.33	1.05	0.22	0.00	0.00	0.22
01/01/37	12/31/37	(0.20)	0.32	(1.88)	2.67	(0.22)	0.35	1.04	0.20	0.00	0.00	0.20
01/01/38	12/31/38	(0.13)	0.23	(0.95)	1.65	(0.25)	0.37	0.93	0.18	0.00	0.00	0.18
01/01/39	12/31/39	(0.07)	0.17	(0.70)	1.35	(0.14)	0.25	0.87	0.15	0.00	0.00	0.15
01/01/40	12/31/40	(0.15)	0.15	(0.29)	0.92	(0.09)	0.19	0.73	0.03	0.00	0.00	0.03
01/01/41	12/31/41	(0.23)	0.24	(0.92)	0.98	(0.05)	0.15	0.16	0.01	0.00	0.00	0.01
01/01/42	12/31/42	(0.20)	0.20	(1.67)	1.69	(0.19)	0.20	0.03	0.00	0.00	0.00	0.00
01/01/43	12/31/43	(0.19)	0.19	(1.03)	1.05	(0.23)	0.24	0.02	0.00	0.00	0.00	0.00
01/01/44	12/31/44	(0.21)	0.21	(1.23)	1.25	(0.18)	0.18	0.02	0.01	0.00	0.00	0.01
01/01/45	12/31/45	(0.38)	0.39	(1.35)	1.36	(0.20)	0.21	0.03	0.01	0.00	0.00	0.01
01/01/46	12/31/46	(0.46)	0.47	(2.86)	2.90	(0.30)	0.30	0.05	0.01	0.00	0.00	0.01
01/01/47	12/31/47	(0.46)	0.47	(2.87)	2.91	(0.46)	0.47	0.05	0.01	0.00	0.00	0.01
01/01/48	12/31/48	(0.46)	0.47	(2.87)	2.91	(0.46)	0.47	0.05	0.01	0.00	0.00	0.01
01/01/49	12/31/49	(0.46)	0.47	(2.87)	2.91	(0.46)	0.47	0.05	0.01	0.00	0.00	0.01
01/01/50	12/31/50	(0.46)	0.47	(2.87)	2.91	(0.46)	0.47	0.05	0.01	0.00	0.00	0.01
01/01/51	12/31/51	(0.46)	0.47	(2.87)	2.91	(0.46)	0.47	0.05	0.01	0.00	0.00	0.01
01/01/52	12/31/52	(0.46)	0.47	(2.87)	2.91	(0.46)	0.47	0.05	0.01	0.00	0.00	0.01
01/01/53	12/31/53	(0.46)	0.47	(2.87)	2.91	(0.46)	0.47	0.05	0.01	0.00	0.00	0.01
01/01/54	12/31/54	(0.46)	0.47	(2.87)	2.91	(0.46)	0.47	0.05	0.01	0.00	0.00	0.01
01/01/55	12/31/55	(0.46)	0.47	(2.87)	2.91	(0.46)	0.47	0.05	0.01	0.00	0.00	0.01
01/01/56	12/31/56	(0.46)	0.47	(2.87)	2.91	(0.46)	0.47	0.05	0.01	0.00	0.00	0.01
01/01/57	12/31/57	(0.46)	0.47	(2.87)	2.91	(0.46)	0.47	0.05	0.01	0.00	0.00	0.01
01/01/58	12/31/58	(0.46)	0.47	(2.87)	2.91	(0.46)	0.47	0.05	0.01	0.00	0.00	0.01
01/01/59	12/31/59	(0.15)	0.15	(2.87)	2.91	(0.46)	0.47	0.05	0.00	0.00	0.00	0.00
01/01/60	12/31/60	0.00	0.00	(0.02)	0.02	(0.31)	0.31	0.00	0.00	0.00	0.00	0.00

Notes:  
 (3) = Table C2\_2, (9), the initial value is not relevant in calculating the discount unwound during period.  
 (4) = Table C2\_2, (10)  
 (5) = Table C2\_3, (9), the initial value is not relevant in calculating the discount unwound during period.  
 (6) = Table C2\_3, (10)  
 (7) = Table C2\_4, (9), the initial value is not relevant in calculating the discount unwound during period.  
 (8) = Table C2\_4, (10)  
 (9) = (3) + (4) + (5) + (6) + (7) + (8)  
 (10) = 0.21 x (9)<sub>t+1</sub>, where 0.21 is the Federal income tax rate.  
 (11) = Table C2\_1, (4)  
 (12) = 0.2 x 0.21 x (11), 0.21 is the Federal income tax rate and 20% of unearned premiums is taxable.  
 (13) = (10) + (12)

**TABLE C3: POLICYHOLDER SUPPLIED INVESTABLE FUNDS**

TIME INTERVAL		UNEARNED PREMIUM RESERVES (3)	LOSS & LAE RESERVES (4)	ADMITTED PREMIUM RECEIVABLES (5)	ADMITTED PREPAID TAX (DTA) (6)	INVESTABLE RESERVES (7)	CUMULATIVE POST TAX CASH FLOW FROM UW (8)	POST TAX CASH FROM UW AVAILABLE TO INVESTORS (9)	POLICYHOLDER SUPPLIED INVESTABLE FUNDS (10)	RESERVES FUNDED BY INVESTORS (11)
FROM (1)	TO (2)									
07/01/23	09/30/23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/01/23	12/31/23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01/01/24	03/31/24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/01/24	06/30/24	0.00	0.00	(5.40)	0.00	5.40	1.37	0.00	1.37	4.03
07/01/24	09/30/24	195.52	19.85	167.25	10.22	37.90	27.91	0.00	27.91	9.99
10/01/24	12/31/24	318.72	73.20	256.47	13.62	121.82	96.70	0.00	96.70	25.12
01/01/25	03/31/25	441.40	168.93	348.12	12.06	250.15	208.45	0.00	208.45	41.70
04/01/25	06/30/25	477.26	301.13	390.71	10.51	377.17	326.44	0.00	326.44	50.73
07/01/25	09/30/25	271.66	427.07	226.01	8.95	463.77	421.04	0.00	421.04	42.73
10/01/25	12/31/25	116.94	509.95	127.46	7.39	492.03	461.42	0.00	461.42	30.62
01/01/26	03/31/26	29.45	536.52	74.76	6.30	484.91	462.61	0.00	462.61	22.30
04/01/26	06/30/26	0.00	514.51	31.08	5.20	478.23	442.35	0.00	442.35	35.88
07/01/26	09/30/26	0.00	469.03	2.45	4.10	462.49	416.96	0.00	416.96	45.53
10/01/26	12/31/26	0.00	425.96	1.07	3.00	421.89	388.03	0.00	388.03	33.86
01/01/27	03/31/27	0.00	386.50	0.39	2.84	383.27	355.83	0.00	355.83	27.43
04/01/27	06/30/27	0.00	350.17	0.09	2.68	347.41	323.16	0.00	323.16	24.24
07/01/27	09/30/27	0.00	316.51	(0.00)	2.51	314.00	291.15	0.00	291.15	22.85
10/01/27	12/31/27	0.00	284.95	(0.00)	2.35	282.60	260.40	0.00	260.40	22.21
01/01/28	03/31/28	0.00	256.48	(0.00)	2.12	254.36	232.51	0.00	232.51	21.85
04/01/28	06/30/28	0.00	230.68	(0.00)	1.88	228.80	207.30	0.00	207.30	21.50
07/01/28	09/30/28	0.00	207.61	(0.00)	1.65	205.96	184.81	0.00	184.81	21.15
10/01/28	12/31/28	0.00	187.03	(0.00)	1.41	185.62	164.82	0.00	164.82	20.79
01/01/29	03/31/29	0.00	169.92	(0.00)	1.23	168.69	148.07	0.00	148.07	20.63
04/01/29	06/30/29	0.00	155.81	(0.00)	1.04	154.77	134.31	0.00	134.31	20.46
07/01/29	09/30/29	0.00	143.88	(0.00)	0.85	143.03	122.73	0.00	122.73	20.29
10/01/29	12/31/29	0.00	133.18	(0.00)	0.66	132.52	112.39	0.00	112.39	20.13
01/01/30	03/31/30	0.00	124.20	(0.00)	0.61	123.58	103.57	0.00	103.57	20.01
04/01/30	06/30/30	0.00	116.69	(0.00)	0.56	116.13	96.23	0.00	96.23	19.90
07/01/30	09/30/30	0.00	110.35	(0.00)	0.51	109.84	90.06	0.00	90.06	19.79
10/01/30	12/31/30	0.00	104.78	(0.00)	0.46	104.32	84.65	0.00	84.65	19.67
01/01/31	03/31/31	0.00	100.26	(0.00)	0.44	99.82	80.24	0.00	80.24	19.57
04/01/31	06/30/31	0.00	96.64	(0.00)	0.42	96.22	76.74	0.00	76.74	19.48
07/01/31	09/30/31	0.00	93.68	(0.00)	0.41	93.27	73.90	0.00	73.90	19.38
10/01/31	12/31/31	0.00	91.07	(0.00)	0.39	90.68	71.40	0.00	71.40	19.28
01/01/32	03/31/32	0.00	88.94	(0.00)	0.38	88.56	69.36	0.00	69.36	19.20
04/01/32	06/30/32	0.00	87.22	(0.00)	0.36	86.86	67.74	0.00	67.74	19.12
07/01/32	09/30/32	0.00	85.74	(0.00)	0.34	85.40	66.36	0.00	66.36	19.04
10/01/32	12/31/32	0.00	84.32	(0.00)	0.32	84.00	65.04	0.00	65.04	18.96
01/01/33	03/31/33	0.00	83.00	(0.00)	0.30	82.70	63.80	0.00	63.80	18.90
04/01/33	06/30/33	0.00	81.75	(0.00)	0.27	81.48	62.64	0.00	62.64	18.85
07/01/33	09/30/33	0.00	80.60	(0.00)	0.24	80.35	61.56	0.00	61.56	18.79
10/01/33	12/31/33	0.00	79.53	(0.00)	0.22	79.32	60.58	0.00	60.58	18.74
01/01/34	03/31/34	0.00	78.60	(0.00)	0.22	78.38	59.70	0.00	59.70	18.68
04/01/34	06/30/34	0.00	77.77	(0.00)	0.22	77.55	58.93	0.00	58.93	18.62
07/01/34	09/30/34	0.00	77.01	(0.00)	0.23	76.78	58.22	0.00	58.22	18.57
10/01/34	12/31/34	0.00	76.26	(0.00)	0.23	76.03	57.52	0.00	57.52	18.51
01/01/35	03/31/35	0.00	75.53	(0.00)	0.23	75.30	56.84	0.00	56.84	18.46
04/01/35	06/30/35	0.00	74.82	(0.00)	0.22	74.59	56.19	0.00	56.19	18.40
07/01/35	09/30/35	0.00	74.12	(0.00)	0.22	73.90	55.55	0.00	55.55	18.34
10/01/35	12/31/35	0.00	73.44	(0.00)	0.22	73.22	54.93	0.00	54.93	18.29
01/01/36	03/31/36	0.00	72.78	(0.00)	0.22	72.56	54.33	0.00	54.33	18.24
04/01/36	06/30/36	0.00	72.15	(0.00)	0.22	71.93	53.75	0.00	53.75	18.18
07/01/36	09/30/36	0.00	71.49	(0.00)	0.22	71.27	53.14	0.00	53.14	18.13
10/01/36	12/31/36	0.00	70.77	(0.00)	0.22	70.55	52.48	0.00	52.48	18.07
01/01/37	03/31/37	0.00	69.98	(0.00)	0.21	69.77	51.74	0.00	51.74	18.02
04/01/37	06/30/37	0.00	69.13	(0.00)	0.21	68.92	50.95	0.00	50.95	17.97
07/01/37	09/30/37	0.00	68.29	(0.00)	0.20	68.09	50.16	0.00	50.16	17.93
10/01/37	12/31/37	0.00	67.52	(0.00)	0.20	67.32	49.45	0.00	49.45	17.88
01/01/38	03/31/38	0.00	66.85	(0.00)	0.19	66.66	48.83	0.00	48.83	17.83
04/01/38	06/30/38	0.00	66.26	(0.00)	0.19	66.08	48.29	0.00	48.29	17.79
07/01/38	09/30/38	0.00	65.73	(0.00)	0.19	65.55	47.81	0.00	47.81	17.74
10/01/38	12/31/38	0.00	65.22	(0.00)	0.18	65.04	47.34	0.00	47.34	17.69
01/01/39	03/31/39	0.00	64.74	(0.00)	0.18	64.56	46.91	0.00	46.91	17.66
04/01/39	06/30/39	0.00	64.28	(0.00)	0.17	64.11	46.50	0.00	46.50	17.62
07/01/39	09/30/39	0.00	63.85	(0.00)	0.16	63.69	46.11	0.00	46.11	17.58
10/01/39	12/31/39	0.00	63.45	(0.00)	0.15	63.30	45.76	0.00	45.76	17.54
01/01/40	03/31/40	0.00	63.10	(0.00)	0.12	62.98	45.44	0.00	45.44	17.53
04/01/40	06/30/40	0.00	62.78	(0.00)	0.09	62.69	45.16	0.00	45.16	17.52
07/01/40	09/30/40	0.00	62.48	(0.00)	0.06	62.41	44.90	0.00	44.90	17.51
10/01/40	12/31/40	0.00	62.16	(0.00)	0.03	62.13	44.62	0.00	44.62	17.51
01/01/41	03/31/41	0.00	61.85	(0.00)	0.03	61.82	44.32	0.00	44.32	17.50
04/01/41	06/30/41	0.00	61.53	(0.00)	0.02	61.51	44.01	0.00	44.01	17.50
07/01/41	09/30/41	0.00	61.17	(0.00)	0.01	61.16	43.66	0.00	43.66	17.50
10/01/41	12/31/41	0.00	60.77	(0.00)	0.01	60.76	43.26	0.00	43.26	17.50
01/01/42	03/31/42	0.00	60.29	(0.00)	0.01	60.29	42.79	0.00	42.79	17.50
04/01/42	06/30/42	0.00	59.76	(0.00)	0.01	59.76	42.26	0.00	42.26	17.50
07/01/42	09/30/42	0.00	59.23	(0.00)	0.00	59.23	41.73	0.00	41.73	17.50
10/01/42	12/31/42	0.00	58.75	(0.00)	0.00	58.74	41.25	0.00	41.25	17.50
01/01/43	03/31/43	0.00	58.32	(0.00)	0.00	58.32	40.82	0.00	40.82	17.49
04/01/43	06/30/43	0.00	57.95	(0.00)	0.00	57.95	40.45	0.00	40.45	17.49
07/01/43	09/30/43	0.00	57.60	(0.00)	0.00	57.59	40.10	0.00	40.10	17.49

**TABLE C3: POLICYHOLDER SUPPLIED INVESTABLE FUNDS**

TIME INTERVAL		UNEARNED PREMIUM RESERVES (3)	LOSS & LAE RESERVES (4)	ADMITTED PREMIUM RECEIVABLES (5)	ADMITTED PREPAID TAX (DTA) (6)	INVESTABLE RESERVES (7)	CUMULATIVE POST TAX CASH FLOW FROM UW (8)	POST TAX CASH FROM UW AVAILABLE TO INVESTORS (9)	POLICYHOLDER SUPPLIED INVESTABLE FUNDS (10)	RESERVES FUNDED BY INVESTORS (11)
FROM (1)	TO (2)									
10/01/43	12/31/43	0.00	57.23	(0.00)	0.00	57.22	39.73	0.00	39.73	17.49
01/01/44	03/31/44	0.00	56.84	(0.00)	0.00	56.84	39.35	0.00	39.35	17.49
04/01/44	06/30/44	0.00	56.44	(0.00)	0.00	56.43	38.94	0.00	38.94	17.49
07/01/44	09/30/44	0.00	56.02	(0.00)	0.01	56.01	38.53	0.00	38.53	17.49
10/01/44	12/31/44	0.00	55.59	(0.00)	0.01	55.59	38.10	0.00	38.10	17.49
01/01/45	03/31/45	0.00	55.15	(0.00)	0.01	55.15	37.66	0.00	37.66	17.48
04/01/45	06/30/45	0.00	54.71	(0.00)	0.01	54.70	37.22	0.00	37.22	17.48
07/01/45	09/30/45	0.00	54.19	(0.00)	0.01	54.18	36.71	0.00	36.71	17.48
10/01/45	12/31/45	0.00	53.56	(0.00)	0.01	53.55	36.07	0.00	36.07	17.48
01/01/46	03/31/46	0.00	52.79	(0.00)	0.01	52.78	35.31	0.00	35.31	17.47
04/01/46	06/30/46	0.00	51.90	(0.00)	0.01	51.89	34.42	0.00	34.42	17.47
07/01/46	09/30/46	0.00	50.94	(0.00)	0.01	50.92	33.46	0.00	33.46	17.47
10/01/46	12/31/46	0.00	49.97	(0.00)	0.01	49.96	32.49	0.00	32.49	17.46
01/01/47	03/31/47	0.00	49.01	(0.00)	0.01	49.00	31.54	0.00	31.54	17.46
04/01/47	06/30/47	0.00	48.05	(0.00)	0.01	48.04	30.58	0.00	30.58	17.46
07/01/47	09/30/47	0.00	47.09	(0.00)	0.01	47.08	29.63	0.00	29.63	17.46
10/01/47	12/31/47	0.00	46.13	(0.00)	0.01	46.12	28.66	0.00	28.66	17.45
01/01/48	03/31/48	0.00	45.17	(0.00)	0.01	45.16	27.70	0.00	27.70	17.45
04/01/48	06/30/48	0.00	44.21	(0.00)	0.01	44.20	26.75	0.00	26.75	17.45
07/01/48	09/30/48	0.00	43.25	(0.00)	0.01	43.24	25.79	0.00	25.79	17.45
10/01/48	12/31/48	0.00	42.28	(0.00)	0.01	42.27	24.83	0.00	24.83	17.44
01/01/49	03/31/49	0.00	41.32	(0.00)	0.01	41.31	23.87	0.00	23.87	17.44
04/01/49	06/30/49	0.00	40.37	(0.00)	0.01	40.36	22.92	0.00	22.92	17.44
07/01/49	09/30/49	0.00	39.41	(0.00)	0.01	39.40	21.96	0.00	21.96	17.44
10/01/49	12/31/49	0.00	38.44	(0.00)	0.01	38.43	21.00	0.00	21.00	17.43
01/01/50	03/31/50	0.00	37.48	(0.00)	0.01	37.47	20.04	0.00	20.04	17.43
04/01/50	06/30/50	0.00	36.52	(0.00)	0.01	36.51	19.09	0.00	19.09	17.43
07/01/50	09/30/50	0.00	35.56	(0.00)	0.01	35.55	18.13	0.00	18.13	17.42
10/01/50	12/31/50	0.00	34.60	(0.00)	0.01	34.59	17.17	0.00	17.17	17.42
01/01/51	03/31/51	0.00	33.64	(0.00)	0.01	33.63	16.21	0.00	16.21	17.42
04/01/51	06/30/51	0.00	32.68	(0.00)	0.01	32.67	15.25	0.00	15.25	17.42
07/01/51	09/30/51	0.00	31.72	(0.00)	0.01	31.71	14.30	0.00	14.30	17.41
10/01/51	12/31/51	0.00	30.76	(0.00)	0.01	30.74	13.33	0.00	13.33	17.41
01/01/52	03/31/52	0.00	29.79	(0.00)	0.01	29.78	12.38	0.00	12.38	17.41
04/01/52	06/30/52	0.00	28.84	(0.00)	0.01	28.83	11.42	0.00	11.42	17.41
07/01/52	09/30/52	0.00	27.88	(0.00)	0.01	27.87	10.46	0.00	10.46	17.40
10/01/52	12/31/52	0.00	26.91	(0.00)	0.01	26.90	9.50	0.00	9.50	17.40
01/01/53	03/31/53	0.00	25.95	(0.00)	0.01	25.94	8.54	0.00	8.54	17.40
04/01/53	06/30/53	0.00	25.00	(0.00)	0.01	24.99	7.59	0.00	7.59	17.40
07/01/53	09/30/53	0.00	24.04	(0.00)	0.01	24.02	6.63	0.00	6.63	17.39
10/01/53	12/31/53	0.00	23.07	(0.00)	0.01	23.06	5.67	0.00	5.67	17.39
01/01/54	03/31/54	0.00	22.11	(0.00)	0.01	22.10	4.71	0.00	4.71	17.39
04/01/54	06/30/54	0.00	21.15	(0.00)	0.01	21.14	3.76	0.00	3.76	17.38
07/01/54	09/30/54	0.00	20.19	(0.00)	0.01	20.18	2.80	0.00	2.80	17.38
10/01/54	12/31/54	0.00	19.23	(0.00)	0.01	19.22	1.84	0.00	1.84	17.38
01/01/55	03/31/55	0.00	18.27	(0.00)	0.01	18.26	0.88	0.00	0.88	17.38
04/01/55	06/30/55	0.00	17.31	(0.00)	0.01	17.30	(0.07)	(0.07)	0.00	17.30
07/01/55	09/30/55	0.00	16.35	(0.00)	0.01	16.34	(1.03)	(0.96)	0.00	16.34
10/01/55	12/31/55	0.00	15.38	(0.00)	0.01	15.37	(2.00)	(0.96)	0.00	15.37
01/01/56	03/31/56	0.00	14.42	(0.00)	0.01	14.41	(2.95)	(0.96)	0.00	14.41
04/01/56	06/30/56	0.00	13.47	(0.00)	0.01	13.46	(3.91)	(0.95)	0.00	13.46
07/01/56	09/30/56	0.00	12.51	(0.00)	0.01	12.50	(4.86)	(0.96)	0.00	12.50
10/01/56	12/31/56	0.00	11.54	(0.00)	0.01	11.53	(5.83)	(0.96)	0.00	11.53
01/01/57	03/31/57	0.00	10.58	(0.00)	0.01	10.57	(6.79)	(0.96)	0.00	10.57
04/01/57	06/30/57	0.00	9.62	(0.00)	0.01	9.61	(7.74)	(0.95)	0.00	9.61
07/01/57	09/30/57	0.00	8.66	(0.00)	0.01	8.65	(8.70)	(0.96)	0.00	8.65
10/01/57	12/31/57	0.00	7.70	(0.00)	0.01	7.69	(9.66)	(0.96)	0.00	7.69
01/01/58	03/31/58	0.00	6.74	(0.00)	0.01	6.73	(10.62)	(0.96)	0.00	6.73
04/01/58	06/30/58	0.00	5.78	(0.00)	0.01	5.77	(11.57)	(0.95)	0.00	5.77
07/01/58	09/30/58	0.00	4.82	(0.00)	0.01	4.81	(12.53)	(0.96)	0.00	4.81
10/01/58	12/31/58	0.00	3.86	(0.00)	0.01	3.85	(13.49)	(0.96)	0.00	3.85
01/01/59	03/31/59	0.00	2.89	(0.00)	0.01	2.89	(14.45)	(0.96)	0.00	2.89
04/01/59	06/30/59	0.00	1.94	(0.00)	0.01	1.93	(15.40)	(0.95)	0.00	1.93
07/01/59	09/30/59	0.00	1.10	(0.00)	0.00	1.10	(16.24)	(0.83)	0.00	1.10
10/01/59	12/31/59	0.00	0.48	(0.00)	0.00	0.47	(16.86)	(0.63)	0.00	0.47
01/01/60	03/31/60	0.00	0.12	(0.00)	0.00	0.12	(17.22)	(0.36)	0.00	0.12
04/01/60	06/30/60	0.00	(0.00)	(0.00)	0.00	(0.00)	(17.34)	(0.12)	(0.00)	0.00
TOTAL		1,850.94	12,356.15	1,620.46	114.74	12,471.89	9,694.48	(17.34)	9,893.74	2,578.15

Notes:

- (3) = Table A1, (1b) x [ Table C5\_2, (6) - Table C5\_2, (7) ]
- (4) = Table A1, (1a) x Table A1, (3) x [ Table C5\_2, (8) - Table C5\_1, (13) ]
- (5) = Table C4, (7)
- (6) = Table C2\_7, (13), DTA allocated to the model time periods.
- (7) = (3) + (4) - (5) - (6)
- (8) = Table C1, (14), cumulative
- (9) = [ (8) - (10) ] - (9)<sub>t-1</sub>, cumulative
- (10) = min [ max ( 0, (8) ), (7) ]
- (11) = (7) - (10)

**TABLE C4: ADMITTED PREMIUM RECEIVABLES**

TIME INTERVAL		CUMULATIVE		COLLECTED PREMIUM MINUS PRIOR PERIOD EARNED PREMIUM (5)	NONADMITTED PREMIUM RECEIVABLES (6)	ADMITTED PREMIUM RECEIVABLES (7)
		EARNED PREMIUM NET (3)	COLLECTED PREMIUM NET (4)			
FROM (1)	TO (2)					
07/01/23	09/30/23	0.00	0.00	0.00	0.00	0.00
10/01/23	12/31/23	0.00	0.00	0.00	0.00	0.00
01/01/24	03/31/24	0.00	0.00	0.00	0.00	0.00
04/01/24	06/30/24	0.00	5.40	5.40	0.00	(5.40)
07/01/24	09/30/24	30.89	59.16	59.16	0.00	167.25
10/01/24	12/31/24	113.94	176.18	145.29	0.00	256.47
01/01/25	03/31/25	262.94	356.23	242.29	0.00	348.12
04/01/25	06/30/25	468.72	555.27	292.32	0.00	390.71
07/01/25	09/30/25	674.32	719.97	251.25	0.00	226.01
10/01/25	12/31/25	829.04	818.51	144.19	0.00	127.46
01/01/26	03/31/26	916.53	871.21	42.17	0.00	74.76
04/01/26	06/30/26	945.98	899.49	(17.04)	15.41	31.08
07/01/26	09/30/26	945.98	920.40	(25.58)	23.13	2.45
10/01/26	12/31/26	945.98	934.76	(11.22)	10.15	1.07
01/01/27	03/31/27	945.98	941.90	(4.07)	3.68	0.39
04/01/27	06/30/27	945.98	945.05	(0.92)	0.84	0.09
07/01/27	09/30/27	945.98	945.98	0.00	0.00	(0.00)
10/01/27	12/31/27	945.98	945.98	0.00	0.00	(0.00)
01/01/28	03/31/28	945.98	945.98	0.00	0.00	(0.00)
04/01/28	06/30/28	945.98	945.98	0.00	0.00	(0.00)
07/01/28	09/30/28	945.98	945.98	0.00	0.00	(0.00)
10/01/28	12/31/28	945.98	945.98	0.00	0.00	(0.00)
01/01/29	03/31/29	945.98	945.98	0.00	0.00	(0.00)
04/01/29	06/30/29	945.98	945.98	0.00	0.00	(0.00)
07/01/29	09/30/29	945.98	945.98	0.00	0.00	(0.00)
10/01/29	12/31/29	945.98	945.98	0.00	0.00	(0.00)
01/01/30	03/31/30	945.98	945.98	0.00	0.00	(0.00)
04/01/30	06/30/30	945.98	945.98	0.00	0.00	(0.00)
07/01/30	09/30/30	945.98	945.98	0.00	0.00	(0.00)
10/01/30	12/31/30	945.98	945.98	0.00	0.00	(0.00)
01/01/31	03/31/31	945.98	945.98	0.00	0.00	(0.00)
04/01/31	06/30/31	945.98	945.98	0.00	0.00	(0.00)
07/01/31	09/30/31	945.98	945.98	0.00	0.00	(0.00)
10/01/31	12/31/31	945.98	945.98	0.00	0.00	(0.00)
01/01/32	03/31/32	945.98	945.98	0.00	0.00	(0.00)
04/01/32	06/30/32	945.98	945.98	0.00	0.00	(0.00)
07/01/32	09/30/32	945.98	945.98	0.00	0.00	(0.00)
10/01/32	12/31/32	945.98	945.98	0.00	0.00	(0.00)
01/01/33	03/31/33	945.98	945.98	0.00	0.00	(0.00)
04/01/33	06/30/33	945.98	945.98	0.00	0.00	(0.00)
07/01/33	09/30/33	945.98	945.98	0.00	0.00	(0.00)
10/01/33	12/31/33	945.98	945.98	0.00	0.00	(0.00)
01/01/34	03/31/34	945.98	945.98	0.00	0.00	(0.00)
04/01/34	06/30/34	945.98	945.98	0.00	0.00	(0.00)
07/01/34	09/30/34	945.98	945.98	0.00	0.00	(0.00)
10/01/34	12/31/34	945.98	945.98	0.00	0.00	(0.00)
01/01/35	03/31/35	945.98	945.98	0.00	0.00	(0.00)
04/01/35	06/30/35	945.98	945.98	0.00	0.00	(0.00)
07/01/35	09/30/35	945.98	945.98	0.00	0.00	(0.00)
10/01/35	12/31/35	945.98	945.98	0.00	0.00	(0.00)
01/01/36	03/31/36	945.98	945.98	0.00	0.00	(0.00)
04/01/36	06/30/36	945.98	945.98	0.00	0.00	(0.00)
07/01/36	09/30/36	945.98	945.98	0.00	0.00	(0.00)
10/01/36	12/31/36	945.98	945.98	0.00	0.00	(0.00)
01/01/37	03/31/37	945.98	945.98	0.00	0.00	(0.00)
04/01/37	06/30/37	945.98	945.98	0.00	0.00	(0.00)
07/01/37	09/30/37	945.98	945.98	0.00	0.00	(0.00)
10/01/37	12/31/37	945.98	945.98	0.00	0.00	(0.00)
01/01/38	03/31/38	945.98	945.98	0.00	0.00	(0.00)
04/01/38	06/30/38	945.98	945.98	0.00	0.00	(0.00)
07/01/38	09/30/38	945.98	945.98	0.00	0.00	(0.00)
10/01/38	12/31/38	945.98	945.98	0.00	0.00	(0.00)
01/01/39	03/31/39	945.98	945.98	0.00	0.00	(0.00)
04/01/39	06/30/39	945.98	945.98	0.00	0.00	(0.00)
07/01/39	09/30/39	945.98	945.98	0.00	0.00	(0.00)
10/01/39	12/31/39	945.98	945.98	0.00	0.00	(0.00)
01/01/40	03/31/40	945.98	945.98	0.00	0.00	(0.00)
04/01/40	06/30/40	945.98	945.98	0.00	0.00	(0.00)
07/01/40	09/30/40	945.98	945.98	0.00	0.00	(0.00)
10/01/40	12/31/40	945.98	945.98	0.00	0.00	(0.00)
01/01/41	03/31/41	945.98	945.98	0.00	0.00	(0.00)
04/01/41	06/30/41	945.98	945.98	0.00	0.00	(0.00)
07/01/41	09/30/41	945.98	945.98	0.00	0.00	(0.00)
10/01/41	12/31/41	945.98	945.98	0.00	0.00	(0.00)
01/01/42	03/31/42	945.98	945.98	0.00	0.00	(0.00)
04/01/42	06/30/42	945.98	945.98	0.00	0.00	(0.00)
07/01/42	09/30/42	945.98	945.98	0.00	0.00	(0.00)
10/01/42	12/31/42	945.98	945.98	0.00	0.00	(0.00)
01/01/43	03/31/43	945.98	945.98	0.00	0.00	(0.00)
04/01/43	06/30/43	945.98	945.98	0.00	0.00	(0.00)
07/01/43	09/30/43	945.98	945.98	0.00	0.00	(0.00)

**TABLE C4: ADMITTED PREMIUM RECEIVABLES**

TIME INTERVAL		CUMULATIVE		COLLECTED PREMIUM MINUS PRIOR PERIOD EARNED PREMIUM (5)	NONADMITTED PREMIUM RECEIVABLES (6)	ADMITTED PREMIUM RECEIVABLES (7)
		EARNED PREMIUM NET (3)	COLLECTED PREMIUM NET (4)			
FROM (1)	TO (2)					
10/01/43	12/31/43	945.98	945.98	0.00	0.00	(0.00)
01/01/44	03/31/44	945.98	945.98	0.00	0.00	(0.00)
04/01/44	06/30/44	945.98	945.98	0.00	0.00	(0.00)
07/01/44	09/30/44	945.98	945.98	0.00	0.00	(0.00)
10/01/44	12/31/44	945.98	945.98	0.00	0.00	(0.00)
01/01/45	03/31/45	945.98	945.98	0.00	0.00	(0.00)
04/01/45	06/30/45	945.98	945.98	0.00	0.00	(0.00)
07/01/45	09/30/45	945.98	945.98	0.00	0.00	(0.00)
10/01/45	12/31/45	945.98	945.98	0.00	0.00	(0.00)
01/01/46	03/31/46	945.98	945.98	0.00	0.00	(0.00)
04/01/46	06/30/46	945.98	945.98	0.00	0.00	(0.00)
07/01/46	09/30/46	945.98	945.98	0.00	0.00	(0.00)
10/01/46	12/31/46	945.98	945.98	0.00	0.00	(0.00)
01/01/47	03/31/47	945.98	945.98	0.00	0.00	(0.00)
04/01/47	06/30/47	945.98	945.98	0.00	0.00	(0.00)
07/01/47	09/30/47	945.98	945.98	0.00	0.00	(0.00)
10/01/47	12/31/47	945.98	945.98	0.00	0.00	(0.00)
01/01/48	03/31/48	945.98	945.98	0.00	0.00	(0.00)
04/01/48	06/30/48	945.98	945.98	0.00	0.00	(0.00)
07/01/48	09/30/48	945.98	945.98	0.00	0.00	(0.00)
10/01/48	12/31/48	945.98	945.98	0.00	0.00	(0.00)
01/01/49	03/31/49	945.98	945.98	0.00	0.00	(0.00)
04/01/49	06/30/49	945.98	945.98	0.00	0.00	(0.00)
07/01/49	09/30/49	945.98	945.98	0.00	0.00	(0.00)
10/01/49	12/31/49	945.98	945.98	0.00	0.00	(0.00)
01/01/50	03/31/50	945.98	945.98	0.00	0.00	(0.00)
04/01/50	06/30/50	945.98	945.98	0.00	0.00	(0.00)
07/01/50	09/30/50	945.98	945.98	0.00	0.00	(0.00)
10/01/50	12/31/50	945.98	945.98	0.00	0.00	(0.00)
01/01/51	03/31/51	945.98	945.98	0.00	0.00	(0.00)
04/01/51	06/30/51	945.98	945.98	0.00	0.00	(0.00)
07/01/51	09/30/51	945.98	945.98	0.00	0.00	(0.00)
10/01/51	12/31/51	945.98	945.98	0.00	0.00	(0.00)
01/01/52	03/31/52	945.98	945.98	0.00	0.00	(0.00)
04/01/52	06/30/52	945.98	945.98	0.00	0.00	(0.00)
07/01/52	09/30/52	945.98	945.98	0.00	0.00	(0.00)
10/01/52	12/31/52	945.98	945.98	0.00	0.00	(0.00)
01/01/53	03/31/53	945.98	945.98	0.00	0.00	(0.00)
04/01/53	06/30/53	945.98	945.98	0.00	0.00	(0.00)
07/01/53	09/30/53	945.98	945.98	0.00	0.00	(0.00)
10/01/53	12/31/53	945.98	945.98	0.00	0.00	(0.00)
01/01/54	03/31/54	945.98	945.98	0.00	0.00	(0.00)
04/01/54	06/30/54	945.98	945.98	0.00	0.00	(0.00)
07/01/54	09/30/54	945.98	945.98	0.00	0.00	(0.00)
10/01/54	12/31/54	945.98	945.98	0.00	0.00	(0.00)
01/01/55	03/31/55	945.98	945.98	0.00	0.00	(0.00)
04/01/55	06/30/55	945.98	945.98	0.00	0.00	(0.00)
07/01/55	09/30/55	945.98	945.98	0.00	0.00	(0.00)
10/01/55	12/31/55	945.98	945.98	0.00	0.00	(0.00)
01/01/56	03/31/56	945.98	945.98	0.00	0.00	(0.00)
04/01/56	06/30/56	945.98	945.98	0.00	0.00	(0.00)
07/01/56	09/30/56	945.98	945.98	0.00	0.00	(0.00)
10/01/56	12/31/56	945.98	945.98	0.00	0.00	(0.00)
01/01/57	03/31/57	945.98	945.98	0.00	0.00	(0.00)
04/01/57	06/30/57	945.98	945.98	0.00	0.00	(0.00)
07/01/57	09/30/57	945.98	945.98	0.00	0.00	(0.00)
10/01/57	12/31/57	945.98	945.98	0.00	0.00	(0.00)
01/01/58	03/31/58	945.98	945.98	0.00	0.00	(0.00)
04/01/58	06/30/58	945.98	945.98	0.00	0.00	(0.00)
07/01/58	09/30/58	945.98	945.98	0.00	0.00	(0.00)
10/01/58	12/31/58	945.98	945.98	0.00	0.00	(0.00)
01/01/59	03/31/59	945.98	945.98	0.00	0.00	(0.00)
04/01/59	06/30/59	945.98	945.98	0.00	0.00	(0.00)
07/01/59	09/30/59	945.98	945.98	0.00	0.00	(0.00)
10/01/59	12/31/59	945.98	945.98	0.00	0.00	(0.00)
01/01/60	03/31/60	945.98	945.98	0.00	0.00	(0.00)
04/01/60	06/30/60	945.98	945.98	0.00	0.00	(0.00)

Notes:

- (3) = Table A1, (1b) x Table C5\_2, (7)
- (4) = Table A1, (1b) x Table C5\_1, (12)
- (5) = (4) - (3)<sub>t-1</sub>, t-1 implies that is nonadmitted if not received in 90 days.
- (6) = max{ 0, -(5) x [ 1.0 - Table A1, (4) x Table A1, (1a) / Table A1, (1b) ] }
- (7) = Table A1, (1b) x [ Table C5\_2, (6) - Table C5\_1, (12) ] - (6)

TABLE C5\_1: POLICYHOLDER SUPPLIED - UNDERWRITING CASH FLOW PATTERNS

TIME INTERVAL		COLLECTED PREMIUM	LOSS & LAE PAYOUT	COMMISS. & BROKER.	GENERAL EXPENSES	OTHER ACQ. EXPENSES	PREMIUM TAXES	MISC. AND OTHER TAXES	REINS. EXPENSES	PREMIUM DISCOUNT	CUMULATIVE	
FROM	TO										COLLECTED PREMIUM	LOSS & LAE PAYOUT
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
07/01/23	09/30/23	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
10/01/23	12/31/23	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
01/01/24	03/31/24	0.00%	0.00%	0.0000%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
04/01/24	06/30/24	0.57%	0.00%	0.5710%	0.00%	3.99%	0.00%	0.00%	0.00%	0.57%	0.57%	0.00%
07/01/24	09/30/24	5.68%	0.71%	5.6833%	13.60%	23.58%	0.00%	23.93%	23.93%	5.68%	6.25%	0.71%
10/01/24	12/31/24	12.37%	1.91%	12.3700%	15.29%	22.96%	23.93%	21.80%	21.80%	12.37%	18.62%	2.62%
01/01/25	03/31/25	19.03%	3.43%	19.0325%	22.24%	28.19%	21.80%	28.72%	28.72%	19.03%	37.66%	6.04%
04/01/25	06/30/25	21.04%	4.73%	21.0407%	23.65%	21.29%	28.72%	25.54%	25.54%	21.04%	58.70%	10.78%
07/01/25	09/30/25	17.41%	5.52%	17.4106%	10.87%	0.00%	25.54%	0.00%	0.00%	17.41%	76.11%	16.29%
10/01/25	12/31/25	10.42%	5.68%	10.4175%	8.18%	0.00%	0.00%	0.00%	0.00%	10.42%	86.53%	21.98%
01/01/26	03/31/26	5.57%	5.83%	5.5710%	4.62%	0.00%	0.00%	0.00%	0.00%	5.57%	92.10%	27.80%
04/01/26	06/30/26	2.99%	5.95%	2.9887%	1.56%	0.00%	0.00%	0.00%	0.00%	2.99%	95.09%	33.75%
07/01/26	09/30/26	2.21%	5.86%	2.2111%	0.00%	0.00%	0.00%	0.00%	0.00%	2.21%	97.30%	39.61%
10/01/26	12/31/26	1.52%	5.55%	1.5174%	0.00%	0.00%	0.00%	0.00%	0.00%	1.52%	98.81%	45.15%
01/01/27	03/31/27	0.76%	5.08%	0.7556%	0.00%	0.00%	0.00%	0.00%	0.00%	0.76%	99.57%	50.23%
04/01/27	06/30/27	0.33%	4.68%	0.3329%	0.00%	0.00%	0.00%	0.00%	0.00%	0.33%	99.90%	54.91%
07/01/27	09/30/27	0.10%	4.33%	0.0978%	0.00%	0.00%	0.00%	0.00%	0.00%	0.10%	100.00%	59.25%
10/01/27	12/31/27	0.00%	4.06%	0.0000%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	63.31%
01/01/28	03/31/28	0.00%	3.67%	0.0000%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	66.98%
04/01/28	06/30/28	0.00%	3.32%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	70.30%
07/01/28	09/30/28	0.00%	2.97%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	73.27%
10/01/28	12/31/28	0.00%	2.65%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	75.92%
01/01/29	03/31/29	0.00%	2.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	78.12%
04/01/29	06/30/29	0.00%	1.82%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	79.94%
07/01/29	09/30/29	0.00%	1.54%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	81.47%
10/01/29	12/31/29	0.00%	1.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	82.85%
01/01/30	03/31/30	0.00%	1.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	84.01%
04/01/30	06/30/30	0.00%	0.97%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	84.98%
07/01/30	09/30/30	0.00%	0.82%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	85.79%
10/01/30	12/31/30	0.00%	0.72%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	86.51%
01/01/31	03/31/31	0.00%	0.58%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	87.09%
04/01/31	06/30/31	0.00%	0.47%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	87.56%
07/01/31	09/30/31	0.00%	0.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	87.94%
10/01/31	12/31/31	0.00%	0.34%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	88.27%
01/01/32	03/31/32	0.00%	0.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	88.55%
04/01/32	06/30/32	0.00%	0.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	88.77%
07/01/32	09/30/32	0.00%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	88.96%
10/01/32	12/31/32	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	89.14%
01/01/33	03/31/33	0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	89.31%
04/01/33	06/30/33	0.00%	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	89.47%
07/01/33	09/30/33	0.00%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	89.62%
10/01/33	12/31/33	0.00%	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	89.76%
01/01/34	03/31/34	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	89.88%
04/01/34	06/30/34	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	89.99%
07/01/34	09/30/34	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.08%
10/01/34	12/31/34	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.18%
01/01/35	03/31/35	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.28%
04/01/35	06/30/35	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.37%
07/01/35	09/30/35	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.46%
10/01/35	12/31/35	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.54%
01/01/36	03/31/36	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.63%
04/01/36	06/30/36	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.71%
07/01/36	09/30/36	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.80%
10/01/36	12/31/36	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.89%
01/01/37	03/31/37	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.99%
04/01/37	06/30/37	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.10%
07/01/37	09/30/37	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.21%
10/01/37	12/31/37	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.31%
01/01/38	03/31/38	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.39%
04/01/38	06/30/38	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.47%
07/01/38	09/30/38	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.54%
10/01/38	12/31/38	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.60%
01/01/39	03/31/39	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.66%
04/01/39	06/30/39	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.72%
07/01/39	09/30/39	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.78%
10/01/39	12/31/39	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.83%
01/01/40	03/31/40	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.88%
04/01/40	06/30/40	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.92%
07/01/40	09/30/40	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.96%
10/01/40	12/31/40	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.00%
01/01/41	03/31/41	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.04%
04/01/41	06/30/41	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.08%
07/01/41	09/30/41	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.12%
10/01/41	12/31/41	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.18%
01/01/42	03/31/42	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.24%
04/01/42	06/30/42	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.30%
07/01/42	09/30/42	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.37%
10/01/42	12/31/42	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.44%
01/01/43	03/31/43	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.49%
04/01/43	06/30/43	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.54%
07/01/43	09/30/43	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.58%
10/01/43	12/31/43	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.63%
01/01/44	03/31/44	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.68%

TABLE C5\_1: POLICYHOLDER SUPPLIED - UNDERWRITING CASH FLOW PATTERNS

TIME INTERVAL		COLLECTED PREMIUM	LOSS & LAE PAYOUT	COMMISS. & BROKER.	GENERAL EXPENSES	OTHER ACQ. EXPENSES	PREMIUM TAXES	MISC. AND OTHER TAXES	REINS. EXPENSES	PREMIUM DISCOUNT	CUMULATIVE	
FROM	TO										COLLECTED PREMIUM	LOSS & LAE PAYOUT
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
04/01/44	06/30/44	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.73%
07/01/44	09/30/44	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.79%
10/01/44	12/31/44	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.84%
01/01/45	03/31/45	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.90%
04/01/45	06/30/45	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.96%
07/01/45	09/30/45	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.02%
10/01/45	12/31/45	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.10%
01/01/46	03/31/46	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.20%
04/01/46	06/30/46	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.32%
07/01/46	09/30/46	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.44%
10/01/46	12/31/46	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.57%
01/01/47	03/31/47	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.69%
04/01/47	06/30/47	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.81%
07/01/47	09/30/47	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.94%
10/01/47	12/31/47	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	94.06%
01/01/48	03/31/48	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	94.18%
04/01/48	06/30/48	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	94.31%
07/01/48	09/30/48	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	94.43%
10/01/48	12/31/48	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	94.56%
01/01/49	03/31/49	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	94.68%
04/01/49	06/30/49	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	94.80%
07/01/49	09/30/49	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	94.93%
10/01/49	12/31/49	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	95.05%
01/01/50	03/31/50	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	95.17%
04/01/50	06/30/50	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	95.30%
07/01/50	09/30/50	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	95.42%
10/01/50	12/31/50	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	95.55%
01/01/51	03/31/51	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	95.67%
04/01/51	06/30/51	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	95.79%
07/01/51	09/30/51	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	95.92%
10/01/51	12/31/51	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	96.04%
01/01/52	03/31/52	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	96.16%
04/01/52	06/30/52	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	96.29%
07/01/52	09/30/52	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	96.41%
10/01/52	12/31/52	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	96.53%
01/01/53	03/31/53	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	96.66%
04/01/53	06/30/53	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	96.78%
07/01/53	09/30/53	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	96.91%
10/01/53	12/31/53	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	97.03%
01/01/54	03/31/54	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	97.15%
04/01/54	06/30/54	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	97.28%
07/01/54	09/30/54	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	97.40%
10/01/54	12/31/54	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	97.52%
01/01/55	03/31/55	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	97.65%
04/01/55	06/30/55	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	97.77%
07/01/55	09/30/55	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	97.89%
10/01/55	12/31/55	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	98.02%
01/01/56	03/31/56	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	98.14%
04/01/56	06/30/56	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	98.27%
07/01/56	09/30/56	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	98.39%
10/01/56	12/31/56	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	98.51%
01/01/57	03/31/57	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	98.64%
04/01/57	06/30/57	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	98.76%
07/01/57	09/30/57	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	98.88%
10/01/57	12/31/57	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.01%
01/01/58	03/31/58	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.13%
04/01/58	06/30/58	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.26%
07/01/58	09/30/58	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.38%
10/01/58	12/31/58	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.50%
01/01/59	03/31/59	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.63%
04/01/59	06/30/59	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.75%
07/01/59	09/30/59	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.86%
10/01/59	12/31/59	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.94%
01/01/60	03/31/60	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.98%
04/01/60	06/30/60	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
TOTAL		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		

Notes:  
 (3): The premium collection pattern for a single policy from Section VII-G, Exhibit 1, converted to a full policy year basis.  
 (4): The loss & LAE payout pattern for a single policy from Section VII-I, Exhibit 1, converted to a full policy year basis.  
 (5), (11) = (3)  
 (6) = 0.5 x Table C5\_2, (3) + 0.5 x Table C5\_2, (4)  
 (7) = 1/6 x Table C5\_2, (3)<sub>t+1</sub> + 5/6 x Table C5\_2, (3)<sub>t</sub>  
 (8) = Table C5\_2, (3)<sub>t-1</sub>  
 (9), (10) = Table C5\_2, (3)  
 (12) = (3), cumulative  
 (13) = (4), cumulative

**TABLE C5\_2: ADDITIONAL PREMIUM AND LOSS PATTERNS**

TIME INTERVAL		WRITTEN PREMIUM (3)	EARNED PREMIUM (4)	LOSS & LAE INCURRED (5)	CUMULATIVE		
FROM (1)	TO (2)				WRITTEN PREMIUM (6)	EARNED PREMIUM (7)	LOSS & LAE INCURRED (8)
07/01/23	09/30/23		0.00%	0.00%	0.00%	0.00%	0.00%
10/01/23	12/31/23		0.00%	0.00%	0.00%	0.00%	0.00%
01/01/24	03/31/24		0.00%	0.00%	0.00%	0.00%	0.00%
04/01/24	06/30/24		0.00%	0.00%	0.00%	0.00%	0.00%
07/01/24	09/30/24	23.93%	3.27%	3.27%	23.93%	3.27%	3.27%
10/01/24	12/31/24	21.80%	8.78%	8.78%	45.74%	12.04%	12.04%
01/01/25	03/31/25	28.72%	15.75%	15.75%	74.46%	27.80%	27.80%
04/01/25	06/30/25	25.54%	21.75%	21.75%	100.00%	49.55%	49.55%
07/01/25	09/30/25		21.73%	21.73%	100.00%	71.28%	71.28%
10/01/25	12/31/25		16.36%	16.36%	100.00%	87.64%	87.64%
01/01/26	03/31/26		9.25%	9.25%	100.00%	96.89%	96.89%
04/01/26	06/30/26		3.11%	3.11%	100.00%	100.00%	100.00%
07/01/26	09/30/26		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/26	12/31/26		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/27	03/31/27		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/27	06/30/27		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/27	09/30/27		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/27	12/31/27		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/28	03/31/28		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/28	06/30/28		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/28	09/30/28		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/28	12/31/28		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/29	03/31/29		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/29	06/30/29		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/29	09/30/29		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/29	12/31/29		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/30	03/31/30		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/30	06/30/30		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/30	09/30/30		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/30	12/31/30		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/31	03/31/31		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/31	06/30/31		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/31	09/30/31		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/31	12/31/31		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/32	03/31/32		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/32	06/30/32		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/32	09/30/32		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/32	12/31/32		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/33	03/31/33		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/33	06/30/33		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/33	09/30/33		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/33	12/31/33		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/34	03/31/34		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/34	06/30/34		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/34	09/30/34		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/34	12/31/34		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/35	03/31/35		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/35	06/30/35		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/35	09/30/35		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/35	12/31/35		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/36	03/31/36		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/36	06/30/36		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/36	09/30/36		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/36	12/31/36		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/37	03/31/37		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/37	06/30/37		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/37	09/30/37		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/37	12/31/37		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/38	03/31/38		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/38	06/30/38		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/38	09/30/38		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/38	12/31/38		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/39	03/31/39		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/39	06/30/39		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/39	09/30/39		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/39	12/31/39		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/40	03/31/40		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/40	06/30/40		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/40	09/30/40		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/40	12/31/40		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/41	03/31/41		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/41	06/30/41		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/41	09/30/41		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/41	12/31/41		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/42	03/31/42		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/42	06/30/42		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/42	09/30/42		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/42	12/31/42		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/43	03/31/43		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/43	06/30/43		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/43	09/30/43		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/43	12/31/43		0.00%	0.00%	100.00%	100.00%	100.00%

**TABLE C5\_2: ADDITIONAL PREMIUM AND LOSS PATTERNS**

TIME INTERVAL		WRITTEN PREMIUM (3)	EARNED PREMIUM (4)	LOSS & LAE INCURRED (5)	CUMULATIVE		
FROM (1)	TO (2)				WRITTEN PREMIUM (6)	EARNED PREMIUM (7)	LOSS & LAE INCURRED (8)
01/01/44	03/31/44		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/44	06/30/44		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/44	09/30/44		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/44	12/31/44		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/45	03/31/45		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/45	06/30/45		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/45	09/30/45		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/45	12/31/45		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/46	03/31/46		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/46	06/30/46		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/46	09/30/46		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/46	12/31/46		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/47	03/31/47		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/47	06/30/47		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/47	09/30/47		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/47	12/31/47		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/48	03/31/48		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/48	06/30/48		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/48	09/30/48		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/48	12/31/48		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/49	03/31/49		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/49	06/30/49		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/49	09/30/49		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/49	12/31/49		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/50	03/31/50		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/50	06/30/50		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/50	09/30/50		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/50	12/31/50		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/51	03/31/51		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/51	06/30/51		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/51	09/30/51		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/51	12/31/51		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/52	03/31/52		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/52	06/30/52		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/52	09/30/52		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/52	12/31/52		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/53	03/31/53		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/53	06/30/53		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/53	09/30/53		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/53	12/31/53		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/54	03/31/54		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/54	06/30/54		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/54	09/30/54		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/54	12/31/54		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/55	03/31/55		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/55	06/30/55		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/55	09/30/55		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/55	12/31/55		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/56	03/31/56		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/56	06/30/56		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/56	09/30/56		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/56	12/31/56		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/57	03/31/57		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/57	06/30/57		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/57	09/30/57		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/57	12/31/57		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/58	03/31/58		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/58	06/30/58		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/58	09/30/58		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/58	12/31/58		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/59	03/31/59		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/59	06/30/59		0.00%	0.00%	100.00%	100.00%	100.00%
07/01/59	09/30/59		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/59	12/31/59		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/60	03/31/60		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/60	06/30/60		0.00%	0.00%	100.00%	100.00%	100.00%
TOTAL		100.00%	100.00%	100.00%			

Notes:

- (3): Based on Unit Statistical Data.
- (4): Single policy earned premium is earned uniformly through the one year policy term and then converted to a policy year basis.
- (5): We assume that the loss & LAE incurred pattern coincides with the earned premium pattern.
- (6) = (3), cumulative
- (7) = (4), cumulative
- (8) = (5), cumulative

TABLE D1: CAPITAL NEEDED FROM INVESTORS

TIME INTERVAL		UNEARNED PREMIUM RESERVES (3)	LOSS & LAE RESERVES (4)	TOTAL RESERVES (5)	RESERVES TO SURPLUS RATIO (6)	IMPLIED SURPLUS (7)	RESERVES FUNDED BY INVESTORS (8)	CAPITAL NEEDED FROM INVESTORS (9)
FROM (1)	TO (2)							
07/01/23	09/30/23	0.00	0.00	0.00	1.55	0.00	0.00	0.00
10/01/23	12/31/23	0.00	0.00	0.00	1.55	0.00	0.00	0.00
01/01/24	03/31/24	0.00	0.00	0.00	1.55	0.00	0.00	0.00
04/01/24	06/30/24	0.00	0.00	0.00	1.55	0.00	4.03	4.03
07/01/24	09/30/24	195.52	19.85	215.37	1.55	139.26	9.99	149.25
10/01/24	12/31/24	318.72	73.20	391.92	1.55	253.42	25.12	278.54
01/01/25	03/31/25	441.40	168.93	610.33	1.55	394.65	41.70	436.35
04/01/25	06/30/25	477.26	301.13	778.39	1.55	503.32	50.73	554.05
07/01/25	09/30/25	271.66	427.07	698.73	1.55	451.81	42.73	494.54
10/01/25	12/31/25	116.94	509.95	626.89	1.55	405.36	30.62	435.98
01/01/26	03/31/26	29.45	536.52	565.97	1.55	365.97	22.30	388.27
04/01/26	06/30/26	0.00	514.51	514.51	1.55	332.69	35.88	368.57
07/01/26	09/30/26	0.00	469.03	469.03	1.55	303.29	45.53	348.82
10/01/26	12/31/26	0.00	425.96	425.96	1.55	275.44	33.86	309.29
01/01/27	03/31/27	0.00	386.50	386.50	1.55	249.92	27.43	277.35
04/01/27	06/30/27	0.00	350.17	350.17	1.55	226.43	24.24	250.67
07/01/27	09/30/27	0.00	316.51	316.51	1.55	204.66	22.85	227.51
10/01/27	12/31/27	0.00	284.95	284.95	1.55	184.26	22.21	206.46
01/01/28	03/31/28	0.00	256.48	256.48	1.55	165.84	21.85	187.70
04/01/28	06/30/28	0.00	230.68	230.68	1.55	149.16	21.50	170.66
07/01/28	09/30/28	0.00	207.61	207.61	1.55	134.24	21.15	155.39
10/01/28	12/31/28	0.00	187.03	187.03	1.55	120.94	20.79	141.73
01/01/29	03/31/29	0.00	169.92	169.92	1.55	109.87	20.63	130.50
04/01/29	06/30/29	0.00	155.81	155.81	1.55	100.75	20.46	121.21
07/01/29	09/30/29	0.00	143.88	143.88	1.55	93.04	20.29	113.33
10/01/29	12/31/29	0.00	133.18	133.18	1.55	86.12	20.13	106.25
01/01/30	03/31/30	0.00	124.20	124.20	1.55	80.31	20.01	100.32
04/01/30	06/30/30	0.00	116.69	116.69	1.55	75.45	19.90	95.35
07/01/30	09/30/30	0.00	110.35	110.35	1.55	71.36	19.79	91.14
10/01/30	12/31/30	0.00	104.78	104.78	1.55	67.75	19.67	87.43
01/01/31	03/31/31	0.00	100.26	100.26	1.55	64.83	19.57	84.40
04/01/31	06/30/31	0.00	96.64	96.64	1.55	62.49	19.48	81.97
07/01/31	09/30/31	0.00	93.68	93.68	1.55	60.58	19.38	79.96
10/01/31	12/31/31	0.00	91.07	91.07	1.55	58.89	19.28	78.17
01/01/32	03/31/32	0.00	88.94	88.94	1.55	57.51	19.20	76.71
04/01/32	06/30/32	0.00	87.22	87.22	1.55	56.40	19.12	75.52
07/01/32	09/30/32	0.00	85.74	85.74	1.55	55.44	19.04	74.48
10/01/32	12/31/32	0.00	84.32	84.32	1.55	54.53	18.96	73.48
01/01/33	03/31/33	0.00	83.00	83.00	1.55	53.67	18.90	72.57
04/01/33	06/30/33	0.00	81.75	81.75	1.55	52.86	18.85	71.71
07/01/33	09/30/33	0.00	80.60	80.60	1.55	52.12	18.79	70.91
10/01/33	12/31/33	0.00	79.53	79.53	1.55	51.43	18.74	70.17
01/01/34	03/31/34	0.00	78.60	78.60	1.55	50.82	18.68	69.50
04/01/34	06/30/34	0.00	77.77	77.77	1.55	50.29	18.62	68.91
07/01/34	09/30/34	0.00	77.01	77.01	1.55	49.80	18.57	68.36
10/01/34	12/31/34	0.00	76.26	76.26	1.55	49.31	18.51	67.82
01/01/35	03/31/35	0.00	75.53	75.53	1.55	48.84	18.46	67.29
04/01/35	06/30/35	0.00	74.82	74.82	1.55	48.38	18.40	66.78
07/01/35	09/30/35	0.00	74.12	74.12	1.55	47.93	18.34	66.27
10/01/35	12/31/35	0.00	73.44	73.44	1.55	47.49	18.29	65.78
01/01/36	03/31/36	0.00	72.78	72.78	1.55	47.06	18.24	65.30
04/01/36	06/30/36	0.00	72.15	72.15	1.55	46.65	18.18	64.83
07/01/36	09/30/36	0.00	71.49	71.49	1.55	46.23	18.13	64.35
10/01/36	12/31/36	0.00	70.77	70.77	1.55	45.76	18.07	63.83
01/01/37	03/31/37	0.00	69.98	69.98	1.55	45.25	18.02	63.27
04/01/37	06/30/37	0.00	69.13	69.13	1.55	44.70	17.97	62.67
07/01/37	09/30/37	0.00	68.29	68.29	1.55	44.16	17.93	62.08
10/01/37	12/31/37	0.00	67.52	67.52	1.55	43.66	17.88	61.54
01/01/38	03/31/38	0.00	66.85	66.85	1.55	43.23	17.83	61.06
04/01/38	06/30/38	0.00	66.26	66.26	1.55	42.85	17.79	60.63
07/01/38	09/30/38	0.00	65.73	65.73	1.55	42.50	17.74	60.24
10/01/38	12/31/38	0.00	65.22	65.22	1.55	42.17	17.69	59.87
01/01/39	03/31/39	0.00	64.74	64.74	1.55	41.86	17.66	59.52
04/01/39	06/30/39	0.00	64.28	64.28	1.55	41.57	17.62	59.18
07/01/39	09/30/39	0.00	63.85	63.85	1.55	41.29	17.58	58.87
10/01/39	12/31/39	0.00	63.45	63.45	1.55	41.03	17.54	58.57
01/01/40	03/31/40	0.00	63.10	63.10	1.55	40.80	17.53	58.33
04/01/40	06/30/40	0.00	62.78	62.78	1.55	40.60	17.52	58.12
07/01/40	09/30/40	0.00	62.48	62.48	1.55	40.40	17.51	57.91
10/01/40	12/31/40	0.00	62.16	62.16	1.55	40.20	17.51	57.70
01/01/41	03/31/41	0.00	61.85	61.85	1.55	39.99	17.50	57.50
04/01/41	06/30/41	0.00	61.53	61.53	1.55	39.79	17.50	57.29
07/01/41	09/30/41	0.00	61.17	61.17	1.55	39.56	17.50	57.06
10/01/41	12/31/41	0.00	60.77	60.77	1.55	39.29	17.50	56.79
01/01/42	03/31/42	0.00	60.29	60.29	1.55	38.99	17.50	56.48
04/01/42	06/30/42	0.00	59.76	59.76	1.55	38.65	17.50	56.14
07/01/42	09/30/42	0.00	59.23	59.23	1.55	38.30	17.50	55.80
10/01/42	12/31/42	0.00	58.75	58.75	1.55	37.99	17.50	55.48
01/01/43	03/31/43	0.00	58.32	58.32	1.55	37.71	17.49	55.21
04/01/43	06/30/43	0.00	57.95	57.95	1.55	37.47	17.49	54.97
07/01/43	09/30/43	0.00	57.60	57.60	1.55	37.24	17.49	54.74
10/01/43	12/31/43	0.00	57.23	57.23	1.55	37.00	17.49	54.50

**TABLE D1: CAPITAL NEEDED FROM INVESTORS**

TIME INTERVAL		UNEARNED PREMIUM RESERVES (3)	LOSS & LAE RESERVES (4)	TOTAL RESERVES (5)	RESERVES TO SURPLUS RATIO (6)	IMPLIED SURPLUS (7)	RESERVES FUNDED BY INVESTORS (8)	CAPITAL NEEDED FROM INVESTORS (9)
FROM (1)	TO (2)							
01/01/44	03/31/44	0.00	56.84	56.84	1.55	36.75	17.49	54.24
04/01/44	06/30/44	0.00	56.44	56.44	1.55	36.49	17.49	53.98
07/01/44	09/30/44	0.00	56.02	56.02	1.55	36.22	17.49	53.71
10/01/44	12/31/44	0.00	55.59	55.59	1.55	35.95	17.49	53.43
01/01/45	03/31/45	0.00	55.15	55.15	1.55	35.66	17.48	53.15
04/01/45	06/30/45	0.00	54.71	54.71	1.55	35.38	17.48	52.86
07/01/45	09/30/45	0.00	54.19	54.19	1.55	35.04	17.48	52.52
10/01/45	12/31/45	0.00	53.56	53.56	1.55	34.63	17.48	52.11
01/01/46	03/31/46	0.00	52.79	52.79	1.55	34.13	17.47	51.61
04/01/46	06/30/46	0.00	51.90	51.90	1.55	33.56	17.47	51.03
07/01/46	09/30/46	0.00	50.94	50.94	1.55	32.94	17.47	50.40
10/01/46	12/31/46	0.00	49.97	49.97	1.55	32.31	17.46	49.78
01/01/47	03/31/47	0.00	49.01	49.01	1.55	31.69	17.46	49.15
04/01/47	06/30/47	0.00	48.05	48.05	1.55	31.07	17.46	48.53
07/01/47	09/30/47	0.00	47.09	47.09	1.55	30.45	17.46	47.91
10/01/47	12/31/47	0.00	46.13	46.13	1.55	29.83	17.45	47.28
01/01/48	03/31/48	0.00	45.17	45.17	1.55	29.21	17.45	46.66
04/01/48	06/30/48	0.00	44.21	44.21	1.55	28.59	17.45	46.04
07/01/48	09/30/48	0.00	43.25	43.25	1.55	27.97	17.45	45.41
10/01/48	12/31/48	0.00	42.28	42.28	1.55	27.34	17.44	44.78
01/01/49	03/31/49	0.00	41.32	41.32	1.55	26.72	17.44	44.16
04/01/49	06/30/49	0.00	40.37	40.37	1.55	26.10	17.44	43.54
07/01/49	09/30/49	0.00	39.41	39.41	1.55	25.48	17.44	42.92
10/01/49	12/31/49	0.00	38.44	38.44	1.55	24.86	17.43	42.29
01/01/50	03/31/50	0.00	37.48	37.48	1.55	24.24	17.43	41.67
04/01/50	06/30/50	0.00	36.52	36.52	1.55	23.62	17.43	41.04
07/01/50	09/30/50	0.00	35.56	35.56	1.55	23.00	17.42	40.42
10/01/50	12/31/50	0.00	34.60	34.60	1.55	22.37	17.42	39.79
01/01/51	03/31/51	0.00	33.64	33.64	1.55	21.75	17.42	39.17
04/01/51	06/30/51	0.00	32.68	32.68	1.55	21.13	17.42	38.55
07/01/51	09/30/51	0.00	31.72	31.72	1.55	20.51	17.41	37.93
10/01/51	12/31/51	0.00	30.76	30.76	1.55	19.89	17.41	37.30
01/01/52	03/31/52	0.00	29.79	29.79	1.55	19.27	17.41	36.67
04/01/52	06/30/52	0.00	28.84	28.84	1.55	18.65	17.41	36.05
07/01/52	09/30/52	0.00	27.88	27.88	1.55	18.03	17.40	35.43
10/01/52	12/31/52	0.00	26.91	26.91	1.55	17.40	17.40	34.80
01/01/53	03/31/53	0.00	25.95	25.95	1.55	16.78	17.40	34.18
04/01/53	06/30/53	0.00	25.00	25.00	1.55	16.16	17.40	33.56
07/01/53	09/30/53	0.00	24.04	24.04	1.55	15.54	17.39	32.93
10/01/53	12/31/53	0.00	23.07	23.07	1.55	14.92	17.39	32.31
01/01/54	03/31/54	0.00	22.11	22.11	1.55	14.30	17.39	31.68
04/01/54	06/30/54	0.00	21.15	21.15	1.55	13.68	17.38	31.06
07/01/54	09/30/54	0.00	20.19	20.19	1.55	13.06	17.38	30.44
10/01/54	12/31/54	0.00	19.23	19.23	1.55	12.43	17.38	29.81
01/01/55	03/31/55	0.00	18.27	18.27	1.55	11.81	17.38	29.19
04/01/55	06/30/55	0.00	17.31	17.31	1.55	11.19	17.30	28.49
07/01/55	09/30/55	0.00	16.35	16.35	1.55	10.57	16.34	26.91
10/01/55	12/31/55	0.00	15.38	15.38	1.55	9.95	15.37	25.32
01/01/56	03/31/56	0.00	14.42	14.42	1.55	9.33	14.41	23.74
04/01/56	06/30/56	0.00	13.47	13.47	1.55	8.71	13.46	22.16
07/01/56	09/30/56	0.00	12.51	12.51	1.55	8.09	12.50	20.58
10/01/56	12/31/56	0.00	11.54	11.54	1.55	7.46	11.53	18.99
01/01/57	03/31/57	0.00	10.58	10.58	1.55	6.84	10.57	17.41
04/01/57	06/30/57	0.00	9.62	9.62	1.55	6.22	9.61	15.84
07/01/57	09/30/57	0.00	8.66	8.66	1.55	5.60	8.65	14.26
10/01/57	12/31/57	0.00	7.70	7.70	1.55	4.98	7.69	12.66
01/01/58	03/31/58	0.00	6.74	6.74	1.55	4.36	6.73	11.08
04/01/58	06/30/58	0.00	5.78	5.78	1.55	3.74	5.77	9.51
07/01/58	09/30/58	0.00	4.82	4.82	1.55	3.12	4.81	7.93
10/01/58	12/31/58	0.00	3.86	3.86	1.55	2.49	3.85	6.34
01/01/59	03/31/59	0.00	2.89	2.89	1.55	1.87	2.89	4.76
04/01/59	06/30/59	0.00	1.94	1.94	1.55	1.25	1.93	3.19
07/01/59	09/30/59	0.00	1.10	1.10	1.55	0.71	1.10	1.81
10/01/59	12/31/59	0.00	0.48	0.48	1.55	0.31	0.47	0.78
01/01/60	03/31/60	0.00	0.12	0.12	1.55	0.08	0.12	0.20
04/01/60	06/30/60	0.00	0.00	0.00	1.55	0.00	0.00	0.00
TOTAL		1,850.94	12,356.15	14,207.09		9,186.58	2,578.15	11,764.73

Notes:

- (3) = Table A1, (1b) x [ Table C5\_2, (6) - Table C5\_2, (7) ]
- (4) = Table A1, (1a) x Table A1, (3) x [ Table C5\_2, (8) - Table C5\_1, (13) ]
- (5) = (3) + (4)
- (6) = Table A1, (13)
- (7) = (5) / (6)
- (8) = Table C3, (11)
- (9) = (7) + (8)

## **COST OF CAPITAL**

The first step in setting an underwriting profit factor under a rate of return standard is to determine the fair and reasonable return that should be allowed for bearing the risk of underwriting workers' compensation insurance in Massachusetts. In the context of insurance ratemaking, a "fair and reasonable return" has traditionally been interpreted to mean the cost of the equity capital required to support insurance operations.<sup>1</sup> However, in the Decision on 2003 rates, the Commissioner endorsed the use of a weighted average cost of capital that includes the impact of debt capital at the insurance holding company level.<sup>2</sup> To narrow the debate again this year, the WCRIBMA has used a weighted average cost of capital in its derivation of the profit provision.

Calculating the weighted average cost of capital is simply a matter of separately calculating the cost of equity capital and the cost of debt capital, and then using appropriate weights to combine the two estimates.

### **Equity Cost of Capital**

Several methods have been used to estimate the cost of equity capital for a regulated firm or industry. However, it is widely agreed that methods that rely on market data are preferred, on both a theoretical and pragmatic basis, to those that are based on accounting data. Indeed, it is market requirements that suggest use of the term "cost of

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<sup>1</sup> Insurance operating companies typically carry no debt on their balance sheets; that is, the capital of the operating companies is all equity capital.

<sup>2</sup> See, for example, page 52: "We agree that estimates of the cost of capital should reflect debt/equity financing at the holding company level."

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capital," as the phrase refers to the cost to the firm of attracting investment funds in capital markets.

As in the past, the WCRIBMA has relied on the two most prominent market based methodologies to estimate the cost of equity capital for the WCRIBMA: the Discounted Cash Flow (DCF) model and the traditional, single factor Capital Asset Pricing Model (CAPM). These two methods have been widely recognized as the leading approaches for estimating the cost of equity capital in the US economy, and as a result, each method has explicitly been given equal weight in the estimation process. Since the 2016 rate filing, the WCRIBMA has been using a three-stage dividend growth model in place of the one-stage model used in prior filings. In contrast with the previous approach, in which a single growth rate persists in perpetuity, the three stage model reflects the assumption that in the long run, the insurance industry's growth rate will decline to a level consistent with the long term growth of the economy at large.

To apply the CAPM and DCF models in the context of insurance regulation, a sample of firms that investors would view as representative of the risks and required returns in the market being regulated need to be selected. In the 2020 rate filing, the WCRIBMA relied exclusively on Value Line sample of companies. The sample included data from Value Line Investment Survey, Part 3 – The Ratings and Report and from Value Line Investment Survey, Mid Cap Edition. In this filing, consistent with rate filing in 2022, the WCRIBMA uses individual group companies that write workers' compensation in Massachusetts. This is consistent with the sample of companies used for the calculation of the leverage ratio and the asset distribution. This method provides a better assessment of the risk and required returns associated with the capital that is actually supporting the

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business of workers' compensation in Massachusetts, since industry composites may be affected by carriers that are serving other lines or geographic areas. The sample is taken from A.M. Best's Global Insurance Database using BestLink. Of the 79 insurance groups that write workers' compensation in Massachusetts, 42 are connected to private holding companies, and the remaining 37 are owned by public companies. We use financial data for the 37 publicly traded companies in the cost of capital calculation. These data are from the Value Line Investment Survey, Part 3 – The Ratings and Report, from Value Line Investment Survey, Mid Cap Edition and from Yahoo Finance.

Based on these data, the cost of equity capital was calculated for the sample of 37 publicly traded companies that own subsidiaries that write workers' compensation in Massachusetts. This calculation provides an estimate of the fair rate of return for the average risk activity in which these companies are engaged. Based on the average of the DCF and CAPM results, investors currently require a return on equity of at least 10.39% for bearing the risk of underwriting workers' compensation insurance, as shown below.

DCF	8.21%
CAPM	12.57%
Average	10.39%

Given these results, the WCRIBMA has used a cost of equity capital of 10.39% as the best estimate of the required equity return for equity supporting workers compensation insurance in Massachusetts.

## **Debt Cost of Capital**

To conform to the 2003 Commissioner’s decision, the WCRIBMA estimates the cost of debt capital for the sample of companies, as well as the share of debt in their capital structure. Prior to the 2020 rate filing, the WCRIBMA relied on the long term corporate bonds, the 30 year High Quality Market yield from the U.S. Department of Treasury, as a proxy for the debt cost of capital. Since the 2020 filing, to be consistent with the CAPM analysis, we are using a three horizon yield rate instead. The result, 5.41%, is shown in Section VII-E, Exhibit 1.

In calculating the debt/equity proportion, the WCRIBMA has researched the topic and found that financial theory and practice overwhelmingly favor the use of market values of equity and debt as opposed to book values.<sup>3</sup> To elaborate, *every single* financial advisor, text book and trade book surveyed by Brotherson et al. (2015) recommended market values over book values in cost of capital exercises, while 95% (74%) of corporations in the survey used the market value of equity (debt) in practice. The reasoning is straightforward. Market values, when available, are the best guide to the value of the investment required to own the business by the businesses actually being studied or regulated, while book values reflect accounting rules and entries that not

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<sup>3</sup> Brotherson, W. Todd and Eades, Kenneth M. and Harris, Robert S. and Higgins, Robert C., 'Best Practices' in Estimating the Cost of Capital: An Update (November 5, 2015). Journal of Applied Finance (Formerly Financial Practice and Education), Vol. 23, No. 1, 2013. Available at SSRN: <https://ssrn.com/abstract=2686738> .

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updated in line with actual, current conditions. Moreover, the fair return to capital--- equivalently, the cost of capital---concerns the return that the owner of the capital would earn on market terms. Consequently, modern financial cost of equity methodologies, including the CAPM and the DCF are aimed at establishing the appropriate return on equity capital *at market value*.

We follow this guidance to the extent possible by using market values for equity. We do not have market values for debt, and this is a common problem. As noted by valuation expert Aswath Damodaran, book values of debt are reasonable proxies for market values of debt in many circumstances,<sup>4</sup> though there are exceptions: For example, if the default risk of the issuer increases after the debt is issued, or if interest rates rise after the debt is issued, the book value of debt will overstate the amount of debt in the capital structure. In any case, because we cannot access debt market values, we use book values for debt. For the group of 37 insurers, the share of non-equity capital in the corporate capital structure is 18%, as shown in Section VII – E, Exhibit 4. This is calculated as a weighted average using Massachusetts workers’ compensation direct premiums written for the weights.

Thus, the weighted average cost of capital is 9.48%, as shown below:

$$(18\% \times 5.41\%) + (82\% \times 10.39\%) = 9.48\%$$

The results of the analysis for the sample of group companies that write workers’ compensation in Massachusetts are contained in exhibits to this section, and a more detailed explanation of the models is contained in the accompanying appendix.

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<sup>4</sup> See [Financial measures & ratios \(nyu.edu\)](https://www.nyu.edu/finance/financial-measures-ratios), accessed on 12/7/2023. In the definition of Debt Ratio, Damodaran writes: “Since a significant portion or all debt at most firms is non-traded, analysts often use book value of debt as a proxy for market value. While this is a reasonable approximation for most firms, it will break down for firms whose default risk has changed significantly since the debt issue.”

## APPENDIX: COST OF CAPITAL

### INTRODUCTION

This appendix is intended to provide a more detailed description of the cost of capital methods selected by the WCRIBMA to derive the estimated cost of capital that is required to determine the underwriting profit provision in this filing.

The generally recognized standards for determining a fair rate of return for a regulated enterprise were articulated in two cases before the U.S. Supreme Court - Bluefield Waterworks and Hope Natural Gas. In Bluefield, the Court stated:

A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties ....

Bluefield Waterworks & Improvement Company v. Public Service Commission of West Virginia, 262 U.S. 679, 692-693 (1923). In Hope, the Court further stated:

From the investor or company point of view, it is important that there be enough revenue not only for operating expenses, but also for the capital costs of the business. These include service on the debt and dividends on

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the stock. By that standard the return to the equity owner should be commensurate with the returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.

Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591, 603 (1944).

These decisions set forth the two basic standards of fairness under which regulated industries must operate: first, the rate of return to the equity holder should equal that which can be expected to be earned by investors in businesses of similar risk; and second, the rate of return must be sufficient to assure the continued attraction of capital. In essence these criteria, when reasonably applied, balance the interests of consumers of the regulated product or service, and investors, who provide the capital needed to operate the enterprise.

There are several methods that have been used to estimate the fair rate of return, or cost of capital, for a regulated firm or industry. However, it is widely agreed that methods that rely on market data are preferred, on both a theoretical and pragmatic basis, to those that are based on accounting data. Indeed, it is market requirements that suggest use of the term "cost of capital," as the phrase refers to the cost to the firm of attracting investment funds in capital markets. That cost, of course, is the return that the firm must pay and investors expect to earn as a result of placing their capital at risk in the enterprise. For this reason, the WCRIBMA used the two most prominent market-based

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methodologies to derive the cost of capital estimates for this filing. The first of these is known as the DCF model (sometimes called the Gordon growth model or the dividend valuation model), and the second is a specific form of Risk Premium Analysis known as CAPM.

DCF and CAPM approaches were used to obtain independent estimates of the cost of capital, so as not to place undue reliance on any single methodology. Moreover, we used these two models because economic and financial theory strongly support the use of market data to determine required rates of return, and these are the most prominent market-based methods currently available. Reliance on market data is critical for three reasons.

1. Such information reflects the consensus of all investors regarding the risk and required returns on different securities. Thus, the potential for the biases and perceptions of the analyst to overstate or understate the fair rate of return is minimized.
2. The alternative to market data is to use historical accounting data to estimate the cost of capital. This procedure is seriously flawed because it is not prospective and does not necessarily reflect the returns that are of ultimate concern to investors – those that can be earned in the market.
3. The use of market-based models is consistent with the dictates of Hope, in the sense that Hope instructs us to consider investor requirements when determining the fair and reasonable rate of return. (For example, "the return to the equity owner

should be commensurate with the returns on investments in other enterprises having corresponding risks.")

In effect, these market based models provide an initial estimate of the "opportunity cost" of placing capital at risk in support of workers' compensation insurance in Massachusetts. Opportunity cost is among the most basic concepts in economics. It refers to the fact that resources have a variety of potential uses, and by using a resource in a particular endeavor an investor forgoes the returns that are available in other, alternative activities. Thus, the opportunity cost of capital (otherwise termed the cost of capital) is the return available from employing that capital in its next best alternative use. This is, of course, the return that investors have forgone by using their capital in support of Massachusetts workers' compensation insurance activities.

### **METHODOLOGY**

The DCF model and a specific form of RPA known as the CAPM were used to estimate the cost of capital. These are the most widely recognized methods for estimating the cost of capital in regulatory proceedings. The DCF analysis is the leading model used by practitioners to estimate the required rate of return in regulatory rate proceedings, while RPA analysis is the leading approach used by academics, both for estimating the cost of capital and explaining capital market behavior. Each one provides a reasonable basis for estimating the cost of capital, and each should be accorded equal weight in the process.

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Turning to the DCF model first, the DCF is based upon the presumption that the cost of an investment, typically the price of a stock, must equal the present value of the cash flows from the investment. The logic of this assumption is as follows: investors are willing to pay the current price for a share of stock only if the present value of the expected cash flows emanating from that investment are equal to that price. If the present value of the cash flows were greater (less) than the current price, investors would bid the price up (down).

The cash flows arising from the purchase of a share of stock are the dividend payments and capital gains the investor expects to receive in the future.

If the security is expected to be held in perpetuity, then the stock price can be expressed as the sum of the discounted dividends:

$$V_0 = [D_1/(1+k)] + [D_2/(1+k)^2] + [D_3/(1+k)^3] + \dots$$

where  $V_0$  is the price of the stock,  $D_i$  is the dividend in period  $i$ , and  $k$  is the investor's implicit discount rate, or cost of capital.

In this filing, consistent with rate filings since 2016, the WCRIBMA implemented a three-stage DCF model, which assumes varying rates of dividend growth at different times in the future. The first stage is a five year period of short-term dividend growth, with the rate of growth calculated in the same manner as the dividend growth rate in prior filings. The calculation of this is shown in Section VII-E, Exhibit 2, Page 4.

The second stage, beginning in year six, is a five year period where the dividend growth rate declines (in a linear fashion) to a level consistent with the expected long term

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growth in the US economy. Then, starting in year 10 (stage 3), the rate of growth is assumed to be remain equal to the long-term rate of growth of the economy (based on the economy’s real long-term growth potential and current inflationary expectations). The calculation of this is shown in Section VII-E, Exhibit 2, Page 2. A mathematical presentation of the three-stage dividend growth rate follows:

$$V_0 = D_0 \sum_{t=1}^{\infty} \left( \frac{1 + g_t}{1 + k} \right)^t = D_1 \sum_{t=1}^{\infty} \frac{(1 + g_t)^{t-1}}{(1 + k)^t}$$

$$\frac{1}{\frac{D_1}{V_0}} = \sum_{t=1}^5 \frac{(1 + g_{ST})^{t-1}}{(1 + k)^t} + (1 + g_{ST})^4 \sum_{t=6}^9 \frac{\prod_{i=1}^{t-5} (1 + g_{IT_i})}{(1 + k)^t}$$

$$+ (1 + g_{ST})^4 (1 + g_{IT_1})(1 + g_{IT_2})(1 + g_{IT_3})(1 + g_{IT_4}) \sum_{t=10}^{\infty} \frac{(1 + g_{LT})^{t-9}}{(1 + k)^t}$$

$$\frac{1}{\frac{D_1}{V_0}} = \left[ \frac{1}{k - g_{ST}} \left( 1 - \left( \frac{1 + g_{ST}}{1 + k} \right)^5 \right) + \frac{(1 + g_{ST})^4 (1 + g_{IT_1})}{(1 + k)^6} + \frac{(1 + g_{ST})^4 (1 + g_{IT_1})(1 + g_{IT_2})}{(1 + k)^7} \right.$$

$$+ \frac{(1 + g_{ST})^4 (1 + g_{IT_1})(1 + g_{IT_2})(1 + g_{IT_3})}{(1 + k)^8}$$

$$+ \frac{(1 + g_{ST})^4 (1 + g_{IT_1})(1 + g_{IT_2})(1 + g_{IT_3})(1 + g_{IT_4})}{(1 + k)^9}$$

$$\left. + \frac{(1 + g_{ST})^4 (1 + g_{IT_1})(1 + g_{IT_2})(1 + g_{IT_3})(1 + g_{IT_4})(1 + g_{LT})}{(k - g_{LT})} \frac{1}{(1 + k)^9} \right]$$

Where:

$V_0$  = Present Value of a stock

$D_t$  = Dividend Paid at the end of period  $t$

$g_t$  = Dividend Growth Rate at time  $t$ ,

if  $t \leq 5 \rightarrow$  Short Term Stage (ST)

if  $5 < t < 10 \rightarrow$  Intermediate Term Stage ( $IT_t$ )

if  $t \geq 10 \rightarrow$  Long Term Stage (LT)

$g_{ST}$  = Short – Term Dividend Growth Rate

$g_{IT_t}$  = Intermediate – Term Dividend Growth Rate,

Linearly Interpolated between time 5 and 10

$g_{LT}$  = Long – Term Dividend Growth Rate

$k$  = Cost of Capital

$\frac{D_1}{V_0}$  = Dividend Payable in the coming 12 months divided by the current price

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Turning to the second model used to calculate the cost of capital, the specific form of RPA known as the CAPM, it should be noted that RPA is a technique which attempts to estimate the cost of capital by calculating the incremental return investors require to hold a particular security, as opposed to another, less risky asset. While the DCF estimates the cost of capital directly, by looking at expected cash flows and market prices, RPA estimates required returns by evaluating the relative risk of alternative investments. Obviously, those investments with greater risk require greater returns.

The single factor version of the CAPM is one specific form of RPA, which begins with the assumption that there is a risk-free asset, which is typically taken to be a U.S. Treasury security. It then estimates the relative risk of alternative securities to measure the "risk premium" investors require to hold these risky assets. In the classical application of the CAPM, the relative risk of a particular security is measured by a value known as the "beta for market risk" (otherwise known as simply beta) which is an estimate of the relative volatility of that security's returns (or price) compared with the volatility of the entire market (usually proxied by the New York Stock Exchange index or the S&P 500). The information on the beta is used in the following manner to estimate investors' required rate of return:

$$K = r_f + (\beta \times r_D)$$

where  $r_f$  is the risk-free yield,  $\beta$  is the beta for market risk, and  $r_D$  is the market risk premium.

As noted above, the beta coefficient is a measure of the relative volatility, or riskiness, of an investment, compared with the market average. If an individual stock has

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a beta of 1.5, for example, the stock has a tendency to be 50% more volatile than the market as a whole. This implies that if the market as a whole goes up (or down) by 10% this stock has a tendency to go up (or down) by 15%.

The market risk premium is the average difference between the returns on the market portfolio and the returns on the riskless asset. For example, over the period 1926 - 2022 a diversified portfolio of common stocks earned an annual return which averaged 8.73 percentage points higher than the return on U.S. Treasury bills. Therefore, an individual security of exactly average risk (i.e., with a beta of 1) would be expected to earn 8.73 percentage points more than a T-bill. In addition to the T-bill, however, it is also reasonable to consider alternative-term securities, and to measure the risk premium relative to them. In fact, this type of procedure is frequently recommended when the time horizon of the investment is relatively long, as is often the case with an investment in insurance.

### **RESULTS**

In estimating the cost of capital the WCRIBMA relied on financial data for a sample of publicly traded companies that are involved in writing workers' compensation in Massachusetts. The sample is taken from A.M. Best's Global Insurance Database using BestLink. The financial data for the publicly traded sample of companies, a total of 37 companies, are drawn from the Value Line Investment Survey and Yahoo Finance. Value Line Investment Survey is an independent investment advisory service that provides weekly reports on approximately 1,700 publicly traded stocks. In addition, it provides in depth quarterly reports on each of the firms it covers, which contain a wealth of historical

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and forecast information on each security. In terms of numbers of subscribers and annual revenues Value Line is the largest such service in the world. In addition, Value Line is the data source most widely relied upon by experts estimating the cost of capital in regulatory proceedings.

The DCF model requires an estimate of the current dividend yield and the expected growth rate in dividends.

To estimate the dividend yield, the WCRIBMA utilized estimates for the expected first year dividend yield provided by Value Line and Yahoo Finance. Since the annual DCF model requires an estimate of the dividends payable during the first year of the investment, and Value Line's expected first year dividend yield is defined as the estimated dividends payable in the coming year divided by the current share price of the stock, it is precisely the correct value to use in the DCF model. However, for the companies from the Value Line Investment Survey, Small and Mid-Cap Edition, the dividend yield is defined as the current annual dividend divided by the current share price, not the coming year's dividend as is required in the model. As a consequence, for those companies, an additional adjustment has been made: to estimate the dividends payable during the first year of the investment the current annual dividends are multiplied by  $1.0 + 0.5 \times \text{Dividend Growth Rate}$  (derived in Section VII-E Exhibit 2, Page 4).<sup>5</sup>

To estimate the short-term dividend growth rate, the WCRIBMA averaged the results from two different techniques, one called the "growth forecast" method, and the other termed "fundamental analysis". The first, "growth forecast" method, relies on

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<sup>5</sup> Stock dividends are generally paid quarterly but increased only once a year; thus, depending on the timing, a company's dividend may be increased in the current quarter, or up to four quarters in the future. The growth rate is multiplied by 0.5 year to account for the fact that on average, across a large sample of companies, dividends will be increased approximately one half year in the future.

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estimates of growth based on historical earnings and dividend data along with analysts' forecasts of growth in these variables. The second, "fundamental analysis" relies on estimating a firm's sustainable growth based on the rate at which it retains and reinvests earnings. For each of these approaches, the WCRIBMA relied on long term (i.e., ten-year) and short term (i.e., five-year) historical information, along with Value Line analysts' forecasts and Yahoo forecasts. When calculating the expected growth rate, we averaged the results based on these three data sources.

It is appropriate to assume that when evaluating future growth prospects, investors will consider all available information in forming their estimates. This suggests that historical growth in dividends and earnings per share will be of some significance in forming expectations about future growth. At the same time, analysts are an important source of information for investors, and their estimates of future growth are followed closely by the investment community.

As regards fundamental analysis, the premise is that sustainable growth in the future can arise from two sources: retained earnings and issuance of new stock at prices different than book value. In the first case, retained earnings can be reinvested to produce earnings, which will be used to pay higher dividends in the future. In the second case, the proceeds from the sale of stock at prices above book value can also be used for new investment, and the profits ultimately will be used to pay higher dividends in the future. Thus, the fundamental analysis computes the expected growth rate as the sum of the earnings retained as a percentage of common equity and a stock issuance adjustment factor, as follows:

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$$g = (b \times r) + (s \times v)$$

where:  $b$  = retention ratio (retained earnings/profit)

$r$  = return on equity

$s$  = fraction of shares to be issued

$v$  = (market/book) - 1.

The results of the DCF analysis calculating the short-term dividend growth rate for the sample of Massachusetts workers' compensation insurers are contained in summary form in section VII-E, Exhibit 2, Page 4 of the filing, with the details of the calculations contained in Exhibit 2, Page 5.

The long-term dividend growth rate that applies in perpetuity starting in year 10 is calculated in two steps. Using data from Bureau of Economic Analysis, we first estimated the growth rate in real gross domestic product (real GDP) for the period 1929-2022. Second, we multiplied this by the rate of expected inflation, calculated by the spread between the yield on 10-year treasury notes and 10-year treasury inflation indexed securities. The resultant long-term rate of dividend growth equals 5.66% as shown in Section VII-E, Exhibit 2, Page 2.

Stage 2 is applied to years 6 through 9 and is a linear interpolation between dividend growth rates in stage 1 and stage 3. Using a dividend yield of 2.42%, the required rate of return ( $k$ ) in this three-stage DCF model is equal to 8.21%.

Turning now to the CAPM, the model begins with the assumption that there is a risk-free asset, which is typically taken to be a U.S. Treasury security. It then estimates the relative risk of alternative securities, measured by their "beta," to measure the "risk

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premium" investors require to hold the risky assets. This information is used in the following manner to estimate investors' required rate of return:

$$K = r_f + (\beta \times r_d)$$

where  $r_f$  is the risk-free yield,  $\beta$  is the beta coefficient, and  $r_d$  is the market risk premium. In this case, we relied on an average of three CAPM estimates, where the different estimates arise from the choices of short-, intermediate- or long-term Treasuries as the risk-free rate.

As regards the estimate of the beta coefficient for the representative sample of 37 publicly traded companies involved in writing workers' compensation in Massachusetts, the beta coefficient for this sample of companies ranges from 0.29 to 1.73, and using weights of each company's direct premium written, the weighted average equals 0.99. This is shown on Section VII-E, Exhibit 3, Page 2.

The WCRIBMA relied on three estimates of the risk-free yield, based on the yields on one-month US Treasury bills, 5-year US Treasury notes and 20-year US Treasury bonds, the standard choices for the riskless security used in practical applications of the CAPM. In implementing this model, we chose to average the yields on these securities for the period from July through September 2023. This procedure obtains a representative estimate of current interest rates, and avoids any anomalous results that might arise due to unusual interest rate volatility. During this period the yields on one-month Treasury bills averaged 5.49%, while the yields on 5-year and 20-year Treasuries averaged 4.31% and 4.42% respectively.

Combining the information concerning the recent yields on U.S. Treasury securities, beta coefficients for the Massachusetts workers' compensation insurers, and

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the historical differential between risk-free and equity investments, our best estimate of investors' required return on equity is 12.57% as shown in Section VII-E, Exhibit 3, Page

1. To illustrate this calculation, consider the results for the short term CAPM below:

$$K = r_f + (\beta \times r_d), \text{ or}$$

$$14.17\% = 5.49\% + (0.99 \times 8.73\%)$$

Each of the other calculations (i.e., the intermediate and long horizon CAPM's) is performed identically. The results from these three models are averaged to produce a 12.57% CAPM cost of capital.

Based on all this information, our single best estimate of the cost of equity capital for Massachusetts workers' compensation insurers is 10.39%, which is the average of the results from the DCF and CAPM analyses.

Finally, consistent with the 2003 Commissioner's decision, the WCRIBMA estimated the share of debt and equity in insurer capital structures, and estimate the cost of debt, so as to calculate a weighted average cost of capital for use in ratemaking.<sup>6</sup> The details of these calculations are contained in Section VII-E, Exhibit 4 and Section VII-E, Exhibit 1. As these exhibits show, debt accounts for approximately 18% of insurer capital, while common equity accounts for 82% of capital.

Given the equity cost, as shown above, of 10.39%, and the debt cost of 5.41%, the weighted average cost of capital is 9.48%, as shown below:

$$(18\% \times 5.41\%) + (82\% \times 10.39\%) = 9.48\%$$

---

<sup>6</sup> It is typical in insurance regulation to use the cost of equity capital alone as the target return in ratemaking. Since the cost of debt is lower than the cost of equity, the weighted average cost of capital will be lower than the cost of equity alone, and hence the rate indication is lower as well.

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Exhibit 1

## Cost of Capital: Summary Exhibit

(1) Discounted Cash Flow	8.21%
(2) Capital Asset Pricing Model	12.57%
(3) Equity Capital Cost	10.39%
(4) Debt Capital Cost	5.41%
(5) Capital Structure	
(a) Equity Capital Share	82%
(b) Debt Capital Share	18%
(6) Weighted Average Cost of Capital (WACC)	9.48%

### Notes:

(1): Exhibit 2, Page 1

(2): Exhibit 3, Page 1

(3) = [ (1) + (2) ] / 2.0

(4): Average of three-horizons yields:

Short-Term = 5.32%, the average yield on 1-month Commercial Paper (line (1)' of Section VII-J, Exhibit 2, Page 3)

Intermediate-Term = 5.23%, the average yield on 5-year HQM yield (line (15) of Section VII-J, Exhibit 2, Page 3)

Long-Term = 5.67%, the average yield on 20-year industrial yield (Section VII-J, Exhibit 2, Page 2)

(5): Exhibit 4

(6) = [ (3) x (5a) ] + [ (4) x (5b) ]

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## Cost of Capital Estimate Using Discounted Cash Flow (DCF) Analysis

$$V_0 = D_0 \sum_{t=1}^{\infty} \left( \frac{1 + g_t}{1 + k} \right)^t = D_1 \sum_{t=1}^{\infty} \frac{(1 + g_t)^{t-1}}{(1 + k)^t}$$

$$\frac{1}{\frac{D_1}{V_0}} = \sum_{t=1}^5 \frac{(1 + g_{ST})^{t-1}}{(1 + k)^t} + (1 + g_{ST})^4 \sum_{t=6}^9 \frac{\prod_{i=1}^{t-5} (1 + g_{IT_i})}{(1 + k)^t}$$

$$+ (1 + g_{ST})^4 (1 + g_{IT_1})(1 + g_{IT_2})(1 + g_{IT_3})(1 + g_{IT_4}) \sum_{t=10}^{\infty} \frac{(1 + g_{LT})^{t-9}}{(1 + k)^t}$$

	Time (t) (1)	Dividend Growth Rate (g) (2)	Discounted Dividends (3)
Stage 1	1	6.70%	
	2	6.70%	
	3	6.70%	
	4	6.70%	
	5	6.70%	4.49
Stage 2	6	6.49%	0.86
	7	6.28%	0.84
	8	6.08%	0.83
	9	5.87%	0.81
Stage 3	≥10	5.66%	33.53
(4) Total Discounted Dividends			41.36

(5) Dividend Yield Rate ( $D_1/V_0$ )

2.42%

(6) Cost of Capital (k)

**8.21%**

### Notes:

(2): Stage 1 dividend growth rate is the short-term rate from Page 4.

Stage 2 dividend growth rate is a linear interpolation between dividend growth rate of stage 1 and stage 3.

Stage 3 dividend growth rate is the long-term rate from Page 2.

(3): Stage 1 =  $(1.0 - [(1.0 + g_{ST}) / (1.0 + k)]^5) / (k - g_{ST})$

Stage 2, Time 6 =  $[(1.0 + g_{ST})^4 \times (1.0 + g_{IT1})] / (1.0 + k)^6$

Stage 2, Time 7 =  $[(1.0 + g_{ST})^4 \times (1.0 + g_{IT1}) \times (1.0 + g_{IT2})] / (1.0 + k)^7$

Stage 2, Time 8 =  $[(1.0 + g_{ST})^4 \times (1.0 + g_{IT1}) \times (1.0 + g_{IT2}) \times (1.0 + g_{IT3})] / (1.0 + k)^8$

Stage 2, Time 9 =  $[(1.0 + g_{ST})^4 \times (1.0 + g_{IT1}) \times (1.0 + g_{IT2}) \times (1.0 + g_{IT3}) \times (1.0 + g_{IT4})] / (1.0 + k)^9$

Stage 3 =  $[(1.0 + g_{ST})^4 \times (1.0 + g_{IT1}) \times (1.0 + g_{IT2}) \times (1.0 + g_{IT3}) \times (1.0 + g_{IT4}) \times (1.0 + g_{LT})] / [(k - g_{LT}) \times (1.0 + k)^9]$

(5): Page 5

(6): Cost of Capital is calculated using excel function so that  $[1.0 / (5)] - (4) = 0$ .

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 Exhibit 2  
 Page 2

## Discounted Cash Flow (DCF) Analysis: Long-Term Dividend Growth Rate

Years (1)	Real Gross Domestic Product (2)	Real Gross Domestic Product Percent Change (3)
1929	1,191.1	
1930	1,089.8	-8.50%
1931	1,020.0	-6.40%
1932	888.4	-12.90%
1933	877.4	-1.24%
1934	972.3	10.82%
1935	1,058.8	8.90%
1936	1,195.3	12.89%
1937	1,256.5	5.12%
1938	1,214.9	-3.31%
1939	1,312.4	8.03%
1940	1,428.1	8.82%
1941	1,681.0	17.71%
1942	1,998.5	18.89%
1943	2,338.8	17.03%
1944	2,524.8	7.95%
1945	2,500.1	-0.98%
1946	2,209.9	-11.61%
1947	2,184.6	-1.14%
1948	2,274.6	4.12%
1949	2,261.9	-0.56%
1950	2,458.5	8.69%
1951	2,656.3	8.05%
1952	2,764.8	4.08%
1953	2,894.4	4.69%
1954	2,877.7	-0.58%
1955	3,083.0	7.13%
1956	3,148.8	2.13%
1957	3,215.1	2.11%
1958	3,191.2	-0.74%
1959	3,412.4	6.93%
1960	3,500.3	2.58%
1961	3,590.1	2.57%
1962	3,810.1	6.13%
1963	3,976.1	4.36%
1964	4,205.3	5.76%
1965	4,478.6	6.50%
1966	4,773.9	6.59%
1967	4,904.9	2.74%
1968	5,145.9	4.91%
1969	5,306.6	3.12%
1970	5,316.4	0.18%
1971	5,491.4	3.29%
1972	5,780.0	5.26%
1973	6,106.4	5.65%
1974	6,073.4	-0.54%
1975	6,060.9	-0.21%
1976	6,387.4	5.39%
1977	6,682.8	4.62%
1978	7,052.7	5.54%
1979	7,276.0	3.17%
1980	7,257.3	-0.26%
1981	7,441.5	2.54%
1982	7,307.3	-1.80%

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 Exhibit 2  
 Page 2

## Discounted Cash Flow (DCF) Analysis: Long-Term Dividend Growth Rate

Years (1)	Real Gross Domestic Product (2)	Real Gross Domestic Product Percent Change (3)
1983	7,642.3	4.58%
1984	8,195.3	7.24%
1985	8,537.0	4.17%
1986	8,832.6	3.46%
1987	9,137.7	3.45%
1988	9,519.4	4.18%
1989	9,869.0	3.67%
1990	10,055.1	1.89%
1991	10,044.2	-0.11%
1992	10,398.0	3.52%
1993	10,684.2	2.75%
1994	11,114.6	4.03%
1995	11,413.0	2.68%
1996	11,843.6	3.77%
1997	12,370.3	4.45%
1998	12,924.9	4.48%
1999	13,543.8	4.79%
2000	14,096.0	4.08%
2001	14,230.7	0.96%
2002	14,472.7	1.70%
2003	14,877.3	2.80%
2004	15,449.8	3.85%
2005	15,988.0	3.48%
2006	16,433.1	2.78%
2007	16,762.4	2.00%
2008	16,781.5	0.11%
2009	16,349.1	-2.58%
2010	16,789.8	2.70%
2011	17,052.4	1.56%
2012	17,442.8	2.29%
2013	17,812.2	2.12%
2014	18,261.7	2.52%
2015	18,799.6	2.95%
2016	19,141.7	1.82%
2017	19,612.1	2.46%
2018	20,193.9	2.97%
2019	20,692.1	2.47%
2020	20,234.1	-2.21%
2021	21,407.7	5.80%
2022	21,822.0	1.94%
(4) Average		3.29%
(5) Rate of Expected Inflation		2.30%
(6) Long-Term Dividend Growth Rate		<b>5.66%</b>

Notes:

(2): Bureau of Economic Analysis, Table 1.1.6.

(3) =  $[(2)_t / (2)_{t-1}] - 1.0$

(5): Page 3, average of column (4)

(6) =  $\{ [1.0 + (4)] \times [1.0 + (5)] \} - 1.0$

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Page 3

## Discounted Cash Flow (DCF) Analysis: Long-Term Dividend Growth Rate Rate of Expected Inflation

Time Period (1)	Market yield on U.S. Treasury Securities at 10-year Constant Maturity (2)	Inflation Indexed Market yield on U.S. Treasury Securities at 10-year Constant Maturity (3)	Rate of Expected Inflation (4) = (2) - (3)
2022-10	3.98	1.59	2.39
2022-11	3.89	1.52	2.37
2022-12	3.62	1.36	2.26
2023-01	3.53	1.29	2.24
2023-02	3.75	1.41	2.34
2023-03	3.66	1.36	2.30
2023-04	3.46	1.19	2.27
2023-05	3.57	1.36	2.21
2023-06	3.75	1.55	2.20
2023-07	3.9	1.60	2.30
2023-08	4.17	1.83	2.34
2023-09	4.38	2.04	2.34
Average			<b>2.30%</b>

Source: Federal Reserve Statistical Release, H.15.

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Page 4

## Discounted Cash Flow (DCF) Analysis: Short-Term Dividend Growth Rate

(1) Growth Forecast { = [ (a) + (b) ] / 2.0 }	6.49
(a) Dividend Component	5.62
(b) Earnings Component	7.36
(2) Fundamental Analysis [ = (a) + (b) ]	6.91
(a) Retention to book	7.05
(b) Stock issuance factor	-0.14
(3) Short-Term Dividend Growth Rate { = [ (1) + (2) ] / 2.0 }	6.70

### Notes:

- (1a): Page 5, average of columns (3) through (5)
- (1b): Page 5, average of columns (6) through (8)
- (2a): Page 5, average of columns (9) through (11)
- (2b): Page 5, average of column (15)

Discounted Cash Flow (DCF) Analysis: Parameter Estimation

Companies (1)	Dividend Yield (2)	Average Dividend Growth Rate			Average Earnings Growth Rate			Average Earnings Retention Rates Retained Earnings as a Percent of Common Equity			Stock Issuance Adjustment Factor			
		Annual Rate of Change			Annual Rate of Change			Past 10 Years (9)	Past 5 Years (10)	Forecast (11)	2023 Shares (12)	2026 - 2028 Shares (13)	2026 - 2028 Market/ Book (14)	Stock Issuance Adjustment Factor (15)
		Past 10 Years (3)	Past 5 Years (4)	Forecast (5)	Past 10 Years (6)	Past 5 Years (7)	Forecast (8)							
ALLIANZ US PC INSURANCE COMPANIES	5.1	NA	NA	NA	NA	NA	10.84	NA	NA	NA	0.00	0.00	0.00	NA
AMERICAN FINANCIAL GROUP INC	2.4	12.50	12.50	12.00	11.50	12.00	12.50	10.85	8.12	13.50	84.00	80.00	2.15	-1.39
AMERICAN INTERNATIONAL GROUP	2.4	NA	20.50	2.00	NA	-17.00	NA	8.52	4.83	6.00	730.00	700.00	0.75	0.26
AMERISAFE INC	2.7	NA	10.50	NA	NA	1.00	10.00	4.24	4.98	NA	0.00	0.00	0.00	NA
ARCH CAPITAL GROUP LTD	0.0	NA	NA	NA	9.00	18.00	NA	10.28	10.10	14.50	365.00	340.00	2.05	-1.85
ARGO GROUP	0.0	14.50	10.00	0.00	NA	NA	14.50	6.96	8.33	9.00	35.00	32.00	0.81	0.42
BERKLEY (W R) CORP	0.7	9.50	9.50	11.00	11.00	18.00	9.50	8.96	7.58	15.00	255.00	250.00	2.60	-0.79
BERKSHIRE HATHAWAY	0.0	NA	NA	0.00	6.00	12.00	NA	6.78	7.84	4.00	2200.00	2000.00	1.05	-0.12
BROOKFIELD REINSURANCE LTD	0.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00	0.00	0.00	NA
CHUBB LTD	1.7	7.50	3.00	5.00	4.50	4.50	7.50	7.02	7.58	11.50	400.00	375.00	1.80	-1.28
CINCINNATI FINANCIAL CORP	3.0	5.00	4.50	7.50	11.00	8.50	5.00	2.83	2.68	4.50	156.80	155.00	1.50	-0.14
CNA FINANCIAL CORP	4.3	17.00	8.00	6.00	5.00	5.00	17.00	4.64	4.40	9.50	272.00	275.00	1.95	0.26
EMPLOYERS HOLDINGS INC	3.0	NA	20.50	NA	NA	1.50	10.00	10.20	10.96	NA	0.00	0.00	0.00	NA
EVEREST RE GROUP	2.0	12.50	6.00	5.00	13.00	4.50	12.50	8.58	10.16	12.00	40.00	44.00	0.35	-1.57
FAIRFAX FINANCIAL GROUP	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00	0.00	0.00	NA
GENERAL ELECTRIC	0.3	-23.00	-46.00	28.00	-17.00	-30.00	-23.00	5.81	4.68	13.50	1085.00	1070.00	NA	NA
HANOVER INS GROUP	3.2	9.50	8.00	7.50	18.50	12.00	9.50	6.13	5.38	14.00	35.00	33.00	1.26	-0.38
HARTFORD FINANCIAL	2.3	16.00	11.00	4.50	9.50	14.00	16.00	8.52	6.44	10.50	300.00	270.00	0.80	0.52
HDI/TALANX US PC GROUP	3.2	NA	NA	NA	NA	NA	14.57	NA	NA	NA	0.00	0.00	0.00	NA
INTACT US INSURANCE GROUP	2.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00	0.00	0.00	NA
JAMES RIVER GROUP	1.3	NA	NA	NA	NA	NA	6.90	NA	NA	NA	0.00	0.00	0.00	NA
MARKEL CORP	0.0	NA	NA	0.00	12.50	28.00	NA	7.21	3.62	13.50	13.20	12.80	1.43	-0.33
MS&AD US INSURANCE GROUP	3.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00	0.00	0.00	NA
NATIONAL HEALTHCARE	3.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00	0.00	0.00	NA
OLD REPUBLIC INTL CORP	3.6	2.50	3.00	6.00	NA	16.00	2.50	5.48	3.52	7.00	285.00	280.00	1.25	-0.11
PROASSURANCE CORP	0.0	NA	-23.00	0.00	NA	NA	NA	5.84	4.98	11.50	53.00	32.65	1.60	-6.84
PROGRESSIVE CORP	0.3	23.00	33.00	NA	14.00	19.00	23.00	13.02	10.64	21.50	585.00	585.00	3.50	0.00
QBE NORTH AMERICA INSURANCE GROUP	2.9	NA	NA	NA	NA	NA	57.67	NA	NA	NA	0.00	0.00	0.00	NA
RLI CORP	0.8	5.00	4.50	6.00	4.50	12.50	5.00	8.83	8.28	11.50	45.00	45.00	2.55	0.00
SAMSUNG F & M INSURANCE CO	5.5	NA	NA	NA	NA	NA	11.00	NA	NA	NA	0.00	0.00	0.00	NA
SELECTIVE INS GROUP INC	1.2	7.00	11.00	8.00	21.50	13.00	7.00	8.80	7.72	18.00	61.00	65.00	1.70	1.12
SKYWARD SPECIALTY INSURANCE GROUP	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00	0.00	0.00	NA
SOMPO HOLDINGS US GROUP	4.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00	0.00	0.00	NA
TOKIO MARINE US PC GROUP	3.2	NA	NA	NA	NA	NA	6.50	NA	NA	NA	0.00	0.00	0.00	NA
TRAVELERS CO INC	2.5	8.00	6.00	4.00	9.00	5.50	8.00	8.84	9.88	9.00	230.00	230.00	1.75	0.00
XL REINSURANCE AMERICA GROUP	6.2	NA	NA	NA	NA	NA	5.60	NA	NA	NA	0.00	0.00	0.00	NA
ZURICH INSURANCE US PC GROUP	5.7	NA	NA	NA	NA	NA	1.30	NA	NA	NA	0.00	0.00	0.00	NA
(16) Weighted Average	2.42	7.05	5.94	3.87	6.43	7.26	8.39	6.61	6.18	8.36				-0.14

Notes:

Sources: Value Line Investment Survey, Part 3, The Ratings & Reports (VL)  
 Value Line Investment Survey, Part 2, Small and Mid Cap Edition (VLSM)  
<http://finance.yahoo.com> (data available in September 2023)

(2): The dividend yields needed for the DCF Analysis relate dividends at time 1,  $D_1$ , to stock prices at time 0,  $P_0$ . Dividend yields from VLIS, Small and Mid Cap Edition, must be adjusted because they are derived from the ratio of dividends at time 0,  $D_0$ , to stock price at time zero,  $P_0$ .  $D_1$  is estimated from  $D_0$  as follows:

$$D_1 = D_0 \times [ 1.0 + ( 0.5 \times \text{Dividend Growth Rate} ) ], \quad \text{where Dividend Growth Rate} = 6.7\% \text{ from Page 4.}$$

(3) - (10): Data available only at Value Line Investment Surveys.

(11) - (14): Data available only at Value Line Investment Survey, Part 3.

(12), (13): in millions.

(15) =  $[(14) - 1.0] \times \{ [(13) / (12)]^t - 1.0 \} \times 100$ , where t is 0.25 for the years between midyear 2023 and midyear 2027.

(16): Weighted by direct premiums written.

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Exhibit 3  
Page 1

## Cost of Capital Estimate Using Capital Asset Pricing Model Analysis

$$\text{Cost of Capital: } K = r_f + (\beta \times r_d)$$

Time Horizon (1)	Risk-Free Yield ( $r_f$ ) (2)	Market Risk Premium ( $r_d$ ) (3)	Beta Coefficient ( $\beta$ ) (4)	Estimated Cost of Capital (K) (5)
Short-Term	5.49	8.73	0.99	14.17
Intermediate-Term	4.31	7.74	0.99	12.01
Long-Term	4.42	7.17	0.99	11.55
Average	4.74	7.88	0.99	<b>12.57</b>

### Notes:

(2): Section VII-J, Exhibit 2, Page 3

Short-Term = average yield on 1-month U.S. Treasury Constant Maturities (line (2))

Intermediate-Term = average yield on 5-year U.S. Treasury (line (8))

Long-Term = average yield on 20-year U.S. Treasury (line (11))

(3): Section VII-J, Exhibit 4

Short-Term = S&P 500 total returns minus U.S. Treasury Bill total returns

Intermediate-Term = S&P 500 total returns minus Intermediate-Term Government Bonds income returns

Long-Term = S&P 500 total returns minus Long-Term Government Bonds income returns

(4): Average Beta Coefficient (Page 2).

(5) = (2) + [ (4) x (3) ]

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Page 2

## Capital Asset Pricing Model - Beta Coefficient

<u>Companies</u>	<u>Beta Coefficients</u>
ALLIANZ US PC INSURANCE COMPANIES	1.1
AMERICAN FINANCIAL GROUP INC	1.3
AMERICAN INTERNATIONAL GROUP	1.5
AMERISAFE INC	0.8
ARCH CAPITAL GROUP LTD	1.2
ARGO GROUP	1.0
BERKLEY (W R) CORP	1.1
BERKSHIRE HATHAWAY	1.0
BROOKFIELD REINSURANCE LTD	1.7
CHUBB LTD	1.1
CINCINNATI FINANCIAL CORP	1.1
CNA FINANCIAL CORP	1.1
EMPLOYERS HOLDINGS INC	0.8
EVEREST RE GROUP	1.1
FAIRFAX FINANCIAL GROUP	0.9
GENERAL ELECTRIC	1.2
HANOVER INS GROUP	1.0
HARTFORD FINANCIAL	1.2
HDI/TALANX US PC GROUP	0.9
INTACT US INSURANCE GROUP	0.6
JAMES RIVER GROUP	0.4
MARKEL CORP	1.2
MS&AD US INSURANCE GROUP	0.5
NATIONAL HEALTHCARE	0.3
OLD REPUBLIC INTL CORP	1.1
PROASSURANCE CORP	0.7
PROGRESSIVE CORP	0.8
QBE NORTH AMERICA INSURANCE GROUP	0.8
RLI CORP	0.8
SAMSUNG F & M INSURANCE CO	0.5
SELECTIVE INS GROUP INC	0.9
SKYWARD SPECIALTY INSURANCE GROUP	NA
SOMPO HOLDINGS US GROUP	0.4
TOKIO MARINE US PC GROUP	0.4
TRAVELERS CO INC	1.0
XL REINSURANCE AMERICA GROUP	1.3
ZURICH INSURANCE US PC GROUP	0.6
Weighted Average	0.99

### Notes:

Sources: Value Line Investment Survey, Part 3, The Ratings & Reports (VL)  
Value Line Investment Survey, Part 2, Small and Mid Cap Edition (VLSM)  
<http://finance.yahoo.com> (data available in September 2023)  
Weighted by direct premiums written.

# VII 000089

Section VII - Profit  
Subsection E - Cost of Capital  
7/1/2024

Section VII - E  
Exhibit 4

## Capital Structure Ratios of Property-Casualty Insurance Companies

Companies (1)	Total Debt \$ in millions (2)	Preferred Stock \$ in millions (3)	Total Debt Capital =(2) + (3) (4)	Common Equity \$ in millions (5)	Equity Capital Share (6)	Debt Capital Share (7)
ALLIANZ US PC INSURANCE COMPANIES	35,788.0	0.0	35,788.0	95,662.3	0.73	0.27
AMERICAN FINANCIAL GROUP INC	1,474.0	0.0	1,474.0	9,695.8	0.87	0.13
AMERICAN INTERNATIONAL GROUP	26,000.0	0.0	26,000.0	42,877.5	0.62	0.38
AMERISAFE INC	0.0	0.0	0.0	1,004.8	1.00	0.00
ARCH CAPITAL GROUP LTD	2,726.0	830.0	3,556.0	28,374.9	0.89	0.11
ARGO GROUP	399.2	0.0	399.2	1,045.3	0.72	0.28
BERKLEY (W R) CORP	2,835.8	0.0	2,835.8	15,992.4	0.85	0.15
BERKSHIRE HATHAWAY	122,744.0	0.0	122,744.0	775,135.2	0.86	0.14
BROOKFIELD REINSURANCE LTD	3,803.0	2,580.0	6,383.0	352.1	0.05	0.95
CHUBB LTD	14,789.0	0.0	14,789.0	82,604.7	0.85	0.15
CINCINNATI FINANCIAL CORP	867.0	0.0	867.0	16,593.1	0.95	0.05
CNA FINANCIAL CORP	3,176.0	0.0	3,176.0	10,794.6	0.77	0.23
EMPLOYERS HOLDINGS INC	182.5	0.0	182.5	1,062.6	0.85	0.15
EVEREST RE GROUP	3,085.0	0.0	3,085.0	13,951.9	0.82	0.18
FAIRFAX FINANCIAL GROUP	8,624.9	1,335.5	9,960.4	19,112.2	0.66	0.34
GENERAL ELECTRIC	22,400.0	6.0	22,406.0	123,398.9	0.85	0.15
HANOVER INS GROUP	782.8	0.0	782.8	3,849.9	0.83	0.17
HARTFORD FINANCIAL	4,358.0	0.0	4,358.0	22,410.5	0.84	0.16
HDI/TALANX US PC GROUP	9,533.0	0.0	9,533.0	16,426.1	0.63	0.37
INTACT US INSURANCE GROUP	5,144.0	1,322.0	6,466.0	25,354.8	0.80	0.20
JAMES RIVER GROUP	326.4	144.9	471.3	578.6	0.55	0.45
MARKEL CORP	3,813.9	0.0	3,813.9	19,709.8	0.84	0.16
MS&AD US INSURANCE GROUP	4,764.9	0.0	4,764.9	18,981.8	0.80	0.20
NATIONAL HEALTHCARE	125.9	0.0	125.9	1,040.9	0.89	0.11
OLD REPUBLIC INTL CORP	1,590.5	0.0	1,590.5	7,791.6	0.83	0.17
PROASSURANCE CORP	426.0	0.0	426.0	957.7	0.69	0.31
PROGRESSIVE CORP	6,886.5	493.9	7,380.4	76,617.4	0.91	0.09
QBE NORTH AMERICA INSURANCE GROUP	3,045.0	0.0	3,045.0	14,306.8	0.82	0.18
RLI CORP	200.0	0.0	200.0	6,023.3	0.97	0.03
SAMSUNG F & M INSURANCE CO	0.0	1,671.0	1,671.0	7,464.0	0.82	0.18
SELECTIVE INS GROUP INC	503.6	0.0	503.6	6,080.6	0.92	0.08
SKYWARD SPECIALTY INSURANCE GROUP	128.6	0.0	128.6	912.6	0.88	0.12
SOMPO HOLDINGS US GROUP	609,051.0	0.0	609,051.0	14,186.6	0.02	0.98
TOKIO MARINE US PC GROUP	1,484.7	0.0	1,484.7	42,801.9	0.97	0.03
TRAVELERS CO INC	8,031.0	0.0	8,031.0	37,430.9	0.82	0.18
XL REINSURANCE AMERICA GROUP	67,908.8	0.0	67,908.8	67,662.9	0.50	0.50
ZURICH INSURANCE US PC GROUP	15,671.0	0.0	15,671.0	69,299.2	0.82	0.18
<b>(8) Weighed Average</b>					<b>0.82</b>	<b>0.18</b>

Notes:

Sources: Value Line Investment Survey, Part 3, The Ratings & Reports (VL)

Value Line Investment Survey, Part 2, Small and Mid Cap Edition (VLSM)

<http://finance.yahoo.com> (data available in September 2023)

(5) = (outstanding shares) \* (one month average share price)

One month (Aug 5, 2023 - Sep 5, 2023) average share price from 'Yahoo Finance'

Value Line doesn't have debt information for Berkshire Hathaway. 'Yahoo Finance' used instead.

(6) = (5) / [(4) + (5)]

(7) = 1.0 - (6)

(8): Weighted by direct premiums written.

Leverage Ratio

Company	Loss & LAE and Unearned Premium Reserves (\$000)					Surplus (\$000)					Leverage Ratio				
	2022	2021	2020	2019	2018	2022	2021	2020	2019	2018	2022	2021	2020	2019	2018
	(1)	(2)				(3)					(4) = (3) / (2)				
018555 A.I.M. Mutual Insurance Companies (G)	380	367	365	351	336	370	357	319	295	258	0.98	0.97	0.87	0.84	0.77
018674 Travelers Group (G)	63,557	59,693	56,497	53,741	51,786	22,816	23,167	21,558	20,680	20,207	0.36	0.39	0.38	0.38	0.39
000048 Hartford Insurance Group (G)	34,242	32,175	30,110	28,987	28,001	15,069	14,720	13,998	13,383	11,253	0.44	0.46	0.46	0.46	0.40
000060 Liberty Mutual Insurance Companies (G)	76,185	71,673	67,355	61,714	58,715	26,705	27,679	24,051	21,803	20,951	0.35	0.39	0.36	0.35	0.36
018498 Chubb INA Group (G)	47,908	44,682	40,278	35,571	34,027	18,438	18,416	17,722	17,646	18,647	0.38	0.41	0.44	0.50	0.55
018549 Zurich Insurance US PC Group (G)	16,809	16,539	16,269	16,495	17,696	7,324	7,708	6,958	7,406	6,873	0.44	0.47	0.43	0.45	0.39
000811 Berkshire Hathaway Insurance Group (G)	129,685	121,698	106,038	97,790	90,618	271,825	307,741	244,072	223,215	167,425	2.10	2.53	2.30	2.28	1.85
018396 Charter Insurance Group (G)	81	90	100	98	107	75	81	84	81	69	0.93	0.90	0.83	0.82	0.64
018533 AmTrust Group (G)	6,137	5,660	5,098	5,123	5,117	2,328	2,210	2,210	2,128	2,164	0.38	0.39	0.43	0.42	0.42
018252 W. R. Berkley Insurance Group (G)	17,735	16,045	14,287	12,999	12,351	8,329	6,816	6,186	6,010	5,590	0.47	0.42	0.43	0.46	0.45
000734 Old Republic Insurance Group (G)	7,253	7,008	6,858	6,621	6,593	4,563	4,598	4,079	4,120	3,713	0.63	0.66	0.59	0.62	0.56
018540 American International Group (G)	34,423	35,346	35,391	38,572	42,359	19,522	19,603	18,467	17,855	17,908	0.57	0.55	0.52	0.46	0.42
018313 CNA Insurance Companies (G)	24,678	34,835	33,334	32,312	32,209	10,563	11,321	10,709	10,792	10,409	0.43	0.32	0.32	0.33	0.32
004861 Hanover Ins Group Prop & Cas Cos (G)	8,192	7,459	6,830	6,453	6,103	2,690	2,720	2,589	2,470	2,171	0.33	0.36	0.38	0.38	0.36
018524 MEMIC Group (G)	1,021	981	949	912	904	524	527	488	470	424	0.51	0.54	0.51	0.52	0.47
018220 Arbella Insurance Group (G)	961	905	868	886	879	913	930	837	736	651	0.95	1.03	0.96	0.83	0.74
003926 Selective Insurance Group (G)	6,181	5,595	5,129	4,855	4,610	2,474	2,391	2,125	1,932	1,768	0.40	0.43	0.41	0.40	0.38
004202 Utica National Insurance Group (G)	2,452	2,274	2,121	1,968	1,849	1,458	1,410	1,257	1,139	1,021	0.59	0.62	0.59	0.58	0.55
005658 QBE North America Insurance Group (G)	3,939	4,105	3,650	3,394	3,128	1,806	1,694	1,625	1,718	1,741	0.46	0.41	0.45	0.51	0.56
018484 Arch Insurance Group (G)	7,148	6,143	5,213	3,918	3,183	2,900	2,499	1,978	1,779	1,975	0.41	0.41	0.38	0.45	0.62
018756 Starr International Group (G)	4,773	4,400	3,998	3,554	3,033	3,039	2,828	2,379	2,187	2,024	0.64	0.64	0.60	0.62	0.67
000086 Sentry Insurance Group (G)	5,989	5,556	5,119	4,815	4,510	7,490	7,506	6,533	6,001	5,450	1.25	1.35	1.28	1.25	1.21
004284 Federated Mutual Group (G)	4,177	3,830	3,398	2,948	2,636	4,579	4,410	3,975	3,778	3,404	1.10	1.15	1.17	1.28	1.29
018680 AF Group (G)	4,483	4,236	4,045	3,817	3,618	2,304	2,047	1,886	1,720	1,517	0.51	0.48	0.47	0.45	0.42
003116 Fairfax Financial (USA) Group (G)	20,413	18,455	15,701	14,182	13,099	9,750	8,816	7,472	7,040	6,652	0.48	0.48	0.48	0.50	0.51
000780 Progressive Insurance Group (G)	41,784	36,561	30,255	27,304	23,748	17,860	16,415	15,536	14,043	11,970	0.43	0.45	0.51	0.51	0.50
000706 Norfolk & Dedham Group Pool (G)	341	325	318	310	299	434	447	406	362	316	1.27	1.38	1.28	1.17	1.06
018943 AU Holding Company Group (G)	1,065	801	727	701	665	946	1,029	975	949	899	0.89	1.28	1.34	1.35	1.35
004835 Great American P & C Insurance Group (G)	10,149	9,546	8,966	8,468	8,038	4,356	4,221	3,643	3,342	2,865	0.43	0.44	0.41	0.39	0.36
018733 Tokio Marine US PC Group (G)	21,694	19,886	18,192	16,934	15,617	11,125	10,312	9,351	8,923	8,635	0.51	0.52	0.51	0.53	0.55
000346 EMC Insurance Companies (G)	3,569	3,473	3,182	2,898	2,795	1,605	1,737	1,566	1,575	1,662	0.45	0.50	0.49	0.54	0.59
000174 Arrow Mutual Liability Insurance Company	10	9	10	10	11	26	31	32	32	31	2.76	3.39	3.07	3.09	2.67
004019 Argo Group (G)	3,085	2,673	2,326	2,061	1,784	1,111	1,177	1,072	1,051	1,005	0.36	0.44	0.46	0.51	0.56
000124 American Family Insurance Group (G)	15,290	13,925	12,975	12,480	11,519	7,278	9,274	7,489	7,007	7,739	0.48	0.67	0.58	0.56	0.67
002947 American National Prop & Cas Group (G)	1,916	1,755	1,656	1,596	1,532	1,622	1,570	1,463	1,330	1,184	0.85	0.89	0.88	0.83	0.77
018602 Employers Insurance Group (G)	1,825	1,782	1,842	1,970	2,017	941	1,089	1,046	1,021	928	0.52	0.61	0.57	0.52	0.46
018385 Service Insurance Group (G)	213	185	157	146	157	163	164	156	145	132	0.77	0.89	0.99	0.99	0.84
018468 Markel Corporation Group (G)	11,489	9,874	8,497	7,593	6,191	5,406	4,649	4,187	3,726	3,203	0.47	0.47	0.49	0.49	0.52
002146 Electric Insurance Company	597	623	718	783	828	338	374	387	395	405	0.57	0.60	0.54	0.50	0.49
005696 Everest Re U.S. Group (G)	14,054	11,966	9,752	7,814	7,012	5,553	5,789	5,276	3,739	3,651	0.40	0.48	0.54	0.48	0.52
000246 Central Insurance Companies (G)	1,054	1,029	976	918	863	1,032	1,004	893	897	809	0.98	0.98	0.91	0.98	0.94
018593 Group 1001 Property and Casualty Group (G)	459	417	266	208	223	201	198	135	173	159	0.44	0.47	0.51	0.83	0.71
004294 The Cincinnati Insurance Companies (G)	11,259	9,834	9,013	8,225	7,906	6,512	7,247	5,838	5,620	4,919	0.58	0.74	0.65	0.68	0.62
018878 Sompo Holdings US Group (G)	8,399	6,949	5,044	3,722	3,187	4,150	2,929	2,423	2,028	2,127	0.49	0.42	0.48	0.54	0.67
018557 XL America Companies (G)	11,746	8,786	8,200	7,056	6,984	4,382	3,489	2,869	2,462	2,512	0.37	0.40	0.35	0.35	0.36
000590 Merchants Insurance Group (G)	618	559	506	456	420	312	303	267	244	225	0.51	0.54	0.53	0.53	0.54
013103 Work First Casualty Company	49	42	43	40	37	43	36	25	21	18	0.88	0.86	0.57	0.52	0.49
005987 Nationwide Group (G)	26,222	25,144	24,332	23,567	23,992	18,914	18,022	16,484	15,749	14,478	0.72	0.72	0.68	0.67	0.60
018975 Core Specialty Insurance Group (G)	2,063	1,537	1,095	1,037	877	1,021	932	1,045	433	379	0.50	0.61	0.95	0.42	0.43
018887 Church Mutual Insurance Group (G)	1,400	1,305	1,263	1,170	1,118	764	791	743	679	619	0.55	0.61	0.59	0.58	0.55
018923 Pharmacists Mutual Insurance Group (G)	261	222	215	187	167	134	177	172	176	138	0.51	0.80	0.80	0.94	0.82
018922 Benchmark Insurance Group (G)	359	266	172	137	121	235	183	186	148	129	0.65	0.69	1.08	1.08	1.06

VII 000090

Leverage Ratio

Company	Loss & LAE and Unearned Premium Reserves (\$000)					Surplus (\$000)					Leverage Ratio				
	2022	2021	2020	2019	2018	2022	2021	2020	2019	2018	2022	2021	2020	2019	2018
(1)	(2)					(3)					(4) = (3) / (2)				
000419 Coaction Specialty Insurance Group (G)	1,173	1,508	1,782	1,712	1,545	479	589	668	569	474	0.41	0.39	0.37	0.33	0.31
018717 Skyward Specialty Insurance Group (G)	952	681	533	509	416	408	370	342	338	264	0.43	0.54	0.64	0.66	0.64
018458 Intact US Insurance Group (G)	2,178	1,976	1,745	1,557	1,546	828	852	823	961	819	0.38	0.43	0.47	0.62	0.53
004071 Amerisure Companies (G)	1,905	1,839	1,830	1,843	1,787	1,089	1,177	1,080	1,008	984	0.57	0.64	0.59	0.55	0.55
018782 MS&AD US Insurance Group (G)	915	793	749	740	729	1,537	1,605	1,546	1,170	559	1.68	2.02	2.06	1.58	0.77
003918 GuideOne Insurance Companies (G)	1,217	1,081	948	838	870	389	458	442	456	433	0.32	0.42	0.47	0.54	0.50
018559 ProAssurance Group (G)	3,245	3,314	3,214	3,024	2,668	1,382	1,453	1,421	1,488	1,778	0.43	0.44	0.44	0.49	0.67
018067 American Contractors Insurance Group (G)	352	307	325	323	295	202	186	181	174	160	0.57	0.60	0.56	0.54	0.54
002967 ICW Group (G)	3,158	2,696	2,390	2,050	1,785	1,487	1,494	1,290	1,301	1,109	0.47	0.55	0.54	0.63	0.62
000221 Brotherhood Mutual Insurance Company	630	555	474	436	397	322	324	298	280	241	0.51	0.58	0.63	0.64	0.61
018894 WCF Insurance Group (G)	1,422	1,275	1,233	1,170	1,142	1,169	1,185	1,074	1,041	946	0.82	0.93	0.87	0.89	0.83
012138 Cherokee Insurance Company	420	414	399	374	345	334	337	289	227	186	0.79	0.81	0.73	0.61	0.54
012124 Premier Group Insurance Company	19	19	18	17	17	31	34	36	39	40	1.62	1.81	1.95	2.24	2.31
003883 RLI Group (G)	2,222	1,985	1,779	1,636	1,522	1,408	1,241	1,122	1,030	830	0.63	0.63	0.63	0.63	0.55
018211 AMERISAFE Insurance Group (G)	698	747	784	818	840	252	278	366	360	384	0.36	0.37	0.47	0.44	0.46
004354 Auto-Owners Insurance Group (G)	13,029	11,419	10,644	9,901	9,204	14,666	15,234	13,781	12,396	11,552	1.13	1.33	1.29	1.25	1.26
018429 Allianz US PC Insurance Companies (G)	6,557	6,215	5,905	6,467	5,833	3,141	2,836	2,831	2,798	3,094	0.48	0.46	0.48	0.43	0.53
018567 IAT Insurance Group (G)	1,707	1,579	1,358	1,226	1,007	815	939	811	854	730	0.48	0.59	0.60	0.70	0.72
000088 State Farm Group (G)	81,008	70,138	66,417	64,820	65,737	131,394	143,205	126,077	116,308	100,887	1.62	2.04	1.90	1.79	1.53
000672 National American Insurance Company	243	205	177	162	149	95	94	85	80	74	0.39	0.46	0.48	0.50	0.50
000032 Farmers Insurance Group (G)	19,638	18,681	18,803	18,509	17,960	6,149	6,533	8,688	8,376	8,019	0.31	0.35	0.46	0.45	0.45
018907 HDI/Talanx US PC Group (G)	692	699	728	521	252	334	280	246	227	216	0.48	0.40	0.34	0.44	0.86
011021 Samsung F & M Insurance Co., Ltd USB	46	51	63	78	108	88	80	78	73	68	1.89	1.57	1.24	0.94	0.63
000964 West Bend Mutual Insurance Company	2,254	1,997	1,814	1,672	1,577	1,514	1,597	1,401	1,231	1,138	0.67	0.80	0.77	0.74	0.72
018626 James River Group (G)	1,432	684	435	432	361	493	325	286	267	242	0.34	0.48	0.66	0.62	0.67
018392 The Gray Insurance Group (G)	225	209	209	210	186	184	201	152	133	128	0.82	0.96	0.73	0.63	0.69
000766 Penn National Insurance Companies (G)	1,120	1,080	1,061	1,041	1,056	798	789	718	664	591	0.71	0.73	0.68	0.64	0.56
											2022	2021	2020	2019	2018
(5) Premium Weighted Leverage Ratio											1.57	1.45	1.53	1.52	1.66
(6) Selected Leverage Ratio											<b>1.55</b>				

Notes:  
 Source: A.M. Best's Global Insurance Database for all Massachusetts Workers' Compensation Group Companies.  
 (5) = Sum (4) / Sum [ (4) x Direct Premiums Written from Section VII - J, Exhibit 5 ]  
 (6): Selected Leverage Ratio is equal to five year average.

Single Policy  
 Determination of Selected Premium Flow From Premium Collection Special Call

Time Interval		Net Premium Ranges									Weighted Average Selected Collection Pattern (12)
		0 - 9,999			10,000 - 199,999			200,000 +			
		Actual Premium Collection Pattern		Weight (5)	Actual Premium Collection Pattern		Weight (8)	Actual Premium Collection Pattern		Weight (11)	
From (1)	To (2)	Actual (3)	Selected (4)		Actual (6)	Selected (7)		Actual (9)	Selected (10)		
07/01/23	09/30/23	0.0%	0.0%	24.7%	0.1%	0.0%	50.4%	0.0%	0.0%	25.0%	0.0%
10/01/23	12/31/23	0.0%	0.0%	24.7%	0.0%	0.0%	50.4%	0.2%	0.0%	25.0%	0.0%
01/01/24	03/31/24	0.1%	0.0%	24.7%	0.1%	0.0%	50.4%	0.0%	0.0%	25.0%	0.0%
04/01/24	06/30/24	11.2%	11.2%	24.7%	2.7%	2.7%	50.4%	1.1%	1.0%	25.0%	4.4%
07/01/24	09/30/24	38.1%	38.1%	24.7%	34.5%	34.5%	50.4%	37.8%	37.8%	25.0%	36.2%
10/01/24	12/31/24	22.6%	22.6%	24.7%	26.0%	26.0%	50.4%	22.4%	22.4%	25.0%	24.3%
01/01/25	03/31/25	15.4%	15.4%	24.7%	20.5%	20.5%	50.4%	20.1%	20.1%	25.0%	19.1%
04/01/25	06/30/25	4.0%	4.0%	24.7%	5.7%	5.7%	50.4%	7.4%	7.5%	25.0%	5.7%
07/01/25	09/30/25	2.2%	2.2%	24.7%	1.8%	1.8%	50.4%	3.1%	3.0%	25.0%	2.2%
10/01/25	12/31/25	2.8%	2.8%	24.7%	4.0%	4.0%	50.4%	5.6%	5.6%	25.0%	4.1%
01/01/26	03/31/26	1.9%	1.9%	24.7%	2.2%	2.2%	50.4%	1.9%	1.9%	25.0%	2.1%
04/01/26	06/30/26	1.1%	1.1%	24.7%	1.2%	1.5%	50.4%	0.2%	0.5%	25.0%	1.2%
07/01/26	09/30/26	0.1%	0.7%	24.7%	0.2%	1.1%	50.4%	0.0%	0.2%	25.0%	0.8%
10/01/26	12/31/26	0.0%	0.0%	24.7%	0.1%	0.0%	50.4%	0.1%	0.0%	25.0%	0.0%
01/01/27	03/31/27	0.0%	0.0%	24.7%	0.0%	0.0%	50.4%	0.1%	0.0%	25.0%	0.0%
04/01/27	06/30/27	0.0%	0.0%	24.7%	0.0%	0.0%	50.4%	0.0%	0.0%	25.0%	0.0%
07/01/27	09/30/27	0.2%	0.0%	24.7%	0.2%	0.0%	50.4%	0.0%	0.0%	25.0%	0.0%
10/01/27	12/31/27	0.2%	0.0%	24.7%	0.4%	0.0%	50.4%	0.0%	0.0%	25.0%	0.0%
01/01/28	03/31/28	0.1%	0.0%	24.7%	0.3%	0.0%	50.4%	0.0%	0.0%	25.0%	0.0%
Total											100.0%

Notes:  
 (5), (8), (11) are calculated using Unit Statistical Data for PY 2021.  
 (3), (6), (9) are from the premium collection special call.  
 (12) = [(4) x (5)] + [(7) x (8)] + [(10) x (11)]

VII 000092

# VII 000093

Section VII - Profit  
Subsection H - Expense Weights  
7/1/2024

Section VII - H  
Exhibit 1

## Cash Flow Weights

Item of Expense Allowance (% of Standard Premium plus ARAP)	Policy Year		Average
	2020	2021	
(1) Expected Losses	59.91%	59.30%	59.61%
(2) Expected Loss Adjustment Expense (LAE):	11.68%	11.56%	11.62%
(a) Defense and Cost Containment Expense	5.41%	5.36%	5.39%
(b) Adjusting and Other Expense	6.26%	6.20%	6.23%
(3) Expected Losses + Expected LAE [= (1) + (2) ]	71.59%	70.85%	71.22%
(4) Fixed Expenses	5.20%	4.92%	5.06%
(a) General Expenses	4.83%	4.57%	4.70%
(b) Miscellaneous and Other Taxes	0.36%	0.34%	0.35%
(5) Variable Expenses [= (5a) + (5b) + (5c) ]	19.02%	19.02%	19.02%
(a) Total Acquisition	11.46%	11.46%	11.46%
(i) Commissions	9.05%	9.05%	9.05%
(ii) Other Acquisition	1.41%	1.41%	1.41%
(iii) Reinsurance Expenses	1.00%	1.00%	1.00%
(iv) Incidental Income and Earned but Uncollected Premium	0.00%	0.00%	0.00%
(b) Premium Tax	2.16%	2.16%	2.16%
(c) Premium Discount	5.40%	5.40%	5.40%
(6) Total Expenses [= (4) + (5) ]	24.21%	23.93%	24.07%

### Notes:

- (1): Policy Year 2020 and Policy Year 2021 Expected Losses are based on the loss ratios projected to the prospective policy period adjusted by the factor to remove the residual market subsidy associated with large deductible policies from Section I-B, Exhibit 1.
- (2): Expected LAE = Expected Losses x 0.195 where 0.195 is the LAE ratio calculated in VI-H, Exhibit 1.
- (2a), (2b): Loss Adjustment Expense split between DCC and AO is  $0.464 = 0.09 / 0.195$  and  $0.536 = 1 - 0.464$  where 0.09 is three year average ratio of DCC to loss from Section VI-H, Exhibit 1, line (4) and LAE ratio = 0.195 from Section VI-H, Exhibit 1, line (6).
- (4): Section VI-B, Exhibit 1 times the factor to reflect the impact of large deductible policies, from Section I-D, Exhibit 1, Page 1.
- (4a), (4b): Policy Year 2020 Fixed Expenses split between General Expenses and Other Taxes based on \$43,087,745 General Expenses and \$3,235,741 Other Taxes. Policy Year 2021 General Expenses split based on \$45,330,276 General Expenses and \$3,404,148 Other Taxes. See VI-B, Exhibit 1, columns (12) & (13).
- (5a): Section VI-G, Exhibit 1.
- (5b), (5c): Section VI-A, Exhibit 1.

# VII 000094

Section VII - Profit  
Subsection I - Loss & LAE Flow  
7/1/2024

Section VII - I  
Exhibit 1

Single Policy  
Loss & Loss Adjustment Expense (LAE) Flow

Time Interval		Earned Premium (3)	Loss Flow (4)	DCC Flow (5) = (4)	AO Flow (6) = [(3) + (4)] / 2.0	Loss & LAE Payout (7)
From (1)	To (2)					
07/01/23	09/30/23	0.0000	0.0000	0.0000	0.0000	0.0000
10/01/23	12/31/23	0.0000	0.0000	0.0000	0.0000	0.0000
01/01/24	03/31/24	0.0000	0.0000	0.0000	0.0000	0.0000
04/01/24	06/30/24	0.0000	0.0000	0.0000	0.0000	0.0000
07/01/24	09/30/24	0.2500	0.0454	0.0454	0.1477	0.0544
10/01/24	12/31/24	0.2500	0.0454	0.0454	0.1477	0.0544
01/01/25	03/31/25	0.2500	0.0454	0.0454	0.1477	0.0544
04/01/25	06/30/25	0.2500	0.0454	0.0454	0.1477	0.0544
07/01/25	09/30/25	0.0000	0.0633	0.0633	0.0317	0.0606
10/01/25	12/31/25	0.0000	0.0633	0.0633	0.0317	0.0606
01/01/26	03/31/26	0.0000	0.0633	0.0633	0.0317	0.0606
04/01/26	06/30/26	0.0000	0.0633	0.0633	0.0317	0.0606
07/01/26	09/30/26	0.0000	0.0471	0.0471	0.0236	0.0451
10/01/26	12/31/26	0.0000	0.0471	0.0471	0.0236	0.0451
01/01/27	03/31/27	0.0000	0.0471	0.0471	0.0236	0.0451
04/01/27	06/30/27	0.0000	0.0471	0.0471	0.0236	0.0451
07/01/27	09/30/27	0.0000	0.0332	0.0332	0.0166	0.0317
10/01/27	12/31/27	0.0000	0.0332	0.0332	0.0166	0.0317
01/01/28	03/31/28	0.0000	0.0332	0.0332	0.0166	0.0317
04/01/28	06/30/28	0.0000	0.0332	0.0332	0.0166	0.0317
07/01/28	09/30/28	0.0000	0.0171	0.0171	0.0085	0.0163
10/01/28	12/31/28	0.0000	0.0171	0.0171	0.0085	0.0163
01/01/29	03/31/29	0.0000	0.0171	0.0171	0.0085	0.0163
04/01/29	06/30/29	0.0000	0.0171	0.0171	0.0085	0.0163
07/01/29	09/30/29	0.0000	0.0092	0.0092	0.0046	0.0088
10/01/29	12/31/29	0.0000	0.0092	0.0092	0.0046	0.0088
01/01/30	03/31/30	0.0000	0.0092	0.0092	0.0046	0.0088
04/01/30	06/30/30	0.0000	0.0092	0.0092	0.0046	0.0088
07/01/30	09/30/30	0.0000	0.0043	0.0043	0.0021	0.0041
10/01/30	12/31/30	0.0000	0.0043	0.0043	0.0021	0.0041
01/01/31	03/31/31	0.0000	0.0043	0.0043	0.0021	0.0041
04/01/31	06/30/31	0.0000	0.0043	0.0043	0.0021	0.0041
07/01/31	09/30/31	0.0000	0.0020	0.0020	0.0010	0.0020
10/01/31	12/31/31	0.0000	0.0020	0.0020	0.0010	0.0020
01/01/32	03/31/32	0.0000	0.0020	0.0020	0.0010	0.0020
04/01/32	06/30/32	0.0000	0.0020	0.0020	0.0010	0.0020
07/01/32	09/30/32	0.0000	0.0016	0.0016	0.0008	0.0016
10/01/32	12/31/32	0.0000	0.0016	0.0016	0.0008	0.0016
01/01/33	03/31/33	0.0000	0.0016	0.0016	0.0008	0.0016
04/01/33	06/30/33	0.0000	0.0016	0.0016	0.0008	0.0016
07/01/33	09/30/33	0.0000	0.0010	0.0010	0.0005	0.0010
10/01/33	12/31/33	0.0000	0.0010	0.0010	0.0005	0.0010
01/01/34	03/31/34	0.0000	0.0010	0.0010	0.0005	0.0010
04/01/34	06/30/34	0.0000	0.0010	0.0010	0.0005	0.0010
07/01/34	09/30/34	0.0000	0.0009	0.0009	0.0005	0.0009
10/01/34	12/31/34	0.0000	0.0009	0.0009	0.0005	0.0009
01/01/35	03/31/35	0.0000	0.0009	0.0009	0.0005	0.0009
04/01/35	06/30/35	0.0000	0.0009	0.0009	0.0005	0.0009
07/01/35	09/30/35	0.0000	0.0008	0.0008	0.0004	0.0008
10/01/35	12/31/35	0.0000	0.0008	0.0008	0.0004	0.0008
01/01/36	03/31/36	0.0000	0.0008	0.0008	0.0004	0.0008
04/01/36	06/30/36	0.0000	0.0008	0.0008	0.0004	0.0008
07/01/36	09/30/36	0.0000	0.0012	0.0012	0.0006	0.0011
10/01/36	12/31/36	0.0000	0.0012	0.0012	0.0006	0.0011
01/01/37	03/31/37	0.0000	0.0012	0.0012	0.0006	0.0011
04/01/37	06/30/37	0.0000	0.0012	0.0012	0.0006	0.0011
07/01/37	09/30/37	0.0000	0.0007	0.0007	0.0004	0.0007
10/01/37	12/31/37	0.0000	0.0007	0.0007	0.0004	0.0007
01/01/38	03/31/38	0.0000	0.0007	0.0007	0.0004	0.0007
04/01/38	06/30/38	0.0000	0.0007	0.0007	0.0004	0.0007
07/01/38	09/30/38	0.0000	0.0006	0.0006	0.0003	0.0006
10/01/38	12/31/38	0.0000	0.0006	0.0006	0.0003	0.0006
01/01/39	03/31/39	0.0000	0.0006	0.0006	0.0003	0.0006
04/01/39	06/30/39	0.0000	0.0006	0.0006	0.0003	0.0006
07/01/39	09/30/39	0.0000	0.0004	0.0004	0.0002	0.0004
10/01/39	12/31/39	0.0000	0.0004	0.0004	0.0002	0.0004
01/01/40	03/31/40	0.0000	0.0004	0.0004	0.0002	0.0004
04/01/40	06/30/40	0.0000	0.0004	0.0004	0.0002	0.0004
07/01/40	09/30/40	0.0000	0.0004	0.0004	0.0002	0.0004
10/01/40	12/31/40	0.0000	0.0004	0.0004	0.0002	0.0004
01/01/41	03/31/41	0.0000	0.0004	0.0004	0.0002	0.0004
04/01/41	06/30/41	0.0000	0.0004	0.0004	0.0002	0.0004
07/01/41	09/30/41	0.0000	0.0008	0.0008	0.0004	0.0007
10/01/41	12/31/41	0.0000	0.0008	0.0008	0.0004	0.0007
01/01/42	03/31/42	0.0000	0.0008	0.0008	0.0004	0.0007
04/01/42	06/30/42	0.0000	0.0008	0.0008	0.0004	0.0007
07/01/42	09/30/42	0.0000	0.0005	0.0005	0.0002	0.0004
10/01/42	12/31/42	0.0000	0.0005	0.0005	0.0002	0.0004

# VII 000095

Section VII - Profit  
 Subsection I - Loss & LAE Flow  
 7/1/2024

Section VII - I  
 Exhibit 1

Single Policy  
 Loss & Loss Adjustment Expense (LAE) Flow

Time Interval		Earned Premium (3)	Loss Flow (4)	DCC Flow (5) = (4)	AO Flow (6) = [(3) + (4)] / 2.0	Loss & LAE Payout (7)
From (1)	To (2)					
01/01/43	03/31/43	0.0000	0.0005	0.0005	0.0002	0.0004
04/01/43	06/30/43	0.0000	0.0005	0.0005	0.0002	0.0004
07/01/43	09/30/43	0.0000	0.0006	0.0006	0.0003	0.0005
10/01/43	12/31/43	0.0000	0.0006	0.0006	0.0003	0.0005
01/01/44	03/31/44	0.0000	0.0006	0.0006	0.0003	0.0005
04/01/44	06/30/44	0.0000	0.0006	0.0006	0.0003	0.0005
07/01/44	09/30/44	0.0000	0.0006	0.0006	0.0003	0.0006
10/01/44	12/31/44	0.0000	0.0006	0.0006	0.0003	0.0006
01/01/45	03/31/45	0.0000	0.0006	0.0006	0.0003	0.0006
04/01/45	06/30/45	0.0000	0.0006	0.0006	0.0003	0.0006
07/01/45	09/30/45	0.0000	0.0013	0.0013	0.0006	0.0012
10/01/45	12/31/45	0.0000	0.0013	0.0013	0.0006	0.0012
01/01/46	03/31/46	0.0000	0.0013	0.0013	0.0006	0.0012
04/01/46	06/30/46	0.0000	0.0013	0.0013	0.0006	0.0012
07/01/46	09/30/46	0.0000	0.0013	0.0013	0.0006	0.0012
10/01/46	12/31/46	0.0000	0.0013	0.0013	0.0006	0.0012
01/01/47	03/31/47	0.0000	0.0013	0.0013	0.0006	0.0012
04/01/47	06/30/47	0.0000	0.0013	0.0013	0.0006	0.0012
07/01/47	09/30/47	0.0000	0.0013	0.0013	0.0006	0.0012
10/01/47	12/31/47	0.0000	0.0013	0.0013	0.0006	0.0012
01/01/48	03/31/48	0.0000	0.0013	0.0013	0.0006	0.0012
04/01/48	06/30/48	0.0000	0.0013	0.0013	0.0006	0.0012
07/01/48	09/30/48	0.0000	0.0013	0.0013	0.0006	0.0012
10/01/48	12/31/48	0.0000	0.0013	0.0013	0.0006	0.0012
01/01/49	03/31/49	0.0000	0.0013	0.0013	0.0006	0.0012
04/01/49	06/30/49	0.0000	0.0013	0.0013	0.0006	0.0012
07/01/49	09/30/49	0.0000	0.0013	0.0013	0.0006	0.0012
10/01/49	12/31/49	0.0000	0.0013	0.0013	0.0006	0.0012
01/01/50	03/31/50	0.0000	0.0013	0.0013	0.0006	0.0012
04/01/50	06/30/50	0.0000	0.0013	0.0013	0.0006	0.0012
07/01/50	09/30/50	0.0000	0.0013	0.0013	0.0006	0.0012
10/01/50	12/31/50	0.0000	0.0013	0.0013	0.0006	0.0012
01/01/51	03/31/51	0.0000	0.0013	0.0013	0.0006	0.0012
04/01/51	06/30/51	0.0000	0.0013	0.0013	0.0006	0.0012
07/01/51	09/30/51	0.0000	0.0013	0.0013	0.0006	0.0012
10/01/51	12/31/51	0.0000	0.0013	0.0013	0.0006	0.0012
01/01/52	03/31/52	0.0000	0.0013	0.0013	0.0006	0.0012
04/01/52	06/30/52	0.0000	0.0013	0.0013	0.0006	0.0012
07/01/52	09/30/52	0.0000	0.0013	0.0013	0.0006	0.0012
10/01/52	12/31/52	0.0000	0.0013	0.0013	0.0006	0.0012
01/01/53	03/31/53	0.0000	0.0013	0.0013	0.0006	0.0012
04/01/53	06/30/53	0.0000	0.0013	0.0013	0.0006	0.0012
07/01/53	09/30/53	0.0000	0.0013	0.0013	0.0006	0.0012
10/01/53	12/31/53	0.0000	0.0013	0.0013	0.0006	0.0012
01/01/54	03/31/54	0.0000	0.0013	0.0013	0.0006	0.0012
04/01/54	06/30/54	0.0000	0.0013	0.0013	0.0006	0.0012
07/01/54	09/30/54	0.0000	0.0013	0.0013	0.0006	0.0012
10/01/54	12/31/54	0.0000	0.0013	0.0013	0.0006	0.0012
01/01/55	03/31/55	0.0000	0.0013	0.0013	0.0006	0.0012
04/01/55	06/30/55	0.0000	0.0013	0.0013	0.0006	0.0012
07/01/55	09/30/55	0.0000	0.0013	0.0013	0.0006	0.0012
10/01/55	12/31/55	0.0000	0.0013	0.0013	0.0006	0.0012
01/01/56	03/31/56	0.0000	0.0013	0.0013	0.0006	0.0012
04/01/56	06/30/56	0.0000	0.0013	0.0013	0.0006	0.0012
07/01/56	09/30/56	0.0000	0.0013	0.0013	0.0006	0.0012
10/01/56	12/31/56	0.0000	0.0013	0.0013	0.0006	0.0012
01/01/57	03/31/57	0.0000	0.0013	0.0013	0.0006	0.0012
04/01/57	06/30/57	0.0000	0.0013	0.0013	0.0006	0.0012
07/01/57	09/30/57	0.0000	0.0013	0.0013	0.0006	0.0012
10/01/57	12/31/57	0.0000	0.0013	0.0013	0.0006	0.0012
01/01/58	03/31/58	0.0000	0.0013	0.0013	0.0006	0.0012
04/01/58	06/30/58	0.0000	0.0013	0.0013	0.0006	0.0012
07/01/58	09/30/58	0.0000	0.0013	0.0013	0.0006	0.0012
10/01/58	12/31/58	0.0000	0.0013	0.0013	0.0006	0.0012
01/01/59	03/31/59	0.0000	0.0013	0.0013	0.0006	0.0012
04/01/59	06/30/59	0.0000	0.0013	0.0013	0.0006	0.0012
(8) Relative Weights			1.0000	0.0903	0.1045	

Notes:

- (3): Single policy earned premium is earned uniformly through the one year policy term.
- (4): Exhibit 2, (8). Annual values divided by 4.0.
- (7): Loss & LAE Payout = ( 1.000 x (4) + 0.0903 x (5) + 0.1045 x (6) ) / ( 1.000 + 0.0903 + 0.1045 )
- (8): DCC relative weight = 1.000 x 0.195 x 0.464; AO relative weight = 1.000 x 0.195 x 0.536  
 where 0.195 is the LAE factor calculated in Section VI-H, Exhibit 1 and 0.464, 0.536 are the DCC and AO relative weights from Section VI-H, Exhibit 1.

# VII 000096

Section VII - Profit  
 Subsection I - Loss & LAE Flow  
 7/1/2024

Section VII - I  
 Exhibit 2

## Loss Payment Pattern

Age In Months  (1)	Indemnity Unadjusted LDF to Ult  (2)	Indemnity % Paid =1.0 / (2) (3)	Indemnity Incremental % Paid (3) - 1st Diff (4)	Medical LDF to Ult  (5)	Medical %Paid =1.0 / (5) (6)	Medical Incremental % Paid (6) - 1st Diff (7)	Indemnity & Medical Incremental % Paid (8)
12	8.011	12.48%	12.48%	3.015	33.17%	33.17%	18.17%
24	2.886	34.65%	22.17%	1.495	66.88%	33.70%	25.34%
36	1.761	56.79%	22.14%	1.298	77.07%	10.19%	18.86%
48	1.365	73.23%	16.44%	1.220	81.97%	4.90%	13.27%
60	1.223	81.80%	8.56%	1.187	84.25%	2.28%	6.84%
72	1.157	86.40%	4.60%	1.170	85.46%	1.21%	3.67%
84	1.131	88.39%	1.99%	1.157	86.42%	0.97%	1.71%
96	1.121	89.18%	0.79%	1.145	87.32%	0.89%	0.82%
108	1.114	89.77%	0.59%	1.135	88.14%	0.82%	0.65%
120	1.111	90.04%	0.27%	1.124	88.93%	0.79%	0.42%
132	1.107	90.35%	0.31%	1.117	89.51%	0.57%	0.38%
144	1.104	90.57%	0.23%	1.109	90.14%	0.63%	0.34%
156	1.098	91.07%	0.50%	1.104	90.57%	0.43%	0.48%
168	1.094	91.39%	0.32%	1.101	90.80%	0.23%	0.29%
180	1.092	91.54%	0.15%	1.096	91.27%	0.47%	0.24%
192	1.091	91.64%	0.10%	1.092	91.59%	0.32%	0.16%
204	1.089	91.79%	0.15%	1.089	91.83%	0.24%	0.17%
216	1.086	92.08%	0.29%	1.085	92.17%	0.34%	0.30%
228	1.084	92.23%	0.15%	1.082	92.44%	0.27%	0.19%
240	1.083	92.36%	0.13%	1.076	92.91%	0.47%	0.22%
252	1.081	92.53%	0.17%	1.071	93.34%	0.43%	0.24%
264			0.53%			0.48%	0.52%
276			0.53%			0.48%	0.52%
288			0.53%			0.48%	0.52%
300			0.53%			0.48%	0.52%
312			0.53%			0.48%	0.52%
324			0.53%			0.48%	0.52%
336			0.53%			0.48%	0.52%
348			0.53%			0.48%	0.52%
360			0.53%			0.48%	0.52%
372			0.53%			0.48%	0.52%
384			0.53%			0.48%	0.52%
396			0.53%			0.48%	0.52%
408			0.53%			0.48%	0.52%
420			0.53%			0.48%	0.52%
Total			100.00%			100.00%	100.00%

**Notes:**

(2), (5): Section II - E, Exhibit 1, Page 1.

(8) = (4) x 72.53% + (7) x 27.47%, where 72.53% and 27.47% are indemnity and medical estimated ultimate losses respectively, from Section II - A, Exhibit 1, Page 2.

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Section VII - Profit  
 Subsection J - Portfolio Rate of Return  
 7/1/2024

Section VII - J  
 Exhibit 1  
 Page 1

## Calculation of Portfolio Rate of Return

Asset Class (1)	Proportion (2)	Pre-tax Return (3)	Tax Rate (4)	After-tax Return (5)
Cash and Short-term Investments	5.64%	5.49%	21.00%	4.33%
Governments	10.99%	4.74%	21.00%	3.75%
States & Territories	5.43%	2.86%	5.25%	2.71%
Special Revenue	15.83%	2.70%	5.25%	2.56%
Industrials	40.96%	5.37%	21.00%	4.24%
Common Stocks	10.72%	12.62%	14.10%	10.84%
Real Estate	0.92%	9.03%	21.00%	7.14%
Mortgage Loans	1.88%	6.39%	21.00%	5.05%
Preferred Stocks	0.36%	6.15%	13.13%	5.34%
Other Invested Assets	7.29%	10.70%	16.99%	8.89%
(6) Total	100.00%	5.97%	17.35%	4.93%
(7) Investment Expenses		0.21%	21.00%	0.17%
(8) Portfolio Rate of Return		5.75%		<b>4.76%</b>

Notes:

(2): Page 2

(3): Pretax bond returns are from Exhibit 2, page 1.

Cash and short term investments: using short horizon CAPM with beta=0.00. Exhibit 2, Page 3, line (2).

Pretax return for Common Stock:  $r_f + b \times \text{MRP}$  with  $b=1.00$  and three horizons. MRP from Exhibit 4 and  $r_f$  from Exhibit 2,

Page 3, line (2) for short-term, line (8) for intermediate-term and line (11) for long-term horizon.

12.62% = average ( 8.73% + 5.49%, 7.74% + 4.31%, 7.17% + 4.42% )

Pretax return for Real Estate is the WACC for the REIT sector as calculated using data on capital structure, beta, and cost of debt from Damodaran Online, where cost of equity capital = 13.12%, using CAPM three horizon methodology from Section VII-E, Exhibit 3, page 1 with beta = 1.06, as reported in Damodaran Online for REIT sector.

Pretax return for Mortgage Loans: calculated using data for 15-year fixed rate mortgages from FRED. Exhibit 2, Page 3, line (23).

Pretax return for Preferred Stocks: calculated using data from yahoo finance.

Pretax return for Other Invested Assets from Exhibit 2, Page 4.

(4): Governments and Other taxable bonds taxed at Federal Tax Rate of 0.21.

Tax rate for Tax Exempt Bonds =  $0.25 \times 0.21$

Tax rate for Preferred stock =  $(0.50 \times 0.21) + (0.50 \times 0.25 \times 0.21)$

Tax rate for Common Stocks from Exhibit 6, page 1.

Tax rate for Other Invested Assets from Exhibit 2, page 4.

(5) = (3) x [ 1.0 - (4) ]

(7): Exhibit 5, page 1.

(8) = (6) - (7)

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Section VII - Profit  
Subsection J - Portfolio Rate of Return  
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Section VII - J  
Exhibit 1  
Page 2

## Asset Distribution for MA Workers' Compensation Group Companies

Asset Class (1)	Proportion (2)
Cash and Short Term Investments	5.64%
Bonds:	73.20%
Governments	10.99%
States & Territories	5.43%
Special Revenue	15.83%
Industrials	40.96%
Common Stocks	10.72%
Real Estate	0.92%
Mortgage Loans	1.88%
Preferred Stocks	0.36%
Other Invested Assets	7.29%

(3) Total 100.00%

### Notes:

Proportion of each asset class is from page 3. The Bond share in total is 73.20%.

This is allocated to the following subcategories:

Governments, States & Territories, Special Revenue and Industrials

by multiplying 73.20% by the adjusted bond weights from Exhibit 3, page 1.

Asset Distribution for MA Workers' Compensation Group Companies

Companies	Bonds	Preferred Stocks	Common Stocks	Real Estate	Mortgage Loans	Cash and Short Term Investments	Other Invested Assets	Total Cash and Invested Assets	% Bonds	% Preferred Stocks	% Common Stocks	% Real Estate	% Mortgage Loans	% Cash and Short Term Investments	% Other Invested Assets
(1)	(\$000) (2)	(\$000) (3)	(\$000) (4)	(\$000) (5)	(\$000) (6)	(\$000) (7)	(\$000) (8)	(\$000) (9)	= (2) / (9) (10)	= (3) / (9) (11)	= (4) / (9) (12)	= (5) / (9) (13)	= (6) / (9) (14)	= (7) / (9) (15)	= (8) / (9) (16)
A.I.M. Mutual Insurance Companies (G)	604	1	96	0	0	7	21	729	82.77%	0.10%	13.21%	0.00%	0.00%	1.02%	2.90%
Travelers Group (G)	71,340	17	1,676	1,220	0	1,090	4,269	79,612	89.61%	0.02%	2.11%	1.53%	0.00%	1.37%	5.36%
Hartford Insurance Group (G)	29,957	213	942	307	4,371	2,592	5,917	44,299	67.62%	0.48%	2.13%	0.69%	9.87%	5.85%	13.36%
Liberty Mutual Insurance Companies (G)	57,509	19	8,537	256	3,633	6,251	14,748	90,954	63.23%	0.02%	9.39%	0.28%	3.99%	6.87%	16.22%
Chubb INA Group (G)	56,608	19	303	64	0	2,646	3,615	63,256	89.49%	0.03%	0.48%	0.10%	0.00%	4.18%	5.71%
Zurich Insurance US PC Group (G)	17,325	0	1,005	1,286	0	519	1,396	21,531	80.46%	0.00%	4.67%	5.97%	0.00%	2.41%	6.48%
Berkshire Hathaway Insurance Group (G)	16,054	10,598	312,826	145	451	71,791	56,183	468,047	3.43%	2.26%	66.84%	0.03%	0.10%	15.34%	12.00%
Charter Insurance Group (G)	82	0	39	0	0	26	1	147	55.80%	0.00%	26.30%	0.00%	0.00%	17.48%	0.43%
AmTrust Group (G)	6,622	44	199	12	0	406	378	7,660	86.45%	0.57%	2.59%	0.16%	0.00%	5.30%	4.93%
W. R. Berkley Insurance Group (G)	15,778	192	2,783	446	51	1,695	2,851	23,797	66.30%	0.81%	11.69%	1.88%	0.22%	7.12%	11.98%
Old Republic Insurance Group (G)	8,665	1	2,271	0	0	379	9	11,326	76.50%	0.01%	20.06%	0.00%	0.00%	3.35%	0.08%
American International Group (G)	41,940	64	526	0	3,938	2,134	5,191	53,793	77.97%	0.12%	0.98%	0.00%	7.32%	3.97%	9.65%
CNA Insurance Companies (G)	36,971	490	967	0	1,024	1,160	2,239	42,851	86.28%	1.14%	2.26%	0.00%	2.39%	2.71%	5.22%
Hanover Ins Group Prop & Cas Cos (G)	7,962	11	291	46	183	76	605	9,173	86.79%	0.12%	3.18%	0.50%	1.99%	0.83%	6.59%
MEMIC Group (G)	1,194	0	209	0	0	29	35	1,466	81.41%	0.00%	14.24%	0.00%	0.00%	1.96%	2.39%
Arbella Insurance Group (G)	1,410	0	209	0	0	62	3	1,683	83.77%	0.00%	12.42%	0.00%	0.00%	3.66%	0.16%
Selective Insurance Group (G)	6,696	18	118	0	166	349	483	7,830	85.52%	0.23%	1.51%	0.00%	2.11%	4.46%	6.17%
Utica National Insurance Group (G)	2,945	0	415	12	2	-10	113	3,477	84.70%	0.00%	11.94%	0.34%	0.06%	-0.28%	3.26%
QBE North America Insurance Group (G)	2,962	0	108	49	0	883	361	4,363	67.88%	0.00%	2.48%	1.13%	0.00%	20.23%	8.28%
Arch Insurance Group (G)	11,668	20	283	1	29	533	335	12,869	90.67%	0.16%	2.20%	0.00%	0.23%	4.14%	2.60%
Starr International Group (G)	5,069	136	1,237	0	0	716	299	7,456	67.99%	1.82%	16.58%	0.00%	0.00%	9.60%	4.01%
Sentry Insurance Group (G)	9,055	0	2,028	146	0	-27	1,624	12,826	70.60%	0.00%	15.81%	1.14%	0.00%	-0.21%	12.66%
Federated Mutual Group (G)	5,587	52	1,613	60	0	206	466	7,984	69.97%	0.65%	20.21%	0.75%	0.00%	2.58%	5.83%
AF Group (G)	4,359	0	2,817	107	0	1,102	872	6,727	64.80%	0.00%	4.26%	1.59%	0.00%	16.39%	12.96%
Fairfax Financial (USA) Group (G)	14,312	424	5,954	394	2,279	2,709	2,395	28,466	50.28%	1.49%	20.92%	1.38%	8.00%	9.52%	8.41%
Progressive Insurance Group (G)	47,215	306	3,580	560	2	1,265	19	52,947	89.17%	0.58%	6.76%	1.06%	0.00%	2.39%	0.04%
Norfolk & Dedham Group Pool (G)	407	0	167	25	0	36	88	723	56.38%	0.00%	23.07%	3.41%	0.00%	5.01%	12.13%
AU Holding Company Group (G)	114	0	0	214	0	1,048	438	1,815	6.30%	0.02%	0.00%	11.80%	0.00%	57.73%	24.14%
Great American P & C Insurance Group (G)	9,909	431	373	38	859	469	2,077	14,154	70.01%	3.04%	2.63%	0.27%	6.07%	3.32%	14.67%
Tokio Marine US PC Group (G)	24,293	179	1,234	121	3,983	948	1,028	31,785	76.43%	0.56%	3.88%	0.38%	12.53%	2.98%	3.23%
EMC Insurance Companies (G)	3,108	112	969	141	0	103	151	4,585	67.79%	2.44%	21.14%	3.08%	0.00%	2.25%	3.29%
Arrow Mutual Liability Insurance Company	29	0	9	0	0	1	0	39	74.16%	0.00%	22.06%	0.05%	0.00%	3.32%	0.41%
Argo Group (G)	2,574	0	18	0	160	289	272	3,313	77.69%	0.00%	0.53%	0.01%	4.83%	8.74%	8.20%
American Family Insurance Group (G)	15,707	0	2,831	162	254	1,611	2,405	22,970	68.38%	0.00%	12.32%	0.70%	1.11%	7.01%	10.47%
American National Prop & Cas Group (G)	2,760	0	3	14	27	620	5	3,429	80.48%	0.00%	0.07%	0.41%	0.80%	18.09%	0.15%
Employers Insurance Group (G)	2,339	0	171	0	0	145	60	2,715	86.16%	0.00%	6.29%	0.00%	0.00%	5.34%	2.22%
Service Insurance Group (G)	227	8	29	0	12	21	22	319	71.15%	2.44%	9.10%	0.00%	3.86%	6.54%	6.91%
Markel Corporation Group (G)	9,502	0	3,938	13	0	1,939	516	15,909	59.73%	0.00%	24.76%	0.08%	0.00%	12.19%	3.25%
Electric Insurance Company	599	0	10	16	0	5	7	637	94.03%	0.00%	1.54%	2.52%	0.00%	0.82%	1.08%
Everest Re U.S. Group (G)	14,191	353	183	0	0	996	2,308	18,031	78.70%	1.96%	1.01%	0.00%	0.00%	5.53%	12.80%
Central Insurance Companies (G)	1,402	2	346	35	0	47	33	1,863	75.23%	0.11%	18.55%	1.86%	0.00%	2.50%	1.74%
Group 1001 Property and Casualty Group (G)	447	10	21	0	22	92	4	595	75.12%	1.65%	3.50%	0.00%	3.67%	15.47%	0.60%
The Cincinnati Insurance Companies (G)	8,753	378	5,780	8	0	1,020	709	16,647	52.58%	2.27%	34.72%	0.05%	0.00%	6.13%	4.26%
Sompo Holdings US Group (G)	8,780	5	405	12	0	1,923	355	11,480	76.48%	0.05%	3.53%	0.10%	0.00%	16.75%	3.09%
XL America Companies (G)	12,888	10	4	0	212	1,201	1,227	15,542	82.92%	0.07%	0.03%	0.00%	1.37%	7.73%	7.89%
Merchants Insurance Group (G)	710	11	67	0	0	45	0	833	85.25%	1.30%	8.03%	0.00%	0.00%	5.38%	0.03%
Work First Casualty Company	65	0	5	2	2	11	7	92	70.76%	0.00%	5.16%	1.68%	2.67%	12.21%	7.52%
Nationwide Group (G)	21,909	42	8,656	354	1,777	94	6,540	39,373	55.65%	0.11%	21.99%	0.90%	4.51%	0.24%	16.61%
Core Specialty Insurance Group (G)	2,115	0	1	4	0	131	8	2,259	93.62%	0.00%	0.05%	0.18%	0.00%	5.80%	0.35%
Church Mutual Insurance Group (G)	1,401	0	248	11	0	118	105	1,881	74.46%	0.00%	13.16%	0.56%	0.00%	6.56%	5.56%
Pharmacists Mutual Insurance Group (G)	278	4	25	25	0	8	9	350	79.51%	1.16%	7.09%	7.24%	0.00%	2.32%	2.68%
Benchmark Insurance Group (G)	613	11	13	6	0	98	0	740	82.82%	1.43%	1.75%	0.80%	0.00%	13.20%	0.00%
Coaction Specialty Insurance Group (G)	1,817	5	0	0	0	79	103	2,003	90.70%	0.23%	0.00%	0.00%	0.00%	3.95%	5.12%
Skyward Specialty Insurance Group (G)	711	9	105	0	52	176	120	1,173	60.63%	0.75%	8.99%	0.00%	4.42%	15.02%	10.19%
Intact US Insurance Group (G)	2,378	0	585	0	0	311	16	3,290	72.28%	0.00%	17.77%	0.00%	0.00%	9.46%	0.49%
Amerisure Companies (G)	2,133	23	202	11	0	99	231	2,699	79.03%	0.84%	7.50%	0.41%	0.00%	3.66%	8.56%
MS&AD US Insurance Group (G)	2,012	0	21	17	0	279	6	2,336	86.15%	0.00%	0.89%	0.75%	0.00%	11.96%	0.26%

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Asset Distribution for MA Workers' Compensation Group Companies

Companies	Bonds	Preferred Stocks	Common Stocks	Real Estate	Mortgage Loans	Cash and Short Term Investments	Other Invested Assets	Total Cash and Invested Assets	% Bonds	% Preferred Stocks	% Common Stocks	% Real Estate	% Mortgage Loans	% Cash and Short Term Investments	% Other Invested Assets
(1)	(\$000) (2)	(\$000) (3)	(\$000) (4)	(\$000) (5)	(\$000) (6)	(\$000) (7)	(\$000) (8)	(\$000) (9)	= (2) / (9) (10)	= (3) / (9) (11)	= (4) / (9) (12)	= (5) / (9) (13)	= (6) / (9) (14)	= (7) / (9) (15)	= (8) / (9) (16)
GuideOne Insurance Companies (G)	1,057	3	31	11	96	140	58	1,396	75.75%	0.21%	2.21%	0.81%	6.87%	10.02%	4.13%
ProAssurance Group (G)	3,834	23	27	35	0	160	302	4,381	87.52%	0.53%	0.61%	0.81%	0.00%	3.64%	6.89%
American Contractors Insurance Group (G)	358	1	48	0	0	20	88	516	69.29%	0.26%	9.38%	0.00%	0.00%	3.95%	17.12%
ICW Group (G)	2,795	24	910	31	0	64	149	3,974	70.34%	0.60%	22.91%	0.78%	0.00%	1.62%	3.76%
Brotherhood Mutual Insurance Company	459	0	148	43	0	43	106	799	57.47%	0.06%	18.51%	5.39%	0.00%	5.36%	13.21%
WCF Insurance Group (G)	1,705	0	324	52	161	49	168	2,458	69.36%	0.00%	13.17%	2.10%	6.56%	1.99%	6.82%
Cherokee Insurance Company	346	47	214	0	0	-8	93	692	49.92%	6.83%	30.96%	0.00%	0.00%	-1.16%	13.46%
Premier Group Insurance Company	48	0	0	0	0	4	0	52	92.03%	0.00%	0.00%	0.00%	0.00%	7.97%	0.00%
RLI Group (G)	2,665	1	879	27	0	75	53	3,700	72.03%	0.03%	23.74%	0.73%	0.00%	2.03%	1.43%
AMERISAFE Insurance Group (G)	811	0	48	4	0	33	0	897	90.41%	0.00%	5.40%	0.50%	0.00%	3.69%	0.00%
Auto-Owners Insurance Group (G)	20,330	133	3,983	237	18	108	1,344	26,153	77.73%	0.51%	15.23%	0.91%	0.07%	0.41%	5.14%
Allianz US PC Insurance Companies (G)	9,853	0	164	0	539	559	549	11,663	84.48%	0.00%	1.41%	0.00%	4.62%	4.79%	4.71%
IAT Insurance Group (G)	1,070	52	779	0	0	363	22	2,287	46.80%	2.26%	34.07%	0.00%	0.00%	15.88%	0.98%
State Farm Group (G)	110,716	263	104,223	380	1,681	3,526	4,316	225,105	49.18%	0.12%	46.30%	0.17%	0.75%	1.57%	1.92%
National American Insurance Company	267	0	21	1	0	19	9	318	83.95%	0.00%	6.77%	0.32%	0.00%	6.04%	2.91%
Farmers Insurance Group (G)	22,531	16	550	577	586	1,509	194	25,964	86.78%	0.06%	2.12%	2.22%	2.26%	5.81%	0.75%
HDI/Talanx US PC Group (G)	1,004	0	30	1	0	70	2	1,107	90.74%	0.00%	2.70%	0.05%	0.00%	6.33%	0.18%
Samsung F & M Insurance Co, Ltd USB	103	0	0	0	0	27	0	130	78.95%	0.00%	0.00%	0.00%	0.00%	21.05%	0.00%
West Bend Mutual Insurance Company	2,317	20	306	54	0	115	406	3,218	71.99%	0.62%	9.51%	1.68%	0.00%	3.57%	12.62%
James River Group (G)	1,315	38	48	0	0	331	25	1,757	74.87%	2.14%	2.72%	0.00%	0.00%	18.85%	1.42%
The Gray Insurance Group (G)	103	6	159	17	2	43	49	380	27.25%	1.67%	41.81%	4.43%	0.42%	11.44%	12.99%
Penn National Insurance Companies (G)	1,453	2	190	23	0	55	0	1,723	84.34%	0.10%	11.03%	1.33%	0.00%	3.20%	0.00%

	% Bonds	% Preferred Stocks	% Common Stocks	% Real Estate	% Mortgage Loans	% Cash and Short Term Investments	% Other Invested Assets
(17): Premium Weighted Asset Distribution	73.20%	0.36%	10.72%	0.92%	1.88%	5.64%	7.29%

Notes:  
 Source: A.M. Best's Global Insurance Database for all Massachusetts Workers' Compensation Group Companies, 2022 Exhibit of Assets.  
 (5): Real estate is the sum of: properties occupied by the company, properties held for the production of income and properties held for sale.  
 (6): Mortgage Loans is the sum of: mortgage loans first liens and mortgage loans other than first.  
 (9) = (2) + (3) + (4) + (5) + (6) + (7) + (8)  
 (17): Premium Weighted Asset Distribution use Direct Premiums Written from Exhibit 5, page 2.

VII 000100

# VII 000101

Section VII - Profit  
 Subsection J - Portfolio Rate of Return  
 7/1/2024

Section VII - J  
 Exhibit 2  
 Page 1

## Calculation of Pretax Returns on Bonds

% of Bonds (adjusted for removal of Other Bonds category) by Class, by Maturity				
Term to Maturity in years	Governments	States and Territories	Special Revenue	Industrials
0.5	3.69%	0.49%	1.66%	4.42%
3	7.56%	2.00%	7.41%	26.98%
7	2.68%	1.98%	5.35%	19.68%
15	0.64%	2.67%	4.75%	3.18%
25	0.44%	0.27%	2.45%	1.70%
Total	15.01%	7.42%	21.62%	55.95%

As of	Term to Maturity in years	Yield Data			
		Governments	States and Territories	Special Revenue	Industrials
Jul-23	0.5	5.53%	3.09%	3.12%	5.50%
	3	4.47%	2.31%	2.22%	5.21%
	7	4.03%	2.31%	2.04%	5.13%
	15	4.03%	2.88%	2.55%	5.36%
	25	4.06%	3.39%	3.23%	5.33%
Aug-23	0.5	5.54%	3.37%	3.38%	5.53%
	3	4.59%	2.63%	2.56%	5.33%
	7	4.26%	2.63%	2.43%	5.33%
	15	4.32%	3.15%	2.89%	5.59%
	25	4.37%	3.61%	3.45%	5.60%
Sep-23	0.5	5.51%	3.36%	3.37%	5.54%
	3	4.74%	2.79%	2.72%	5.48%
	7	4.46%	2.83%	2.62%	5.50%
	15	4.52%	3.33%	3.05%	5.73%
	25	4.56%	3.79%	3.56%	5.74%
Jul-23 Aug-23 Sep-23 Average	All	Weighted Yields			
	All	4.62%	2.61%	2.43%	5.22%
	All	4.75%	2.90%	2.76%	5.37%
	All	4.86%	3.07%	2.91%	5.51%
Average	<b>4.74%</b>	<b>2.86%</b>	<b>2.70%</b>	<b>5.37%</b>	

Notes:

% of Bonds by Class and by Maturity for MA WC Group Companies are from Exhibit 3, page 1.

Yield Data are from Page 2.

15 Years to Maturity = Average of 10 and 20 years to maturity

20 Years to Maturity = Average of 20 and 30 years to maturity

Example of Weighted Yield calculation for Jul-23, States and Territories:

$$2.61 = (3.09 \times 0.49 + 2.31 \times 2 + 2.31 \times 1.98 + 2.88 \times 2.67 + 3.39 \times 0.27) / 7.42$$

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## Calculation of Yield Data

Term to Maturity in Years	Jul-23	Aug-23	Sep-23	Formulas used to derive the yields (reference to data on page 3)
<b>Governments</b>				
0.5	5.53%	5.54%	5.51%	=(4)
3	4.47%	4.59%	4.74%	=(7)
7	4.03%	4.26%	4.46%	=(9)
10	3.90%	4.17%	4.38%	=(10)
20	4.15%	4.46%	4.65%	=(11)
30	3.96%	4.28%	4.47%	=(12)
<b>States and Territories</b>				
0.5	3.09%	3.37%	3.36%	=(4) + 9.5/9.0 x [ (20) - (5) ] - 0.5/9.0 x [ (21) - (10) ]
3	2.31%	2.63%	2.79%	=(7) + 7.0/9.0 x [ (20) - (5) ] + 2.0/9.0 x [ (21) - (10) ]
7	2.31%	2.63%	2.83%	=(9) + 1.0/3.0 x [ (20) - (5) ] + 2.0/3.0 x [ (21) - (10) ]
10	2.52%	2.80%	2.99%	=(21)
20	3.25%	3.50%	3.67%	=(11) + 0.5 x [ (21) - (10) ] + 0.5 x [ (22) - (12) ]
30	3.53%	3.73%	3.91%	=(22)
<b>Special Revenue</b>				
0.5	3.12%	3.38%	3.37%	=(4) + 29.5/29.0 x [ (20) - (5) ] - 0.5/29.0 x [ (19) - (12) ]
3	2.22%	2.56%	2.72%	=(7) + 27.0/29.0 x [ (20) - (5) ] + 2.0/29.0 x [ (19) - (12) ]
7	2.04%	2.43%	2.62%	=(9) + 23.0/29.0 x [ (20) - (5) ] + 6.0/29.0 x [ (19) - (12) ]
10	2.10%	2.49%	2.68%	=(10) + 20.0/29.0 x [ (20) - (5) ] + 9.0/29.0 x [ (19) - (12) ]
20	3.00%	3.29%	3.42%	=(11) + 10.0/29.0 x [ (20) - (5) ] + 19.0/29.0 x [ (19) - (12) ]
30	3.46%	3.61%	3.71%	=(19)
<b>Industrial</b>				
0.5	5.50%	5.53%	5.54%	=(4) + 18.0/21.0 x [ (1) - (3) ] + 3.0/21.0 x [ (14) - (6) ]
3	5.21%	5.33%	5.48%	=(7) + 2.0/3.0 x [ (14) - (6) ] + 1.0/3.0 x [ (15) - (8) ]
7	5.13%	5.33%	5.50%	=(9) + 3.0/5.0 x [ (15) - (8) ] + 2.0/5.0 x [ (16) - (10) ]
10	5.26%	5.46%	5.61%	=(16)
20	5.45%	5.71%	5.85%	=(11) + 1.0/2.0 x [ (16) - (10) ] + 1.0/2.0 x [ (17) - (12) ]
30	5.20%	5.49%	5.63%	=(17)

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## Yield Data

	Jul-23	Aug-23	Sep-23	Average
<b>FEDERAL RESERVE STATISTICAL RELEASE</b>				
Commercial Paper				
(1) 1-month	5.22%	5.37%	5.38%	5.32%
(1) 3-month	5.35%	5.44%	5.49%	5.43%
U.S. Govt Securities - Secondary Market				
Treasury Constant Maturities				
(2) 1-month	5.39%	5.54%	5.53%	5.49%
(3) 3-month	5.49%	5.56%	5.56%	5.54%
(4) 6-month	5.53%	5.54%	5.51%	5.53%
(5) 1-year	5.37%	5.37%	5.44%	5.39%
(6) 2-year	4.83%	4.90%	5.02%	4.92%
(7) 3-year	4.47%	4.59%	4.74%	4.60%
(8) 5-year	4.14%	4.31%	4.49%	4.31%
(9) 7-year	4.03%	4.26%	4.46%	4.25%
(10) 10-year	3.90%	4.17%	4.38%	4.15%
(11) 20-year	4.15%	4.46%	4.65%	4.42%
(12) 30-year	3.96%	4.28%	4.47%	4.24%
<b>YAHOO</b>				
(13) Preferred Stock	6.03%	6.01%	6.41%	6.15%
<b>US DEPARTMENT OF THE TREASURY</b>				
HQM Corporate Bond Yield Curve Par Yields				
(14) 2-year	5.47%	5.55%	5.67%	5.56%
(15) 5-year	5.07%	5.23%	5.40%	5.23%
(16) 10-year	5.26%	5.46%	5.61%	5.44%
(17) 30-year	5.20%	5.49%	5.63%	5.44%
<b>VALUE LINE INVESTMENT SURVEY (Part II)</b>				
Bond Buyer Indexes				
(18) 20-Bond Index (GOs)	3.62%	3.76%	3.86%	3.75%
(19) Calculated 30-Bond Index ( = (18) x [ (12) / (11) ] )	3.46%	3.61%	3.71%	3.59%
General Obligation Bonds (GOs)				
(20) 1-year Aaa	2.99%	3.24%	3.33%	3.18%
(21) 10-year Aaa	2.52%	2.80%	2.99%	2.77%
(22) 25/30-year Aaa	3.53%	3.73%	3.91%	3.72%
<b>FEDERAL RESERVE ECONOMIC DATA</b>				
(23) 15-Year Fixed Rate Mortgage	6.18%	6.43%	6.57%	6.39%

Note:

Sources: Federal Reserve Statistical Release, H.15, Yahoo Finance, US Department of the Treasury, FRED and various issues of Value Line Investment Survey, Part II.

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## Calculation of Other Assets Return and Tax Rate

Other Asset Type (1)	Allocation by Other Asset Type (2)	Investment Categories				Total (7)
		Hedge Fund (3)	Private Equity (4)	Fixed Income (5)	Real Estate (6)	
Joint Venture, LLCs: Other	2.861760%	1				
Joint Venture, LLCs: Common Stock	1.459740%		1			
Joint Venture, LLCs: Real Estate	1.394310%				1	
Other Assets	0.891559%					
Noncollateral Loans	0.249534%			1		
Joint Venture, LLCs: Fixed Income, NAIC Designation Not Assigned by SVO	0.123710%			1		
Surplus Debentures	0.089297%			1		
Collateral Loans	0.079958%			1		
Non-Registered Private Funds: Bonds, NAIC Designation Not Assigned by SVO	0.060754%			1		
Residual Tranches: Fixed Income	0.052591%		1			
Nonguaranteed Federal Low-Income Housing Tax Credit	0.036263%				1	
Non-Registered Private Funds: Other Fixed Income	0.017917%			1		
Non-Guaranteed State Low-Income Housing Tax Credit	0.016765%				1	
Non-Registered Private Funds: Mortgage Loans	0.013756%			1		
Residual Tranches: Common Stock	0.011540%		1			
Oil and Gas Production	0.006610%		1			
Joint Venture, LLCs: Mortgage Loans	0.006060%			1		
Residual Tranches: Other	0.004010%		1			
Capital Notes	0.001380%			1		
Mineral Rights	0.000345%		1			
Other Low-Income Housing Tax Credit	0.000096%				1	
Guaranteed Federal Low-Income Housing Tax Credit	0.000011%				1	
Transportation Equipment	0.000005%		1			
Guaranteed State Low-Income Housing Tax Credit	0.000001%				1	
Residual Tranches: Preferred Stock	0.000000%		1			
<b>Total</b>	<b>7.38%</b>	<b>2.86%</b>	<b>1.53%</b>	<b>0.64%</b>	<b>1.45%</b>	<b>6.49%</b>

(8) Adjusted Total (remove Other Assets)	3.26%	1.75%	0.73%	1.65%	7.38%
(9) Allocation by Category	44.12%	23.66%	9.90%	22.32%	100.00%

(10) Pre-tax Return	9.65%	16.41%	5.53%	9.03%	<b>10.70%</b>
(11) Tax Rate	17.21%	14.10%	21.00%	21.00%	<b>16.99%</b>
(12) After-tax Return	7.99%	14.10%	4.37%	7.14%	8.89%

### Notes:

(1): Source SNL Financial. List of Schedule BA investments held by Massachusetts Workers Compensation underwriters.

(2): Direct Premium Written weighted average asset allocation for each of the investment types covered by Schedule BA.

(3) - (6): Used the NAIC assignments and classified the various investment types into 4 major categories.

(8): Investment Category Allocation, Total x [ (2), Total / (7), Total ]

(9) = (8) / (8), Total

(10): Hedge Fund (HF) return is equal to equity market return plus spread between Credit Suisse Hedge Fund Index and S&P 500 total return from 12/31/1993 to 7/31/2023.

HF = 9.65% = 12.62% + ( 7.07% - 10.04% ), where 12.62% is the Common Stock pretax return from Section VII-J, Exhibit 1, page 1,

7.07% is the Credit Suisse Hedge Fund average return and 10.04% is the S&P 500 total return from Yahoo Finance.

Private Equity (PE) return is equal to equity market return plus spread between US Private Equity Index and S&P 500 total return from 12/31/1994 to 3/31/2023.

PE = 16.41% = 12.62% + ( 13.92% - 10.13% ), where 12.62% is the Common Stock pretax return from Section VII-J, Exhibit 1, page 1,

13.92% is the US Private Equity Index average return from Cambridge Associates and 10.13% is the S&P 500 total return from Yahoo Finance.

Fixed Income (FI) return is the three month average yield on the high yield corporate bond ETF, the investment grade bond ETF and the 30 yr mortgage rate.

FI = 5.53% = average ( 5.85% , 4.35% , 6.39% ), where 5.85% , is the three month (July-Sep 2021) average return of High Yield Corporate Bond ETF (HYG),

4.35% is the Investment Grade Corporate Bond ETF (LQD) from Yahoo Finance and 6.39% is the 15-Year Fixed Rate Mortgage, 3 month average from FRED.

Real Estate (RE) return is the WACC for the REIT sector as calculated using data on capital structure, beta, and cost of debt from Damodaran Online,

and cost of equity capital = 13.12%, using CAPM three horizon methodology from Section VII-E, Exhibit 3, page 1 with beta = 1.21,

as reported in Damodaran Online for REIT sector.

Total = 10.7% = Sum [ (9) x (10) ]

(11): Hedge Fund (HF) tax rate is equal to 55% of equity market tax rate and 45% of federal tax rate.

HF = 55% x 14.1% + 45% x 21%, where 14.1% is the Common Stock tax rate from Section VII-J, Exhibit 1, page 1.

Private Equity (PE) tax rate is equal to Common Stock tax rate = 14.1%, from Section VII-J, Exhibit 1, page 1.

Fixed Income and Real Estate tax rate is equal to the federal tax rate.

Total = 16.99% = 1.0 - [ (12), Total / (10), Total ]

(12) = (10) x [ 1.0 - (11) ]

Total = 8.89% = Sum [ (9) x (12) ]

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 Page 1

Premium Weighted Bond Distribution for MA Workers' Compensation Group Companies by Class and by Maturity

Term to Maturity in Years	Governments	States & Territories	Special Revenue	Industrials	Other Bonds	Total Bonds
0.5	3.65%	0.49%	1.64%	4.38%	0.02%	10.19%
3	7.49%	1.98%	7.34%	26.72%	0.41%	43.95%
7.5	2.66%	1.96%	5.30%	19.49%	0.28%	29.68%
15	0.63%	2.65%	4.70%	3.15%	0.01%	11.14%
25	0.44%	0.27%	2.43%	1.68%	0.22%	5.04%
Total	14.87%	7.34%	21.42%	55.42%	0.95%	100.00%

% of Bonds (adjusted for removal of Other Bonds category) by Class, by Maturity

Term to Maturity in Years	Governments	States & Territories	Special Revenue	Industrials	Total Bonds
0.5	3.69%	0.49%	1.66%	4.42%	10.26%
3	7.56%	2.00%	7.41%	26.98%	43.95%
7.5	2.68%	1.98%	5.35%	19.68%	29.69%
15	0.64%	2.67%	4.75%	3.18%	11.24%
25	0.44%	0.27%	2.45%	1.70%	4.86%
Total	15.01%	7.42%	21.62%	55.95%	100.00%

Notes:

- Bond Distribution from pages 2 and 3.
- Premium Weighted Bond Distribution use Direct Premiums Written from Exhibit 5, page 2.

Bond Distribution for MA Workers' Compensation Group Companies by Class and by Maturity

Companies  (1)	Governments					States & Territories					Special Revenue				
	0.5	3	7.5	15	25	0.5	3	7.5	15	25	0.5	3	7.5	15	25
	(2)					(3)					(4)				
A.I.M. Mutual Insurance Companies (G)	0.45%	0.13%	0.54%	0.16%	0.00%	0.46%	1.20%	1.09%	0.72%	0.00%	2.77%	15.06%	10.92%	6.25%	4.10%
Travelers Group (G)	0.76%	5.47%	3.47%	0.16%	0.01%	1.26%	2.34%	7.02%	19.72%	0.49%	0.86%	1.83%	3.80%	9.80%	1.14%
Hartford Insurance Group (G)	0.69%	5.33%	3.86%	0.54%	0.37%	0.07%	0.29%	0.24%	0.87%	0.67%	0.59%	3.37%	3.17%	6.49%	7.66%
Liberty Mutual Insurance Companies (G)	1.24%	7.86%	5.41%	0.34%	0.30%	0.25%	2.04%	4.99%	0.43%	0.74%	1.81%	7.60%	6.94%	2.14%	0.64%
Chubb INA Group (G)	1.21%	3.69%	1.45%	0.50%	0.46%	0.59%	2.11%	0.06%	0.21%	0.07%	4.58%	13.67%	6.05%	4.73%	1.73%
Zurich Insurance US PC Group (G)	4.74%	15.47%	5.62%	4.60%	2.71%	0.12%	1.93%	1.31%	0.32%	0.42%	0.86%	6.01%	5.12%	3.72%	4.67%
Berkshire Hathaway Insurance Group (G)	27.94%	34.29%	2.14%	0.57%	0.90%	0.01%	0.31%	0.28%	0.35%	0.20%	0.05%	2.89%	2.62%	2.99%	1.22%
Charter Insurance Group (G)	16.32%	5.52%	0.67%	0.00%	0.00%	2.02%	8.76%	0.04%	0.00%	0.00%	2.49%	9.19%	0.61%	0.63%	0.00%
AmTrust Group (G)	0.98%	2.42%	0.33%	0.14%	0.07%	0.07%	0.30%	0.17%	0.01%	0.00%	0.58%	1.86%	1.54%	1.00%	0.12%
W. R. Berkley Insurance Group (G)	1.68%	7.77%	0.87%	0.28%	0.10%	0.29%	1.98%	1.98%	0.00%	0.00%	2.54%	12.01%	4.97%	2.54%	1.51%
Old Republic Insurance Group (G)	3.32%	5.58%	5.06%	0.00%	0.00%	0.71%	5.57%	0.00%	0.00%	0.00%	0.84%	4.69%	0.83%	0.00%	0.00%
American International Group (G)	0.24%	4.90%	0.69%	0.23%	0.79%	0.23%	2.09%	1.74%	0.62%	0.01%	1.17%	8.37%	4.96%	3.35%	0.80%
CNA Insurance Companies (G)	1.60%	0.47%	0.17%	0.00%	0.09%	0.25%	1.03%	1.15%	2.75%	1.13%	0.64%	4.22%	4.83%	8.10%	5.30%
Hanover Ins Group Prop & Cas Cos (G)	0.47%	2.04%	1.46%	0.45%	0.22%	0.12%	0.95%	2.57%	0.89%	0.00%	1.59%	5.95%	9.55%	5.08%	2.15%
MEMIC Group (G)	0.60%	2.69%	0.95%	0.62%	0.03%	0.12%	4.48%	2.01%	1.89%	0.25%	1.69%	12.11%	8.14%	6.58%	4.36%
Arbella Insurance Group (G)	2.60%	0.65%	0.69%	0.00%	0.00%	0.13%	1.68%	10.69%	0.54%	0.00%	0.67%	15.51%	13.91%	1.19%	0.00%
Selective Insurance Group (G)	0.04%	1.23%	0.60%	0.03%	0.00%	0.22%	1.53%	0.21%	0.11%	0.24%	2.26%	10.92%	6.65%	5.13%	1.78%
Utica National Insurance Group (G)	0.56%	1.91%	0.34%	0.12%	0.09%	0.00%	0.14%	0.09%	0.12%	0.00%	2.31%	9.58%	7.35%	6.81%	1.96%
QBE North America Insurance Group (G)	7.83%	2.43%	1.68%	2.57%	1.92%	0.21%	1.54%	1.13%	0.07%	0.20%	0.16%	1.76%	1.35%	0.63%	0.07%
Arch Insurance Group (G)	1.16%	11.42%	9.00%	0.06%	0.01%	0.01%	0.15%	0.22%	0.01%	0.00%	0.28%	1.49%	1.14%	0.22%	0.26%
Starr International Group (G)	2.97%	3.66%	1.98%	0.00%	0.00%	0.69%	1.39%	0.00%	0.19%	0.00%	1.07%	4.56%	1.08%	0.46%	0.08%
Sentry Insurance Group (G)	0.81%	3.58%	3.66%	5.00%	1.49%	0.32%	1.41%	1.57%	0.14%	0.00%	1.14%	8.51%	9.21%	7.73%	1.12%
Federated Mutual Group (G)	0.50%	0.50%	0.48%	0.19%	0.00%	3.22%	2.33%	1.08%	2.55%	0.04%	4.08%	5.29%	2.55%	7.07%	0.31%
AF Group (G)	2.45%	10.65%	6.74%	1.80%	3.55%	0.06%	0.57%	0.52%	0.01%	0.00%	2.00%	7.65%	5.83%	3.69%	1.87%
Fairfax Financial (USA) Group (G)	14.78%	62.58%	0.17%	0.04%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	1.19%	0.02%
Progressive Insurance Group (G)	2.94%	33.44%	16.49%	0.00%	0.00%	0.31%	1.40%	0.59%	0.00%	0.00%	0.23%	0.99%	1.49%	0.13%	0.00%
Norfolk & Dedham Group Pool (G)	0.66%	2.78%	4.00%	0.16%	0.02%	0.24%	0.95%	0.00%	0.00%	0.00%	6.96%	22.74%	15.97%	4.70%	0.82%
AU Holding Company Group (G)	18.85%	37.11%	0.19%	0.01%	0.00%	0.42%	0.60%	0.78%	0.43%	0.00%	4.62%	17.19%	1.72%	1.44%	0.29%
Great American P & C Insurance Group (G)	0.75%	4.24%	0.12%	0.02%	0.02%	0.54%	0.06%	0.14%	0.05%	0.04%	1.34%	2.04%	2.28%	3.15%	3.43%
Tokio Marine US PC Group (G)	0.67%	2.08%	0.73%	1.04%	0.57%	0.57%	1.78%	1.58%	3.51%	1.39%	1.99%	7.86%	6.36%	10.31%	10.07%
EMC Insurance Companies (G)	1.46%	1.56%	1.20%	0.25%	0.07%	1.96%	4.52%	0.69%	0.64%	0.00%	1.73%	3.74%	6.87%	27.63%	1.77%
Arrow Mutual Liability Insurance Company	8.02%	43.25%	7.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Argo Group (G)	3.20%	7.69%	2.94%	0.22%	0.48%	0.04%	0.91%	0.34%	0.00%	0.00%	0.38%	4.87%	3.32%	2.21%	0.76%
American Family Insurance Group (G)	1.19%	7.20%	3.15%	0.12%	0.19%	0.33%	1.88%	2.08%	1.25%	0.00%	1.53%	11.13%	10.85%	5.29%	1.12%
American National Prop & Cas Group (G)	8.71%	0.96%	0.45%	0.00%	0.19%	0.41%	8.98%	4.91%	0.13%	0.00%	0.09%	3.15%	2.29%	0.19%	0.17%
Employers Insurance Group (G)	0.48%	3.16%	1.14%	0.06%	0.22%	0.26%	3.29%	1.11%	0.14%	0.00%	3.80%	13.29%	5.50%	4.34%	1.31%
Service Insurance Group (G)	1.88%	7.78%	0.73%	0.00%	0.00%	0.07%	0.00%	0.13%	0.00%	0.00%	2.17%	4.48%	2.03%	1.46%	0.73%
Markel Corporation Group (G)	10.51%	20.44%	5.15%	0.26%	0.00%	1.64%	13.15%	6.31%	2.46%	0.00%	1.62%	15.99%	11.93%	3.33%	0.38%
Electric Insurance Company	1.08%	1.83%	0.00%	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.29%	1.12%	1.54%	0.70%	0.15%
Everest Re U.S. Group (G)	2.27%	7.43%	3.26%	0.45%	0.21%	0.01%	0.19%	0.25%	0.26%	0.08%	1.62%	5.29%	3.38%	3.26%	2.03%
Central Insurance Companies (G)	0.51%	2.24%	0.54%	0.15%	1.15%	0.79%	5.31%	2.33%	1.52%	0.00%	2.20%	7.84%	9.31%	3.33%	1.45%
Group 1001 Property and Casualty Group (G)	0.00%	6.86%	0.00%	0.00%	0.00%	0.34%	1.52%	1.10%	0.00%	0.00%	0.51%	1.53%	3.36%	0.22%	2.09%
The Cincinnati Insurance Companies (G)	0.31%	1.20%	0.22%	0.00%	0.00%	2.87%	11.40%	3.43%	9.31%	0.00%	1.53%	8.98%	3.80%	9.01%	0.05%
Sompo Holdings US Group (G)	2.03%	11.17%	3.06%	0.41%	0.06%	0.08%	0.46%	0.01%	0.00%	0.00%	1.92%	9.05%	7.88%	6.52%	1.65%
XL America Companies (G)	2.85%	13.67%	3.59%	0.27%	2.63%	0.04%	0.45%	1.42%	1.04%	0.03%	0.59%	3.47%	9.88%	7.99%	3.98%

VII 000106

Bond Distribution for MA Workers' Compensation Group Companies by Class and by Maturity

Companies  (1)	Governments					States & Territories					Special Revenue				
	0.5	3	7.5	15	25	0.5	3	7.5	15	25	0.5	3	7.5	15	25
	(2)					(3)					(4)				
Merchants Insurance Group (G)	1.11%	0.59%	0.54%	0.03%	0.00%	0.79%	0.22%	4.38%	2.20%	0.94%	5.01%	6.70%	11.38%	8.49%	5.89%
Work First Casualty Company	2.64%	0.06%	2.60%	3.58%	1.71%	0.00%	4.13%	4.39%	2.32%	0.00%	0.00%	3.63%	3.53%	1.60%	2.26%
Nationwide Group (G)	1.26%	8.50%	3.72%	1.00%	1.35%	0.22%	1.38%	1.07%	0.37%	0.00%	1.09%	5.50%	5.03%	3.40%	1.30%
Core Specialty Insurance Group (G)	0.56%	1.75%	1.09%	0.55%	0.12%	0.02%	0.81%	0.41%	0.04%	0.00%	0.80%	3.13%	2.28%	2.20%	0.58%
Church Mutual Insurance Group (G)	0.57%	2.20%	3.54%	0.22%	0.10%	0.02%	2.74%	3.62%	1.29%	0.00%	1.88%	11.64%	13.83%	5.71%	1.41%
Pharmacists Mutual Insurance Group (G)	0.71%	2.31%	3.28%	0.96%	0.01%	0.24%	1.90%	4.04%	0.00%	0.00%	1.41%	18.06%	17.94%	4.08%	0.79%
Benchmark Insurance Group (G)	2.76%	7.52%	0.58%	0.03%	0.00%	0.42%	3.59%	2.51%	2.42%	0.11%	2.58%	13.10%	13.03%	7.35%	1.54%
Coaction Specialty Insurance Group (G)	3.65%	2.04%	0.16%	0.09%	0.02%	0.03%	0.53%	0.51%	0.79%	0.17%	0.46%	4.28%	3.78%	4.35%	1.46%
Skyward Specialty Insurance Group (G)	2.63%	5.87%	0.85%	0.73%	0.15%	0.00%	0.27%	0.98%	1.16%	0.23%	1.09%	5.50%	6.09%	6.17%	0.85%
Intact US Insurance Group (G)	5.40%	10.01%	10.20%	3.67%	1.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.39%	4.41%	5.11%	0.56%	0.02%
Amerisure Companies (G)	1.11%	6.67%	4.18%	1.78%	5.04%	0.35%	3.06%	0.42%	0.42%	0.18%	0.85%	5.31%	4.67%	4.36%	0.41%
MS&AD US Insurance Group (G)	5.00%	11.18%	3.37%	0.11%	0.01%	0.24%	1.54%	0.92%	0.18%	0.01%	0.72%	4.42%	4.88%	2.63%	1.15%
GuideOne Insurance Companies (G)	1.43%	0.75%	1.37%	0.02%	0.02%	0.33%	3.26%	6.47%	1.72%	0.00%	0.49%	8.73%	4.76%	1.27%	0.02%
ProAssurance Group (G)	1.11%	3.92%	2.40%	0.18%	0.01%	0.11%	1.29%	0.79%	0.08%	0.03%	2.05%	7.63%	5.62%	2.45%	0.55%
American Contractors Insurance Group (G)	5.17%	5.18%	0.31%	0.06%	0.01%	0.00%	2.10%	0.00%	0.00%	0.00%	2.40%	11.05%	6.09%	3.01%	0.67%
ICW Group (G)	11.68%	37.66%	11.97%	0.18%	0.00%	0.42%	13.31%	0.77%	0.87%	0.00%	0.00%	1.07%	0.32%	0.18%	0.04%
Brotherhood Mutual Insurance Company	0.00%	1.22%	0.48%	0.00%	0.00%	3.65%	8.48%	6.76%	1.14%	0.00%	4.18%	19.03%	18.97%	9.16%	0.00%
WCF Insurance Group (G)	1.40%	5.75%	6.10%	4.85%	0.62%	0.01%	1.36%	7.10%	2.75%	0.00%	0.37%	4.48%	10.95%	4.83%	0.00%
Cherokee Insurance Company	1.08%	1.80%	2.42%	0.00%	0.00%	1.42%	3.59%	1.69%	0.31%	0.45%	2.45%	15.16%	10.48%	4.77%	3.25%
Premier Group Insurance Company	0.00%	15.22%	20.88%	0.00%	0.00%	0.00%	4.17%	0.00%	0.00%	0.00%	2.09%	4.06%	0.69%	0.61%	0.01%
RLI Group (G)	3.55%	8.65%	2.11%	0.58%	0.04%	0.32%	1.20%	0.09%	0.00%	0.00%	1.13%	4.26%	8.95%	8.74%	7.29%
AMERISAFE Insurance Group (G)	0.57%	1.93%	1.34%	0.05%	0.01%	1.83%	10.97%	4.32%	6.45%	1.10%	3.06%	25.68%	10.64%	6.24%	1.82%
Auto-Owners Insurance Group (G)	3.90%	10.31%	5.54%	3.94%	0.87%	2.97%	12.78%	7.01%	0.85%	0.00%	1.06%	4.39%	5.12%	2.86%	1.03%
Allianz US PC Insurance Companies (G)	3.10%	11.51%	2.94%	1.81%	1.61%	0.11%	0.23%	0.12%	0.05%	0.03%	1.41%	4.64%	2.86%	2.66%	2.25%
IAT Insurance Group (G)	5.86%	4.91%	0.14%	0.10%	0.03%	0.02%	0.05%	0.04%	0.00%	0.00%	0.35%	0.54%	0.43%	0.07%	0.02%
State Farm Group (G)	1.86%	8.38%	1.02%	0.51%	0.07%	3.24%	18.91%	8.14%	1.42%	0.02%	1.87%	12.75%	10.77%	0.75%	0.02%
National American Insurance Company	0.95%	2.81%	1.81%	1.85%	0.27%	0.17%	1.03%	1.84%	2.03%	0.75%	1.58%	8.49%	8.89%	11.87%	2.47%
Farmers Insurance Group (G)	8.91%	16.81%	1.24%	0.50%	0.17%	0.35%	1.56%	0.81%	0.86%	0.41%	2.08%	10.09%	5.69%	5.82%	3.24%
HDI/Talanx US PC Group (G)	4.47%	13.37%	3.37%	0.48%	0.02%	0.00%	0.35%	0.44%	0.77%	0.00%	0.15%	0.78%	1.74%	3.82%	1.42%
Samsung F & M Insurance Co, Ltd USB	4.00%	20.67%	2.60%	0.00%	0.00%	0.02%	0.04%	0.00%	0.00%	0.00%	1.66%	0.78%	0.00%	0.00%	0.00%
West Bend Mutual Insurance Company	0.10%	3.66%	3.84%	0.70%	0.91%	0.00%	1.42%	1.94%	0.65%	0.00%	2.00%	11.11%	10.06%	5.85%	1.92%
James River Group (G)	3.34%	1.83%	0.07%	0.04%	0.01%	0.11%	0.61%	1.90%	2.58%	0.40%	0.62%	8.73%	8.97%	10.05%	2.41%
The Gray Insurance Group (G)	15.82%	27.52%	0.00%	0.00%	0.00%	0.00%	3.82%	0.00%	0.00%	0.00%	0.81%	11.73%	6.32%	7.20%	3.48%
Penn National Insurance Companies (G)	0.75%	0.26%	0.40%	0.00%	0.00%	0.00%	0.67%	0.86%	0.80%	0.28%	1.27%	6.22%	6.06%	5.37%	2.03%

Notes:  
 Source: A.M. Best's Global Insurance Database for all Massachusetts Workers' Compensation Group Companies, 2022 Schedule D, Part 1A.  
 Bonds less than a year adjusted to remove the double counting of short term bonds in the portfolio.

VII 000107

Bond Distribution for MA Workers' Compensation Group Companies by Class and by Maturity

Companies  (1)	Industrials					Other Bonds				
	0.5	3	7.5	15	25	0.5	3	7.5	15	25
	(2)					(3)				
A.I.M. Mutual Insurance Companies (G)	4.37%	27.34%	19.25%	3.10%	2.08%	0.00%	0.00%	0.00%	0.00%	0.00%
Travelers Group (G)	3.47%	15.47%	21.03%	1.42%	0.47%	0.00%	0.00%	0.00%	0.00%	0.00%
Hartford Insurance Group (G)	5.66%	32.15%	18.44%	6.02%	2.68%	0.00%	0.03%	0.00%	0.00%	0.82%
Liberty Mutual Insurance Companies (G)	1.76%	26.12%	23.84%	3.54%	1.79%	0.02%	0.19%	0.02%	0.00%	0.00%
Chubb INA Group (G)	3.17%	22.70%	25.79%	4.13%	3.07%	0.00%	0.00%	0.00%	0.00%	0.04%
Zurich Insurance US PC Group (G)	3.37%	21.75%	14.12%	2.46%	0.57%	0.00%	0.00%	0.00%	0.06%	0.05%
Berkshire Hathaway Insurance Group (G)	0.13%	5.90%	5.11%	0.64%	0.26%	0.00%	6.09%	5.08%	0.00%	0.02%
Charter Insurance Group (G)	5.66%	36.17%	10.38%	0.60%	0.00%	0.00%	0.94%	0.00%	0.00%	0.00%
AmTrust Group (G)	8.52%	52.60%	26.25%	1.51%	0.45%	0.00%	0.00%	0.00%	0.00%	1.09%
W. R. Berkley Insurance Group (G)	11.15%	37.31%	9.98%	1.06%	0.52%	0.03%	0.97%	0.00%	0.00%	0.47%
Old Republic Insurance Group (G)	7.84%	30.05%	34.40%	1.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
American International Group (G)	6.38%	31.05%	25.80%	3.41%	2.24%	0.76%	0.07%	0.02%	0.05%	0.04%
CNA Insurance Companies (G)	1.28%	17.71%	23.52%	11.84%	12.21%	0.04%	0.03%	0.08%	0.17%	1.36%
Hanover Ins Group Prop & Cas Cos (G)	4.32%	33.41%	27.25%	0.87%	0.58%	0.00%	0.00%	0.08%	0.00%	0.00%
MEMIC Group (G)	3.96%	22.33%	15.60%	5.87%	5.38%	0.00%	0.00%	0.00%	0.17%	0.17%
Arbella Insurance Group (G)	5.42%	27.81%	17.70%	0.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Selective Insurance Group (G)	5.77%	32.30%	23.82%	3.98%	1.54%	0.01%	0.08%	0.05%	0.06%	1.45%
Utica National Insurance Group (G)	3.20%	29.16%	28.62%	4.25%	3.37%	0.00%	0.00%	0.04%	0.00%	0.00%
QBE North America Insurance Group (G)	7.42%	49.27%	16.70%	1.70%	1.34%	0.00%	0.00%	0.00%	0.00%	0.00%
Arch Insurance Group (G)	3.32%	47.35%	20.39%	2.58%	0.62%	0.00%	0.00%	0.32%	0.00%	0.00%
Starr International Group (G)	3.01%	31.70%	38.45%	6.60%	0.79%	0.00%	0.01%	0.02%	0.00%	1.27%
Sentry Insurance Group (G)	5.73%	18.08%	26.35%	3.61%	0.56%	0.00%	0.00%	0.00%	0.00%	0.00%
Federated Mutual Group (G)	3.54%	26.90%	19.13%	18.59%	1.65%	0.00%	0.00%	0.00%	0.00%	0.00%
AF Group (G)	6.04%	21.52%	15.64%	6.47%	2.93%	0.00%	0.00%	0.00%	0.00%	0.00%
Fairfax Financial (USA) Group (G)	1.97%	15.98%	0.69%	0.03%	2.11%	0.00%	0.20%	0.00%	0.00%	0.05%
Progressive Insurance Group (G)	8.99%	22.25%	10.63%	0.12%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%
Norfolk & Dedham Group Pool (G)	4.41%	19.10%	16.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AU Holding Company Group (G)	0.00%	4.31%	10.28%	0.84%	0.15%	0.00%	0.69%	0.00%	0.00%	0.06%
Great American P & C Insurance Group (G)	8.00%	51.85%	14.67%	5.16%	1.98%	0.00%	0.00%	0.00%	0.00%	0.12%
Tokio Marine US PC Group (G)	2.50%	21.00%	14.68%	4.25%	6.12%	0.10%	0.42%	0.10%	0.07%	0.24%

VII 000108

Bond Distribution for MA Workers' Compensation Group Companies by Class and by Maturity

Companies  (1)	Industrials					Other Bonds				
	0.5	3	7.5	15	25	0.5	3	7.5	15	25
	(2)					(3)				
EMC Insurance Companies (G)	5.76%	19.25%	15.08%	3.80%	1.76%	0.00%	0.00%	0.00%	0.00%	0.26%
Arrow Mutual Liability Insurance Company	6.32%	34.71%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Argo Group (G)	1.05%	42.81%	27.25%	0.81%	0.48%	0.00%	0.01%	0.08%	0.13%	0.01%
American Family Insurance Group (G)	6.05%	26.53%	18.31%	1.36%	0.44%	0.00%	0.00%	0.00%	0.00%	0.00%
American National Prop & Cas Group (G)	11.74%	29.37%	25.28%	1.89%	1.08%	0.00%	0.00%	0.00%	0.00%	0.00%
Employers Insurance Group (G)	1.47%	31.90%	25.66%	1.79%	0.66%	0.00%	0.00%	0.00%	0.00%	0.44%
Service Insurance Group (G)	9.45%	41.70%	22.57%	3.62%	0.10%	0.00%	0.00%	0.00%	0.00%	1.11%
Markel Corporation Group (G)	0.19%	4.33%	1.63%	0.68%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Electric Insurance Company	10.12%	62.11%	17.20%	3.41%	0.43%	0.00%	0.00%	0.00%	0.00%	0.00%
Everest Re U.S. Group (G)	3.98%	24.41%	33.17%	2.94%	1.60%	0.00%	0.10%	3.81%	0.01%	0.00%
Central Insurance Companies (G)	3.99%	25.28%	24.44%	0.96%	6.62%	0.00%	0.00%	0.00%	0.00%	0.04%
Group 1001 Property and Casualty Group (G)	4.13%	46.47%	28.78%	1.80%	0.84%	0.00%	0.00%	0.07%	0.00%	0.38%
The Cincinnati Insurance Companies (G)	2.74%	21.04%	16.89%	7.16%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%
Sompo Holdings US Group (G)	5.24%	34.04%	14.91%	1.31%	0.19%	0.00%	0.00%	0.00%	0.00%	0.01%
XL America Companies (G)	1.64%	21.27%	23.49%	1.40%	0.31%	0.00%	0.00%	0.00%	0.00%	0.00%
Merchants Insurance Group (G)	4.03%	26.39%	10.92%	1.51%	5.63%	0.18%	2.76%	0.32%	0.00%	0.00%
Work First Casualty Company	3.24%	24.15%	20.51%	12.81%	5.29%	0.00%	0.00%	0.00%	0.00%	1.55%
Nationwide Group (G)	7.58%	29.37%	21.23%	3.90%	2.71%	0.00%	0.00%	0.00%	0.00%	0.00%
Core Specialty Insurance Group (G)	4.87%	59.25%	20.04%	0.70%	0.27%	0.00%	0.00%	0.00%	0.00%	0.53%
Church Mutual Insurance Group (G)	3.30%	26.96%	16.24%	3.64%	1.09%	0.00%	0.00%	0.00%	0.00%	0.00%
Pharmacists Mutual Insurance Group (G)	2.21%	17.27%	16.34%	6.15%	2.29%	0.00%	0.00%	0.00%	0.00%	0.00%
Benchmark Insurance Group (G)	5.13%	25.46%	7.40%	1.21%	0.21%	0.00%	2.48%	0.56%	0.00%	0.00%
Coaction Specialty Insurance Group (G)	2.89%	45.03%	16.75%	9.26%	2.98%	0.09%	0.64%	0.04%	0.00%	0.00%
Skyward Specialty Insurance Group (G)	2.67%	46.28%	15.02%	1.81%	0.27%	0.00%	0.00%	0.00%	0.00%	1.36%
Intact US Insurance Group (G)	2.16%	30.18%	15.45%	8.47%	2.94%	0.00%	0.00%	0.00%	0.00%	0.00%
Amerisure Companies (G)	5.05%	24.36%	17.13%	9.36%	5.29%	0.00%	0.00%	0.00%	0.00%	0.00%
MS&AD US Insurance Group (G)	1.45%	30.78%	29.58%	0.77%	0.94%	0.00%	0.00%	0.07%	0.00%	0.05%
GuideOne Insurance Companies (G)	3.91%	38.78%	22.76%	2.80%	0.97%	0.00%	0.00%	0.00%	0.00%	0.13%
ProAssurance Group (G)	9.46%	36.68%	21.33%	3.25%	0.62%	0.00%	0.14%	0.12%	0.05%	0.14%
American Contractors Insurance Group (G)	9.12%	41.94%	11.17%	1.03%	0.08%	0.00%	0.06%	0.00%	0.00%	0.56%

VII 000109

Bond Distribution for MA Workers' Compensation Group Companies by Class and by Maturity

Companies  (1)	Industrials					Other Bonds				
	0.5	3	7.5	15	25	0.5	3	7.5	15	25
	(2)					(3)				
ICW Group (G)	3.04%	10.21%	4.30%	0.95%	2.33%	0.18%	0.28%	0.25%	0.00%	0.00%
Brotherhood Mutual Insurance Company	2.77%	14.18%	9.19%	0.77%	0.00%	0.00%	0.00%	0.00%	0.00%	0.02%
WCF Insurance Group (G)	2.53%	14.22%	21.68%	6.87%	4.14%	0.00%	0.00%	0.00%	0.00%	0.00%
Cherokee Insurance Company	5.67%	34.87%	7.22%	2.67%	0.69%	0.00%	0.00%	0.00%	0.00%	0.00%
Premier Group Insurance Company	4.61%	37.42%	10.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
RLI Group (G)	2.29%	26.43%	16.54%	3.53%	4.30%	0.00%	0.00%	0.00%	0.00%	0.00%
AMERISAFE Insurance Group (G)	2.58%	10.32%	8.91%	2.10%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%
Auto-Owners Insurance Group (G)	4.25%	11.60%	12.37%	6.01%	0.41%	0.00%	0.08%	0.12%	0.19%	2.32%
Allianz US PC Insurance Companies (G)	5.35%	29.15%	24.48%	3.40%	2.03%	0.00%	0.00%	0.27%	0.00%	0.00%
IAT Insurance Group (G)	6.55%	53.77%	16.18%	4.92%	6.02%	0.00%	0.00%	0.00%	0.00%	0.00%
State Farm Group (G)	1.77%	10.93%	17.28%	0.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
National American Insurance Company	4.35%	17.51%	22.02%	7.82%	1.48%	0.00%	0.00%	0.00%	0.00%	0.00%
Farmers Insurance Group (G)	3.36%	21.12%	15.30%	1.12%	0.49%	0.00%	0.00%	0.00%	0.00%	0.06%
HDI/Talanx US PC Group (G)	1.52%	26.54%	32.84%	6.55%	0.89%	0.00%	0.00%	0.19%	0.00%	0.28%
Samsung F & M Insurance Co, Ltd USB	5.90%	38.58%	22.59%	1.69%	1.46%	0.00%	0.00%	0.00%	0.00%	0.00%
West Bend Mutual Insurance Company	1.94%	25.91%	25.04%	2.56%	0.26%	0.00%	0.10%	0.04%	0.00%	0.00%
James River Group (G)	1.66%	30.72%	19.44%	2.64%	1.52%	0.00%	0.20%	0.00%	0.00%	2.16%
The Gray Insurance Group (G)	0.33%	2.00%	0.00%	20.96%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Penn National Insurance Companies (G)	6.12%	37.85%	20.71%	6.23%	4.06%	0.07%	0.00%	0.00%	0.00%	0.00%

Notes:

Source: A.M. Best's Global Insurance Database for all Massachusetts Workers' Compensation Group Companies, 2022 Schedule D, Part 1A.  
 Bonds less than a year adjusted to remove the double counting of short term bonds in the portfolio.

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Market Risk Premium

Year (1)	Large Company Stocks Total Returns (2)	Long-Term Government Bonds Income Returns (3)	Intermediate-Term Government Bonds Income Returns (4)	Short-Term Total Returns (5)	Long-Term Market Risk Premium = (2) - (3) (6)	Intermediate-Term Market Risk Premium = (2) - (4) (7)	Short-Term Market Risk Premium = (2) - (5) (8)
1926	11.62	3.73	3.78	3.27	7.89	7.84	8.35
1927	37.49	3.41	3.49	3.12	34.08	34.00	34.37
1928	43.61	3.22	3.64	3.56	40.39	39.97	40.05
1929	-8.42	3.47	4.07	4.75	-11.89	-12.49	-13.17
1930	-24.90	3.32	3.30	2.41	-28.22	-28.20	-27.31
1931	-43.34	3.33	3.16	1.07	-46.67	-46.50	-44.41
1932	-8.19	3.69	3.63	0.96	-11.88	-11.82	-9.15
1933	53.99	3.12	2.83	0.30	50.87	51.16	53.69
1934	-1.44	3.18	2.93	0.16	-4.62	-4.37	-1.60
1935	47.67	2.81	2.02	0.17	44.86	45.65	47.50
1936	33.92	2.77	1.44	0.18	31.15	32.48	33.74
1937	-35.03	2.66	1.48	0.31	-37.69	-36.51	-35.34
1938	31.12	2.64	1.82	-0.02	28.48	29.30	31.14
1939	-0.41	2.40	1.31	0.02	-2.81	-1.72	-0.43
1940	-9.78	2.23	0.90	0.00	-12.01	-10.68	-9.78
1941	-11.59	1.94	0.67	0.06	-13.53	-12.26	-11.65
1942	20.34	2.46	0.76	0.27	17.88	19.58	20.07
1943	25.90	2.44	1.56	0.35	23.46	24.34	25.55
1944	19.75	2.46	1.44	0.33	17.29	18.31	19.42
1945	36.44	2.34	1.19	0.33	34.10	35.25	36.11
1946	-8.07	2.04	1.08	0.35	-10.11	-9.15	-8.42
1947	5.71	2.13	1.21	0.50	3.58	4.50	5.21
1948	5.50	2.40	1.56	0.81	3.10	3.94	4.69
1949	18.79	2.25	1.36	1.10	16.54	17.43	17.69
1950	31.71	2.12	1.39	1.20	29.59	30.32	30.51
1951	24.02	2.38	1.98	1.49	21.64	22.04	22.53
1952	18.37	2.66	2.19	1.66	15.71	16.18	16.71
1953	-0.99	2.84	2.55	1.82	-3.83	-3.54	-2.81
1954	52.62	2.79	1.60	0.86	49.83	51.02	51.76
1955	31.56	2.75	2.45	1.57	28.81	29.11	29.99
1956	6.56	2.99	3.05	2.46	3.57	3.51	4.10
1957	-10.78	3.44	3.59	3.14	-14.22	-14.37	-13.92
1958	43.36	3.27	2.93	1.54	40.09	40.43	41.82
1959	11.96	4.01	4.18	2.95	7.95	7.78	9.01
1960	0.47	4.26	4.15	2.66	-3.79	-3.68	-2.19
1961	26.89	3.83	3.54	2.13	23.06	23.35	24.76
1962	-8.73	4.00	3.73	2.73	-12.73	-12.46	-11.46
1963	22.80	3.89	3.71	3.12	18.91	19.09	19.68
1964	16.48	4.15	4.00	3.54	12.33	12.48	12.94
1965	12.45	4.19	4.15	3.93	8.26	8.30	8.52
1966	-10.06	4.49	4.93	4.76	-14.55	-14.99	-14.82
1967	23.98	4.59	4.88	4.21	19.39	19.10	19.77
1968	11.06	5.50	5.49	5.21	5.56	5.57	5.85
1969	-8.50	5.95	6.65	6.58	-14.45	-15.15	-15.08
1970	3.86	6.74	7.49	6.52	-2.88	-3.63	-2.66
1971	14.30	6.32	5.75	4.39	7.98	8.55	9.91
1972	19.00	5.87	5.75	3.84	13.13	13.25	15.16
1973	-14.69	6.51	6.58	6.93	-21.20	-21.27	-21.62
1974	-26.47	7.27	7.24	8.00	-33.74	-33.71	-34.47
1975	37.23	7.99	7.35	5.80	29.24	29.88	31.43
1976	23.93	7.89	7.10	5.08	16.04	16.83	18.85

VII 000111

Market Risk Premium

Year (1)	Large Company Stocks Total Returns (2)	Long-Term Government Bonds Income Returns (3)	Intermediate-Term Government Bonds Income Returns (4)	Short-Term Total Returns (5)	Long-Term Market Risk Premium = (2) - (3) (6)	Intermediate-Term Market Risk Premium = (2) - (4) (7)	Short-Term Market Risk Premium = (2) - (5) (8)
1977	-7.16	7.14	6.49	5.12	-14.30	-13.65	-12.28
1978	6.57	7.90	7.83	7.18	-1.33	-1.26	-0.61
1979	18.61	8.86	9.04	10.38	9.75	9.57	8.23
1980	32.50	9.97	10.55	11.24	22.53	21.95	21.26
1981	-4.92	11.55	12.97	14.71	-16.47	-17.89	-19.63
1982	21.55	13.50	12.81	10.54	8.05	8.74	11.01
1983	22.56	10.38	10.35	8.80	12.18	12.21	13.76
1984	6.27	11.74	11.68	9.85	-5.47	-5.41	-3.58
1985	31.73	11.25	10.29	7.72	20.48	21.44	24.01
1986	18.67	8.98	7.72	6.16	9.69	10.95	12.51
1987	5.25	7.92	7.47	5.47	-2.67	-2.22	-0.22
1988	16.61	8.97	8.24	6.35	7.64	8.37	10.26
1989	31.69	8.81	8.46	8.37	22.88	23.23	23.32
1990	-3.10	8.19	8.15	7.81	-11.29	-11.25	-10.91
1991	30.47	8.22	7.43	5.60	22.25	23.04	24.87
1992	7.62	7.26	6.27	3.51	0.36	1.35	4.11
1993	10.08	7.17	5.53	2.90	2.91	4.55	7.18
1994	1.32	6.59	6.07	3.90	-5.27	-4.75	-2.58
1995	37.58	7.60	6.69	5.60	29.98	30.89	31.98
1996	22.96	6.18	5.82	5.21	16.78	17.14	17.75
1997	33.36	6.64	6.14	5.26	26.72	27.22	28.10
1998	28.58	5.83	5.29	4.86	22.75	23.29	23.72
1999	21.04	5.57	5.30	4.68	15.47	15.74	16.36
2000	-9.10	6.50	6.19	5.89	-15.60	-15.29	-14.99
2001	-11.89	5.53	4.27	3.83	-17.42	-16.16	-15.72
2002	-22.10	5.59	3.98	1.65	-27.69	-26.08	-23.75
2003	28.68	4.80	2.85	1.02	23.88	25.83	27.66
2004	10.88	5.02	3.28	1.20	5.86	7.60	9.68
2005	4.91	4.69	3.92	2.98	0.22	0.99	1.93
2006	15.79	4.68	4.54	4.80	11.11	11.25	10.99
2007	5.49	4.86	4.44	4.66	0.63	1.05	0.83
2008	-37.00	4.45	2.96	1.60	-41.45	-39.96	-38.60
2009	26.46	3.47	2.01	0.10	22.99	24.45	26.36
2010	15.06	4.25	1.92	0.12	10.81	13.14	14.94
2011	2.11	3.82	1.64	0.04	-1.71	0.47	2.07
2012	16.00	2.47	0.75	0.06	13.53	15.25	15.94
2013	32.39	2.90	1.06	0.02	29.49	31.33	32.37
2014	13.69	3.41	1.63	0.02	10.28	12.06	13.67
2015	1.38	2.47	1.51	0.02	-1.09	-0.13	1.36
2016	11.96	2.30	1.36	0.20	9.66	10.60	11.76
2017	21.83	2.67	1.93	0.80	19.16	19.90	21.03
2018	-4.38	2.82	2.65	1.83	-7.20	-7.03	-6.21
2019	31.49	2.55	2.08	2.15	28.94	29.41	29.34
2020	18.40	1.53	0.66	0.45	16.87	17.74	17.95
2021	28.71	1.73	0.86	0.04	26.98	27.85	28.67
2022	-18.11	2.61	2.67	1.43	-20.72	-20.78	-19.54
Average	12.02	4.85	4.28	3.28	7.17	7.74	8.73

Notes:

Source: 2023 SBBi Yearbook.

(2): Appendix A-1: Large-Capitalization Stocks, Total Returns.

(3): Appendix A-7: Long Term Government Bonds: Income Returns.

(4): Appendix A-11: Intermediate Term Government Bonds: Income Returns.

(5): Appendix A-14: U.S. Treasury Bills, Total Returns.

VII 000112

Investment Expense to Invested Assets Ratio

Companies	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
A.I.M. Mutual Insurance Companies (G)	0.14%	0.14%	0.14%	0.14%	0.14%	0.13%	0.14%	0.15%	0.16%	0.16%
Travelers Group (G)	0.22%	0.21%	0.22%	0.22%	0.23%	0.22%	0.22%	0.23%	0.22%	0.23%
Hartford Insurance Group (G)	0.20%	0.20%	0.20%	0.24%	0.25%	0.24%	0.20%	0.19%	0.19%	0.18%
Liberty Mutual Insurance Companies (G)	0.31%	0.30%	0.31%	0.32%	0.30%	0.27%	0.26%	0.27%	0.27%	0.27%
Chubb INA Group (G)	0.14%	0.15%	0.14%	0.14%	0.13%	0.13%	0.16%	0.16%	0.18%	0.17%
Zurich Insurance US PC Group (G)	0.39%	0.41%	0.40%	0.40%	0.30%	0.25%	0.24%	0.14%	0.15%	0.09%
Berkshire Hathaway Insurance Group (G)	0.12%	0.11%	0.10%	0.11%	0.14%	0.10%	0.13%	0.13%	0.12%	0.06%
Charter Insurance Group (G)	0.37%	0.33%	0.31%	0.30%	0.28%	0.27%	0.24%	0.26%	0.25%	0.25%
AmTrust Group (G)	0.02%	0.02%	0.05%	0.08%	0.11%	0.25%	0.18%	0.16%	0.16%	0.18%
W. R. Berkley Insurance Group (G)	0.18%	0.20%	0.28%	0.25%	0.23%	0.25%	0.29%	0.30%	0.26%	0.26%
Old Republic Insurance Group (G)	0.07%	0.06%	0.07%	0.08%	0.08%	0.07%	0.09%	0.12%	0.12%	0.13%
American International Group (G)	0.18%	0.15%	0.17%	0.16%	0.17%	0.19%	0.15%	0.16%	0.13%	0.15%
CNA Insurance Companies (G)	0.16%	0.15%	0.15%	0.15%	0.14%	0.14%	0.15%	0.23%	0.20%	0.19%
Hanover Ins Group Prop & Cas Cos (G)	0.21%	0.20%	0.20%	0.20%	0.21%	0.24%	0.25%	0.26%	0.15%	0.15%
MEMIC Group (G)	0.21%	0.17%	0.18%	0.18%	0.18%	0.19%	0.19%	0.19%	0.22%	0.22%
Arbella Insurance Group (G)	0.10%	0.09%	0.11%	0.11%	0.11%	0.11%	0.11%	0.10%	0.11%	0.24%
Selective Insurance Group (G)	0.23%	0.27%	0.23%	0.21%	0.20%	0.22%	0.18%	0.19%	0.19%	0.18%
Utica National Insurance Group (G)	0.24%	0.22%	0.23%	0.26%	0.27%	0.27%	0.26%	0.29%	0.30%	0.28%
QBE North America Insurance Group (G)	0.27%	0.24%	0.25%	0.27%	0.28%	0.29%	0.25%	0.33%	0.29%	0.29%
Arch Insurance Group (G)	0.20%	0.22%	0.22%	0.22%	0.22%	0.21%	0.15%	0.14%	0.11%	0.10%
Starr International Group (G)	0.09%	0.10%	0.09%	0.11%	0.12%	0.14%	0.13%	0.13%	0.11%	0.10%
Sentry Insurance Group (G)	0.31%	0.28%	0.32%	0.33%	0.29%	0.25%	0.25%	0.25%	0.25%	0.25%
Federated Mutual Group (G)	0.23%	0.23%	0.22%	0.23%	0.23%	0.21%	0.20%	0.18%	0.18%	0.20%
AF Group (G)	0.19%	0.21%	0.21%	0.19%	0.23%	0.12%	0.13%	0.15%	0.13%	0.12%
Fairfax Financial (USA) Group (G)	0.42%	0.51%	0.47%	0.50%	0.46%	0.40%	0.62%	0.62%	0.77%	0.97%
Progressive Insurance Group (G)	0.12%	0.17%	0.19%	0.23%	0.26%	0.30%	0.34%	0.38%	0.38%	0.40%
Norfolk & Dedham Group Pool (G)	0.43%	0.33%	0.55%	0.57%	0.63%	0.58%	0.60%	0.58%	0.61%	0.50%
AU Holding Company Group (G)	0.02%	0.11%	0.08%	0.03%	0.03%	0.02%	0.02%	0.02%	0.02%	0.03%
Great American P & C Insurance Group (G)	0.13%	0.18%	0.20%	0.28%	0.30%	0.29%	0.32%	0.32%	0.34%	0.41%
Tokio Marine US PC Group (G)	0.53%	0.53%	0.45%	0.40%	0.40%	0.40%	0.29%	0.25%	0.19%	0.17%
EMC Insurance Companies (G)	0.56%	0.58%	0.64%	0.82%	0.79%	0.67%	0.69%	0.63%	0.58%	0.56%
Arrow Mutual Liability Insurance Company	0.13%	0.26%	0.35%	0.20%	0.31%	0.33%	0.31%	0.31%	0.41%	0.32%
Argo Group (G)	0.28%	0.25%	0.31%	0.42%	0.51%	0.49%	0.39%	0.41%	0.42%	0.37%

VII 000113

Investment Expense to Invested Assets Ratio

Companies	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
American Family Insurance Group (G)	0.52%	0.58%	0.49%	0.56%	0.56%	0.54%	0.49%	0.48%	0.46%	0.46%
American National Prop & Cas Group (G)	0.13%	0.11%	0.11%	0.13%	0.13%	0.14%	0.15%	0.13%	0.13%	0.15%
Employers Insurance Group (G)	0.12%	0.15%	0.15%	0.16%	0.10%	0.10%	0.10%	0.10%	0.10%	0.11%
Service Insurance Group (G)	0.49%	0.49%	0.49%	0.78%	0.59%	0.38%	0.50%	0.42%	0.41%	0.39%
Markel Corporation Group (G)	0.34%	0.41%	0.38%	0.43%	0.47%	0.43%	0.42%	0.43%	0.39%	0.37%
Electric Insurance Company	0.39%	0.46%	0.44%	0.42%	0.43%	0.44%	0.38%	0.38%	0.36%	0.35%
Everest Re U.S. Group (G)	0.17%	0.12%	0.13%	0.12%	0.09%	0.11%	0.10%	0.09%	0.10%	0.11%
Central Insurance Companies (G)	0.43%	0.31%	0.36%	0.43%	0.38%	0.28%	0.26%	0.27%	0.28%	0.29%
Group 1001 Property and Casualty Group (G)	0.18%	0.10%	0.08%	0.08%	0.11%	0.13%	0.14%	0.72%	0.44%	0.45%
The Cincinnati Insurance Companies (G)	0.06%	0.06%	0.06%	0.06%	0.06%	0.06%	0.05%	0.07%	0.06%	0.07%
Sompo Holdings US Group (G)	0.10%	0.12%	0.14%	0.10%	0.12%	0.12%	0.14%	0.17%	0.15%	0.17%
XL America Companies (G)	0.17%	0.22%	0.23%	0.25%	0.22%	0.24%	0.23%	0.25%	0.25%	0.25%
Merchants Insurance Group (G)	0.13%	0.15%	0.15%	0.16%	0.15%	0.12%	0.12%	0.14%	0.14%	0.13%
Work First Casualty Company	0.38%	0.40%	0.41%	0.41%	0.48%	0.54%	0.82%	0.42%	0.44%	0.53%
Nationwide Group (G)	0.26%	0.27%	0.30%	0.36%	0.37%	0.35%	0.35%	0.25%	0.35%	0.37%
Core Specialty Insurance Group (G)	0.11%	0.16%	0.37%	0.38%	0.20%	0.27%	0.25%	0.27%	0.30%	0.44%
Church Mutual Insurance Group (G)	0.27%	0.27%	0.24%	0.25%	0.27%	0.31%	0.32%	0.28%	0.29%	0.30%
Pharmacists Mutual Insurance Group (G)	0.68%	0.45%	0.58%	0.71%	0.52%	0.52%	0.45%	0.54%	0.66%	0.66%
Benchmark Insurance Group (G)	0.83%	0.61%	0.84%	0.94%	0.92%	0.54%	0.64%	0.75%	0.82%	0.76%
Coaction Specialty Insurance Group (G)	0.11%	0.15%	0.12%	0.11%	0.12%	0.12%	0.14%	0.14%	0.14%	0.16%
Skyward Specialty Insurance Group (G)	0.54%	0.45%	0.36%	0.48%	0.66%	0.39%	0.24%	0.17%	0.13%	0.19%
Intact US Insurance Group (G)	0.23%	0.20%	0.22%	0.39%	0.32%	0.18%	0.19%	0.20%	0.38%	0.38%
Amerisure Companies (G)	0.17%	0.18%	0.18%	0.16%	0.14%	0.15%	0.15%	0.14%	0.16%	0.17%
MS&AD US Insurance Group (G)	0.34%	0.38%	0.36%	0.24%	0.35%	0.35%	0.41%	0.36%	0.36%	0.35%
GuideOne Insurance Companies (G)	0.52%	0.55%	0.65%	0.76%	0.69%	0.63%	0.56%	0.53%	0.53%	0.49%
ProAssurance Group (G)	0.20%	0.30%	0.28%	0.35%	0.32%	0.37%	0.31%	0.29%	0.35%	0.34%
American Contractors Insurance Group (G)	0.24%	0.21%	0.22%	0.21%	0.22%	0.27%	0.29%	0.33%	0.33%	0.33%
ICW Group (G)	0.46%	0.79%	0.68%	0.63%	0.50%	0.80%	0.65%	0.69%	0.30%	0.24%
Brotherhood Mutual Insurance Company	0.59%	0.67%	0.63%	0.69%	0.77%	0.78%	0.83%	0.90%	0.98%	0.82%
WCF Insurance Group (G)	0.27%	0.29%	0.33%	0.34%	0.31%	0.31%	0.30%	0.27%	0.28%	0.26%
Cherokee Insurance Company	0.06%	0.04%	0.06%	0.07%	0.07%	0.07%	0.07%	0.08%	0.09%	0.08%
Premier Group Insurance Company	0.20%	0.23%	0.22%	0.24%	0.26%	0.29%	0.29%	0.29%	0.32%	0.26%
RLI Group (G)	0.30%	0.33%	0.30%	0.30%	0.30%	0.31%	0.32%	0.32%	0.33%	0.32%

VII 000114

Investment Expense to Invested Assets Ratio

Companies	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
AMERISAFE Insurance Group (G)	0.19%	0.17%	0.15%	0.15%	0.14%	0.14%	0.16%	0.16%	0.19%	0.20%
Auto-Owners Insurance Group (G)	0.15%	0.15%	0.14%	0.14%	0.15%	0.15%	0.15%	0.14%	0.15%	0.15%
Allianz US PC Insurance Companies (G)	0.09%	0.07%	0.07%	0.06%	0.08%	0.09%	0.09%	0.06%	0.07%	0.06%
IAT Insurance Group (G)	0.27%	0.31%	0.37%	0.30%	0.42%	0.32%	0.34%	0.39%	0.34%	0.34%
State Farm Group (G)	0.12%	0.11%	0.13%	0.13%	0.14%	0.15%	0.20%	0.28%	0.19%	0.24%
National American Insurance Company	0.60%	0.60%	0.65%	0.73%	0.69%	0.71%	0.67%	0.68%	0.73%	0.76%
Farmers Insurance Group (G)	0.17%	0.18%	0.19%	0.20%	0.18%	0.18%	0.14%	0.11%	0.12%	0.16%
HDI/Talanx US PC Group (G)	0.12%	0.14%	0.13%	0.15%	0.10%	0.12%	0.14%	0.11%	0.12%	0.13%
Samsung F & M Insurance Co, Ltd USB	0.13%	0.15%	0.13%	0.13%	0.33%	0.57%	0.18%	0.31%	0.25%	0.34%
West Bend Mutual Insurance Company	0.40%	0.45%	0.47%	0.57%	0.55%	0.60%	0.60%	0.65%	0.72%	0.81%
James River Group (G)	0.08%	0.15%	0.11%	0.09%	0.30%	0.31%	0.37%	0.41%	0.39%	0.36%
The Gray Insurance Group (G)	0.39%	0.35%	0.42%	0.56%	0.53%	0.53%	0.44%	0.46%	0.37%	0.11%
Penn National Insurance Companies (G)	0.49%	0.49%	0.23%	0.16%	0.19%	0.18%	0.17%	0.18%	0.20%	0.21%

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Premium Weighted Investment Expense to Asset Ratio	0.21%	0.21%	0.22%	0.23%	0.22%	0.21%	0.21%	0.21%	0.21%	0.20%

Selected Ratio	<b>0.21%</b>
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Notes:

Source: A.M. Best's Global Insurance Database for all Massachusetts Workers' Compensation Group Companies.

- Investment Expenses is the sum of Total Investment Expenses Incurred and Investment Tax, Licences & Fees and Aggregate Write Ins, from Exhibit of Net Investment Income.
- Total Cash and Invested Assets from Exhibit of Assets.
- Premium Weighted Investment Expense to Asset Ratio use Direct Premiums Written from page 2.
- Selected Ratio is equal to ten year average.

VII 000115

Direct Premiums Written for MA Workers' Compensation Group Companies

Companies	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
A.I.M. Mutual Insurance Companies (G)	152,056	141,079	141,670	158,738	155,688	158,179	156,921	149,530	144,469	138,172
Travelers Group (G)	147,413	126,925	143,085	155,681	165,699	165,917	170,238	159,479	151,076	142,948
Hartford Insurance Group (G)	139,610	120,626	107,771	122,647	116,964	115,136	106,794	100,625	95,680	93,792
Liberty Mutual Insurance Companies (G)	110,903	88,029	96,993	104,384	107,101	101,407	94,245	96,864	93,636	108,538
Chubb INA Group (G)	98,997	88,568	91,942	95,010	93,797	88,015	85,214	70,148	62,298	56,332
Zurich Insurance US PC Group (G)	86,899	73,842	70,523	60,369	61,930	60,851	63,002	61,220	53,484	43,096
Berkshire Hathaway Insurance Group (G)	67,250	63,679	62,947	70,797	70,331	64,812	63,215	54,174	41,941	28,225
Charter Insurance Group (G)	57,806	53,932	57,464	60,082	60,790	64,004	61,617	58,394	57,349	53,707
AmTrust Group (G)	44,277	32,186	23,632	25,794	32,669	36,819	40,042	36,955	30,874	28,174
W. R. Berkley Insurance Group (G)	41,403	36,010	34,183	33,269	42,470	46,425	41,191	35,083	33,183	30,140
Old Republic Insurance Group (G)	37,661	37,766	35,383	29,096	25,785	26,755	21,483	19,474	21,366	20,020
American International Group (G)	33,275	44,927	84,792	103,726	93,630	84,054	91,871	106,329	105,983	99,753
CNA Insurance Companies (G)	28,796	25,313	24,741	21,232	21,127	20,840	18,238	16,003	15,858	15,740
Hanover Ins Group Prop & Cas Cos (G)	25,032	23,006	22,909	20,803	21,394	20,360	17,429	16,309	12,945	12,871
MEMIC Group (G)	18,153	15,685	16,705	15,237	11,239	9,658	8,147	6,500	6,470	6,535
Arbella Insurance Group (G)	17,012	14,040	14,155	14,180	14,367	15,091	14,935	13,905	13,389	13,312
Selective Insurance Group (G)	16,678	13,773	10,335	9,480	8,189	7,060	6,254	5,646	5,225	4,938
Utica National Insurance Group (G)	15,349	13,249	11,936	12,186	11,778	10,704	9,921	9,731	9,239	8,962
QBE North America Insurance Group (G)	15,134	14,134	9,753	4,219	4,218	6,333	5,862	3,483	2,990	2,924
Arch Insurance Group (G)	12,613	9,506	9,698	6,883	6,148	5,889	6,417	4,136	5,364	5,021
Starr International Group (G)	11,784	8,148	7,945	7,043	7,458	4,833	4,455	4,196	2,914	1,759
Sentry Insurance Group (G)	10,999	8,173	8,949	9,080	8,263	7,293	7,197	5,974	7,166	7,496
Federated Mutual Group (G)	9,547	7,916	8,170	6,820	6,117	5,898	5,082	3,335	3,071	2,381
AF Group (G)	9,427	9,272	10,502	9,801	8,696	10,095	12,548	9,447	9,338	12,176
Fairfax Financial (USA) Group (G)	9,399	10,986	8,287	11,917	12,424	11,527	10,596	9,840	7,808	5,967
Progressive Insurance Group (G)	8,605	8,569	5,922	5,560	3,499	3,560	2,387	2,337	2,074	1,341
Norfolk & Dedham Group Pool (G)	8,391	7,585	7,445	9,599	8,552	8,692	8,848	7,859	7,323	7,235
AU Holding Company Group (G)	6,894	8,448	7,343	7,096	9,344	12,208	12,165	12,229	11,285	10,812
Great American P & C Insurance Group (G)	6,821	5,783	3,050	5,850	4,819	5,786	4,303	3,896	3,493	2,674
Tokio Marine US PC Group (G)	6,209	5,020	5,798	4,928	5,089	4,708	4,273	3,783	2,686	2,518

VII 000116

Direct Premiums Written for MA Workers' Compensation Group Companies

Companies	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
EMC Insurance Companies (G)	6,188	5,527	5,832	6,209	6,326	4,285	4,012	3,246	1,095	593
Arrow Mutual Liability Insurance Company	6,130	4,950	5,525	6,211	6,671	5,757	5,180	5,589	5,414	5,419
Argo Group (G)	6,000	1,960	1,984	1,808	2,766	2,854	2,870	2,732	3,120	3,328
American Family Insurance Group (G)	5,786	5,041	5,194	6,214	6,426	6,652	7,607	6,649	5,855	5,874
American National Prop & Cas Group (G)	5,653	5,422	5,854	6,093	6,612	6,545	6,400	6,034	5,677	5,296
Employers Insurance Group (G)	5,607	4,324	4,285	4,757	3,125	1,583	110	0	0	0
Service Insurance Group (G)	5,238	5,021	3,157	6	0	0	0	0	0	0
Markel Corporation Group (G)	4,911	4,380	3,694	6,312	7,294	5,507	1,455	1,319	1,314	1,074
Electric Insurance Company	4,115	3,810	3,805	3,289	4,451	3,278	4,408	4,164	3,850	4,097
Everest Re U.S. Group (G)	3,956	3,794	5,279	3,240	1,727	1,759	616	489	799	709
Central Insurance Companies (G)	3,411	2,569	2,422	1,856	2,116	1,914	2,029	2,334	2,006	1,819
Group 1001 Property and Casualty Group (G)	3,346	3,914	1,738	230	4	-3	0	0	-20	488
The Cincinnati Insurance Companies (G)	3,292	2,076	1,406	619	367	252	227	294	313	279
Sompo Holdings US Group (G)	3,135	2,382	2,493	2,171	2,301	1,406	899	585	579	415
XL America Companies (G)	3,026	2,574	3,311	3,802	3,765	4,457	3,265	1,356	1,304	2,650
Merchants Insurance Group (G)	2,991	2,790	2,767	2,709	2,603	2,602	2,345	2,058	1,946	1,560
Work First Casualty Company	2,742	1,208	1,414	1,984	1,414	900	0	0	0	0
Nationwide Group (G)	2,740	1,743	1,348	1,564	2,072	2,462	2,506	3,402	3,282	3,222
Core Specialty Insurance Group (G)	2,467	3,150	1,044	1,135	997	641	0	0	0	0
Church Mutual Insurance Group (G)	2,087	1,450	1,318	1,419	1,363	1,287	1,175	1,006	925	919
Pharmacists Mutual Insurance Group (G)	1,994	1,670	616	549	650	573	536	342	409	364
Benchmark Insurance Group (G)	1,914	2,168	1,350	302	26	92	31	0	0	0
Coaction Specialty Insurance Group (G)	1,760	1,605	2,170	3,646	2,976	2,056	1,681	1,047	730	387
Skyward Specialty Insurance Group (G)	1,726	4,236	4,263	2,208	634	195	34	41	62	11
Intact US Insurance Group (G)	1,498	1,387	1,441	1,431	1,298	1,306	1,352	1,515	1,632	1,903
Amerisure Companies (G)	1,085	642	457	503	804	708	777	1,059	550	306
MS&AD US Insurance Group (G)	890	681	998	1,063	1,284	1,315	2,075	1,706	1,628	1,999
GuideOne Insurance Companies (G)	563	571	386	385	477	557	509	316	59	49
ProAssurance Group (G)	334	174	64	321	12	0	0	0	0	0
American Contractors Insurance Group (G)	308	186	30	55	187	80	47	3	-10	-12

VII 000117

Direct Premiums Written for MA Workers' Compensation Group Companies

Companies	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
ICW Group (G)	303	195	133	145	44	329	490	65	2	0
Brotherhood Mutual Insurance Company	216	193	178	180	139	66	36	5	0	0
WCF Insurance Group (G)	198	32	48	56	55	65	30	25	18	18
Cherokee Insurance Company	178	131	135	118	109	118	117	99	81	79
Premier Group Insurance Company	162	362	360	356	367	382	347	322	317	384
RLI Group (G)	143	146	151	137	114	111	88	62	45	19
AMERISAFE Insurance Group (G)	140	93	100	176	60	103	125	45	50	111
Auto-Owners Insurance Group (G)	94	0	0	0	0	0	0	0	0	0
Allianz US PC Insurance Companies (G)	48	309	734	816	1,065	1,034	581	397	457	446
IAT Insurance Group (G)	41	107	-26	477	430	414	496	345	335	479
State Farm Group (G)	27	30	19	32	35	35	24	50	19	30
National American Insurance Company	17	3	0	1	0	0	0	0	0	0
Farmers Insurance Group (G)	15	15	-7	-267	987	2,205	2,660	2,671	3,310	1,187
HDI/Talanx US PC Group (G)	11	150	1	1,481	2,716	5,579	8,710	6,821	5,300	4,242
Samsung F & M Insurance Co, Ltd USB	11	25	11	12	16	36	31	42	17	14
West Bend Mutual Insurance Company	10	6	4	0	0	0	0	0	0	0
James River Group (G)	8	400	394	257	126	4	0	0	0	0
The Gray Insurance Group (G)	1	2	6	1	1	0	0	0	0	0
Penn National Insurance Companies (G)	1	7	3	2	2	3	1	6	3	2

Notes:

Source: A.M. Best's Global Insurance Database for all Massachusetts Workers' Compensation Group Companies.

VII 000118

Calculation of Common Stock Total Return Tax Rate

Year (1)	Income Returns (2)	Capital Appreciation Returns (3)
1926	5.41	5.72
1927	5.71	30.91
1928	4.81	37.88
1929	3.98	-11.91
1930	4.57	-28.48
1931	5.35	-47.07
1932	6.16	-15.15
1933	6.39	46.59
1934	4.46	-5.94
1935	4.95	41.37
1936	5.36	27.92
1937	4.66	-38.59
1938	4.83	25.21
1939	4.69	-5.45
1940	5.36	-15.29
1941	6.71	-17.86
1942	6.79	12.43
1943	6.24	19.45
1944	5.48	13.80
1945	4.97	30.72
1946	4.09	-11.87
1947	5.49	0.00
1948	6.08	-0.65
1949	7.50	10.26
1950	8.77	21.78
1951	6.91	16.46
1952	5.93	11.78
1953	5.46	-6.62
1954	6.21	45.02
1955	4.56	26.40
1956	3.83	2.62
1957	3.84	-14.31
1958	4.38	38.06
1959	3.31	8.48
1960	3.26	-2.97
1961	3.48	23.13
1962	2.98	-11.81
1963	3.61	18.89
1964	3.33	12.97
1965	3.21	9.06
1966	3.11	-13.09
1967	3.64	20.09
1968	3.18	7.66
1969	2.98	-11.36
1970	3.33	0.10
1971	3.49	10.63
1972	2.95	15.79
1973	2.86	-17.37
1974	3.69	-29.72
1975	5.37	31.55
1976	4.49	19.15
1977	4.35	-11.50
1978	5.33	1.06
1979	5.88	12.31
1980	5.74	25.77
1981	4.88	-9.73
1982	5.61	14.76
1983	5.04	17.27
1984	4.57	1.40
1985	4.72	26.33
1986	3.92	14.62
1987	3.64	2.03
1988	3.99	12.40
1989	4.03	27.25

Calculation of Common Stock Total Return Tax Rate

Year (1)	Income Returns (2)	Capital Appreciation Returns (3)
1990	3.43	-6.56
1991	3.76	26.31
1992	2.98	4.46
1993	2.91	7.06
1994	2.83	-1.54
1995	3.04	34.11
1996	2.43	20.26
1997	2.10	31.01
1998	1.67	26.67
1999	1.36	19.53
2000	1.11	-10.14
2001	1.18	-13.04
2002	1.39	-23.37
2003	1.99	26.38
2004	1.76	8.99
2005	1.84	3.00
2006	2.01	13.62
2007	1.96	3.53
2008	1.92	-38.49
2009	2.48	23.45
2010	2.02	12.78
2011	2.13	0.00
2012	2.50	13.41
2013	2.47	29.60
2014	2.16	11.39
2015	2.10	-0.73
2016	2.26	9.54
2017	2.21	19.42
2018	2.01	-6.24
2019	2.34	28.88
2020	1.80	16.26
2021	1.61	26.89
2022	1.40	-19.44
Average	3.87	7.91

	Dividend	Capital Gains
(4) Weights	32.83%	67.17%
(5) Tax Rate	13.13%	14.58%
(6) Common Stock Tax Rate		<b>14.10%</b>

Notes:

Source: 2023 SBBI Yearbook.

(2): Appendix A-2: Large-Capitalization Stocks, Income Returns.

(3): Appendix A-3: Large-Capitalization Stocks, Capital Appreciation Returns.

(5) = Dividend Tax Rate =  $0.5 \times 0.21 + 0.5 \times 0.21 \times 0.25$

Capital Gains Tax Rate is from page 2.

Calculation of Capital Gains Tax Rate

(1) Turnover Rate	36.00%
(2) Weighted Average Cost of Capital	9.48%
(3) Marginal Tax Rate	21.00%
(4) Annual Expected Capital Gains Rate	7.91%

Year (5)	Investment Basis (6) <sub>t-1</sub> x [1.0 - (1)] (6)	Investment Value		Investment Sold (8) x (1) (9)	Realized Capital Gains [(8) - (6)] x (1) (10)	Taxes Paid (10) x (3) (11)	Present Value of the Taxes (12)
		Beg of Year (8) <sub>t-1</sub> - (9) <sub>t-1</sub> (7)	End of Year (7) x [1.0 + (4)] (8)				
0	1,000,000.00	1,000,000.00	1,079,107.22	388,478.60	28,478.60	5,980.51	5,715.65
1	640,000.00	690,628.62	745,262.33	268,294.44	37,894.44	7,957.83	6,946.68
2	409,600.00	476,967.89	514,699.49	185,291.82	37,835.82	7,945.52	6,335.19
3	262,144.00	329,407.67	355,466.20	127,967.83	33,595.99	7,055.16	5,138.06
4	167,772.16	227,498.37	245,495.13	88,378.25	27,980.27	5,875.86	3,908.57
5	107,374.18	157,116.88	169,545.96	61,036.55	22,381.84	4,700.19	2,855.73
6	68,719.48	108,509.42	117,093.29	42,153.59	17,414.57	3,657.06	2,029.50
7	43,980.47	74,939.71	80,867.98	29,112.47	13,279.51	2,788.70	1,413.56
8	28,147.50	51,755.51	55,849.74	20,105.91	9,972.81	2,094.29	969.62
9	18,014.40	35,743.83	38,571.43	13,885.71	7,400.53	1,554.11	657.21
10	11,529.22	24,685.71	26,638.53	9,589.87	5,439.35	1,142.26	441.21
11	7,378.70	17,048.66	18,397.33	6,623.04	3,966.71	833.01	293.89
12	4,722.37	11,774.29	12,705.72	4,574.06	2,874.01	603.54	194.49
13	3,022.31	8,131.66	8,774.94	3,158.98	2,070.94	434.90	128.01
14	1,934.28	5,615.96	6,060.22	2,181.68	1,485.34	311.92	83.86
15	1,237.94	3,878.54	4,185.36	1,506.73	1,061.07	222.83	54.72
16	792.28	2,678.63	2,890.53	1,040.59	755.37	158.63	35.58
17	507.06	1,849.94	1,996.28	718.66	536.12	112.59	23.06
18	324.52	1,277.62	1,378.69	496.33	379.50	79.70	14.91
19	207.69	882.36	952.16	342.78	268.01	56.28	9.62
20	132.92	609.38	657.59	657.59	524.67	110.18	17.20
Total					255,595.47	53,675.05	37,266.30

(13) Implied Tax Rate on Capital Gains 14.58%

Notes:

- (1): Turnover Rate is based on AIB Stock Turnover Study of 1988 transactions. (2001 AIB Profit Filing, R2000-10, 100H-3, Exhibits 15 and 16)
- (2): Interest Rate is the weighted average cost of capital, Section VII - E, Exhibit 1.
- (4): Page 1, average of column (3)
- (10) Year 20 : All remaining capital gains are assumed realized in year 20.
- (12) = (11) x { [ 1.0 + (2) ]<sup>n</sup> - [ (5) + 0.5 ] }
- (13) = (12) Total / (10) Total

VII 000121

Calculation of Common Stock Tax Rate for Different Discount Rates and Turnover Rates

		Discount Rate											
		4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
Turnover Rate	0.10	12.36%	11.40%	10.58%	9.88%	9.28%	8.77%	8.33%	7.95%	7.61%	7.32%	7.07%	6.85%
	0.15	13.36%	12.50%	11.76%	11.11%	10.54%	10.04%	9.61%	9.22%	8.87%	8.56%	8.29%	8.04%
	0.20	14.28%	13.54%	12.88%	12.30%	11.77%	11.30%	10.88%	10.50%	10.15%	9.83%	9.55%	9.29%
	0.25	15.06%	14.42%	13.85%	13.33%	12.85%	12.42%	12.03%	11.66%	11.33%	11.02%	10.73%	10.47%
	0.30	15.68%	15.13%	14.64%	14.18%	13.75%	13.36%	13.00%	12.66%	12.34%	12.05%	11.78%	11.52%
	0.35	16.15%	15.69%	15.26%	14.85%	14.48%	14.13%	13.80%	13.49%	13.20%	12.92%	12.66%	12.42%
	0.40	16.52%	16.12%	15.75%	15.40%	15.06%	14.75%	14.45%	14.17%	13.91%	13.65%	13.41%	13.19%
	0.45	16.82%	16.47%	16.15%	15.84%	15.54%	15.26%	15.00%	14.74%	14.50%	14.27%	14.05%	13.84%
	0.50	17.05%	16.75%	16.47%	16.20%	15.94%	15.69%	15.45%	15.22%	15.00%	14.80%	14.59%	14.40%
	0.55	17.25%	16.99%	16.74%	16.50%	16.27%	16.05%	15.84%	15.63%	15.44%	15.25%	15.07%	14.89%
	0.60	17.41%	17.19%	16.97%	16.76%	16.55%	16.36%	16.17%	15.99%	15.81%	15.64%	15.48%	15.32%
	0.65	17.55%	17.35%	17.16%	16.98%	16.80%	16.63%	16.46%	16.30%	16.14%	15.99%	15.84%	15.70%
	0.70	17.67%	17.50%	17.33%	17.17%	17.01%	16.86%	16.71%	16.57%	16.43%	16.29%	16.16%	16.03%

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# MASSACHUSETTS WORKERS' COMPENSATION

## VOLUME 2: INDEX 7/1/2024

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Reserved for Future Use

## CLASSIFICATION PRICING

### **Background**

The primary goal of ratemaking is to determine an appropriate price for each insured based on the losses that the insured is expected to generate in the prospective policy period. Because many risks are too small to generate an accurate rate based on their own individual experience, risks are combined into classifications.

The workers' compensation system assigns similar risks to the same classification codes and calculates a separate rate for each classification. In aggregating risks, it is desirable to balance stability and responsiveness, and to identify groups that are distinctly different from each other in terms of experience. In order to attain stability, we want a group large enough that its losses do not fluctuate too much. For responsiveness, we want a group small enough so that its rate adjusts to the changing costs of similar risks.

In the Massachusetts workers' compensation system, insureds are separated into five Industry Groups: Manufacturing, Construction, Office and Clerical, Goods and Services, and Miscellaneous. The assignment of class codes to each industry group is based on products produced, processes involved, and services provided.

### **Summary**

In this section, we first calculate the rate change for each Industry Group as it varies from the statewide overall indicated rate change. The calculation of the indicated Industry Group rate change is similar to the process used in developing the overall rate level indication. We update the indicated class relativities within each Industry Group to

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reflect the ratio of the pure premium for the individual class to the pure premium for the given Industry Group. Class relativities are updated regularly in order to maintain a fair and accurate classification system.

Estimated pure premium relativities for each class are a credibility-weighted average of three pure premium relativities: (1) recent Massachusetts (MA) experience, (2) recent "countrywide" (CW) experience, and (3) the relativities underlying the present rate. Average rates are calculated from the updated relativities to derive the proposed rate change by Industry Group. Proposed average rates are capped by an iterative process to attain the required industry group changes. Finally, proposed manual rates are determined by applying offsets to the proposed average capped rates. Since ARAP, Merit and Experience Rating, and the Construction Credit program are each designed to be revenue neutral, an offset for each of these programs is applied to the rate.

## **Massachusetts Data**

The data used for the purpose of classification pricing are the Unit Statistical Data from Schedule Z, which shows detailed policy year payroll, premium and loss data for each classification in Massachusetts. The data used exclude the experience of large deductible policies. In this review, we have utilized the latest available five policy years of data, policy years 2017 through 2021.

This Massachusetts data does not include data for Self Insurance Groups ("SIGs"). The WCRIBMA collects Unit Statistical Data from SIGs where the WCRIBMA has been designated by the Commissioner to perform experience rating calculations for SIGs

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members. See 211 CMR 67.09 (2). SIGs that are exempt from this requirement do not report Unit Statistical Data to the WCRIBMA. The written public comment provided to the Commissioner at the public hearing on the 2023 Rates by Mass NAHRO Insurance Group, Inc. (NAHRO) regarding the use of SIG data discussed total housing authority payroll<sup>1</sup>. That discussion did not include data for the other SIG that writes housing authority insureds and is exempt from reporting Unit Statistical Data to the WCRIBMA.

## **Adjustment of Massachusetts Data**

We begin the process by calculating "limited losses." Limited losses are determined by applying per claim limits and per occurrence limits. These limited losses are multiplied by primary conversion factors (PCF) (Section IX – B, Exhibit 1, Page 1) in order to adjust each policy year's experience to reflect current conditions. Primary conversion factors include benefit level adjustments, loss development factors, and trend factors. Consistent with other sections of the filing, the WCRIBMA has selected five year average paid plus case loss development factors. Section IX-B, Exhibit 1, Page 1 shows the development factors used in the calculation of the primary conversion factors. Converted limited losses are the product of the limited losses and the primary conversion factors.

Next, we apply excess loss factors. Since the 2010 rate filing, the WCRIBMA has followed the NCCI's class ratemaking methodology in calculating excess loss factors. A provision for excess losses has been determined using estimated excess ratios by hazard group from Section XII - F, Exhibit 3, Page 1. The excess ratios in Section XII – F, Exhibit

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<sup>1</sup> Workers Compensation Rate Hearing February 3, 2023 Testimony of Jeffrey Kadison, ACAS, MAA on behalf of the Massachusetts NAHRO Insurance Group, Inc.

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3, Page 1 are “per occurrence” excess ratios which need to be converted to “per claim” excess ratios. This is done by multiplying the excess ratios from Section XII – F, Exhibit 3, Page 1 by a factor of 0.985.

A factor (calculated as  $[ 1.0 / (1.0 - \text{Excess Ratio}) ] - 1.0$ ) is applied separately for indemnity and medical losses to converted limited losses by class to derive unadjusted excess losses. Consistent with the methodology in past rate filings and with NCCI's methodology, 30% of the unadjusted indemnity excess losses are reassigned to medical excess losses. The resulting quantities are termed the adjusted excess losses.

Finally, we calculate converted unlimited losses by multiplying the sum of the converted limited losses and the adjusted excess losses by the secondary conversion factors (SCF) (Section IX – B, Exhibit 1, Page 2). Secondary conversion factors include factors to load loss adjustment expenses and the investment income offset. Indemnity and medical converted unlimited losses are then summed by policy year. These sums are displayed by Industry Group in Section IX - C. Massachusetts indicated pure premiums are calculated by dividing these losses by exposure (generally payrolls).

## **Inclusion of Countrywide Data**

Massachusetts relativities are credibility-weighted with countrywide (CW) relativities and with the pure premiums relativities underlying present rates. The countrywide data used in this filing are supplied by NCCI and other independent bureaus. Countrywide relativities are based upon three composite policy years, although the specific years vary by state (see

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Section IX - D, Exhibit 3). Before the data can be used for ratemaking purposes, they must be adjusted to reflect the Massachusetts' distribution of exposure and loss levels.

Pitch factors are used to adjust the countrywide data to a corresponding Massachusetts level. These pitch factors are calculated as follows:

1. Multiply each state's classification pure premiums by the corresponding Massachusetts exposure to estimate the loss level that would occur if the employers in that state were located in Massachusetts.
2. Sum the indemnity and medical losses by state and industry group to determine the aggregate adjusted losses for each state.
3. Calculate aggregate adjusted losses for Massachusetts in a similar fashion.
4. Divide the aggregate adjusted losses for Massachusetts by the aggregate adjusted losses for each state to determine the pitch factors.

Pitch factors represent the amount by which another state's data must be adjusted to be on the same exposure distribution and loss level as the Massachusetts Schedule Z data (Section IX - D, Exhibit 2). Each state's pure premiums are multiplied by its corresponding pitch factor to derive adjusted pure premiums. The sum of the products of

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the adjusted pure premiums and exposures by state by class is then divided by the total exposure by class to derive countrywide class pure premiums.

For each Industry Group, the countrywide indicated pure premiums are converted to relativities, so that they balance to unity when weighted by Massachusetts exposures.

## **Underlying Relativities**

The relativities underlying present rates are calculated by balancing to unity the pure premiums underlying present rates (which have been adjusted to reflect the impact of benefit changes and trend to the proposed effective period), based on five years of exposure.

## **Formula Relativities**

Once we have the separate (MA Indicated, CW and Underlying) relativities, we use credibility-weighted averages to calculate formula relativities. The indicated Massachusetts relativity is multiplied by its credibility, the indicated countrywide relativity is multiplied by its (limited) credibility and the relativity underlying the present rate is multiplied by the remaining credibility. The total formula relativity is the weighted average of the indemnity and medical relativities, using the Industry Group indemnity and medical pure premiums as weights. The calculated formula relativities are then balanced to unity, based on five policy years of exposure.

**Credibility**

Credibility reflects the relative reliability and volume of class data used to determine class relativities. In general, a class with a higher total amount of expected losses (measured by dollars) has more weight given to its recent MA indicated relativities, while a class with lower expected losses has more weight given to the countrywide and underlying relativities. Credibilities are calculated separately for the MA and the CW experience, and the remainder of credibility is assigned to the relativity underlying the present rate.

**Massachusetts Credibility**

This filing follows the classical credibility method, which has been used since the 2001 rate filing, based on the formula:

$$Z = ( E / F )^{0.4}$$

Where        Z = Credibility assigned to MA or CW experience  
                 E = Expected Losses for MA, Claim Counts for CW  
                 F = Full Credibility Criterion

The Massachusetts full credibility criterion is the product of the claim count standard and the average claim cost. We use NCCI's credibility standards for this purpose. The average claim costs have been updated in Section IX - D, Exhibit 1, Page 2 of this filing.

# IX 000008

Credibility is a function of the volume of indemnity and medical expected losses. By class, expected losses are calculated separately for indemnity and medical losses by multiplying the pure premiums underlying the present rate by exposure. Pure premiums underlying present rates are the product of the adopted relativities from the previous rate revision and pure premium underlying present rate factors. The factors are comprised of the rate level factor implicit in the current rate and an adjustment for benefit level changes and trend since the previous revision (Section IX - E, Exhibit 1).

## **Practical Credibility Considerations**

This method may produce anomalous credibilities for classes with small amounts of data. Therefore, the following constraints are applied:

1. Credibilities cannot be negative.
2. Countrywide credibilities are limited so that the sum of the Massachusetts and countrywide credibilities does not exceed 100%.
3. Countrywide credibilities are limited to  $\frac{1}{2}$  of (1.0 - Massachusetts credibility), and accordingly, cannot be greater than 50%.

## **Countrywide Credibility**

The credibility of adjusted countrywide pure premiums is determined based on claim counts for lost time claims (Section IX - D, Exhibit 1, Page 1). Exposure cannot be used as a measure of credibility since wage levels vary significantly between states.

## **Proposed Average Capped Rates**

Proposed average rates by class are calculated to achieve the proposed rate change by Industry Group. The uncapped rate for each class is the product of the formula pure premium relativity and the uncapped rate level factor for the Industry Group. This uncapped rate level factor is the product of the present average rate and the average rate level change by industry group.

Proposed average uncapped rates are then subject to several capping mechanisms (Section IX – H, Exhibit 1). The capping mechanisms require an iterative process of adjusting capped average rates to balance to the required industry group change, applying the capping mechanism again, and repeating until the capped average rates produce an industry group change equal to the required industry group change. The WCRIBMA uses five years of exposures by class to determine whether the required Industry Group change is achieved.

## **Swing Limits**

The primary capping mechanism used in the process described above is the application of swing limits by class. Swing limits are used to establish an allowable range of rate changes by industry group. Swings limits do not impact the total premium for an industry group, but they do impact the dispersion of rates within an industry group. So long as the resulting allowable range of rate changes is valid (that is, it includes the required industry group change) the iterative process will yield a reasonable solution. As we did in

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the 2016, 2018, 2020, 2022, and 2023 rate filings, the WCRIBMA is proposing +/-20% swing limits centered around the required industry group rate changes in this filing.

This proposed method is comparable to what the NCCI has been doing since 1977. When NCCI began using this method, the allowable range of rate changes was based on the required industry group change plus or minus 25%. Currently, a number of NCCI states have modified the calculation to employ +/- 20% or +/- 15% swing limits in calculating the allowable range of rate changes for an industry group.

## **Manual Rates**

Section IX - A displays the proposed manual rates and rating values for this filing. Proposed manual rates are determined by applying offsets to the proposed average capped rates. We calculate offsets for the impact of merit and experience rating, ARAP, construction credits, and the recoupment of the Insolvency Fund assessments, as shown in Section IX - K.

The manual rates are filed on behalf of the WCRIBMA's member carriers. SIGs are not WCRIBMA member carriers. SIGs utilize the uniform classification system, and the manual rules and rates filed with the Commissioner by the WCRIBMA to price their insureds. SIGs may apply to the Commissioner for authority to make their own rates. See M.G.L. c. 152, § 25O(3); 211 CMR 67.09(4). It is our understanding that NAHRO has filed for and received approval for its own rates effective 10/1/2022 and 6/1/2023.

## **All Risk Adjustment Program**

The All Risk Adjustment Program (ARAP) surcharges those experience-rated risks, both voluntary and assigned, with a record of losses greater than expected under the Experience Rating Plan. The purpose of this program is to provide a pricing mechanism to reflect the unusually adverse experience of certain experience-rated risks and to provide an additional financial incentive for such risks to improve workplace safety. Because the program allows for surcharges only, it generates additional premium revenue. In order to achieve revenue-neutrality, we apply a corresponding offset to reduce the manual rates to make up for the anticipated surcharge premium.

The ARAP adjustment is calculated and identified as a separate factor on the Experience Rating Calculation sheet. The ARAP factor can range from 1.00 to a maximum of 1.25. The offset factor for ARAP, calculated in Section IX – K, Exhibit 3, is 1.054.

## **Merit Rating Program**

The objective of the Merit Rating Program is to provide a pricing mechanism for risks too small to qualify for experience rating to share in the loss experience that they generate.

A risk is eligible for the Merit Rating Program if it is not eligible for experience rating and has an average annual premium over the last three policy years of at least \$500. Eligible risks receive the following adjustments to their premium, based on the number of lost-time claims over the most recent three policy years.

# IX 000012

Number of Lost-Time Claims	Merit Rating Adjustment
0	5% credit
1	None
2 or more	5% debit

To make the program revenue neutral, rates are offset by the average historical merit rating credit weighted by the percentage of premium eligible for merit rating. Section IX - K, Exhibit 2 shows the calculation of the combined offset of 0.997 for Experience and Merit Rating.

## **Construction Credit Program**

The Massachusetts Construction Classification Premium Adjustment Program is a credit-only program. We have calculated a 3.7% offset to the eligible classes to assure revenue neutrality. Section IX - K, Exhibit 4 shows the derivation of that offset.

## **Loading for Recoupment of Insolvency Fund Assessments**

Under Massachusetts law, the Massachusetts Insurers Insolvency Fund (Fund) may assess carriers to cover the Fund's costs of providing relief in the event of insurer insolvencies. If a carrier writes premium for a line of business covered by the Fund, such premium will be subject to assessment. The law provides that these assessments can be recouped from policyholders. Beginning in 1988, workers' compensation insurance has been covered by the Fund. The loading is intended to recoup prior year assessments, as

# IX 000013

provided in G.L. c. 175D, § 13. For the reasons stated below, the proposed factor for rates effective 7/1/2024 is a loading of 0.0 (Section IX-K, Exhibit 5, Page 1).

The Fund has not assessed carriers since the last rate revision. The Board of Directors of the Fund at its October 26, 2023 meeting reviewed the financial position of the Fund and voted to not have an assessment or refund of assessment in 2023. The loading in the 7/1/2023 rates was 0.0, so there is no unanticipated impact of the loading in the current rates. Since there is no assessment or refund to recoup and no unanticipated impact in the current rates to true-up, the resulting proposed loading is 0.0.

## **Pricing Examples**

Section IX - L Exhibit 1 is a sample rate calculation for Class 2660 – Boot or Shoe Manufacturing. Exhibit 1, page 2 shows the calculation of the MA indicated pure premium and relativity. Exhibit 1, page 4 shows the calculation of the CW indicated pure premium and relativity. On Exhibit 1, page 5, we calculate the credibilities and formula relativity. The derivation of the proposed manual rate is shown on Exhibit 1, page 6.

Exhibits 2 – 5 detail pricing examples for Class 9033 – Housing Authority & Clerical Sales, Drivers. First, we detail the calculation of the filed methodology in Exhibit 2. This is similar to Exhibit 1 for Class 2660, and shows filed methodology where the estimated pure premium relativities are a credibility-weighted average of three pure premium relativities: (1) recent MA experience, (2) recent CW experience, and (3) relativities underlying the present rate. As discussed in Section I, in order to comply with the 2023 Decision, the subsequent exhibits show other possible ways to derive a rate for 9033 utilizing NAHRO's data in the

# IX 000014

complement of credibility. 3 years of NAHRO 9033 loss experience is adjusted using the same method and factors applied to the MA carrier data in Exhibit 3 (same adjustments as described in 'Adjustment of Massachusetts Data' section above). This adjusted data and relativity will be used in the alternative scenarios.

Using 3 years of NAHRO experience as another state in the CW Complement of Credibility is shown in the pricing example in Exhibit 4. The resulting manual rate for this scenario is \$2.03.

Using 3 years of NAHRO experience for the Complement of Credibility, replacing the use of CW data, is shown in the pricing example in Exhibit 5. The resulting manual rate for this scenario is \$2.25.

## **Special Classes**

The following classes are special situations which require rates and rating values to be calculated using a methodology other than that detailed above.

Class 5040 (Iron or Steel: Erection: Erection-Frame Structures), 5059 (Iron or Steel: Erection: Frame Struct Not Over 2 Strs in Hgt) and 5538 (Sheet Metal Work-Shop & Outside-NOC & Drivers) scopes update.

- Scopes update effective 7/1/2018
- 5538 class experience for policies that had 5040 and 5538 or 5059 and 5538 was reassigned to 5040 or 5059 respectively, for the purpose of classification pricing.
- See Circular Letter No. 2331, released 3/29/2018.

# IX 000015

**MASSACHUSETTS WORKERS COMPENSATION AND EMPLOYERS LIABILITY INSURANCE MANUAL** **RATES**

Draft Proposed Effective July 1, 2024 Page RA-1

## RATES

**LEGEND**

- |   |   |
|---|---|
| (a) Rate for each individual risk must be obtained by Home Office from the MA Bureau.<br>D Supplement Disease Loading. Refer to Section IV of the Manual Supplement -- Treatment of Disease Coverage. | F Rate provides for coverage under the United States Longshore and Harbor Workers' Compensation Act.<br>M Risks are subject to Admiralty Law or Federal Employers Liability Act (FELA). |
|---|---|

CLASS CODE	RATE	MIN PREM	LOSS CONST	CLASS CODE	RATE	MIN PREM	LOSS CONST	CLASS CODE	RATE	MIN PREM	LOSS CONST	CLASS CODE	RATE	MIN PREM	LOSS CONST
0005	1.84	243.	20.	1924	2.35	241.	--	2501	1.38	207.	--	3082D	2.74	255.	--
0008	1.55	233.	20.	1925	3.33	276.	--	2503	0.73	185.	--	3085D	2.65	252.	--
0016	2.77	276.	20.	2003	2.25	238.	--	2570	2.85	259.	--	3110	3.97	298.	--
0034	1.90	246.	20.	2014	2.73	255.	--	2576	1.44	209.	--	3111	1.65	217.	--
0035	1.16	220.	20.	2021	2.01	229.	--	2585	2.21	236.	--	3113	1.21	201.	--
0036	1.90	246.	20.	2039	3.19	271.	--	2586	1.44	209.	--	3114	1.65	217.	--
0042	2.45	265.	20.	2041	1.65	217.	--	2587	1.59	235.	20.	3118	1.04	195.	--
0046	1.92	246.	20.	2070	2.54	248.	--	2623	2.64	251.	--	3119	0.63	181.	--
0050	3.48	331.	50.	2081	2.49	246.	--	2651	0.91	191.	--	3120	0.85	189.	--
0059D	0.18	.	.	2089	1.83	223.	--	2660	1.18	200.	--	3122	1.43	209.	--
0065D	0.08	.	.	2095	2.31	240.	--	2683	1.35	206.	--	3127	1.39	208.	--
0066D	0.06	.	.	2101	1.83	223.	--	2688	1.37	207.	--	3131	1.02	195.	--
0067D	0.06	.	.	2105	(a)	(a)	(a)	2702	13.11	500.	20.	3132	1.45	210.	--
0079	1.75	240.	20.	2111	1.51	212.	--	2710	4.99	334.	--	3145	0.94	192.	--
0083	2.38	262.	20.	2114	1.83	223.	--	2731	2.29	239.	--	3146	1.72	219.	--
0106	5.83	474.	20.	2115	3.97	298.	--	2747	3.75	290.	--	3169	1.69	218.	--
0113	1.90	246.	20.	2121	0.85	189.	--	2790	1.41	208.	--	3179	0.85	189.	--
0170	1.90	246.	20.	2130	1.08	197.	--	2802	2.45	245.	--	3180	1.68	218.	--
0771b	0.28	.	.	2131	2.46	245.	--	2835	1.40	208.	--	3188	1.35	206.	--
0908	73.00	137.	--	2143	1.56	214.	--	2836	1.69	218.	--	3200	1.68	218.	--
0909	199.00	263.	--	2150	2.76	256.	--	2841	2.08	232.	--	3220	1.43	209.	--
0912	399.00	463.	--	2156	2.15	234.	--	2883	2.02	230.	--	3223	(a)	(a)	(a)
0913	146.00	210.	--	2157	3.17	270.	--	2923	0.84	188.	--	3255	1.25	203.	--
0917	1.73	240.	20.	2172	1.36	207.	--	2942	1.07	196.	--	3257	1.86	224.	--
0918	0.30	190.	20.	2211	4.05	301.	--	3018	1.67	217.	--	3270	1.15	199.	--
1430	2.36	242.	--	2220	2.46	245.	--	3022	2.42	244.	--	3300	2.52	247.	--
1438	2.40	243.	--	2260	3.49	281.	--	3027	1.68	218.	--	3305	(a)	(a)	(a)
1463	7.33	500.	--	2288	2.67	252.	--	3028	2.43	244.	--	3315	2.11	233.	--
1624D	3.00	284.	20.	2305	1.64	216.	--	3030	3.71	289.	--	3336	1.70	219.	--
1655	2.17	255.	20.	2362	1.72	219.	--	3040	4.20	306.	--	3365	3.18	320.	50.
1701	2.38	242.	--	2380	1.32	205.	--	3041	1.82	223.	--	3372	1.52	212.	--
1710D	3.00	284.	20.	2402	1.48	211.	--	3042	1.86	224.	--	3373	2.68	253.	--
1747	1.80	222.	--	2413	1.74	220.	--	3066	1.67	217.	--	3381	1.15	199.	--
1748	2.32	240.	--	2416	2.40	243.	--	3076	2.03	230.	--	3383	0.91	191.	--
1853	1.09	197.	--	2417	0.97	193.	--	3081D	2.74	255.	--	3385	0.63	181.	--

Non-Ratable Code and Rate to be used with the following classifications:

b 4771

# IX 000016

**MASSACHUSETTS WORKERS COMPENSATION AND EMPLOYERS LIABILITY INSURANCE MANUAL** **RATES**

Draft

*Proposed Effective July 1, 2024*

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RATES															
CLASS CODE	RATE	MIN PREM	LOSS CONST	CLASS CODE	RATE	MIN PREM	LOSS CONST	CLASS CODE	RATE	MIN PREM	LOSS CONST	CLASS CODE	RATE	MIN PREM	LOSS CONST
3400	1.69	218.	--	4150	0.45	175.	--	4771c	1.87	234.	--	5507	3.19	321.	50.
3507	2.10	233.	--	4239	2.28	239.	--	4777	2.37	242.	--	5508D	3.62	336.	50.
3515	1.56	214.	--	4243	1.65	217.	--	4825	0.32	170.	--	5509	4.25	358.	50.
3558	0.48	176.	--	4244	2.25	238.	--	4828	0.80	187.	--	5538	2.98	313.	50.
3571	0.41	173.	--	4250	1.84	223.	--	4829	0.80	187.	--	5545	33.70	500.	50.
3574	1.13	199.	--	4251	2.23	237.	--	4902	1.07	196.	--	5547	7.13	500.	50.
3612	1.11	198.	--	4273	1.84	223.	--	4923	0.53	178.	--	5606	0.87	239.	50.
3620	2.05	231.	--	4279	1.70	219.	--	5020	3.85	344.	50.	5610	4.58	460.	50.
3629	1.13	199.	--	4283	1.66	217.	--	5022	6.04	500.	50.	5645	4.96	474.	50.
3632	1.13	199.	--	4299	1.19	201.	--	5037	8.37	500.	50.	5701	8.87	500.	50.
3634	1.22	202.	--	4304	4.74	325.	--	5040	16.06	500.	50.	5703	5.02	476.	50.
3635	1.15	199.	--	4307	0.88	190.	--	5057	16.20	500.	50.	5705	7.97	500.	50.
3638	1.13	199.	--	4308	1.51	212.	--	5059	16.16	500.	50.	6003	4.04	350.	50.
3642	0.96	193.	--	4351	0.64	181.	--	5102	4.93	473.	50.	6005	3.62	336.	50.
3643	1.45	210.	--	4352	0.63	181.	--	5146	4.64	462.	50.	6204	4.55	459.	50.
3647	1.51	212.	--	4360	0.53	178.	--	5160	2.83	308.	50.	6217	3.22	322.	50.
3648	0.70	184.	--	4361	0.43	194.	20.	5183	2.39	293.	50.	6229	3.22	322.	50.
3681	0.40	173.	--	4362	0.32	190.	20.	5188	2.68	303.	50.	6233	1.34	256.	50.
3685	0.39	173.	--	4410	1.72	219.	--	5190	1.59	265.	50.	6251D	2.68	303.	50.
3724	3.06	316.	50.	4432	0.71	184.	--	5191	0.50	197.	20.	6252D	3.18	320.	50.
3726	2.63	301.	50.	4439	3.75	290.	--	5192	2.35	261.	20.	6306	6.05	500.	50.
3807	1.69	218.	--	4452	2.21	236.	--	5213	6.59	500.	50.	6319	1.86	274.	50.
3808	2.10	233.	--	4459	1.75	220.	--	5215	4.06	351.	50.	6325	2.04	280.	50.
3821	3.16	290.	20.	4470	1.31	205.	--	5221	4.98	474.	50.	6400	3.10	318.	50.
3826	2.63	251.	--	4484	1.68	218.	--	5222	6.18	500.	50.	6504	1.83	223.	--
3830	1.13	199.	--	4493	1.47	210.	--	5223	2.63	301.	50.	6702M	(a)	.	--
3841	1.41	208.	--	4511	0.19	186.	20.	5348	3.06	316.	50.	6703M	(a)	.	--
4000	4.21	326.	20.	4512	0.05	181.	20.	5402	4.39	454.	50.	6704M	(a)	.	--
4021	2.16	235.	--	4557	1.44	209.	--	5403	5.22	483.	50.	6801F	4.66	322.	--
4024	2.25	238.	--	4558	1.57	214.	--	5437	2.70	304.	50.	6811	4.02	320.	20.
4034	5.51	352.	--	4583	2.37	242.	--	5443	2.11	283.	50.	6824F	5.90	457.	--
4036	1.40	208.	--	4611	0.49	176.	--	5445	4.28	359.	50.	6826F	3.73	290.	--
4038	1.53	213.	--	4635	3.21	271.	--	5462	4.86	470.	50.	6834	1.67	237.	20.
4053	2.35	241.	--	4653	1.63	216.	--	5472	5.57	495.	50.	6836	2.12	253.	20.
4062	1.56	214.	--	4665	8.21	500.	--	5473	8.71	500.	50.	6843F	11.31	500.	--
4112	0.20	166.	--	4692	0.35	171.	--	5474	3.46	330.	50.	6854	9.75	500.	20.
4113	2.35	241.	--	4693	0.53	178.	--	5478	3.18	320.	50.	6872F	10.48	500.	--
4114	2.48	246.	--	4720	1.55	213.	--	5479	3.91	346.	50.	6874F	13.83	500.	--
4130	3.40	278.	--	4740	0.54	178.	--	5480	3.66	337.	50.	6882	9.03	500.	20.
4133	1.44	209.	--	4741	2.44	244.	--	5506	3.55	333.	50.	6884	11.92	500.	20.

For Non-Ratable portion of Rate, refer to:  
 c 0771

# IX 000017

Section IX - Classification Pricing  
 Subsection A - Summary  
 7/1/2024

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**MASSACHUSETTS WORKERS COMPENSATION AND EMPLOYERS LIABILITY INSURANCE MANUAL** **RATES**

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### RATES

CLASS CODE	RATE	MIN PREM	LOSS CONST	CLASS CODE	RATE	MIN PREM	LOSS CONST	CLASS CODE	RATE	MIN PREM	LOSS CONST	CLASS CODE	RATE	MIN PREM	LOSS CONST
7016M	1.88	.	--	7502	1.44	229.	20.	8232	3.33	296.	20.	8829	1.89	245.	20.
7024M	2.35	.	--	7515	1.67	237.	20.	8233	4.31	330.	20.	8831	0.62	201.	20.
7038M	3.55	.	--	7520	2.07	251.	20.	8235	2.94	282.	20.	8832	0.20	186.	20.
7046M	5.06	.	--	7538	2.44	294.	50.	8263	3.12	288.	20.	8833	0.80	207.	20.
7047M	2.95	.	--	7539	0.96	213.	20.	8264	3.12	288.	20.	8835	1.27	223.	20.
7050M	5.57	.	--	7580	1.96	248.	20.	8265	4.31	330.	20.	8837	(a)	(a)	(a)
7090M	4.44	.	--	7590	3.94	317.	20.	8279	3.07	286.	20.	8868	0.59	200.	20.
7098M	5.95	.	--	7600	3.16	290.	20.	8291	2.99	284.	20.	8901	0.04	180.	20.
7099M	7.46	.	--	7601	2.85	309.	50.	8292	2.68	273.	20.	9014	1.65	237.	20.
7133	(a)	(a)	(a)	7610	0.34	191.	20.	8293	4.72	344.	20.	9015	2.01	249.	20.
7151M	8.26	.	--	7704	3.02	285.	20.	8350	5.25	454.	20.	9016	1.18	220.	20.
7152M	12.95	.	--	7720	1.21	221.	20.	8380	1.84	243.	20.	9019	2.28	259.	20.
7153M	10.33	.	--	7855	3.33	326.	50.	8381	0.75	205.	20.	9033	1.95	247.	20.
7219	5.34	457.	20.	8001	1.28	224.	20.	8385	2.66	272.	20.	9040	2.03	250.	20.
7230	6.98	500.	20.	8002	1.28	224.	20.	8392	1.17	220.	20.	9044	1.08	217.	20.
7231	8.28	500.	20.	8006	0.85	209.	20.	8393	1.01	214.	20.	9052	1.16	220.	20.
7309F	10.42	500.	--	8008	0.51	197.	20.	8500	4.31	330.	20.	9058	1.14	219.	20.
7313F	14.35	500.	--	8010	1.01	214.	20.	8601	0.13	184.	20.	9060	0.68	203.	20.
7317F	11.96	500.	--	8013	0.21	186.	20.	8709F	4.01	299.	--	9061	0.67	202.	20.
7327F	17.64	500.	--	8017	0.67	202.	20.	8710	1.49	231.	20.	9062	0.59	200.	20.
7333M	7.53	.	--	8018	2.66	272.	20.	8719	1.49	231.	20.	9063	0.40	193.	20.
7335M	8.85	.	--	8021	2.36	262.	20.	8720	0.58	199.	20.	9077F	6.13	465.	--
7337M	11.10	.	--	8031	1.23	222.	20.	8721	0.12	183.	20.	9079	0.65	202.	20.
7350F	14.45	500.	--	8032	0.89	210.	20.	8726F	3.77	291.	--	9089	0.46	195.	20.
7360	3.12	288.	20.	8033	1.17	220.	20.	8734M	0.44	.	--	9093	0.66	202.	20.
7370	3.17	290.	20.	8034	2.45	265.	20.	8737M	0.35	.	--	9101	2.64	271.	20.
7380	5.31	456.	20.	8039	1.35	226.	20.	8738M	0.55	.	--	9102	2.01	249.	20.
7382	2.72	274.	20.	8044	1.97	248.	20.	8742	0.07	181.	20.	9154	1.47	230.	20.
7394M	9.68	.	--	8046	1.68	238.	20.	8745	3.52	302.	20.	9156	1.45	230.	20.
7395M	12.37	.	--	8048	1.72	239.	20.	8747	0.54	198.	20.	9178	7.38	500.	20.
7398M	15.51	.	--	8058	1.70	239.	20.	8748	0.35	191.	20.	9179	30.83	500.	20.
7403	2.52	267.	20.	8103	1.89	245.	20.	8800	0.77	206.	20.	9180	2.86	279.	20.
7405d	0.83	218.	20.	8105	8.09	500.	20.	8803	0.03	180.	20.	9182	1.82	243.	20.
7420	9.36	500.	20.	8106	2.86	279.	20.	8805M	0.18	.	--	9186	2.86	279.	20.
7421	0.70	204.	20.	8107	1.61	235.	20.	8810	0.04	180.	20.	9220	2.49	266.	20.
7422	0.70	204.	20.	8111	1.87	244.	20.	8814M	0.14	.	--	9402	3.02	285.	20.
7425	2.19	256.	20.	8203	3.44	299.	20.	8815M	0.23	.	--	9403	8.99	500.	20.
7431e	0.53	204.	20.	8204	2.70	274.	20.	8820	0.04	180.	20.	9410	2.25	258.	20.
7445f	0.28	.	.	8215	2.25	258.	20.	8824	1.63	236.	20.	9501	1.41	208.	--
7453g	0.17	.	.	8227	3.99	349.	50.	8826	1.20	221.	20.	9505	1.41	208.	--

For Non-Ratable portion of Rate, refer to:

d 7445                      e 7453

Non-Ratable Code and Rate to be used with:

f 7405                      g 7431

# IX 000018

Section IX - Classification Pricing  
 Subsection A - Summary  
 7/1/2024

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**MASSACHUSETTS WORKERS COMPENSATION  
 AND EMPLOYERS LIABILITY INSURANCE MANUAL**

**RATES**

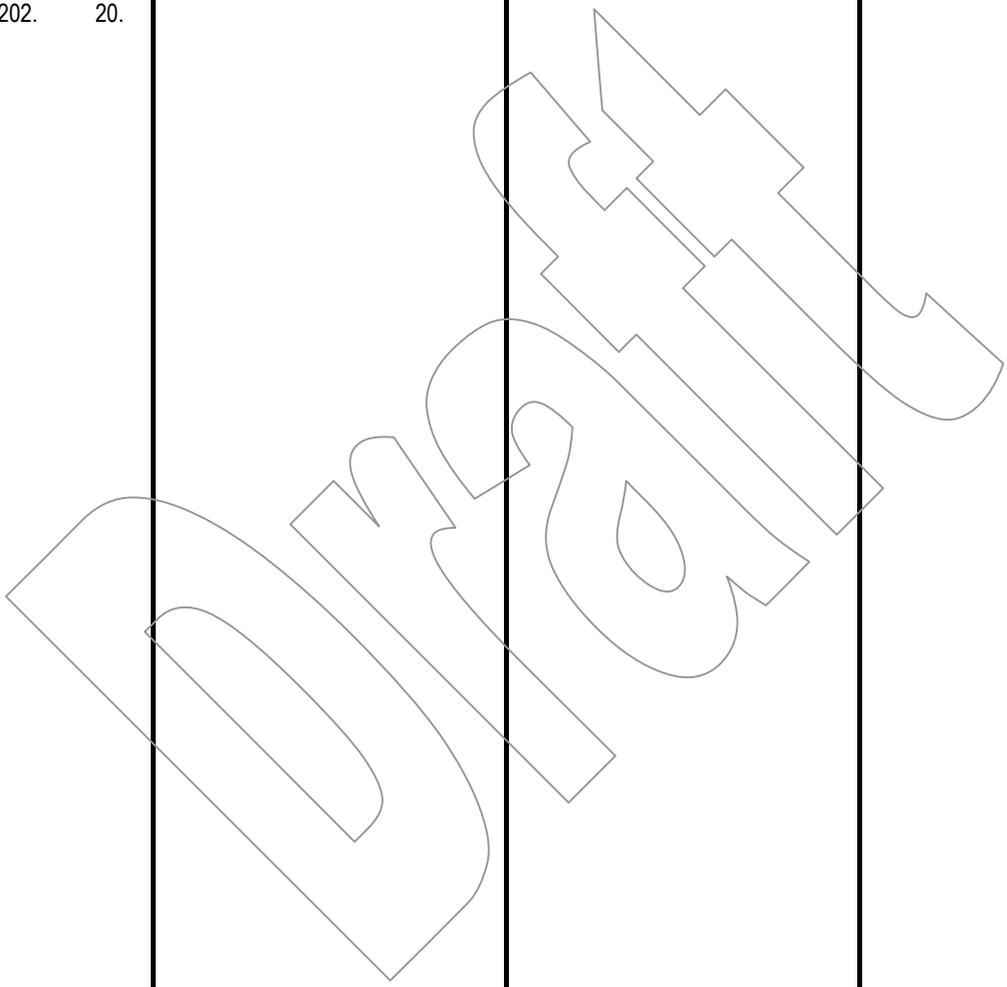
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### RATES

CLASS CODE	RATE	MIN PREM	LOSS CONST	CLASS CODE	RATE	MIN PREM	LOSS CONST	CLASS CODE	RATE	MIN PREM	LOSS CONST	CLASS CODE	RATE	MIN PREM	LOSS CONST
9519	1.91	246.	20.												
9521	2.62	251.	--												
9522	1.38	207.	--												
9533	14.36	500.	50.												
9534	4.10	353.	50.												
9549	2.68	303.	50.												
9552	3.61	335.	50.												
9586	0.23	187.	20.												
9620	0.67	202.	20.												



Calculation of Pure Premium Underlying Proposed Rate Factor

Industry Group (1)	Injury Type (2)	Uncapped Rate Level Factor (3)	Industry Group Pure Premium (4)	Percent of Pure Premium =(4) / [Total of (4)] (5)	Expected Loss and LAE Ratio (6)	Pure Premium Underlying Proposed Rate Factor = (3) x (5) x (6) (7)
Manufacturing	Indemnity	1.361	0.952	0.730	0.776	0.771
	Medical	1.361	0.353	0.270	0.776	0.286
	Total		1.305			
Construction	Indemnity	3.369	2.365	0.733	0.776	1.917
	Medical	3.369	0.861	0.267	0.776	0.698
	Total		3.226			
Office and Clerical	Indemnity	0.097	0.067	0.717	0.776	0.054
	Medical	0.097	0.026	0.283	0.776	0.021
	Total		0.093			
Goods and Services	Indemnity	1.149	0.795	0.721	0.776	0.642
	Medical	1.149	0.308	0.279	0.776	0.249
	Total		1.103			
Miscellaneous	Indemnity	3.872	2.752	0.735	0.776	2.209
	Medical	3.872	0.992	0.265	0.776	0.796
	Total		3.743			

Notes:

- (3): Section IX - H, Exhibit 1.
- (4): Section IX - C, Exhibits 1-5, Page 2.
- (6): Section VI - J, Exhibit 1.

IX 000019

# IX 000020

## Calculation of Indemnity and Medical Conversion Factors

(A). Benefit Level Adjustment Factors

The following factors are used to bring MA Unit Statistical Losses to the benefit level of the proposed effective policy year period.

Indemnity	Policy Year				
	2017	2018	2019	2020	2021
Fatal	1.063	1.056	1.048	1.040	1.023
Permanent Total	1.077	1.069	1.060	1.049	1.027
Permanent Partial	1.125	1.111	1.098	1.082	1.045
Temporary Total	1.053	1.047	1.041	1.034	1.019
<b>Medical</b>					
All Injury Types	1.000	1.000	1.000	1.000	1.000

(B). Loss Development Factors

The following factors are used to bring MA Unit Statistical Losses from first through fifth report to an ultimate basis.

Indemnity	Policy Year				
	2017	2018	2019	2020	2021
Likely	1.054	1.074	1.139	1.335	2.132
Not Likely	1.022	1.041	1.106	1.269	1.786
<b>Medical</b>					
Likely	0.881	0.874	0.875	0.906	0.982
Not Likely	0.982	0.980	0.980	0.981	1.007

(C). Trend Factors

The following factors trend the reported pure premiums from the reported period to the proposed effective period for new rates.

Indemnity	Policy Year				
	2017	2018	2019	2020	2021
All Injury Types	0.762	0.770	0.819	0.913	0.915
<b>Medical</b>					
Lost Time Medical	0.573	0.591	0.670	0.745	0.822
Medical Only	0.476	0.493	0.598	0.772	0.771

Notes:

- (A): Section IV - A, Exhibit 1.
- (B): Development to 10th report (Exhibit 2, Page 1) x Development from 10th to ultimate. The 10th to ultimate development factor was calculated using data from Aggregate Financial Policy Year Call (Call 2) and Large Loss & Catastrophe Call (Call 7).
- (C): Exhibit 3. Frequency x Severity Trends / Wage Trends

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7/1/2024

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Exhibit 1  
Page 2

## Calculation of Indemnity and Medical Conversion Factors

### (D). Primary Conversion Factors (PCF)

Indemnity	Policy Year				
	2017	2018	2019	2020	2021
Fatal - LD	0.853	0.873	0.979	1.268	1.995
Fatal - NLD	0.828	0.847	0.950	1.205	1.671
Permanent Total	0.865	0.884	0.989	1.279	2.004
Permanent Partial - LD	0.903	0.919	1.024	1.318	2.037
Permanent Partial - NLD	0.876	0.891	0.995	1.253	1.707
Temporary Total - LD	0.845	0.866	0.972	1.260	1.988
Temporary Total - NLD	0.820	0.840	0.944	1.198	1.665
<b>Medical</b>					
Lost Time Medical -LD	0.505	0.516	0.586	0.675	0.807
Lost Time Medical -NLD	0.562	0.579	0.656	0.731	0.828
Medical - NLD	0.468	0.483	0.586	0.757	0.776

Notes:

(D) = (A) x (B) x (C), Page 1.

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Exhibit 1  
Page 3

## Calculation of Indemnity and Medical Conversion Factors

### (A). Loss Adjustment Expense Factor

The following factor is applied to include the proposed loss adjustment expense.

	Indemnity	Medical
Loss Adjustment Expense	1.195	1.195

### (B). Investment Income Offset Factor

The following factor is applied to adjust for investment income.

	Investment Income Offset Factor
<b>Indemnity</b>	
Fatal	0.614
Permanent Total	0.512
Permanent Partial	1.096
Temporary Total	1.122
<b>Medical</b>	
Fatal	1.000
Permanent Total	0.512
Permanent Partial	1.095
Temporary Total	1.121
Medical Only	1.000

### (C). Secondary Conversion Factors

The factors above are combined multiplicatively, resulting in the following conversion factors.

<b>Indemnity</b>	
Fatal	0.734
Permanent Total	0.612
Permanent Partial	1.310
Temporary Total	1.341
<b>Medical</b>	
Fatal	1.195
Permanent Total	0.611
Permanent Partial	1.308
Temporary Total	1.339
Medical Only	1.195

#### Notes:

(A): 1.000 + Loss Adjustment Expense (as a percent of losses) from Section VI-A, Exhibit 1.

(B): Exhibit 4.

(C) = (A) x (B)

# IX 000023

## Summary of Development Factors

		Likely to Develop								
		Development Factors From:								
		18-30	30-42	42-54	54-66	66-78	78-90	90-102	102-114	114-126
		<u>(1) Indemnity Losses</u>								
5Yr Weighted Average		1.597	1.172	1.061	1.019	1.005	1.005	1.002	1.001	1.002
Cumulative		2.055	1.287	1.098	1.035	1.016	1.010	1.005	1.004	1.002
		<u>(2) Medical Losses</u>								
5Yr Weighted Average		1.083	1.036	1.001	0.991	0.985	0.991	1.001	0.991	0.991
Cumulative		1.069	0.987	0.952	0.951	0.960	0.975	0.983	0.982	0.991
		<u>(3) Claim Counts</u>								
2Yr Weighted Average		1.029	1.010	1.005	1.002	1.001	1.002	1.001	1.000	1.000
Cumulative		1.051	1.021	1.011	1.006	1.004	1.003	1.001	1.000	1.000
		Not-Likely to Develop								
		Development Factors From:								
		18-30	30-42	42-54	54-66	66-78	78-90	90-102	102-114	114-126
		<u>(4) Indemnity Losses</u>								
5Yr Weighted Average		1.407	1.148	1.063	1.018	1.008	1.001	1.003	1.001	1.001
Cumulative		1.771	1.259	1.097	1.032	1.014	1.006	1.005	1.002	1.001
		<u>(5) Medical Losses</u>								
5Yr Weighted Average		1.026	1.001	0.999	0.999	0.998	0.998	1.001	0.997	0.999
Cumulative		1.018	0.992	0.991	0.992	0.993	0.995	0.997	0.996	0.999
		<u>(6) Claim Counts</u>								
2Yr Weighted Average		1.016	1.005	1.003	1.001	1.001	1.000	1.000	1.000	1.000
Cumulative		1.027	1.011	1.006	1.003	1.002	1.001	1.000	1.000	1.000

Notes:  
 (1), (2), (3): Page 2.  
 (4), (5), (6): Page 3.

# IX 000024

Section IX - Classification Pricing  
 Subsection B - Conversion/Excess Loss Factors  
 7/1/2024

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 Exhibit 2  
 Page 2

## Calculation of Likely to Develop Development Factors

Policy Year	Likely to Develop								
	Indemnity Losses			Medical Losses			Claim Counts		
	Evaluated at month	Link	Ratio	Evaluated at month	Link	Ratio	Evaluated at month	Link	Ratio
18	30	18		30	18		30		
2016	73,291,696	111,778,207	1.525	44,717,413	47,960,953	1.073	1,478	1,505	1.018
2017	72,999,478	114,023,606	1.562	45,408,198	49,269,715	1.085	1,472	1,501	1.020
2018	75,118,932	117,249,888	1.561	45,129,648	48,809,485	1.082	1,474	1,520	1.031
2019	66,194,670	107,050,306	1.617	39,434,944	44,094,004	1.118	1,263	1,295	1.025
2020	61,508,153	107,341,479	1.745	36,578,292	38,766,788	1.060	1,261	1,303	1.033
	5yr Weighted Average		1.597	5yr Weighted Average		1.083	2yr Weighted Average		1.029
	30	42		30	42		30	42	
2015	121,449,392	138,876,192	1.143	52,176,723	54,737,858	1.049	1,592	1,614	1.014
2016	120,387,146	136,197,783	1.131	51,538,300	54,222,851	1.052	1,569	1,576	1.004
2017	125,226,386	147,684,621	1.179	52,358,701	54,027,920	1.032	1,580	1,593	1.008
2018	124,459,836	148,155,466	1.190	51,012,868	51,192,492	1.004	1,577	1,590	1.008
2019	115,568,569	140,683,269	1.217	45,621,630	47,618,636	1.044	1,335	1,350	1.011
	5yr Weighted Average		1.172	5yr Weighted Average		1.036	2yr Weighted Average		1.010
	42	54		42	54		42	54	
2014	154,849,163	162,514,306	1.050	61,821,091	61,629,468	0.997	1,780	1,790	1.006
2015	146,276,488	153,471,673	1.049	56,978,875	57,368,292	1.007	1,650	1,663	1.008
2016	145,770,611	153,259,945	1.051	57,001,604	57,171,724	1.003	1,622	1,625	1.002
2017	156,203,360	165,584,273	1.060	56,811,975	57,047,653	1.004	1,640	1,649	1.005
2018	161,152,395	175,663,150	1.090	55,265,893	54,930,518	0.994	1,650	1,659	1.005
	5yr Weighted Average		1.061	5yr Weighted Average		1.001	2yr Weighted Average		1.005
	54	66		54	66		54	66	
2013	142,990,301	143,989,948	1.007	50,937,335	51,235,299	1.006	1,697	1,702	1.003
2014	170,308,721	171,996,115	1.010	63,429,514	62,902,956	0.992	1,824	1,825	1.001
2015	161,846,074	163,743,068	1.012	59,818,363	57,922,005	0.968	1,694	1,699	1.003
2016	163,412,523	169,885,058	1.040	59,905,849	60,251,766	1.006	1,664	1,666	1.001
2017	175,297,318	180,023,124	1.027	59,459,853	58,705,492	0.987	1,692	1,697	1.003
	5yr Weighted Average		1.019	5yr Weighted Average		0.991	2yr Weighted Average		1.002
	66	78		66	78		66	78	
2012	157,046,028	158,283,957	1.008	58,896,723	56,184,535	0.954	1,770	1,771	1.001
2013	146,813,122	146,755,113	1.000	52,306,160	51,508,212	0.985	1,718	1,717	0.999
2014	175,350,836	175,829,199	1.003	63,919,955	64,254,855	1.005	1,844	1,841	0.998
2015	167,701,770	168,705,176	1.006	59,207,475	58,121,691	0.982	1,715	1,718	1.002
2016	170,279,660	171,969,942	1.010	60,299,092	60,061,738	0.996	1,673	1,672	0.999
	5yr Weighted Average		1.005	5yr Weighted Average		0.985	2yr Weighted Average		1.001
	78	90		78	90		78	90	
2011	152,266,644	153,227,342	1.006	61,499,327	60,389,287	0.982	1,785	1,782	0.998
2012	159,340,290	159,267,315	1.000	56,455,243	56,532,675	1.001	1,775	1,776	1.001
2013	147,847,395	148,993,497	1.008	51,685,664	51,207,424	0.991	1,721	1,722	1.001
2014	177,172,342	178,295,159	1.006	64,702,009	63,787,270	0.986	1,846	1,845	0.999
2015	170,018,116	171,033,558	1.006	58,931,847	58,801,296	0.998	1,724	1,731	1.004
	5yr Weighted Average		1.005	5yr Weighted Average		0.991	2yr Weighted Average		1.002
	90	102		90	102		90	102	
2010	135,628,472	135,866,120	1.002	53,258,998	53,114,241	0.997	1,823	1,822	0.999
2011	154,453,792	154,996,682	1.004	60,828,009	59,799,233	0.983	1,786	1,786	1.000
2012	159,172,902	159,332,035	1.001	56,477,702	57,228,654	1.013	1,776	1,777	1.001
2013	149,483,513	149,576,077	1.001	51,675,555	52,004,160	1.006	1,725	1,727	1.001
2014	179,019,296	179,179,172	1.001	64,010,990	64,345,202	1.005	1,849	1,851	1.001
	5yr Weighted Average		1.002	5yr Weighted Average		1.001	2yr Weighted Average		1.001
	102	114		102	114		102	114	
2009	139,030,456	139,386,310	1.003	53,498,539	52,535,693	0.982	1,604	1,606	1.001
2010	136,080,119	136,114,497	1.000	53,448,710	53,561,894	1.002	1,823	1,824	1.001
2011	155,448,659	155,891,940	1.003	60,021,041	59,473,463	0.991	1,788	1,790	1.001
2012	159,332,035	159,817,261	1.003	57,228,654	56,599,111	0.989	1,777	1,775	0.999
2013	150,328,607	149,996,118	0.998	52,109,124	51,615,063	0.991	1,731	1,733	1.001
	5yr Weighted Average		1.001	5yr Weighted Average		0.991	2yr Weighted Average		1.000
	114	126		114	126		114	126	
2008	139,588,204	140,044,115	1.003	52,107,398	52,137,270	1.001	1,732	1,736	1.002
2009	139,691,954	139,700,500	1.000	52,811,210	51,519,611	0.976	1,611	1,609	0.999
2010	136,426,958	136,683,994	1.002	53,749,433	53,739,398	1.000	1,825	1,824	0.999
2011	156,450,917	156,844,879	1.003	59,606,089	59,256,228	0.994	1,796	1,796	1.000
2012	160,191,172	160,786,669	1.004	56,619,739	55,852,785	0.986	1,776	1,777	1.001
	5yr Weighted Average		1.002	5yr Weighted Average		0.991	2yr Weighted Average		1.000

Note:  
 Unit Statistical Data, excluding Large Deductibles.

# IX 000025

Section IX - Classification Pricing  
 Subsection B - Conversion/Excess Loss Factors  
 7/1/2024

Section IX - B  
 Exhibit 2  
 Page 3

## Calculation of Not-Likely to Develop Development Factors

Policy Year	Not-Likely to Develop								
	Indemnity Losses			Medical Losses			Claim Counts		
	Evaluated at month 18	30	Link Ratio	Evaluated at month 18	30	Link Ratio	Evaluated at month 18	30	Link Ratio
2016	159,662,380	218,901,383	1.371	139,829,622	143,300,487	1.025	13,159	13,355	1.015
2017	174,611,955	243,483,559	1.394	147,051,476	148,933,125	1.013	13,795	14,042	1.018
2018	175,633,682	246,011,077	1.401	149,166,543	154,274,123	1.034	13,434	13,646	1.016
2019	172,440,609	246,339,422	1.429	131,279,771	135,551,220	1.033	12,097	12,273	1.015
2020	155,443,637	224,044,088	1.441	119,406,309	122,839,226	1.029	11,440	11,633	1.017
	5yr Weighted Average		1.407	5yr Weighted Average		1.026	2yr Weighted Average		1.016
2015	211,113,304	236,403,911	1.120	138,667,716	139,044,557	1.003	13,488	13,545	1.004
2016	210,292,444	237,244,542	1.128	139,723,140	139,418,307	0.998	13,291	13,371	1.006
2017	232,280,780	264,764,077	1.140	145,844,138	145,083,094	0.995	13,963	14,032	1.005
2018	238,801,130	280,123,938	1.173	152,070,739	151,388,348	0.996	13,589	13,645	1.004
2019	237,821,159	278,550,289	1.171	134,023,594	136,063,394	1.015	12,233	12,309	1.006
	5yr Weighted Average		1.148	5yr Weighted Average		1.001	2yr Weighted Average		1.005
2014	216,961,595	227,624,335	1.049	135,738,189	136,067,392	1.002	13,390	13,418	1.002
2015	229,003,615	241,758,016	1.056	136,803,540	136,865,414	1.000	13,509	13,536	1.002
2016	227,671,714	241,966,256	1.063	136,639,554	136,425,166	0.998	13,325	13,349	1.002
2017	256,245,338	275,184,961	1.074	142,299,039	142,328,512	1.000	13,985	14,011	1.002
2018	267,127,009	285,421,035	1.068	147,314,947	146,706,328	0.996	13,585	13,631	1.003
	5yr Weighted Average		1.063	5yr Weighted Average		0.999	2yr Weighted Average		1.003
2013	206,917,468	211,044,931	1.020	130,875,200	131,189,562	1.002	13,115	13,131	1.001
2014	219,829,920	223,490,506	1.017	134,267,346	134,745,238	1.004	13,384	13,400	1.001
2015	233,383,615	236,641,898	1.014	134,415,343	134,257,493	0.999	13,505	13,526	1.002
2016	231,813,678	235,450,490	1.016	133,691,041	133,471,979	0.998	13,310	13,327	1.001
2017	265,471,916	272,191,418	1.025	139,916,312	138,545,834	0.990	13,968	13,989	1.002
	5yr Weighted Average		1.018	5yr Weighted Average		0.999	2yr Weighted Average		1.001
2012	193,259,166	195,939,696	1.014	122,319,837	122,153,153	0.999	12,824	12,826	1.000
2013	208,221,757	209,713,058	1.007	130,118,701	129,918,735	0.998	13,115	13,120	1.000
2014	220,135,786	222,722,283	1.012	133,728,238	134,093,848	1.003	13,381	13,393	1.001
2015	232,362,200	234,033,357	1.007	132,793,019	132,580,376	0.998	13,509	13,515	1.000
2016	235,055,888	235,354,040	1.001	133,424,653	132,349,159	0.992	13,320	13,341	1.002
	5yr Weighted Average		1.008	5yr Weighted Average		0.998	2yr Weighted Average		1.001
2011	204,274,044	205,234,308	1.005	125,913,913	125,935,958	1.000	13,097	13,100	1.000
2012	194,883,363	194,619,638	0.999	121,882,445	121,881,671	1.000	12,822	12,827	1.000
2013	208,620,777	208,718,582	1.000	129,741,282	129,176,265	0.996	13,116	13,115	1.000
2014	221,379,140	221,555,895	1.001	133,646,694	133,840,239	1.001	13,388	13,389	1.000
2015	232,720,417	232,481,951	0.999	131,770,220	130,885,581	0.993	13,509	13,514	1.000
	5yr Weighted Average		1.001	5yr Weighted Average		0.998	2yr Weighted Average		1.000
2010	193,374,837	194,177,059	1.004	123,059,561	123,050,373	1.000	13,006	13,006	1.000
2011	204,007,858	204,856,065	1.004	125,497,236	126,083,721	1.005	13,096	13,100	1.000
2012	194,714,051	194,483,860	0.999	121,936,644	122,551,909	1.005	12,827	12,832	1.000
2013	208,228,566	209,427,910	1.006	128,708,134	128,206,436	0.996	13,112	13,119	1.001
2014	220,831,758	221,660,313	1.004	133,616,519	133,450,369	0.999	13,385	13,387	1.000
	5yr Weighted Average		1.003	5yr Weighted Average		1.001	2yr Weighted Average		1.000
2009	175,069,830	174,903,346	0.999	116,854,394	116,840,606	1.000	11,737	11,745	1.001
2010	193,963,060	193,684,962	0.999	122,715,904	122,478,283	0.998	13,005	13,004	1.000
2011	204,404,088	205,158,589	1.004	125,861,913	125,266,500	0.995	13,098	13,102	1.000
2012	194,483,860	194,642,109	1.001	122,551,909	121,895,400	0.995	12,832	12,833	1.000
2013	208,675,379	209,080,111	1.002	128,101,473	127,920,845	0.999	13,115	13,115	1.000
	5yr Weighted Average		1.001	5yr Weighted Average		0.997	2yr Weighted Average		1.000
2008	183,917,810	184,034,222	1.001	115,127,372	115,122,644	1.000	12,657	12,659	1.000
2009	174,597,702	174,406,360	0.999	116,565,089	116,675,643	1.001	11,740	11,741	1.000
2010	193,372,501	193,684,169	1.002	122,290,744	121,989,147	0.998	13,003	13,005	1.000
2011	204,599,612	204,833,800	1.001	125,133,874	124,935,193	0.998	13,096	13,097	1.000
2012	194,268,198	194,482,640	1.001	121,874,772	121,703,893	0.999	12,832	12,833	1.000
	5yr Weighted Average		1.001	5yr Weighted Average		0.999	2yr Weighted Average		1.000

Note:  
 Unit Statistical Data, excluding Large Deductibles.

# IX 000026

Section IX - Classification Pricing  
 Subsection B - Conversion/Excess Loss Factors  
 7/1/2024

Section IX - B  
 Exhibit 3

### Trend Factors

Policy Year	Statewide Average Weekly Wage	Indemnity Severity	Lost Time Medical Severity	Medical Only Severity	Lost Time Claim Frequency	Medical Only Claim Frequency
(1) Historical Values						
2017	1,395.56	33,872	11,683	951	165.49	298.77
2018	1,445.94	35,812	12,114	975	160.39	291.99
2019	1,544.09	38,883	12,331	978	148.34	256.11
2020	1,707.79	37,406	11,876	1,034	153.08	207.34
2021	1,771.94	38,502	11,106	1,039	153.99	214.47
(2) Trend to PY 2021						
2017	1.270	1.137	0.951	1.093	0.931	0.718
2018	1.225	1.075	0.917	1.066	0.960	0.735
2019	1.148	0.990	0.901	1.063	1.038	0.837
2020	1.038	1.029	0.935	1.005	1.006	1.034
2021	1.000	1.000	1.000	1.000	1.000	1.000
(3) Projected Trend from PY 2021 to Prospective Effective Period						
Selected Annual Trend	4.7%	3.8%	0.6%	2.4%	-1.6%	-5.1%
Trend Factor	1.175	1.138	1.023	1.087	0.945	0.834
(4) Trend Factors from PY to Prospective Effective Period						
Policy Year	Statewide Average Weekly Wage	Indemnity Severity	Lost Time Medical Severity	Medical Only Severity	Lost Time Claim Frequency	Medical Only Claim Frequency
2017	1.492	1.293	0.972	1.188	0.879	0.598
2018	1.440	1.223	0.938	1.159	0.907	0.612
2019	1.349	1.127	0.921	1.155	0.981	0.698
2020	1.219	1.171	0.957	1.092	0.950	0.862
2021	1.175	1.138	1.023	1.087	0.945	0.834

**Notes:**

(1): Statewide Average Weekly Wage from Section V-G, Exhibit 2.

Indemnity Severity from Section V-C, Exhibit 1, Page 1.

Lost Time Medical Severity from Section V-D, Exhibit 1, Page 1.

Medical Only Severity from Section V-D, Exhibit 2, Page 1.

Lost Time Claim Frequency from Section V-B, Exhibit 1, Page 1.

Medical Only Claim Frequency from Section V-B, Exhibit 2, Page 1.

(2) = (1) / (1) for Policy Year 2021

(3): Selected Annual Trend from Section I-D, Exhibit 1, Page 1.

Trend Factor = ( 1.0 + Selected Annual Trend ) ^ Trend Period, where Trend Period extends from the midpoint of PY 2021 to midpoint of policy effective period 7/1/2024 - 6/30/2025, which is 3.5 years.

(4) = (2) x (3)

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Section IX - Classification Pricing  
Subsection B - Conversion/Excess Loss Factors  
7/1/2024

Section IX - B  
Exhibit 4

## Calculation of Investment Income Offset Factor

### Indemnity

Injury Type (1)	Loss Flow Discounted at 3.92% Post-Chapter 398 (2)	Injury Type Weights At Ultimate (3)	Investment Income Offset Factor (4)
Fatal	0.515	1.79%	0.614
Permanent Total	0.430	11.08%	0.512
Permanent Partial	0.919	35.86%	1.096
Temporary Total	0.941	21.54%	1.122
Total Indemnity			0.838

### Medical

Injury Type (5)	Loss Flow Discounted at 3.92% Post-Chapter 398 (6)	Injury Type Weights At Ultimate (7)	Investment Income Offset Factor (8)
Fatal	0.515	0.21%	1.000
Permanent Total	0.430	4.71%	0.512
Permanent Partial	0.919	10.10%	1.095
Temporary Total	0.941	11.16%	1.121
Medical Only		3.54%	1.000
Total Medical			0.840

#### Notes:

(2), (6): Loss Flows are from the 8/1/1999 rate filing, Section VIII - E, Exhibits 12 and 16. The discount rate is calculated by multiplying the pre-tax rate of return on governments (Section VII-J, Exhibit 1, Page 1) times the complement of the federal tax rate on investment income (Section VII-J, Exhibit 1, Page 1) [4.74% x (1.000 - 17.35%)] = 3.92%

(3): Section IV - E, Exhibit 2, Page 1.

(4) = (2) / 0.838, which is the weighted average of (2) and (3).

(7): Section IV - E, Exhibit 2, Page 2.

(8) = (6) / 0.840, which is the weighted average of (6) and (7). This weighted average excludes Fatal and Medical Only injury types as it is assumed that they generate no investment income.

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Section IX - Classification Pricing  
Subsection B - Conversion/Excess Loss Factors  
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Section IX - B  
Exhibit 5

## Calculation of Excess Loss Factors

Hazard Group (1)	Excess Ratio (2)	Excess Factor (3) = [ 1.0 / (1.0 - (2)) ]
A	0.120	1.136
B	0.137	1.159
C	0.169	1.203
D	0.213	1.271
E	0.237	1.311
F	0.272	1.374
G	0.384	1.623

**Note:**

(2) = Excess Ratio for Accident Limit of \$500,000 x 0.985, where the Excess Ratio from Section XII-F, Exhibit 3, Page 1 and 0.985 is the factor to convert the per occurrence claims to per claim basis.

Calculation of Converted Limited Losses by Indemnity Likely/Not-Likely and Medical Likely/Not-Likely  
 Manufacturing Industry Group, Industry Code 1  
 All Classes

Policy Year (1)	Injury Type (2)	Limited Losses					Converted Limited Losses					Total (12)
		Indemnity		Medical		Total (7)	Indemnity		Medical			
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)			Likely (8)	Not-Likely (9)	Likely (10)	Not-Likely (11)	
2017	Fatal	0	667,222	0	30,870	698,092	0	552,177	0	17,358	569,535	
	Permanent Total	6,962,887	0	1,662,547	0	8,625,434	6,021,940	0	839,222	0	6,861,162	
	Permanent Partial	6,893,343	16,821,509	2,355,814	5,120,100	31,190,766	6,223,786	14,732,432	1,189,169	2,879,057	25,024,444	
	Temporary Total	4,420,499	13,862,818	1,682,401	7,747,088	27,712,806	3,735,806	11,364,471	849,244	4,356,225	20,305,746	
	Medical Only	0	0	0	3,058,304	3,058,304	0	0	0	1,430,609	1,430,609	
2018	Fatal	3,467	183,404	1,280	6,711	194,862	3,028	155,263	660	3,885	162,836	
	Permanent Total	7,758,309	0	1,675,908	0	9,434,217	6,860,284	0	864,668	0	7,724,952	
	Permanent Partial	5,976,417	14,658,461	2,470,945	5,723,582	28,829,405	5,494,133	13,060,131	1,274,859	3,313,477	23,142,600	
	Temporary Total	5,638,794	18,096,361	2,363,293	9,894,874	35,993,322	4,885,362	15,195,070	1,219,318	5,728,307	27,028,057	
	Medical Only	0	0	0	3,119,968	3,119,968	0	0	0	1,506,598	1,506,598	
2019	Fatal	0	981,065	0	18,935	1,000,000	0	932,261	0	12,427	944,688	
	Permanent Total	2,607,018	0	1,007,073	0	3,614,091	2,578,940	0	589,929	0	3,168,869	
	Permanent Partial	7,930,814	13,670,025	2,670,965	4,038,253	28,310,057	8,123,719	13,597,798	1,564,615	2,650,299	25,936,431	
	Temporary Total	6,696,594	17,050,660	2,126,306	9,330,342	35,203,902	6,507,964	16,091,424	1,245,561	6,123,489	29,968,438	
	Medical Only	0	0	0	2,600,435	2,600,435	0	0	0	1,523,717	1,523,717	
2020	Fatal	0	0	0	0	0	0	0	0	0	0	
	Permanent Total	196,450	0	129,877	0	326,327	251,250	0	87,703	0	338,953	
	Permanent Partial	5,076,823	11,592,594	1,451,421	4,498,344	22,619,182	6,693,267	14,530,499	980,111	3,288,178	25,492,055	
	Temporary Total	5,616,386	14,409,023	2,187,120	8,632,935	30,845,464	7,078,578	17,265,430	1,476,912	6,310,462	32,131,382	
	Medical Only	0	0	0	2,256,264	2,256,264	0	0	0	1,708,766	1,708,766	
2021	Fatal	0	1,285,584	0	94,692	1,380,276	0	2,148,154	0	78,368	2,226,522	
	Permanent Total	408,359	0	239,034	0	647,393	818,175	0	192,904	0	1,011,079	
	Permanent Partial	2,957,772	6,626,870	1,447,009	2,678,643	13,710,294	6,025,042	11,308,864	1,167,755	2,216,876	20,718,537	
	Temporary Total	4,062,391	13,059,678	2,269,937	9,125,237	28,517,243	8,074,696	21,746,635	1,831,869	7,552,150	39,205,350	
	Medical Only	0	0	0	2,402,238	2,402,238	0	0	0	1,864,001	1,864,001	
(13) All Years, All Injury Types		73,206,323	142,965,274	25,740,930	80,377,815	322,290,342	79,375,970	152,680,609	15,374,499	52,564,249	299,995,327	

Notes:  
 (3), (4), (5), (6): From Unit Statistical Data, excluding Large Deductibles.  
 (7) = (3) + (4) + (5) + (6)  
 (8) = (3) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2  
 (9) = (4) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2  
 (10) = (5) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2  
 (11) = (6) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2  
 (12) = (8) + (9) + (10) + (11)

IX 000029

Calculation of Converted Unlimited Losses by Indemnity Likely/Not-Likely and Medical Likely/Not-Likely  
 Manufacturing Industry Group, Industry Code 1  
 All Classes

Policy Year (1)	Injury Type (2)	Adjusted Excess Losses					Converted Unlimited Losses					Exposure (13)
		Indemnity		Medical		Total	Indemnity		Medical		Total	
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	(7)	Likely (8)	Not-Likely (9)	Likely (10)	Not-Likely (11)	(12)	
2017	Fatal	0	74,079	0	34,622	108,701	0	459,407	0	62,117	521,524	63,706,913
	Permanent Total	922,027	0	573,620	0	1,495,647	4,252,531	0	863,839	0	5,116,370	
	Permanent Partial	911,875	2,252,114	663,339	1,592,831	5,420,159	9,349,159	22,253,191	2,423,250	5,849,637	39,875,237	
	Temporary Total	525,976	1,706,008	396,600	1,641,446	4,270,030	5,716,238	17,531,157	1,668,332	8,031,585	32,947,312	
	Medical Only	0	0	0	298,484	298,484	0	0	0	2,066,266	2,066,266	
2018	Fatal	574	22,407	425	10,393	33,799	2,642	130,335	1,297	17,062	151,336	66,162,307
	Permanent Total	1,096,948	0	661,106	0	1,758,054	4,873,061	0	932,888	0	5,805,949	
	Permanent Partial	827,311	1,980,116	639,445	1,599,857	5,046,729	8,282,371	19,705,766	2,504,085	6,427,088	36,919,310	
	Temporary Total	771,660	2,188,695	603,938	2,175,440	5,739,733	7,587,643	23,316,475	2,441,554	10,584,045	43,929,717	
	Medical Only	0	0	0	323,919	323,919	0	0	0	2,187,468	2,187,468	
2019	Fatal	0	167,097	0	75,411	242,508	0	806,463	0	104,966	911,429	73,424,124
	Permanent Total	388,481	0	316,139	0	704,620	1,817,268	0	553,988	0	2,371,256	
	Permanent Partial	1,285,592	2,067,795	895,746	1,476,393	5,725,526	12,328,100	20,525,097	3,218,376	5,398,089	41,469,662	
	Temporary Total	988,811	2,325,551	699,336	2,286,208	6,299,906	10,055,264	24,702,298	2,604,445	11,261,572	48,623,579	
	Medical Only	0	0	0	324,402	324,402	0	0	0	2,208,502	2,208,502	
2020	Fatal	0	0	0	0	0	0	0	0	0	0	72,553,810
	Permanent Total	27,920	0	25,888	0	53,808	170,965	0	69,452	0	240,417	
	Permanent Partial	1,092,805	2,200,818	707,357	1,710,349	5,711,329	10,201,329	21,921,410	2,207,363	6,538,530	40,868,632	
	Temporary Total	989,949	2,642,220	719,734	2,509,720	6,861,623	10,822,144	26,701,709	2,941,567	11,811,260	52,276,680	
	Medical Only	0	0	0	361,914	361,914	0	0	0	2,474,463	2,474,463	
2021	Fatal	0	258,497	0	123,269	381,766	0	1,765,462	0	240,956	2,006,418	79,094,856
	Permanent Total	134,623	0	115,102	0	249,725	583,500	0	188,321	0	771,821	
	Permanent Partial	909,996	1,720,444	650,302	1,243,065	4,523,807	9,086,303	17,071,029	2,378,185	4,525,918	33,061,435	
	Temporary Total	1,167,221	3,210,811	879,811	3,002,780	8,260,623	12,395,988	33,474,893	3,631,258	14,134,292	63,636,431	
	Medical Only	0	0	0	394,499	394,499	0	0	0	2,698,907	2,698,907	
(14) All Years, All Injury Types		12,041,769	22,816,652	8,547,888	21,185,002	64,591,311	107,524,506	230,364,692	28,628,200	96,622,723	463,140,121	354,942,010
(15) Pure Premium							0.303	0.649	0.081	0.272	1.305	

Notes:  
 (3), (4) = 0.7 x [ Excess Factor - 1.0 ] x Indemnity Converted Limited Losses. Excess Factor from Section IX-B, Exhibit 5 and Indemnity Converted Limited Losses from Page 1, Columns (8) and (9).  
 (5), (6) = [ Excess Factor - 1.0 ] x Medical Converted Limited Losses + 0.3 x [ Excess Factor - 1.0 ] x Indemnity Converted Limited Losses. Excess Factor from Section IX-B, Exhibit 5 and Medical Converted Limited Losses from Page 1, Columns (10) and (11).  
 (7) = (3) + (4) + (5) + (6)  
 (8), (9), (10), (11): (Converted Limited Losses from Page 1 + Adjusted Excess Losses) x Secondary Conversion Factors from Section IX - B, Exhibit 1, Page 3.  
 (12) = (8) + (9) + (10) + (11)  
 (13): Unit Statistical Data, excluding Large Deductibles.  
 (15): Pure Premium calculated as the All Years, All Injury Types Converted Unlimited Losses divided by the All Years, All Injury Types Exposure.

IX 000030

Calculation of Converted Limited Losses by Indemnity Likely/Not-Likely and Medical Likely/Not-Likely  
 Construction Industry Group, Industry Code 2  
 All Classes

Policy Year (1)	Injury Type (2)	Limited Losses					Converted Limited Losses				
		Indemnity		Medical		Total	Indemnity		Medical		Total
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	(7)	Likely (8)	Not-Likely (9)	Likely (10)	Not-Likely (11)	(12)
2017	Fatal	403,711	3,280,963	317,462	337,683	4,339,819	344,424	2,715,244	160,248	189,881	3,409,797
	Permanent Total	24,978,425	0	7,846,287	0	32,824,712	21,602,904	0	3,960,653	0	25,563,557
	Permanent Partial	26,464,344	49,572,261	8,255,491	12,259,183	96,551,279	23,893,839	43,415,841	4,167,212	6,893,397	78,370,289
	Temporary Total	11,644,722	36,464,071	3,963,187	17,478,780	69,550,760	9,841,066	29,892,544	2,000,540	9,828,401	51,562,551
	Medical Only	0	0	0	3,831,341	3,831,341	0	0	0	1,792,219	1,792,219
2018	Fatal	710,606	2,013,699	1,295	107,135	2,832,735	620,708	1,704,725	668	62,022	2,388,123
	Permanent Total	25,602,272	0	7,799,258	0	33,401,530	22,638,805	0	4,023,949	0	26,662,754
	Permanent Partial	21,307,395	47,155,061	5,869,793	13,333,869	87,666,118	19,587,932	42,013,364	3,028,461	7,719,198	72,348,955
	Temporary Total	14,437,609	35,746,147	5,243,850	18,289,456	73,717,062	12,508,517	30,015,163	2,705,512	10,588,069	55,817,261
	Medical Only	0	0	0	4,057,803	4,057,803	0	0	0	1,959,468	1,959,468
2019	Fatal	192,195	2,993,510	0	185,359	3,371,064	188,070	2,844,595	0	121,651	3,154,316
	Permanent Total	17,016,207	0	5,001,799	0	22,018,006	16,832,937	0	2,929,985	0	19,762,922
	Permanent Partial	22,927,949	48,598,413	8,255,395	14,576,863	94,358,620	23,485,636	48,341,638	4,835,897	9,566,772	86,229,943
	Temporary Total	10,947,717	39,616,484	3,559,166	18,436,323	72,559,690	10,639,340	37,387,740	2,084,910	12,099,729	62,211,719
	Medical Only	0	0	0	3,544,172	3,544,172	0	0	0	2,076,696	2,076,696
2020	Fatal	0	1,222,327	0	218,653	1,440,980	0	1,473,010	0	159,830	1,632,840
	Permanent Total	5,102,077	0	1,936,200	0	7,038,277	6,525,301	0	1,307,471	0	7,832,772
	Permanent Partial	19,252,089	40,293,362	8,142,178	14,619,143	82,306,772	25,381,891	50,504,888	5,498,225	10,686,233	92,071,237
	Temporary Total	10,260,279	36,951,516	3,936,657	18,448,457	69,596,909	12,931,480	44,276,687	2,658,334	13,485,367	73,351,868
	Medical Only	0	0	0	3,022,602	3,022,602	0	0	0	2,289,147	2,289,147
2021	Fatal	0	1,147,845	0	166,578	1,314,423	0	1,917,998	0	137,862	2,055,860
	Permanent Total	1,950,079	0	1,234,522	0	3,184,601	3,907,115	0	996,275	0	4,903,390
	Permanent Partial	6,766,194	17,989,134	3,656,631	9,256,066	37,668,025	13,782,876	30,698,757	2,950,949	7,660,426	55,093,008
	Temporary Total	13,014,901	36,122,418	7,003,274	22,997,093	79,137,686	25,869,341	60,150,108	5,651,733	19,032,657	110,703,839
	Medical Only	0	0	0	3,310,411	3,310,411	0	0	0	2,568,692	2,568,692
(13) All Years, All Injury Types		232,978,771	399,167,211	82,022,445	178,476,970	892,645,397	250,582,182	427,352,302	48,961,022	118,917,717	845,813,223

Notes:

- (3), (4), (5), (6): From Unit Statistical Data, excluding Large Deductibles.
- (7) = (3) + (4) + (5) + (6)
- (8) = (3) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2
- (9) = (4) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2
- (10) = (5) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2
- (11) = (6) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2
- (12) = (8) + (9) + (10) + (11)

IX 000031

Calculation of Converted Unlimited Losses by Indemnity Likely/Not-Likely and Medical Likely/Not-Likely  
 Construction Industry Group, Industry Code 2  
 All Classes

Policy Year (1)	Injury Type (2)	Adjusted Excess Losses				Converted Unlimited Losses						Exposure (13)
		Indemnity		Medical		Indemnity		Medical		Total		
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Total (7)	Likely (8)	Not-Likely (9)	Likely (10)	Not-Likely (11)	Total (12)	
2017	Fatal	90,080	713,966	98,479	373,726	1,276,251	318,742	2,515,588	309,179	673,510	3,817,019	79,798,864
	Permanent Total	5,639,382	0	3,868,848	0	9,508,230	16,683,356	0	4,787,112	0	21,470,468	
	Permanent Partial	6,467,571	11,665,870	4,423,820	7,642,879	30,200,140	39,779,589	72,168,183	11,237,851	19,014,773	142,200,396	
	Temporary Total	2,470,603	7,692,061	1,786,185	6,845,086	18,793,935	16,513,381	50,411,433	5,070,869	22,327,758	94,323,441	
	Medical Only	0	0	0	638,634	638,634	0	0	0	2,904,870	2,904,870	
2018	Fatal	155,789	592,643	66,988	275,181	1,090,601	569,621	1,685,295	80,849	402,958	2,738,723	86,148,020
	Permanent Total	6,170,759	0	4,253,335	0	10,424,094	17,643,167	0	5,060,895	0	22,704,062	
	Permanent Partial	5,287,139	10,996,415	3,511,635	7,656,971	27,452,160	32,591,375	69,453,533	8,555,040	20,113,429	130,713,377	
	Temporary Total	3,152,523	7,799,045	2,320,489	7,252,720	20,524,777	21,005,820	50,719,395	6,730,405	23,890,913	102,346,533	
	Medical Only	0	0	0	705,799	705,799	0	0	0	3,184,994	3,184,994	
2019	Fatal	82,067	868,953	35,172	416,129	1,402,321	198,166	2,724,171	42,030	642,647	3,607,014	88,520,036
	Permanent Total	4,731,400	0	3,169,625	0	7,901,025	13,206,142	0	3,729,422	0	16,935,564	
	Permanent Partial	6,290,737	12,640,636	4,576,257	9,015,101	32,522,731	39,013,072	79,899,114	12,311,954	24,306,782	155,530,922	
	Temporary Total	2,611,990	9,375,175	1,868,514	8,476,537	22,332,216	17,773,728	62,722,106	5,294,100	27,554,038	113,343,972	
	Medical Only	0	0	0	742,556	742,556	0	0	0	3,369,006	3,369,006	
2020	Fatal	0	345,326	0	197,758	543,084	0	1,333,889	0	427,318	1,761,207	92,422,552
	Permanent Total	1,756,363	0	1,405,812	0	3,162,175	5,071,746	0	1,658,955	0	6,730,701	
	Permanent Partial	6,464,567	13,824,199	4,800,668	10,160,393	35,249,827	41,725,303	84,284,116	13,471,890	27,269,285	166,750,594	
	Temporary Total	3,511,696	11,332,848	2,512,780	9,822,811	27,180,135	22,054,883	74,587,890	6,924,729	31,212,388	134,779,890	
	Medical Only	0	0	0	839,356	839,356	0	0	0	3,738,561	3,738,561	
2021	Fatal	0	645,690	0	331,530	977,220	0	1,880,661	0	560,923	2,441,584	101,418,270
	Permanent Total	1,069,877	0	853,050	0	1,922,927	3,047,943	0	1,130,714	0	4,178,657	
	Permanent Partial	3,789,292	8,277,501	2,788,516	6,473,902	21,329,211	23,023,095	51,066,782	7,507,744	18,488,988	100,086,609	
	Temporary Total	6,630,905	15,128,876	4,985,463	13,390,580	40,135,824	43,591,890	100,970,104	14,244,455	43,418,523	202,224,972	
	Medical Only	0	0	0	914,252	914,252	0	0	0	4,162,117	4,162,117	
(14) All Years, All Injury Types		66,372,740	111,899,204	47,325,636	92,171,901	317,769,481	353,811,019	706,422,260	108,148,193	277,663,781	1,446,045,253	448,307,741
(15) Pure Premium							0.789	1.576	0.241	0.619	3.226	

Notes:  
 (3), (4) = 0.7 x [ Excess Factor - 1.0 ] x Indemnity Converted Limited Losses. Excess Factor from Section IX-B, Exhibit 5 and Indemnity Converted Limited Losses from Page 1, Columns (8) and (9).  
 (5), (6) = [ Excess Factor - 1.0 ] x Medical Converted Limited Losses + 0.3 x [ Excess Factor - 1.0 ] x Indemnity Converted Limited Losses. Excess Factor from Section IX-B, Exhibit 5 and Medical Converted Limited Losses from Page 1, Columns (10) and (11).  
 (7) = (3) + (4) + (5) + (6)  
 (8), (9), (10), (11): (Converted Limited Losses from Page 1 + Adjusted Excess Losses) x Secondary Conversion Factors from Section IX - B, Exhibit 1, Page 3.  
 (12) = (8) + (9) + (10) + (11)  
 (13): Unit Statistical Data, excluding Large Deductibles.  
 (15): Pure Premium calculated as the All Years, All Injury Types Converted Unlimited Losses divided by the All Years, All Injury Types Exposure.

IX 000032

Calculation of Converted Limited Losses by Indemnity Likely/Not-Likely and Medical Likely/Not-Likely  
 Office and Clerical Industry Group, Industry Code 3  
 All Classes

Policy Year (1)	Injury Type (2)	Limited Losses					Converted Limited Losses				
		Indemnity		Medical		Total (7)	Indemnity		Medical		Total (12)
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)			Likely (8)	Not-Likely (9)	Likely (10)	
2017	Fatal	0	697,366	0	23,664	721,030	0	577,123	0	13,306	590,429
	Permanent Total	6,711,458	0	1,623,271	0	8,334,729	5,804,489	0	819,396	0	6,623,885
	Permanent Partial	7,622,311	13,373,548	2,080,138	3,924,496	27,000,493	6,881,950	11,712,676	1,050,013	2,206,763	21,851,402
	Temporary Total	8,303,873	13,008,158	2,450,718	9,853,556	33,616,305	7,017,683	10,663,838	1,237,075	5,540,702	24,459,298
	Medical Only	0	0	0	6,703,410	6,703,410	0	0	0	3,135,711	3,135,711
2018	Fatal	502,211	484,065	7,141	15,935	1,009,352	438,677	409,792	3,684	9,225	861,378
	Permanent Total	4,013,859	0	1,806,048	0	5,819,907	3,549,255	0	931,812	0	4,481,067
	Permanent Partial	9,020,837	12,797,353	2,273,785	3,877,684	27,969,659	8,292,874	11,401,954	1,173,136	2,244,856	23,112,820
	Temporary Total	9,394,343	14,308,727	2,804,719	9,963,775	36,471,564	8,139,111	12,014,687	1,447,067	5,768,195	27,369,060
	Medical Only	0	0	0	6,974,925	6,974,925	0	0	0	3,368,114	3,368,114
2019	Fatal	369,368	6,100	21,500	15,631	412,599	361,440	5,797	12,594	10,259	390,090
	Permanent Total	3,259,228	0	647,038	0	3,906,266	3,224,125	0	379,026	0	3,603,151
	Permanent Partial	8,245,802	10,266,775	2,215,799	2,871,484	23,599,860	8,446,368	10,212,529	1,297,985	1,884,550	21,841,432
	Temporary Total	8,573,691	17,008,152	3,555,884	10,033,043	39,170,770	8,332,186	16,051,307	2,082,988	6,584,670	33,051,151
	Medical Only	0	0	0	5,195,502	5,195,502	0	0	0	3,044,288	3,044,288
2020	Fatal	0	1,046,043	0	10,074	1,056,117	0	1,260,573	0	7,364	1,267,937
	Permanent Total	597,358	0	402,642	0	1,000,000	763,990	0	271,895	0	1,035,885
	Permanent Partial	6,515,829	8,436,828	1,520,035	3,144,062	19,616,754	8,590,447	10,574,969	1,026,445	2,298,232	22,490,093
	Temporary Total	5,897,401	11,181,364	2,754,356	6,895,326	26,728,447	7,432,753	13,397,928	1,859,953	5,040,313	27,730,947
	Medical Only	0	0	0	3,435,031	3,435,031	0	0	0	2,601,497	2,601,497
2021	Fatal	0	386,823	0	1,000	387,823	0	646,364	0	828	647,192
	Permanent Total	0	0	0	0	0	0	0	0	0	0
	Permanent Partial	2,711,463	7,056,049	804,136	2,364,691	12,936,339	5,523,306	12,041,265	648,948	1,957,045	20,170,564
	Temporary Total	5,940,966	14,052,636	3,117,154	9,703,545	32,814,301	11,808,685	23,400,083	2,515,584	8,030,765	45,755,117
	Medical Only	0	0	0	4,370,232	4,370,232	0	0	0	3,391,053	3,391,053
(13) All Years, All Injury Types		87,679,998	124,109,987	28,084,364	89,377,066	329,251,415	94,607,339	134,370,885	16,757,601	57,137,736	302,873,561

Notes:  
 (3), (4), (5), (6): From Unit Statistical Data, excluding Large Deductibles.  
 (7) = (3) + (4) + (5) + (6)  
 (8) = (3) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2  
 (9) = (4) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2  
 (10) = (5) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2  
 (11) = (6) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2  
 (12) = (8) + (9) + (10) + (11)

IX 000033

Calculation of Converted Unlimited Losses by Indemnity Likely/Not-Likely and Medical Likely/Not-Likely  
 Office and Clerical Industry Group, Industry Code 3  
 All Classes

Policy Year (1)	Injury Type (2)	Adjusted Excess Losses					Converted Unlimited Losses					Exposure (13)
		Indemnity		Medical		Total (7)	Indemnity		Medical		Total (12)	
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)			Likely (8)	Not-Likely (9)	Likely (10)		Not-Likely (11)
2017	Fatal	0	109,338	0	50,461	159,799	0	503,572	0	76,202	579,774	895,358,113
	Permanent Total	788,489	0	489,145	0	1,277,634	4,037,583	0	800,068	0	4,837,651	
	Permanent Partial	989,898	1,581,665	633,352	1,110,692	4,315,607	10,313,713	17,418,277	2,201,994	4,339,533	34,273,517	
	Temporary Total	1,000,378	1,525,502	690,648	1,774,380	4,990,908	10,754,455	16,349,303	2,581,447	9,795,754	39,480,959	
	Medical Only	0	0	0	647,950	647,950	0	0	0	4,521,476	4,521,476	
2018	Fatal	95,237	58,337	41,565	26,878	222,017	391,667	343,409	54,073	43,143	832,292	937,410,661
	Permanent Total	489,042	0	386,086	0	875,128	2,473,079	0	805,789	0	3,278,868	
	Permanent Partial	1,251,446	1,653,492	774,533	1,164,637	4,844,108	12,504,990	17,105,275	2,547,729	4,459,927	36,617,921	
	Temporary Total	1,226,360	1,728,880	834,498	1,909,584	5,699,322	12,561,707	18,433,954	3,055,282	10,281,447	44,332,390	
	Medical Only	0	0	0	687,132	687,132	0	0	0	4,846,019	4,846,019	
2019	Fatal	40,165	644	19,213	1,905	61,927	294,608	4,725	38,010	14,535	351,878	1,004,745,993
	Permanent Total	465,309	0	272,842	0	738,151	2,259,434	0	398,565	0	2,657,999	
	Permanent Partial	1,250,137	1,509,140	821,940	1,069,263	4,650,480	12,704,383	15,357,758	2,773,054	3,863,857	34,699,052	
	Temporary Total	1,257,217	2,409,558	961,290	2,415,460	7,043,525	12,862,063	24,761,167	4,076,646	12,052,232	53,752,108	
	Medical Only	0	0	0	618,722	618,722	0	0	0	4,377,297	4,377,297	
2020	Fatal	0	212,808	0	93,193	306,001	0	1,080,838	0	120,165	1,201,003	1,047,915,721
	Permanent Total	148,912	0	147,756	0	296,668	559,067	0	256,583	0	815,650	
	Permanent Partial	1,164,596	1,525,405	705,748	1,154,144	4,549,893	12,781,081	15,853,937	2,265,866	4,516,022	35,416,906	
	Temporary Total	1,108,880	1,855,639	862,421	1,805,582	5,632,522	11,456,711	20,459,287	3,645,579	9,167,458	44,729,035	
	Medical Only	0	0	0	528,409	528,409	0	0	0	3,740,238	3,740,238	
2021	Fatal	0	140,540	0	60,488	201,028	0	577,254	0	73,273	650,527	1,116,016,154
	Permanent Total	0	0	0	0	0	0	0	0	0	0	
	Permanent Partial	797,103	1,596,032	475,870	1,065,012	3,934,017	8,281,015	17,867,619	1,471,365	3,953,126	31,573,125	
	Temporary Total	1,648,628	3,271,648	1,195,923	3,025,139	9,141,338	18,050,009	35,774,226	4,970,144	14,805,154	73,599,533	
	Medical Only	0	0	0	707,356	707,356	0	0	0	4,897,598	4,897,598	
(14) All Years, All Injury Types		13,721,797	19,178,628	9,312,830	19,916,387	62,129,642	132,285,565	201,890,601	31,942,194	99,944,456	466,062,816	5,001,446,641
(15) Pure Premium							0.026	0.040	0.006	0.020	0.093	

Notes:  
 (3), (4) = 0.7 x [ Excess Factor - 1.0 ] x Indemnity Converted Limited Losses. Excess Factor from Section IX-B, Exhibit 5 and Indemnity Converted Limited Losses from Page 1, Columns (8) and (9).  
 (5), (6) = [ Excess Factor - 1.0 ] x Medical Converted Limited Losses + 0.3 x [ Excess Factor - 1.0 ] x Indemnity Converted Limited Losses. Excess Factor from Section IX-B, Exhibit 5 and Medical Converted Limited Losses from Page 1, Columns (10) and (11).  
 (7) = (3) + (4) + (5) + (6)  
 (8), (9), (10), (11): (Converted Limited Losses from Page 1 + Adjusted Excess Losses) x Secondary Conversion Factors from Section IX - B, Exhibit 1, Page 3.  
 (12) = (8) + (9) + (10) + (11)  
 (13): Unit Statistical Data, excluding Large Deductibles.  
 (15): Pure Premium calculated as the All Years, All Injury Types Converted Unlimited Losses divided by the All Years, All Injury Types Exposure.

IX 000034

Calculation of Converted Limited Losses by Indemnity Likely/Not-Likely and Medical Likely/Not-Likely  
 Goods and Services Industry Group, Industry Code 9  
 All Classes

Policy Year (1)	Injury Type (2)	Limited Losses					Converted Limited Losses				
		Indemnity		Medical		Total (7)	Indemnity		Medical		Total (12)
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)			Likely (8)	Not-Likely (9)	Likely (10)	
2017	Fatal	322,500	1,012,106	0	211	1,334,817	275,139	837,594	0	118	1,112,851
	Permanent Total	17,230,358	0	6,381,105	0	23,611,463	14,901,891	0	3,221,058	0	18,122,949
	Permanent Partial	19,478,207	41,347,354	6,939,258	13,367,587	81,132,406	17,586,271	36,212,392	3,502,803	7,516,658	64,818,124
	Temporary Total	15,427,638	39,401,868	6,830,232	26,221,288	87,881,026	13,038,045	32,300,893	3,447,768	14,744,356	63,531,062
	Medical Only	0	0	0	10,200,801	10,200,801	0	0	0	4,771,716	4,771,716
2018	Fatal	0	1,074,988	0	195,037	1,270,025	0	910,046	0	112,910	1,022,956
	Permanent Total	14,609,230	0	3,736,214	0	18,345,444	12,918,209	0	1,927,662	0	14,845,871
	Permanent Partial	22,051,460	41,194,101	5,205,334	13,061,102	81,511,997	20,271,952	36,702,376	2,685,640	7,561,289	67,221,257
	Temporary Total	17,705,681	44,768,762	6,990,307	27,037,736	96,502,486	15,339,923	37,591,231	3,606,579	15,652,593	72,190,326
	Medical Only	0	0	0	9,994,836	9,994,836	0	0	0	4,826,396	4,826,396
2019	Fatal	492,264	1,799,325	7,736	433,704	2,733,029	481,699	1,709,816	4,532	284,639	2,480,686
	Permanent Total	7,885,798	0	2,123,707	0	10,009,505	7,800,865	0	1,244,039	0	9,044,904
	Permanent Partial	19,204,606	37,683,166	6,097,539	12,513,845	75,499,156	19,671,728	37,484,063	3,571,855	8,212,816	68,940,462
	Temporary Total	16,068,179	40,728,080	6,627,882	23,617,374	87,041,515	15,615,567	38,436,800	3,882,523	15,500,045	73,434,935
	Medical Only	0	0	0	8,905,670	8,905,670	0	0	0	5,218,249	5,218,249
2020	Fatal	584,403	1,723,907	416,326	141,937	2,866,573	740,759	2,077,458	281,135	103,752	3,203,104
	Permanent Total	3,478,220	0	1,087,456	0	4,565,676	4,448,469	0	734,334	0	5,182,803
	Permanent Partial	18,031,210	25,226,263	5,880,745	9,307,409	58,445,627	23,772,288	31,619,341	3,971,132	6,803,486	66,166,247
	Temporary Total	15,202,787	34,130,919	5,546,032	22,079,681	76,959,419	19,160,740	40,896,943	3,745,108	16,139,702	79,942,493
	Medical Only	0	0	0	6,588,771	6,588,771	0	0	0	4,989,993	4,989,993
2021	Fatal	0	864,672	0	4,597	869,269	0	1,444,829	0	3,804	1,448,633
	Permanent Total	1,801,580	0	1,062,583	0	2,864,163	3,609,586	0	857,519	0	4,467,105
	Permanent Partial	7,367,893	17,771,992	4,164,293	7,783,524	37,087,702	15,008,550	30,328,202	3,360,639	6,441,733	55,139,124
	Temporary Total	12,614,016	33,924,633	7,109,739	25,938,866	79,587,254	25,072,512	56,490,414	5,737,652	21,467,302	108,767,880
	Medical Only	0	0	0	7,548,224	7,548,224	0	0	0	5,856,995	5,856,995
(13) All Years, All Injury Types		209,556,030	362,652,136	76,206,488	224,942,200	873,356,854	229,714,193	385,042,398	45,781,978	146,208,552	806,747,121

Notes:

- (3), (4), (5), (6): From Unit Statistical Data, excluding Large Deductibles.
- (7) = (3) + (4) + (5) + (6)
- (8) = (3) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2
- (9) = (4) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2
- (10) = (5) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2
- (11) = (6) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2
- (12) = (8) + (9) + (10) + (11)

IX 000035

Calculation of Converted Unlimited Losses by Indemnity Likely/Not-Likely and Medical Likely/Not-Likely  
 Goods and Services Industry Group, Industry Code 9  
 All Classes

Policy Year (1)	Injury Type (2)	Indemnity		Adjusted Excess Losses Medical		Total (7)	Indemnity		Converted Unlimited Losses Medical		Total (12)	Exposure (13)
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)		Likely (8)	Not-Likely (9)	Likely (10)	Not-Likely (11)		
2017	Fatal	55,048	138,666	23,592	59,449	276,755	242,218	716,161	28,192	71,184	1,057,755	206,487,993
	Permanent Total	2,320,609	0	1,753,432	0	4,074,041	10,547,172	0	3,041,502	0	13,588,674	
	Permanent Partial	2,615,312	5,324,587	1,840,569	3,846,379	13,626,847	26,468,161	54,421,845	6,989,617	14,863,887	102,743,510	
	Temporary Total	1,810,056	4,616,473	1,499,176	4,997,797	12,923,502	19,915,443	49,516,481	6,624,540	26,437,062	102,493,526	
	Medical Only	0	0	0	934,344	934,344	0	0	0	6,818,741	6,818,741	
2018	Fatal	0	112,550	0	66,445	178,995	0	750,152	0	214,330	964,482	217,178,506
	Permanent Total	1,812,647	0	1,166,435	0	2,979,082	9,021,273	0	1,891,793	0	10,913,066	
	Permanent Partial	3,104,068	5,474,289	1,907,066	3,933,690	14,419,113	30,627,316	55,259,962	6,007,677	15,036,478	106,931,433	
	Temporary Total	2,222,618	5,474,954	1,678,184	5,586,790	14,962,546	23,556,263	57,763,761	7,076,918	28,442,030	116,838,972	
	Medical Only	0	0	0	938,267	938,267	0	0	0	6,888,772	6,888,772	
2019	Fatal	53,528	267,459	23,660	191,524	536,171	392,630	1,450,483	33,689	569,015	2,445,817	225,032,426
	Permanent Total	1,153,976	0	759,756	0	1,913,732	5,484,003	0	1,225,159	0	6,709,162	
	Permanent Partial	2,858,503	5,598,319	1,992,093	4,146,336	14,595,251	29,519,160	56,446,635	7,278,151	16,166,897	109,410,843	
	Temporary Total	2,237,326	5,381,675	1,771,083	5,446,837	14,836,921	23,945,707	58,772,791	7,570,841	28,050,336	118,339,675	
	Medical Only	0	0	0	1,035,947	1,035,947	0	0	0	7,473,764	7,473,764	
2020	Fatal	134,342	351,840	133,440	172,897	792,519	641,953	1,782,076	495,418	330,595	3,250,042	220,879,985
	Permanent Total	760,149	0	479,813	0	1,239,962	3,189,793	0	742,354	0	3,932,147	
	Permanent Partial	3,685,684	4,655,400	2,428,927	3,416,918	14,186,929	35,975,498	47,527,248	8,371,859	13,369,220	105,243,825	
	Temporary Total	2,716,190	6,173,132	1,950,997	6,095,733	16,936,052	29,343,062	63,134,093	7,627,753	29,775,859	129,880,767	
	Medical Only	0	0	0	1,003,279	1,003,279	0	0	0	7,161,960	7,161,960	
2021	Fatal	0	147,584	0	63,769	211,353	0	1,168,156	0	80,750	1,248,906	255,248,350
	Permanent Total	712,720	0	510,631	0	1,223,351	2,647,008	0	836,513	0	3,483,521	
	Permanent Partial	2,259,192	4,681,390	1,721,945	3,451,229	12,113,756	22,624,234	45,869,648	6,648,482	12,940,895	88,083,259	
	Temporary Total	3,590,968	8,249,530	2,723,199	8,087,068	22,650,765	38,445,719	86,834,313	11,330,073	39,576,772	176,186,877	
	Medical Only	0	0	0	1,175,742	1,175,742	0	0	0	8,404,120	8,404,120	
(14) All Years, All Injury Types		34,102,936	56,647,848	24,363,998	54,650,440	169,765,222	312,586,613	581,413,805	83,820,531	262,672,667	1,240,493,616	1,124,827,260
(15) Pure Premium							0.278	0.517	0.075	0.234	1.103	

Notes:  
 (3), (4) = 0.7 x [ Excess Factor - 1.0 ] x Indemnity Converted Limited Losses. Excess Factor from Section IX-B, Exhibit 5 and Indemnity Converted Limited Losses from Page 1, Columns (8) and (9).  
 (5), (6) = [ Excess Factor - 1.0 ] x Medical Converted Limited Losses + 0.3 x [ Excess Factor - 1.0 ] x Indemnity Converted Limited Losses. Excess Factor from Section IX-B, Exhibit 5 and Medical Converted Limited Losses from Page 1, Columns (10) and (11).  
 (7) = (3) + (4) + (5) + (6)  
 (8), (9), (10), (11): (Converted Limited Losses from Page 1 + Adjusted Excess Losses) x Secondary Conversion Factors from Section IX - B, Exhibit 1, Page 3.  
 (12) = (8) + (9) + (10) + (11)  
 (13): Unit Statistical Data, excluding Large Deductibles.  
 (15): Pure Premium calculated as the All Years, All Injury Types Converted Unlimited Losses divided by the All Years, All Injury Types Exposure.

IX 000036

Calculation of Converted Limited Losses by Indemnity Likely/Not-Likely and Medical Likely/Not-Likely  
 Miscellaneous Industry Group, Industry Code 0  
 All Classes

Policy Year (1)	Injury Type (2)	Limited Losses					Converted Limited Losses				
		Indemnity		Medical		Total (7)	Indemnity		Medical		Total (12)
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)			Likely (8)	Not-Likely (9)	Likely (10)	
2017	Fatal	248,172	656,557	4,708	1,023	910,460	211,727	543,350	2,377	575	758,029
	Permanent Total	8,128,556	0	2,114,353	0	10,242,909	7,030,083	0	1,067,285	0	8,097,368
	Permanent Partial	11,308,070	17,733,753	2,554,777	4,679,049	36,275,649	10,209,707	15,531,384	1,289,602	2,631,052	29,661,745
	Temporary Total	8,505,744	18,613,804	2,444,598	9,232,878	38,797,024	7,188,286	15,259,239	1,233,985	5,191,691	28,873,201
	Medical Only	0	0	0	3,077,836	3,077,836	0	0	0	1,439,746	1,439,746
2018	Fatal	200,000	1,173,381	208	1,619	1,375,208	174,698	993,342	107	937	1,169,084
	Permanent Total	8,020,208	0	2,753,796	0	10,774,004	7,091,868	0	1,420,793	0	8,512,661
	Permanent Partial	13,861,758	19,556,471	4,136,441	5,308,573	42,863,243	12,743,142	17,424,072	2,134,155	3,073,221	35,374,590
	Temporary Total	7,233,034	19,377,277	2,619,177	9,623,388	38,852,876	6,266,587	16,270,624	1,351,338	5,571,139	29,459,688
	Medical Only	0	0	0	2,907,798	2,907,798	0	0	0	1,404,143	1,404,143
2019	Fatal	230,000	512,514	0	4,829	747,343	225,064	487,019	0	3,169	715,252
	Permanent Total	3,083,006	0	1,362,469	0	4,445,475	3,049,801	0	798,116	0	3,847,917
	Permanent Partial	9,371,431	17,313,300	2,761,408	5,180,331	34,626,470	9,599,376	17,221,823	1,617,595	3,399,843	31,838,637
	Temporary Total	8,240,263	17,231,628	2,692,344	8,532,971	36,697,206	8,008,150	16,262,211	1,577,138	5,600,175	31,447,674
	Medical Only	0	0	0	2,638,926	2,638,926	0	0	0	1,546,270	1,546,270
2020	Fatal	0	498,479	0	44,019	542,498	0	600,711	0	32,177	632,888
	Permanent Total	3,289,321	0	590,854	0	3,880,175	4,206,877	0	398,990	0	4,605,867
	Permanent Partial	7,696,835	12,354,982	2,069,789	4,698,228	26,819,834	10,147,482	15,486,098	1,397,681	3,434,289	30,465,550
	Temporary Total	7,962,799	17,332,861	3,358,341	9,079,391	37,733,392	10,035,865	20,768,882	2,267,811	6,636,811	39,709,369
	Medical Only	0	0	0	2,864,159	2,864,159	0	0	0	2,169,151	2,169,151
2021	Fatal	0	304,518	0	115,000	419,518	0	508,836	0	95,175	604,011
	Permanent Total	15,253	0	484,747	0	500,000	30,560	0	391,197	0	421,757
	Permanent Partial	3,780,364	5,269,407	2,182,618	2,482,174	13,714,563	7,700,679	8,992,331	1,761,402	2,054,276	20,508,688
	Temporary Total	6,721,542	16,313,522	3,596,448	11,086,107	37,717,619	13,360,213	27,164,851	2,902,381	9,174,989	52,602,434
	Medical Only	0	0	0	2,803,148	2,803,148	0	0	0	2,175,084	2,175,084
(13) All Years, All Injury Types		107,896,356	164,242,454	35,727,076	84,361,447	392,227,333	117,280,165	173,514,773	21,611,953	55,633,913	368,040,804

Notes:

- (3), (4), (5), (6): From Unit Statistical Data, excluding Large Deductibles.
- (7) = (3) + (4) + (5) + (6)
- (8) = (3) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2
- (9) = (4) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2
- (10) = (5) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2
- (11) = (6) x Primary Conversion Factors from Section IX - B, Exhibit 1, Page 2
- (12) = (8) + (9) + (10) + (11)

IX 000037

Calculation of Converted Unlimited Losses by Indemnity Likely/Not-Likely and Medical Likely/Not-Likely  
 Miscellaneous Industry Group, Industry Code 0  
 All Classes

Policy Year (1)	Injury Type (2)	Adjusted Excess Losses					Converted Unlimited Losses					Exposure (13)
		Indemnity		Medical		Total	Indemnity		Medical		Total	
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	(7)	Likely (8)	Not-Likely (9)	Likely (10)	Not-Likely (11)	(12)	
2017	Fatal	55,375	161,993	24,620	69,605	311,593	195,939	517,423	32,261	83,865	829,488	33,758,548
	Permanent Total	1,525,875	0	996,060	0	2,521,935	5,239,725	0	1,261,570	0	6,501,295	
	Permanent Partial	2,117,240	3,212,378	1,286,434	2,151,748	8,767,800	16,150,794	24,558,119	3,369,689	6,256,337	50,334,939	
	Temporary Total	1,612,800	3,193,050	1,083,946	2,910,140	8,799,936	11,804,710	24,749,663	3,103,983	10,849,304	50,507,660	
	Medical Only	0	0	0	350,887	350,887	0	0	0	2,139,806	2,139,806	
2018	Fatal	45,690	259,797	19,622	111,692	436,801	161,672	919,273	23,576	134,592	1,239,113	32,127,472
	Permanent Total	1,495,089	0	1,068,568	0	2,563,657	5,258,709	0	1,522,045	0	6,780,754	
	Permanent Partial	2,537,954	3,676,487	1,681,770	2,483,406	10,379,617	20,021,327	27,646,000	4,991,578	7,268,574	59,927,479	
	Temporary Total	1,338,131	3,442,183	970,420	3,195,645	8,946,379	10,200,047	26,440,370	3,109,107	11,739,753	51,489,277	
	Medical Only	0	0	0	354,422	354,422	0	0	0	2,101,486	2,101,486	
2019	Fatal	42,639	106,518	18,274	46,735	214,166	196,380	435,405	21,837	59,636	713,258	32,418,759
	Permanent Total	663,866	0	537,425	0	1,201,291	2,274,274	0	816,576	0	3,090,850	
	Permanent Partial	1,984,709	3,717,427	1,354,748	2,642,100	9,698,984	15,177,494	27,434,653	3,888,096	7,903,412	54,403,655	
	Temporary Total	1,616,721	3,440,069	1,149,746	3,156,545	9,363,081	12,909,635	26,426,251	3,651,618	11,726,276	54,713,780	
	Medical Only	0	0	0	381,259	381,259	0	0	0	2,303,398	2,303,398	
2020	Fatal	0	157,109	0	79,354	236,463	0	555,919	0	133,280	689,199	31,410,068
	Permanent Total	874,010	0	478,446	0	1,352,456	3,111,569	0	536,482	0	3,648,051	
	Permanent Partial	2,029,344	3,241,959	1,288,123	2,458,961	9,018,387	15,954,105	24,537,544	3,513,276	7,708,908	51,713,833	
	Temporary Total	2,047,884	4,318,825	1,546,594	3,820,654	11,733,957	16,207,677	33,649,608	5,107,936	14,003,774	68,968,995	
	Medical Only	0	0	0	541,829	541,829	0	0	0	3,239,621	3,239,621	
2021	Fatal	0	126,059	0	81,063	207,122	0	465,744	0	210,604	676,348	32,012,019
	Permanent Total	7,993	0	149,587	0	157,580	23,610	0	330,646	0	354,256	
	Permanent Partial	1,500,641	1,823,235	1,138,690	1,412,047	5,874,613	12,055,590	14,170,580	3,793,583	4,534,265	34,554,018	
	Temporary Total	2,728,733	5,651,919	1,983,225	5,117,074	15,480,951	21,579,762	44,016,438	6,542,400	19,138,751	91,277,351	
	Medical Only	0	0	0	507,502	507,502	0	0	0	3,205,690	3,205,690	
(14) All Years, All Injury Types		24,224,694	36,529,008	16,776,298	31,872,668	109,402,668	168,523,019	276,522,990	45,616,259	114,741,332	605,403,600	161,726,866
(15) Pure Premium							1.042	1.710	0.282	0.709	3.743	

Notes:  
 (3), (4) = 0.7 x [ Excess Factor - 1.0 ] x Indemnity Converted Limited Losses. Excess Factor from Section IX-B, Exhibit 5 and Indemnity Converted Limited Losses from Page 1, Columns (8) and (9).  
 (5), (6) = [ Excess Factor - 1.0 ] x Medical Converted Limited Losses + 0.3 x [ Excess Factor - 1.0 ] x Indemnity Converted Limited Losses. Excess Factor from Section IX-B, Exhibit 5 and Medical Converted Limited Losses from Page 1, Columns (10) and (11).  
 (7) = (3) + (4) + (5) + (6)  
 (8), (9), (10), (11): (Converted Limited Losses from Page 1 + Adjusted Excess Losses) x Secondary Conversion Factors from Section IX - B, Exhibit 1, Page 3.  
 (12) = (8) + (9) + (10) + (11)  
 (13): Unit Statistical Data, excluding Large Deductibles.  
 (15): Pure Premium calculated as the All Years, All Injury Types Converted Unlimited Losses divided by the All Years, All Injury Types Exposure.

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Calculation of Converted Limited Losses by Indemnity Likely/Not-Likely and Medical Likely/Not-Likely  
 All Industry Groups  
 All Classes

Policy Year (1)	Injury Type (2)	Limited Losses					Converted Limited Losses				
		Indemnity		Medical		Total (7)	Indemnity		Medical		Total (12)
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)			Likely (8)	Not-Likely (9)	Likely (10)	
2017	Fatal	974,383	6,314,214	322,170	393,451	8,004,218	831,290	5,225,488	162,625	221,238	6,440,641
	Permanent Total	64,011,684	0	19,627,563	0	83,639,247	55,361,307	0	9,907,614	0	65,268,921
	Permanent Partial	71,766,275	138,848,425	22,185,478	39,350,415	272,150,593	64,795,553	121,604,725	11,198,799	22,126,927	219,726,004
	Temporary Total	48,302,476	121,350,719	17,371,136	70,533,590	257,557,921	40,820,886	99,480,985	8,768,612	39,661,375	188,731,858
	Medical Only	0	0	0	26,871,692	26,871,692	0	0	0	12,570,001	12,570,001
2018	Fatal	1,416,284	4,929,537	9,924	326,437	6,682,182	1,237,111	4,173,168	5,119	188,979	5,604,377
	Permanent Total	60,003,878	0	17,771,224	0	77,775,102	53,058,421	0	9,168,884	0	62,227,305
	Permanent Partial	72,217,867	135,361,447	19,956,298	41,304,810	268,840,422	66,390,033	120,601,897	10,296,251	23,912,041	221,200,222
	Temporary Total	54,409,461	132,297,274	20,021,346	74,809,229	281,537,310	47,139,500	111,086,775	10,329,814	43,308,303	211,864,392
	Medical Only	0	0	0	27,055,330	27,055,330	0	0	0	13,064,719	13,064,719
2019	Fatal	1,283,827	6,292,514	29,236	658,458	8,264,035	1,256,273	5,979,488	17,126	432,145	7,685,032
	Permanent Total	33,851,257	0	10,142,086	0	43,993,343	33,486,668	0	5,941,095	0	39,427,763
	Permanent Partial	67,680,602	127,531,679	22,001,106	39,180,776	256,394,163	69,326,827	126,857,851	12,887,947	25,714,280	234,786,905
	Temporary Total	50,526,444	131,635,004	18,561,582	69,950,053	270,673,083	49,103,207	124,229,482	10,873,120	45,908,108	230,113,917
	Medical Only	0	0	0	22,884,705	22,884,705	0	0	0	13,409,220	13,409,220
2020	Fatal	584,403	4,490,756	416,326	414,683	5,906,168	740,759	5,411,752	281,135	303,123	6,736,769
	Permanent Total	12,663,426	0	4,147,029	0	16,810,455	16,195,887	0	2,800,393	0	18,996,280
	Permanent Partial	56,572,786	97,904,029	19,064,168	36,267,186	209,808,169	74,585,375	122,715,795	12,873,594	26,510,418	236,685,182
	Temporary Total	44,939,652	114,005,683	17,782,506	65,135,790	241,863,631	56,639,416	136,605,870	12,008,118	47,612,655	252,866,059
	Medical Only	0	0	0	18,166,827	18,166,827	0	0	0	13,758,554	13,758,554
2021	Fatal	0	3,989,442	0	381,867	4,371,309	0	6,666,181	0	316,037	6,982,218
	Permanent Total	4,175,271	0	3,020,886	0	7,196,157	8,365,436	0	2,437,895	0	10,803,331
	Permanent Partial	23,583,686	54,713,452	12,254,687	24,565,098	115,116,923	48,040,453	93,369,419	9,889,693	20,330,356	171,629,921
	Temporary Total	42,353,816	113,472,887	23,096,552	78,850,848	257,774,103	84,185,447	188,952,091	18,639,219	65,257,863	357,034,620
	Medical Only	0	0	0	20,434,253	20,434,253	0	0	0	15,855,825	15,855,825
(13) All Years, All Injury Types		711,317,478	1,193,137,062	247,781,303	657,535,498	2,809,771,341	771,559,849	1,272,960,967	148,487,053	430,462,167	2,623,470,036

Notes:  
 (3) - (12): Total of Section IX - C, Page 1 of Exhibits 1 through 5.

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Calculation of Converted Unlimited Losses by Indemnity Likely/Not-Likely and Medical Likely/Not-Likely  
 All Industry Groups  
 All Classes

Policy Year (1)	Injury Type (2)	Adjusted Excess Losses				Converted Unlimited Losses						Exposure (13)
		Indemnity		Medical		Indemnity		Medical		Total		
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Total (7)	Likely (8)	Not-Likely (9)	Likely (10)	Not-Likely (11)	Total (12)	
2017	Fatal	200,503	1,198,042	146,691	587,863	2,133,099	756,899	4,712,151	369,632	966,878	6,805,560	1,279,110,431
	Permanent Total	11,196,382	0	7,681,105	0	18,877,487	40,760,367	0	10,754,091	0	51,514,458	
	Permanent Partial	13,101,896	24,036,614	8,847,514	16,344,529	62,330,553	102,061,416	190,819,615	26,222,401	50,324,167	369,427,599	
	Temporary Total	7,419,813	18,733,094	5,456,555	18,168,849	49,778,311	64,704,227	158,558,037	19,049,171	77,441,463	319,752,898	
	Medical Only	0	0	0	2,870,299	2,870,299	0	0	0	18,451,159	18,451,159	
2018	Fatal	297,290	1,045,734	128,600	490,589	1,962,213	1,125,602	3,828,464	159,795	812,085	5,925,946	1,339,026,966
	Permanent Total	11,064,485	0	7,535,530	0	18,600,015	39,269,289	0	10,213,410	0	49,482,699	
	Permanent Partial	13,007,918	23,780,799	8,514,449	16,838,561	62,141,727	104,027,379	189,170,536	24,606,109	53,305,496	371,109,520	
	Temporary Total	8,711,292	20,633,757	6,407,529	20,120,179	55,872,757	74,911,480	176,673,955	22,413,266	84,938,188	358,936,889	
	Medical Only	0	0	0	3,009,539	3,009,539	0	0	0	19,208,739	19,208,739	
2019	Fatal	218,399	1,410,671	96,319	731,704	2,457,093	1,081,784	5,421,247	135,566	1,390,799	8,029,396	1,424,141,337
	Permanent Total	7,403,032	0	5,055,787	0	12,458,819	25,041,121	0	6,723,710	0	31,764,831	
	Permanent Partial	13,669,678	25,533,317	9,640,784	18,349,193	67,192,972	108,742,209	199,663,257	29,469,631	57,639,037	395,514,134	
	Temporary Total	8,712,065	22,932,028	6,449,969	21,781,587	59,875,649	77,546,397	197,384,613	23,197,650	90,644,454	388,773,114	
	Medical Only	0	0	0	3,102,886	3,102,886	0	0	0	19,731,967	19,731,967	
2020	Fatal	134,342	1,067,083	133,440	543,202	1,878,067	641,953	4,752,722	495,418	1,011,358	6,901,451	1,465,182,136
	Permanent Total	3,567,354	0	2,537,715	0	6,105,069	12,103,140	0	3,263,826	0	15,366,966	
	Permanent Partial	14,436,996	25,447,781	9,930,823	18,900,765	68,716,365	116,637,316	194,124,255	29,830,254	59,401,965	399,993,790	
	Temporary Total	10,374,599	26,322,664	7,592,526	24,054,500	68,344,289	89,884,477	218,532,587	26,247,564	95,970,739	430,635,367	
	Medical Only	0	0	0	3,274,787	3,274,787	0	0	0	20,354,843	20,354,843	
2021	Fatal	0	1,318,370	0	660,119	1,978,489	0	5,857,277	0	1,166,506	7,023,783	1,583,789,648
	Permanent Total	1,925,213	0	1,628,370	0	3,553,583	6,302,061	0	2,486,194	0	8,788,255	
	Permanent Partial	9,256,224	18,098,602	6,775,323	13,645,255	47,775,404	75,070,237	146,045,658	21,799,359	44,443,192	287,358,446	
	Temporary Total	15,766,455	35,512,784	11,767,621	32,622,641	95,669,501	134,063,368	301,069,974	40,718,330	131,073,492	606,925,164	
	Medical Only	0	0	0	3,699,351	3,699,351	0	0	0	23,368,432	23,368,432	
(14) All Years, All Injury Types		150,463,936	247,071,340	106,326,650	219,796,398	723,658,324	1,074,730,722	1,996,614,348	298,155,377	851,644,959	4,221,145,406	7,091,250,518
(15) Pure Premium							0.152	0.282	0.042	0.120	0.595	

Notes:  
 (3) - (13): Total of Section IX - C, Page 2 of Exhibits 1 through 5.  
 (15): Pure Premium calculated as the All Years, All Injury Types Converted Unlimited Losses divided by the All Years, All Injury Types Exposure.

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# IX 000041

Section IX - Classification Pricing  
Subsection D - Credibility/Countrywide Data  
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Section IX - D  
Exhibit 1  
Page 1

## MA Full Credibility Standard and Partial Credibility

		Indemnity	Medical
(1)	Average Claim Cost	39,000	15,000
(2)	Claims	850	400
(3)	Full Credibility Standard =(1) x (2)	33,150,000	6,000,000

Partial Credibility Z is given in terms of E, the expected losses and F, the criterion for full credibility by the formula:

$$Z=(E / F)^{0.4}$$

## Credibility of Countrywide Data

		Indemnity	Medical
(4)	Number of Countrywide Claims	1,150	1,000

### Notes:

Partial Credibility is determined from the full credibility standard and the observed number of countrywide claims using the same formula as is done for the Massachusetts data.

(1): Page 2

(2), (4): From the paper "Class Ratemaking for Workers Compensation: NCCI's New Methodology" by Tom Daley.

# IX 000042

## Selection of Average Massachusetts Claim Costs

Policy Year 2021

	Injury Type				
	Fatal	Permanent Total	Permanent Partial	Temporary Total	Medical Only
	Indemnity				
(1) Losses Developed to Ultimate	9,712,187	15,831,401	171,174,213	330,128,157	
(2) On-Level Factor	1.023	1.027	1.045	1.019	
(3) On-Level Ultimate Losses = (1) x (2)	9,933,927	16,265,878	178,808,436	336,497,072	
	Medical				
(4) Losses Developed to Ultimate	469,398	16,973,484	53,196,625	113,580,415	21,189,938
(5) On-Level Factor	1.000	1.000	1.000	1.000	1.000
(6) On-Level Ultimate Losses = (4) x (5)	469,398	16,973,484	53,196,625	113,580,415	21,189,938
	Claim Count				
(7) Claim Count Developed to Fifth Report	17	18	1,233	12,774	
Summary:					
(8) Ultimate Losses			Indemnity 541,505,313		
(9) Ultimate Claim Count			14,042		
(10) Average Claim Cost = (8) / (9)			38,564		
(11) Selected Average Claim Cost			39,000		
(12) Ultimate Losses			Medical 205,409,861		
(13) Ultimate Claim Count			14,042		
(14) Average Claim Cost = (12) / (13)			14,628		
(15) Selected Average Claim Cost			15,000		

**Notes:**

- (1), (4): Unit Statistical Data, developed to Ultimate using development factors from Section X-A, Exhibit 5, Pages 2 and 5.
- (2), (5): Section IV-A, Exhibit 1.
- (7): Unit Statistical Data, developed to fifth report using development factors from Section IX-B, Exhibit 2, Page 1.
- (8) = Sum of (3)
- (9), (13) = Sum of (7)
- (12) = Sum of (6)

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Section IX - Classification Pricing  
 Subsection D - Credibility/Countrywide Data  
 7/1/2024

Section IX - D  
 Exhibit 2

## Countrywide Classification Experience: Pitch Factors

State (1)	State Code (2)	Industry Group (3)	Industry Code (4)	Indemnity (5)	Medical (6)
Alabama	1	Manufacturing	1	2.875	0.540
		Construction	2	3.054	0.468
		Office and Clerical	3	2.307	0.345
		Goods and Services	9	2.753	0.452
		Miscellaneous	0	2.495	0.428
Arizona	2	Manufacturing	1	5.265	0.652
		Construction	2	3.619	0.562
		Office and Clerical	3	3.165	0.480
		Goods and Services	9	3.818	0.590
		Miscellaneous	0	3.542	0.721
Arkansas	3	Manufacturing	1	5.766	1.146
		Construction	2	5.141	1.075
		Office and Clerical	3	3.223	0.631
		Goods and Services	9	4.343	1.115
		Miscellaneous	0	4.469	1.199
Colorado	5	Manufacturing	1	2.158	0.578
		Construction	2	2.262	0.686
		Office and Clerical	3	2.350	0.572
		Goods and Services	9	2.114	0.574
		Miscellaneous	0	2.354	0.752
Connecticut	6	Manufacturing	1	1.207	0.471
		Construction	2	1.055	0.440
		Office and Clerical	3	0.813	0.351
		Goods and Services	9	1.012	0.444
		Miscellaneous	0	1.266	0.588
D.C.	8	Manufacturing	1	0.451	0.315
		Construction	2	2.378	0.979
		Office and Clerical	3	0.868	0.620
		Goods and Services	9	2.192	1.244
		Miscellaneous	0	0.817	0.624
Florida	9	Manufacturing	1	2.412	0.431
		Construction	2	2.238	0.404
		Office and Clerical	3	1.415	0.275
		Goods and Services	9	2.104	0.400
		Miscellaneous	0	2.439	0.572
Georgia	10	Manufacturing	1	2.144	0.764
		Construction	2	0.992	0.457
		Office and Clerical	3	1.600	0.583
		Goods and Services	9	1.623	0.673
		Miscellaneous	0	2.073	0.898
Idaho	11	Manufacturing	1	1.447	0.421
		Construction	2	1.775	0.480
		Office and Clerical	3	1.456	0.285
		Goods and Services	9	1.510	0.394
		Miscellaneous	0	2.246	0.679

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Section IX - D  
 Exhibit 2

## Countrywide Classification Experience: Pitch Factors

State (1)	State Code (2)	Industry Group (3)	Industry Code (4)	Indemnity (5)	Medical (6)
Illinois	12	Manufacturing	1	1.250	0.402
		Construction	2	1.108	0.454
		Office and Clerical	3	0.689	0.312
		Goods and Services	9	1.386	0.456
		Miscellaneous	0	1.344	0.510
Indiana	13	Manufacturing	1	4.533	0.629
		Construction	2	5.485	1.023
		Office and Clerical	3	2.709	0.421
		Goods and Services	9	4.029	0.647
		Miscellaneous	0	4.493	0.874
Iowa	14	Manufacturing	1	1.697	0.372
		Construction	2	2.273	0.521
		Office and Clerical	3	1.050	0.243
		Goods and Services	9	2.011	0.455
		Miscellaneous	0	2.348	0.610
Kansas	15	Manufacturing	1	2.854	0.518
		Construction	2	2.917	0.713
		Office and Clerical	3	1.720	0.393
		Goods and Services	9	2.552	0.514
		Miscellaneous	0	3.147	0.776
Kentucky	16	Manufacturing	1	2.383	0.925
		Construction	2	2.902	0.931
		Office and Clerical	3	0.967	0.429
		Goods and Services	9	2.586	0.958
		Miscellaneous	0	2.545	1.123
Louisiana	17	Manufacturing	1	2.141	0.539
		Construction	2	1.940	0.479
		Office and Clerical	3	0.783	0.255
		Goods and Services	9	2.122	0.507
		Miscellaneous	0	1.959	0.505
Maine	18	Manufacturing	1	1.655	0.454
		Construction	2	1.648	0.521
		Office and Clerical	3	0.788	0.240
		Goods and Services	9	1.341	0.429
		Miscellaneous	0	1.281	0.666
Maryland	19	Manufacturing	1	2.320	0.928
		Construction	2	2.191	0.833
		Office and Clerical	3	1.268	0.502
		Goods and Services	9	1.959	0.876
		Miscellaneous	0	1.955	0.923
Michigan	21	Manufacturing	1	3.472	0.873
		Construction	2	3.393	1.138
		Office and Clerical	3	1.604	0.484
		Goods and Services	9	3.075	0.871
		Miscellaneous	0	3.340	1.177
Minnesota	22	Manufacturing	1	1.515	0.584
		Construction	2	2.044	0.795
		Office and Clerical	3	1.276	0.478
		Goods and Services	9	1.757	0.613
		Miscellaneous	0	2.049	0.877

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Section IX - Classification Pricing  
 Subsection D - Credibility/Countrywide Data  
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Section IX - D  
 Exhibit 2

## Countrywide Classification Experience: Pitch Factors

State (1)	State Code (2)	Industry Group (3)	Industry Code (4)	Indemnity (5)	Medical (6)
Mississippi	23	Manufacturing	1	1.839	0.461
		Construction	2	2.804	0.714
		Office and Clerical	3	1.040	0.204
		Goods and Services	9	2.133	0.638
		Miscellaneous	0	2.673	0.769
Missouri	24	Manufacturing	1	1.784	0.439
		Construction	2	2.049	0.541
		Office and Clerical	3	1.127	0.315
		Goods and Services	9	1.708	0.399
		Miscellaneous	0	1.726	0.481
Montana	25	Manufacturing	1	1.361	0.381
		Construction	2	1.742	0.458
		Office and Clerical	3	1.421	0.240
		Goods and Services	9	1.740	0.429
		Miscellaneous	0	2.240	0.504
Nebraska	26	Manufacturing	1	1.878	0.467
		Construction	2	2.304	0.598
		Office and Clerical	3	2.387	0.487
		Goods and Services	9	2.166	0.520
		Miscellaneous	0	2.352	0.589
Nevada	27	Manufacturing	1	1.258	0.589
		Construction	2	1.473	0.655
		Office and Clerical	3	0.670	0.309
		Goods and Services	9	1.535	0.619
		Miscellaneous	0	1.407	0.713
New Hampshire	28	Manufacturing	1	2.253	0.504
		Construction	2	1.839	0.459
		Office and Clerical	3	1.647	0.415
		Goods and Services	9	1.676	0.388
		Miscellaneous	0	2.040	0.627
New Mexico	30	Manufacturing	1	1.658	0.417
		Construction	2	1.919	0.529
		Office and Clerical	3	1.137	0.236
		Goods and Services	9	1.707	0.506
		Miscellaneous	0	1.828	0.576
North Carolina	32	Manufacturing	1	2.128	0.966
		Construction	2	1.738	0.686
		Office and Clerical	3	0.944	0.521
		Goods and Services	9	1.843	0.827
		Miscellaneous	0	1.709	0.922
Oklahoma	35	Manufacturing	1	1.955	0.618
		Construction	2	1.724	0.596
		Office and Clerical	3	0.924	0.325
		Goods and Services	9	1.450	0.516
		Miscellaneous	0	2.202	0.770
Oregon	36	Manufacturing	1	2.466	0.808
		Construction	2	2.311	0.892
		Office and Clerical	3	1.704	0.533
		Goods and Services	9	1.953	0.707
		Miscellaneous	0	2.609	1.041

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Section IX - Classification Pricing  
 Subsection D - Credibility/Countrywide Data  
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Section IX - D  
 Exhibit 2

## Countrywide Classification Experience: Pitch Factors

State (1)	State Code (2)	Industry Group (3)	Industry Code (4)	Indemnity (5)	Medical (6)
Rhode Island	38	Manufacturing	1	0.801	0.746
		Construction	2	1.442	1.190
		Office and Clerical	3	0.673	0.567
		Goods and Services	9	0.835	0.701
		Miscellaneous	0	1.105	0.913
South Carolina	39	Manufacturing	1	1.379	0.690
		Construction	2	1.290	0.638
		Office and Clerical	3	0.706	0.467
		Goods and Services	9	1.338	0.706
		Miscellaneous	0	1.437	0.845
South Dakota	40	Manufacturing	1	2.909	0.346
		Construction	2	2.829	0.511
		Office and Clerical	3	1.292	0.285
		Goods and Services	9	3.428	0.532
		Miscellaneous	0	4.312	0.848
Tennessee	41	Manufacturing	1	3.258	0.759
		Construction	2	3.629	0.753
		Office and Clerical	3	1.854	0.565
		Goods and Services	9	3.613	0.782
		Miscellaneous	0	3.587	0.963
Utah	43	Manufacturing	1	6.629	0.865
		Construction	2	4.459	0.721
		Office and Clerical	3	5.669	0.770
		Goods and Services	9	5.301	0.749
		Miscellaneous	0	4.266	0.722
Vermont	44	Manufacturing	1	1.466	0.500
		Construction	2	1.348	0.464
		Office and Clerical	3	0.776	0.255
		Goods and Services	9	0.988	0.419
		Miscellaneous	0	1.151	0.533
Virginia	45	Manufacturing	1	4.022	0.800
		Construction	2	3.572	0.720
		Office and Clerical	3	3.876	0.759
		Goods and Services	9	3.514	0.689
		Miscellaneous	0	4.108	0.972
West Virginia	47	Manufacturing	1	4.607	0.931
		Construction	2	4.644	1.403
		Office and Clerical	3	1.797	0.536
		Goods and Services	9	3.433	0.951
		Miscellaneous	0	4.738	1.501
Wisconsin	48	Manufacturing	1	2.518	0.375
		Construction	2	2.172	0.433
		Office and Clerical	3	0.928	0.174
		Goods and Services	9	2.002	0.352
		Miscellaneous	0	2.316	0.443
Hawaii	52	Manufacturing	1	0.898	0.285
		Construction	2	1.352	0.512
		Office and Clerical	3	0.252	0.093
		Goods and Services	9	0.735	0.278
		Miscellaneous	0	0.897	0.358

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Section IX - Classification Pricing  
Subsection D - Credibility/Countrywide Data  
7/1/2024

Section IX - D  
Exhibit 2

## Countrywide Classification Experience: Pitch Factors

State (1)	State Code (2)	Industry Group (3)	Industry Code (4)	Indemnity (5)	Medical (6)
Alaska	54	Manufacturing	1	2.154	0.473
		Construction	2	2.637	0.510
		Office and Clerical	3	1.056	0.175
		Goods and Services	9	2.673	0.376
		Miscellaneous	0	4.438	0.713

### Notes:

Factors to adjust countrywide data to the same payroll distribution and loss level as MA.

Pitch Factor = (MA Unlimited Losses) / [ (State Pure Premium) x (MA Exposure) ]

For a sample countrywide pure premium calculation, see Section IX - L, Exhibit 2, Page 2.

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Section IX - Classification Pricing  
 Subsection D - Credibility/Countrywide Data  
 7/1/2024

Section IX - D  
 Exhibit 3

Countrywide Classification Experience: Database

State (1)	State Code (2)	Experience Data					
		First Report (3)		Second Report (4)		Third Report (5)	
Alabama	1	5/1/2019	- 4/30/2020	5/1/2018	- 4/30/2019	5/1/2017	- 4/30/2018
Arizona	2	3/1/2019	- 2/29/2020	3/1/2018	- 2/28/2019	3/1/2017	- 2/28/2018
Arkansas	3	2/1/2020	- 1/31/2021	2/1/2019	- 1/31/2020	2/1/2018	- 1/31/2019
Colorado	5	3/1/2019	- 2/29/2020	3/1/2018	- 2/28/2019	3/1/2017	- 2/28/2018
Connecticut	6	8/1/2019	- 7/31/2020	8/1/2018	- 7/31/2019	8/1/2017	- 7/31/2018
D.C.	8	2/1/2019	- 1/31/2020	2/1/2018	- 1/31/2019	2/1/2017	- 1/31/2018
Florida	9	1/1/2019	- 12/31/2019	1/1/2018	- 12/31/2018	1/1/2017	- 12/31/2017
Georgia	10	7/1/2019	- 6/30/2020	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018
Idaho	11	7/1/2019	- 6/30/2020	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018
Illinois	12	4/1/2019	- 3/31/2020	4/1/2018	- 3/31/2019	4/1/2017	- 3/31/2018
Indiana	13	7/1/2019	- 6/30/2020	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018
Iowa	14	3/1/2019	- 2/29/2020	3/1/2018	- 2/28/2019	3/1/2017	- 2/28/2018
Kansas	15	7/1/2019	- 6/30/2020	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018
Kentucky	16	5/1/2019	- 4/30/2020	5/1/2018	- 4/30/2019	5/1/2017	- 4/30/2018
Louisiana	17	9/1/2019	- 8/31/2020	9/1/2018	- 8/31/2019	9/1/2017	- 8/31/2018
Maine	18	6/1/2019	- 5/31/2020	6/1/2018	- 5/31/2019	6/1/2017	- 5/31/2018
Maryland	19	4/1/2019	- 3/31/2020	4/1/2018	- 3/31/2019	4/1/2017	- 3/31/2018
Michigan	21	4/1/2020	- 3/31/2021	4/1/2019	- 3/31/2020	4/1/2018	- 3/31/2019
Minnesota	22	1/1/2020	- 12/31/2020	1/1/2019	- 12/31/2019	1/1/2018	- 12/31/2018
Mississippi	23	9/1/2019	- 8/31/2020	9/1/2018	- 8/31/2019	9/1/2017	- 8/31/2018
Missouri	24	7/1/2019	- 6/30/2020	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018
Montana	25	1/1/2020	- 12/31/2020	1/1/2019	- 12/31/2019	1/1/2018	- 12/31/2018
Nebraska	26	8/1/2019	- 7/31/2020	8/1/2018	- 7/31/2019	8/1/2017	- 7/31/2018
Nevada	27	1/1/2019	- 12/31/2019	1/1/2018	- 12/31/2018	1/1/2017	- 12/31/2017
New Hampshire	28	4/1/2019	- 3/31/2020	4/1/2018	- 3/31/2019	4/1/2017	- 3/31/2018
New Mexico	30	7/1/2019	- 6/30/2020	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018
North Carolina	32	1/1/2019	- 12/31/2019	1/1/2018	- 12/31/2018	1/1/2017	- 12/31/2017
Oklahoma	35	6/1/2019	- 5/31/2020	6/1/2018	- 5/31/2019	6/1/2017	- 5/31/2018
Oregon	36	1/1/2019	- 12/31/2019	1/1/2018	- 12/31/2018	1/1/2017	- 12/31/2017
Rhode Island	38	1/1/2019	- 12/31/2019	1/1/2018	- 12/31/2018	1/1/2017	- 12/31/2017
South Carolina	39	5/1/2019	- 4/30/2020	5/1/2018	- 4/30/2019	5/1/2017	- 4/30/2018
South Dakota	40	1/1/2020	- 12/31/2020	1/1/2019	- 12/31/2019	1/1/2018	- 12/31/2018
Tennessee	41	6/1/2019	- 5/31/2020	6/1/2018	- 5/31/2019	6/1/2017	- 5/31/2018
Utah	43	7/1/2019	- 6/30/2020	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018
Vermont	44	7/1/2019	- 6/30/2020	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018
Virginia	45	2/1/2019	- 1/31/2020	2/1/2018	- 1/31/2019	2/1/2017	- 1/31/2018
West Virginia	47	7/1/2019	- 6/30/2020	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018
Wisconsin	48	1/1/2020	- 12/31/2020	1/1/2019	- 12/31/2019	1/1/2018	- 12/31/2018
Hawaii	52	6/1/2019	- 5/31/2020	6/1/2018	- 5/31/2019	6/1/2017	- 5/31/2018
Alaska	54	4/1/2019	- 3/31/2020	4/1/2018	- 3/31/2019	4/1/2017	- 3/31/2018

Calculation of Pure Premium Underlying Present Rate Factor

Industry Group (1)	Injury Type (2)	Uncapped Rate Level Factor (3)	Industry Group Pure Premium From Previous Revision (4)	Percent of Pure Premium =(4) / [Total of (4)] (5)	Expected Loss and LAE Ratio (6)	Benefit Level Change Factor (7)	Trend Factor (8)	Pure Premium Underlying Present Rate Factor = (3) x (5) x (6) x (7) x (8) (9)
Manufacturing	Indemnity	1.478	0.901	0.690	0.788	0.996	0.975	0.780
	Medical	1.478	0.404	0.310	0.788	1.000	0.944	0.340
	Total		1.305					
Construction	Indemnity	3.733	2.343	0.709	0.788	0.996	0.975	2.025
	Medical	3.733	0.961	0.291	0.788	1.000	0.944	0.807
	Total		3.304					
Office and Clerical	Indemnity	0.106	0.063	0.677	0.788	0.996	0.975	0.055
	Medical	0.106	0.030	0.323	0.788	1.000	0.944	0.025
	Total		0.093					
Goods and Services	Indemnity	1.255	0.759	0.685	0.788	0.996	0.975	0.658
	Medical	1.255	0.349	0.315	0.788	1.000	0.944	0.294
	Total		1.108					
Miscellaneous	Indemnity	4.110	2.548	0.701	0.788	0.996	0.975	2.205
	Medical	4.110	1.085	0.299	0.788	1.000	0.944	0.913
	Total		3.633					

Notes:

(3): Section IX - H, Exhibit 1 of 7/1/2023 Stipulation.

(4): Section IX - G of 07/01/2023 Stipulation.

(6): Section VI - J, Exhibit 1 of 7/1/2023 Stipulation.

(7): Section IV - A, Exhibit 1.

(8): Net Indemnity and Medical Trends from Section V - A, Exhibit 1.

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# IX 000050

Section IX - Classification Pricing  
 Subsection F - Underlying Pure Premiums  
 7/1/2024

Section IX - F  
 Exhibit 1

## Calculation of Pure Premiums Underlying Present Rate Manufacturing Industry Group, Industry Code 1

Class (1)	Adopted Relativities		Pure Premiums Underlying Present Rate		
	Indemnity (2)	Medical (3)	Indemnity (4)	Medical (5)	Total (6) = (4) + (5)
1430	1.959	1.888	1.528	0.642	2.170
1438	1.994	1.746	1.555	0.594	2.149
1463	5.421	9.256	4.228	3.147	7.375
1701	2.551	1.863	1.990	0.633	2.623
1747	1.296	1.076	1.011	0.366	1.377
1748	1.853	2.361	1.445	0.803	2.248
1853	0.793	0.450	0.619	0.153	0.771
1924	1.775	1.760	1.384	0.599	1.983
1925	1.681	6.751	1.311	2.295	3.606
2003	1.989	1.654	1.551	0.562	2.114
2014	2.123	2.097	1.656	0.713	2.369
2021	1.544	1.653	1.205	0.562	1.767
2039	2.365	2.397	1.845	0.815	2.659
2041	1.381	1.158	1.077	0.394	1.471
2070	2.065	1.565	1.611	0.532	2.143
2081	1.582	2.215	1.234	0.753	1.987
2089	1.487	1.372	1.159	0.467	1.626
2095	1.687	1.504	1.316	0.511	1.827
2101	1.487	1.372	1.159	0.467	1.626
2111	1.179	1.302	0.919	0.443	1.362
2114	1.487	1.372	1.159	0.467	1.626
2115	3.129	3.190	2.440	1.085	3.525
2121	0.742	0.817	0.579	0.278	0.856
2130	0.848	0.880	0.662	0.299	0.961
2131	1.587	1.958	1.238	0.666	1.904
2143	1.173	0.979	0.915	0.333	1.248
2150	1.952	2.162	1.522	0.735	2.257
2156	1.726	1.887	1.346	0.642	1.988
2157	2.477	1.837	1.932	0.624	2.557
2172	0.960	0.880	0.749	0.299	1.048
2211	2.929	3.159	2.284	1.074	3.358
2220	1.687	1.935	1.316	0.658	1.974
2260	2.904	2.325	2.265	0.790	3.056
2288	2.074	2.234	1.617	0.760	2.377
2305	1.319	1.360	1.029	0.462	1.491
2362	1.105	1.363	0.862	0.463	1.325
2380	0.838	1.075	0.654	0.366	1.019
2402	1.140	1.248	0.889	0.424	1.314
2413	1.513	1.587	1.180	0.540	1.720
2416	1.614	1.841	1.259	0.626	1.885
2417	0.886	0.674	0.691	0.229	0.920
2501	1.190	1.283	0.928	0.436	1.364
2503	0.570	0.579	0.445	0.197	0.641
2570	1.897	1.538	1.479	0.523	2.002
2576	1.114	1.135	0.869	0.386	1.254
2585	1.684	1.555	1.313	0.529	1.842
2586	1.164	1.350	0.908	0.459	1.367
2623	2.273	2.486	1.773	0.845	2.618

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Section IX - Classification Pricing  
 Subsection F - Underlying Pure Premiums  
 7/1/2024

Section IX - F  
 Exhibit 1

## Calculation of Pure Premiums Underlying Present Rate Manufacturing Industry Group, Industry Code 1

Class (1)	Adopted Relativities		Pure Premiums Underlying Present Rate		
	Indemnity (2)	Medical (3)	Indemnity (4)	Medical (5)	Total (6) = (4) + (5)
2651	0.711	0.740	0.555	0.252	0.806
2660	1.048	1.054	0.818	0.359	1.176
2683	1.079	1.248	0.841	0.424	1.265
2688	1.081	1.186	0.843	0.403	1.246
2710	3.305	3.329	2.578	1.132	3.710
2731	1.538	1.765	1.200	0.600	1.800
2747	3.045	2.807	2.375	0.954	3.330
2790	1.212	1.176	0.945	0.400	1.345
2802	1.901	2.091	1.483	0.711	2.194
2835	1.166	1.046	0.910	0.356	1.266
2836	1.501	1.159	1.171	0.394	1.565
2841	1.520	2.162	1.185	0.735	1.920
2883	1.637	1.621	1.277	0.551	1.828
2923	0.651	0.668	0.507	0.227	0.734
2942	0.847	0.862	0.661	0.293	0.954
3018	1.315	1.359	1.026	0.462	1.488
3022	1.745	2.126	1.361	0.723	2.084
3027	1.150	1.259	0.897	0.428	1.325
3028	1.614	1.732	1.259	0.589	1.848
3030	2.647	2.995	2.064	1.018	3.083
3040	3.373	2.824	2.631	0.960	3.591
3041	1.534	1.283	1.196	0.436	1.633
3042	1.748	1.552	1.363	0.528	1.891
3066	1.239	1.414	0.967	0.481	1.447
3076	1.559	1.463	1.216	0.497	1.713
3081	2.187	2.348	1.706	0.798	2.504
3082	2.187	2.348	1.706	0.798	2.504
3085	2.177	2.497	1.698	0.849	2.547
3110	4.059	3.478	3.166	1.183	4.349
3111	1.277	1.274	0.996	0.433	1.429
3113	0.943	0.925	0.736	0.314	1.050
3114	1.358	1.525	1.059	0.519	1.578
3118	0.732	0.767	0.571	0.261	0.832
3119	0.516	0.563	0.402	0.191	0.594
3120	0.710	0.542	0.554	0.184	0.738
3122	1.182	1.101	0.922	0.374	1.296
3127	1.206	1.098	0.941	0.373	1.314
3131	0.699	0.876	0.545	0.298	0.843
3132	1.092	1.203	0.852	0.409	1.260
3145	0.779	0.731	0.608	0.249	0.856
3146	1.067	1.115	0.832	0.379	1.211
3169	1.101	1.446	0.859	0.492	1.350
3179	0.611	0.571	0.477	0.194	0.671
3180	1.314	1.241	1.025	0.422	1.447
3188	1.112	1.141	0.867	0.388	1.255
3200	1.245	1.290	0.971	0.439	1.410
3220	1.221	1.159	0.952	0.394	1.346
3255	1.086	1.127	0.847	0.383	1.231

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Section IX - Classification Pricing  
 Subsection F - Underlying Pure Premiums  
 7/1/2024

Section IX - F  
 Exhibit 1

## Calculation of Pure Premiums Underlying Present Rate Manufacturing Industry Group, Industry Code 1

Class (1)	Adopted Relativities		Pure Premiums Underlying Present Rate		
	Indemnity (2)	Medical (3)	Indemnity (4)	Medical (5)	Total (6) = (4) + (5)
3257	1.233	1.602	0.961	0.545	1.506
3270	0.960	1.022	0.749	0.347	1.096
3300	1.691	2.367	1.319	0.805	2.124
3315	1.600	1.687	1.248	0.574	1.822
3336	1.348	1.174	1.052	0.399	1.451
3372	1.229	1.213	0.959	0.412	1.371
3373	2.165	1.771	1.689	0.602	2.291
3381	0.971	0.872	0.758	0.296	1.054
3383	0.716	0.780	0.558	0.265	0.824
3385	0.459	0.554	0.358	0.188	0.547
3400	1.101	1.446	0.859	0.492	1.350
3507	1.521	1.378	1.187	0.469	1.655
3515	1.304	1.395	1.017	0.474	1.491
3558	0.328	0.517	0.256	0.176	0.432
3571	0.344	0.300	0.268	0.102	0.370
3574	0.874	0.895	0.682	0.304	0.986
3612	0.728	0.790	0.568	0.268	0.836
3620	1.799	1.608	1.403	0.547	1.950
3629	0.874	0.895	0.682	0.304	0.986
3632	0.874	0.895	0.682	0.304	0.986
3634	1.003	0.866	0.782	0.295	1.077
3635	0.940	1.541	0.734	0.524	1.258
3638	0.874	0.895	0.682	0.304	0.986
3642	0.699	0.642	0.545	0.218	0.764
3643	1.009	0.952	0.787	0.324	1.111
3647	1.231	1.146	0.960	0.390	1.350
3648	0.561	0.608	0.438	0.207	0.645
3681	0.331	0.298	0.258	0.101	0.360
3685	0.270	0.264	0.210	0.090	0.300
3807	1.101	1.446	0.859	0.492	1.350
3808	1.717	1.795	1.339	0.610	1.949
3826	1.866	2.103	1.455	0.715	2.170
3830	0.874	0.895	0.682	0.304	0.986
3841	1.068	0.994	0.833	0.338	1.171
4021	1.664	1.782	1.298	0.606	1.904
4024	2.051	1.815	1.600	0.617	2.217
4034	3.631	4.430	2.832	1.506	4.339
4036	0.986	0.986	0.769	0.335	1.105
4038	1.405	1.044	1.096	0.355	1.451
4053	1.867	1.195	1.456	0.406	1.862
4062	1.250	1.094	0.975	0.372	1.347
4112	0.167	0.190	0.130	0.065	0.194
4113	1.867	1.195	1.456	0.406	1.862
4114	1.903	1.573	1.485	0.535	2.019
4130	2.582	2.475	2.014	0.841	2.855
4133	1.046	1.095	0.816	0.372	1.188
4150	0.423	0.327	0.330	0.111	0.441
4239	1.528	1.626	1.192	0.553	1.745

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Section IX - Classification Pricing  
 Subsection F - Underlying Pure Premiums  
 7/1/2024

Section IX - F  
 Exhibit 1

## Calculation of Pure Premiums Underlying Present Rate Manufacturing Industry Group, Industry Code 1

Class (1)	Adopted Relativities		Pure Premiums Underlying Present Rate		
	Indemnity (2)	Medical (3)	Indemnity (4)	Medical (5)	Total (6) = (4) + (5)
4243	1.498	1.271	1.169	0.432	1.601
4244	1.613	1.987	1.258	0.676	1.934
4250	1.355	1.334	1.057	0.453	1.510
4251	1.686	1.285	1.315	0.437	1.752
4273	1.599	1.548	1.247	0.526	1.774
4279	1.380	1.370	1.076	0.466	1.542
4283	1.322	0.895	1.031	0.304	1.336
4299	0.980	0.873	0.764	0.297	1.061
4304	3.071	3.802	2.395	1.293	3.688
4307	0.713	0.860	0.556	0.292	0.848
4308	1.503	0.378	1.172	0.129	1.301
4351	0.540	0.492	0.421	0.167	0.589
4352	0.563	0.558	0.439	0.190	0.629
4360	0.346	0.302	0.270	0.103	0.373
4410	1.401	1.769	1.093	0.601	1.694
4432	0.443	0.452	0.345	0.154	0.499
4439	2.657	3.564	2.073	1.212	3.284
4452	1.681	1.640	1.311	0.558	1.869
4459	1.388	1.414	1.083	0.481	1.564
4470	1.026	0.957	0.800	0.326	1.126
4484	1.198	1.246	0.935	0.424	1.358
4493	1.176	1.062	0.917	0.361	1.279
4557	1.167	0.834	0.910	0.284	1.194
4558	1.130	1.354	0.882	0.460	1.342
4583	1.470	1.536	1.147	0.522	1.669
4611	0.450	0.414	0.351	0.141	0.491
4635	2.260	3.470	1.763	1.180	2.942
4653	1.172	1.096	0.914	0.373	1.287
4665	5.283	6.331	4.121	2.153	6.274
4692	0.290	0.269	0.226	0.091	0.317
4693	0.421	0.457	0.328	0.155	0.484
4720	0.939	1.047	0.732	0.356	1.088
4740	0.430	0.355	0.336	0.121	0.456
4741	1.981	1.816	1.545	0.618	2.162
4771	1.231	1.036	0.960	0.352	1.312
4777	1.470	1.536	1.147	0.522	1.669
4825	0.211	0.181	0.165	0.062	0.226
4828	0.548	0.563	0.428	0.191	0.619
4829	0.548	0.563	0.428	0.191	0.619
4902	0.847	0.862	0.661	0.293	0.954
4923	0.346	0.302	0.270	0.103	0.373
6504	1.487	1.372	1.159	0.467	1.626
9501	1.164	1.115	0.908	0.379	1.287
9505	1.164	1.115	0.908	0.379	1.287
9521	1.950	2.124	1.521	0.722	2.243
9522	1.063	0.839	0.829	0.285	1.114

# IX 000054

Section IX - Classification Pricing  
Subsection F - Underlying Pure Premiums  
7/1/2024

Section IX - F  
Exhibit 1

## Calculation of Pure Premiums Underlying Present Rate Manufacturing Industry Group, Industry Code 1

Class (1)	Adopted Relativities		Pure Premiums Underlying Present Rate		
	Indemnity (2)	Medical (3)	Indemnity (4)	Medical (5)	Total (6) = (4) + (5)

Notes:

(2), (3): Section IX - I, Exhibit 1 of 7/1/2023 Stipulation.

(4) = (2) x Pure Premium Underlying Present Rate Factors from Section IX - E, Exhibit 1

(5) = (3) x Pure Premium Underlying Present Rate Factors from Section IX - E, Exhibit 1  
(Indemnity = 0.78, Medical = 0.34).

# IX 000055

Section IX - Classification Pricing  
 Subsection F - Underlying Pure Premiums  
 7/1/2024

Section IX - F  
 Exhibit 2

## Calculation of Pure Premiums Underlying Present Rate Construction Industry Group, Industry Code 2

Class (1)	Adopted Relativities		Pure Premiums Underlying Present Rate		
	Indemnity (2)	Medical (3)	Indemnity (4)	Medical (5)	Total (6) = (4) + (5)
0050	0.975	1.184	1.974	0.956	2.930
3365	0.868	1.186	1.758	0.957	2.715
3724	0.899	0.993	1.820	0.801	2.621
3726	0.791	0.663	1.602	0.535	2.137
5020	1.065	0.739	2.157	0.596	2.753
5022	1.946	1.856	3.942	1.498	5.439
5037	2.663	2.487	5.393	2.007	7.400
5040	5.166	4.333	10.461	3.497	13.958
5057	3.378	5.317	6.841	4.291	11.132
5059	5.043	6.839	10.211	5.519	15.730
5102	1.459	1.247	2.954	1.006	3.960
5146	1.475	1.261	2.988	1.018	4.005
5160	0.834	0.690	1.688	0.557	2.245
5183	0.743	0.682	1.505	0.550	2.055
5188	0.850	0.689	1.721	0.556	2.277
5190	0.490	0.522	0.992	0.421	1.413
5213	1.803	1.632	3.650	1.317	4.967
5215	1.164	1.098	2.357	0.886	3.243
5221	1.500	1.348	3.037	1.088	4.125
5222	2.040	1.367	4.130	1.103	5.233
5223	0.804	0.754	1.627	0.608	2.236
5348	1.003	0.776	2.032	0.627	2.658
5402	1.286	1.083	2.604	0.874	3.478
5403	1.891	1.681	3.829	1.357	5.186
5437	0.774	0.717	1.568	0.579	2.146
5443	0.648	0.621	1.313	0.501	1.814
5445	1.388	1.006	2.811	0.812	3.623
5462	1.333	1.207	2.700	0.974	3.674
5472	1.884	1.593	3.815	1.286	5.101
5473	2.313	2.406	4.685	1.941	6.626
5474	0.980	1.025	1.985	0.827	2.812
5478	1.029	0.682	2.084	0.551	2.634
5479	1.135	1.179	2.298	0.951	3.249
5480	0.992	0.847	2.008	0.684	2.692
5506	1.167	1.070	2.364	0.863	3.228
5507	1.072	0.943	2.172	0.761	2.933
5508	0.975	1.184	1.974	0.956	2.930
5509	1.157	1.696	2.343	1.369	3.711
5538	0.827	0.872	1.674	0.704	2.378
5545	9.186	13.394	18.602	10.809	29.411
5547	2.187	2.656	4.428	2.143	6.571
5606	0.264	0.269	0.535	0.217	0.753
5610	1.419	0.976	2.873	0.787	3.660
5645	1.347	1.723	2.727	1.390	4.117
5701	3.285	3.777	6.653	3.048	9.701
5703	1.920	1.908	3.888	1.540	5.428
5705	2.279	2.141	4.615	1.727	6.342
6003	1.430	1.161	2.895	0.937	3.832

# IX 000056

Section IX - Classification Pricing  
Subsection F - Underlying Pure Premiums  
7/1/2024

Section IX - F  
Exhibit 2

## Calculation of Pure Premiums Underlying Present Rate Construction Industry Group, Industry Code 2

Class (1)	Adopted Relativities		Pure Premiums Underlying Present Rate		
	Indemnity (2)	Medical (3)	Indemnity (4)	Medical (5)	Total (6) = (4) + (5)
6005	0.975	1.184	1.974	0.956	2.930
6204	1.357	1.063	2.749	0.858	3.607
6217	0.983	0.884	1.990	0.714	2.703
6229	0.970	0.948	1.964	0.765	2.728
6233	0.473	0.333	0.958	0.269	1.227
6251	1.008	0.710	2.040	0.573	2.614
6252	0.849	0.769	1.719	0.620	2.339
6306	2.161	1.703	4.376	1.374	5.750
6319	0.541	0.544	1.095	0.439	1.534
6325	0.578	0.641	1.170	0.517	1.687
6400	0.948	1.153	1.920	0.931	2.850
7538	0.726	0.715	1.470	0.577	2.048
7601	0.754	0.708	1.528	0.571	2.099
7855	0.940	0.844	1.903	0.682	2.585
8227	1.199	1.530	2.427	1.235	3.662
9533	4.356	3.451	8.820	2.785	11.605
9534	1.283	1.172	2.598	0.946	3.543
9549	0.890	0.674	1.801	0.544	2.345
9552	1.172	1.331	2.374	1.074	3.448

Notes:

(2), (3): Section IX - I, Exhibit 1 of 7/1/2023 Stipulation.

(4) = (2) x Pure Premium Underlying Present Rate Factors from Section IX - E, Exhibit 1

(5) = (3) x Pure Premium Underlying Present Rate Factors from Section IX - E, Exhibit 1  
(Indemnity = 2.025, Medical = 0.807).

# IX 000057

Section IX - Classification Pricing  
Subsection F - Underlying Pure Premiums  
7/1/2024

Section IX - F  
Exhibit 3

## Calculation of Pure Premiums Underlying Present Rate Office and Clerical Industry Group, Industry Code 3

Class (1)	Adopted Relativities		Pure Premiums Underlying Present Rate		
	Indemnity (2)	Medical (3)	Indemnity (4)	Medical (5)	Total (6) = (4) + (5)
4361	4.050	4.610	0.223	0.115	0.338
7610	4.268	3.026	0.235	0.076	0.310
8601	1.634	1.618	0.090	0.040	0.130
8721	1.374	1.388	0.076	0.035	0.110
8742	0.752	0.894	0.041	0.022	0.064
8748	4.497	3.704	0.247	0.093	0.340
8800	7.551	6.980	0.415	0.175	0.590
8803	0.339	0.307	0.019	0.008	0.026
8810	0.410	0.450	0.023	0.011	0.034
8820	0.436	0.441	0.024	0.011	0.035
8832	2.176	1.905	0.120	0.048	0.167
8833	9.695	7.220	0.533	0.181	0.714
8868	5.855	6.084	0.322	0.152	0.474
8901	0.410	0.450	0.023	0.011	0.034
9156	12.847	17.087	0.707	0.427	1.134

Notes:

(2), (3): Section IX - I, Exhibit 1 of 7/1/2023 Stipulation.

(4) = (2) x Pure Premium Underlying Present Rate Factors from Section IX - E, Exhibit 1

(5) = (3) x Pure Premium Underlying Present Rate Factors from Section IX - E, Exhibit 1  
(Indemnity = 0.055, Medical = 0.025).

# IX 000058

Section IX - Classification Pricing  
 Subsection F - Underlying Pure Premiums  
 7/1/2024

Section IX - F  
 Exhibit 4

## Calculation of Pure Premiums Underlying Present Rate Goods and Services Industry Group, Industry Code 9

Class (1)	Adopted Relativities		Pure Premiums Underlying Present Rate		
	Indemnity (2)	Medical (3)	Indemnity (4)	Medical (5)	Total (6) = (4) + (5)
0005	1.437	2.227	0.945	0.655	1.600
0008	1.469	1.698	0.966	0.499	1.466
0016	2.094	2.504	1.378	0.736	2.114
0034	1.658	1.830	1.091	0.538	1.629
0035	1.039	1.066	0.684	0.314	0.997
0036	1.658	1.830	1.091	0.538	1.629
0042	2.132	2.520	1.403	0.741	2.143
0046	1.768	2.642	1.163	0.777	1.940
0079	1.742	1.734	1.146	0.510	1.656
0083	2.124	2.263	1.398	0.665	2.063
0113	1.658	1.830	1.091	0.538	1.629
0170	1.658	1.830	1.091	0.538	1.629
0908	123.277	112.535	81.116	33.085	114.202
0909	267.410	446.069	175.956	131.144	307.100
0912	267.410	446.069	175.956	131.144	307.100
0913	123.277	112.535	81.116	33.085	114.202
0917	1.555	1.357	1.023	0.399	1.422
0918	0.325	0.179	0.214	0.053	0.266
2587	1.450	1.199	0.954	0.352	1.306
3821	3.009	3.729	1.980	1.096	3.076
4362	0.309	0.279	0.204	0.082	0.286
4511	0.196	0.194	0.129	0.057	0.186
4512	0.053	0.048	0.035	0.014	0.049
5191	0.450	0.480	0.296	0.141	0.437
5192	1.919	1.577	1.263	0.464	1.726
8001	1.077	1.360	0.709	0.400	1.109
8002	1.022	1.660	0.673	0.488	1.161
8006	0.673	0.671	0.443	0.197	0.641
8008	0.476	0.496	0.313	0.146	0.459
8010	0.918	1.042	0.604	0.306	0.910
8013	0.182	0.287	0.120	0.085	0.204
8017	0.651	0.680	0.428	0.200	0.628
8018	2.630	2.179	1.730	0.641	2.371
8021	2.325	2.191	1.530	0.644	2.174
8031	0.972	1.191	0.640	0.350	0.990
8032	0.847	0.853	0.557	0.251	0.808
8033	0.888	1.065	0.584	0.313	0.897
8034	2.009	1.426	1.322	0.419	1.741
8039	1.060	1.344	0.697	0.395	1.092
8044	1.739	1.854	1.145	0.545	1.690
8046	1.399	2.078	0.921	0.611	1.532
8048	1.566	1.507	1.030	0.443	1.473
8058	1.418	1.833	0.933	0.539	1.472
8103	1.904	1.810	1.253	0.532	1.785
8105	13.657	8.112	8.986	2.385	11.371
8106	2.774	3.318	1.825	0.976	2.801

# IX 000059

Section IX - Classification Pricing  
 Subsection F - Underlying Pure Premiums  
 7/1/2024

Section IX - F  
 Exhibit 4

## Calculation of Pure Premiums Underlying Present Rate Goods and Services Industry Group, Industry Code 9

Class (1)	Adopted Relativities		Pure Premiums Underlying Present Rate		
	Indemnity (2)	Medical (3)	Indemnity (4)	Medical (5)	Total (6) = (4) + (5)
8107	1.596	1.587	1.050	0.466	1.517
8111	1.704	1.971	1.121	0.579	1.701
8203	3.413	3.012	2.246	0.886	3.131
8204	2.929	2.907	1.927	0.855	2.782
8215	1.905	2.033	1.253	0.598	1.851
8232	3.091	3.049	2.034	0.896	2.931
8233	3.509	3.808	2.309	1.120	3.428
8235	2.653	2.879	1.746	0.847	2.592
8263	3.084	3.229	2.029	0.949	2.979
8264	3.017	2.976	1.985	0.875	2.860
8265	3.509	3.808	2.309	1.120	3.428
8279	2.090	3.110	1.375	0.914	2.289
8291	2.420	3.395	1.592	0.998	2.590
8292	2.246	2.285	1.478	0.672	2.150
8293	4.190	4.638	2.757	1.364	4.121
8350	4.821	4.033	3.172	1.186	4.358
8380	1.626	1.584	1.070	0.466	1.536
8381	0.825	0.790	0.543	0.232	0.775
8385	2.457	2.416	1.617	0.710	2.327
8392	0.961	1.104	0.632	0.325	0.957
8393	0.901	0.762	0.593	0.224	0.817
8500	3.509	3.808	2.309	1.120	3.428
8710	1.656	1.335	1.090	0.392	1.482
8719	1.656	1.335	1.090	0.392	1.482
8720	0.536	0.538	0.353	0.158	0.511
8745	3.309	3.596	2.177	1.057	3.235
8747	0.545	0.361	0.359	0.106	0.465
8824	1.423	1.315	0.936	0.387	1.323
8826	1.002	1.062	0.659	0.312	0.972
8829	1.840	1.399	1.211	0.411	1.622
8831	0.420	1.083	0.276	0.318	0.595
8835	1.178	0.912	0.775	0.268	1.043
9014	1.318	1.366	0.867	0.402	1.269
9015	1.953	1.782	1.285	0.524	1.809
9016	0.830	1.232	0.546	0.362	0.909
9033	1.766	1.510	1.162	0.444	1.606
9040	1.925	1.825	1.267	0.537	1.803
9044	0.909	0.886	0.598	0.260	0.859
9052	1.010	0.984	0.665	0.289	0.954
9058	0.980	1.005	0.645	0.296	0.941
9060	0.591	0.792	0.389	0.233	0.622
9061	0.625	0.588	0.412	0.173	0.584
9062	0.625	0.588	0.412	0.173	0.584
9063	0.328	0.508	0.216	0.149	0.365
9079	0.577	0.677	0.380	0.199	0.579
9089	0.391	0.452	0.258	0.133	0.391

# IX 000060

Section IX - Classification Pricing  
Subsection F - Underlying Pure Premiums  
7/1/2024

Section IX - F  
Exhibit 4

## Calculation of Pure Premiums Underlying Present Rate Goods and Services Industry Group, Industry Code 9

Class (1)	Adopted Relativities		Pure Premiums Underlying Present Rate		
	Indemnity (2)	Medical (3)	Indemnity (4)	Medical (5)	Total (6) = (4) + (5)
9093	0.538	0.752	0.354	0.221	0.575
9101	2.528	2.517	1.663	0.740	2.403
9220	2.470	2.250	1.625	0.662	2.287
9410	2.288	2.549	1.505	0.749	2.255
9519	1.727	1.274	1.136	0.375	1.511
9586	0.210	0.190	0.139	0.056	0.194
9620	0.477	0.547	0.314	0.161	0.474

Notes:

(2), (3): Section IX - I, Exhibit 1 of 7/1/2023 Stipulation.

(4) = (2) x Pure Premium Underlying Present Rate Factors from Section IX - E, Exhibit 1

(5) = (3) x Pure Premium Underlying Present Rate Factors from Section IX - E, Exhibit 1  
(Indemnity = 0.658, Medical = 0.294).

# IX 000061

Section IX - Classification Pricing  
 Subsection F - Underlying Pure Premiums  
 7/1/2024

Section IX - F  
 Exhibit 5

## Calculation of Pure Premiums Underlying Present Rate Miscellaneous Industry Group, Industry Code 0

Class (1)	Adopted Relativities		Pure Premiums Underlying Present Rate		
	Indemnity (2)	Medical (3)	Indemnity (4)	Medical (5)	Total (6) = (4) + (5)
0106	1.569	2.376	3.461	2.169	5.630
1624	0.865	0.966	1.907	0.882	2.789
1655	0.588	0.495	1.296	0.452	1.748
1710	0.865	0.966	1.907	0.882	2.789
2702	3.166	5.294	6.980	4.834	11.814
4000	1.183	1.259	2.610	1.149	3.759
6834	0.440	0.577	0.970	0.527	1.496
6836	0.499	0.719	1.100	0.657	1.757
7219	1.524	1.502	3.360	1.371	4.731
7230	1.879	1.923	4.143	1.756	5.899
7231	2.389	2.150	5.267	1.963	7.230
7360	0.964	0.890	2.126	0.813	2.939
7370	0.924	1.013	2.037	0.925	2.962
7380	1.378	1.317	3.040	1.202	4.242
7382	0.752	0.727	1.657	0.664	2.322
7403	0.622	0.658	1.372	0.601	1.973
7405	0.292	0.249	0.645	0.227	0.872
7420	4.673	7.909	10.305	7.221	17.526
7421	0.249	0.139	0.549	0.127	0.677
7422	0.249	0.139	0.549	0.127	0.677
7425	0.622	0.539	1.371	0.492	1.863
7431	0.249	0.139	0.549	0.127	0.677
7502	0.441	0.356	0.972	0.325	1.298
7515	0.343	0.822	0.756	0.750	1.506
7520	0.635	0.695	1.401	0.635	2.036
7539	0.277	0.314	0.612	0.286	0.898
7580	0.659	0.575	1.453	0.525	1.978
7590	1.264	1.973	2.787	1.801	4.588
7600	0.995	0.760	2.194	0.694	2.887
7704	0.769	1.078	1.695	0.984	2.680
7720	0.328	0.326	0.722	0.297	1.020
9019	0.573	0.640	1.263	0.584	1.848
9102	0.472	0.590	1.041	0.539	1.580
9154	0.357	0.420	0.787	0.383	1.170
9178	1.224	5.684	2.698	5.189	7.887
9179	6.187	16.701	13.643	15.248	28.891
9180	0.706	1.225	1.557	1.118	2.675
9182	0.450	0.786	0.992	0.717	1.710
9186	0.706	1.225	1.557	1.118	2.675
9402	0.856	0.848	1.887	0.774	2.661
9403	2.577	2.448	5.682	2.235	7.917

**Notes:**

(2), (3): Section IX - I, Exhibit 1 of 7/1/2023 Stipulation.

(4) = (2) x Pure Premium Underlying Present Rate Factors from Section IX - E, Exhibit 1

(5) = (3) x Pure Premium Underlying Present Rate Factors from Section IX - E, Exhibit 1  
 (Indemnity = 2.205, Medical = 0.913).

# IX 000062

Section IX - Classification Pricing  
 Subsection G - Class Relativities  
 7/1/2024

Section IX - G

## A-Sheet Table of Contents

Class	To find the A-Sheet for:		Look at the A-Sheet for:	
		Description	Class	Exhibit
0005	FARM: NURSERY EMP & DRIVERS		0005	Section IX - G, Exhibit 1
0008	FARM: GARDENING-MARKET OR TRUCK & DRIVERS		0008	Section IX - G, Exhibit 1
0016	FARM: ORCHARDS & DRIVERS		0016	Section IX - G, Exhibit 2
0034	FARM: POULTRY OR EGG PRODUCERS & DRIVERS		0034	Section IX - G, Exhibit 2
0035	FARM: FLORIST & DRIVERS		0035	Section IX - G, Exhibit 3
0036	FARM: DAIRY & DRIVERS		0034	Section IX - G, Exhibit 2
0042	LANDSCAPE GARDENING & DRIVERS		0042	Section IX - G, Exhibit 3
0046	FERTILIZER OR PESTICIDE APPLICATION-COMM OR DOMESTIC, DRIVERS		0046	Section IX - G, Exhibit 4
0050	FARM MACHINERY OPERATION-BY CONTRACTOR & DRIVERS		0050	Section IX - G, Exhibit 4
0079	FARM: BERRY OR VINEYARD & DRIVERS		0079	Section IX - G, Exhibit 5
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 Subsection G - Class Relativities  
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 Exhibit 1

## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
0005 FARM: NURSERY EMP & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	133,117	0	28	0	13,839	0	22,212	36,051	0.104	0.167	0.271
2018	133,342	0	14	0	59,771	0	28,847	88,618	0.448	0.216	0.665
2019	154,502	2	18	66,236	243,954	331,299	117,127	758,616	2.008	2.902	4.910
2020	160,103	0	13	0	43,336	0	62,266	105,602	0.271	0.389	0.660
2021	170,589	1	20	126,591	66,694	67,760	55,675	316,720	1.133	0.724	1.857
<b>MA Total:</b>	<b>751,652</b>	<b>3</b>	<b>93</b>	<b>192,828</b>	<b>427,594</b>	<b>399,059</b>	<b>286,126</b>	<b>1,305,607</b>	<b>0.825</b>	<b>0.912</b>	<b>1.737</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.039	2.959	.
(14) Massachusetts Credibility:	0.210	0.370	.
(15) Countrywide Pure Premium:	1.281	0.591	1.872
(16) Countrywide Indicated Relativity:	1.615	1.889	.
(17) Countrywide Credibility:	0.400	0.320	.
(18) Countrywide Lost-Time Claims:	1456.0	.	.
(19) Pure Premium Underlying Present Rate:	0.945	0.655	1.600
(20) Relativity to Underlying Present Rate:	1.451	2.247	.
(21) Credibility to Underlying Relativity:	0.390	0.310	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.430	2.396	.
(24) Balanced Formula Relativity:	1.415	2.384	1.686

Class(es):		Effective: 7/1/2024							Goods and Services		
0008 FARM: GARDENING-MARKET OR TRUCK & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	540,655	1	59	14,359	701,588	31,622	200,330	947,899	1.324	0.429	1.753
2018	569,896	1	66	137,811	83,192	32,931	122,043	375,977	0.388	0.272	0.660
2019	496,522	0	61	0	20,233	0	48,530	68,763	0.041	0.098	0.138
2020	549,644	2	73	248,811	294,750	173,245	209,853	926,660	0.989	0.697	1.686
2021	557,760	2	44	17,425	74,595	30,297	118,308	240,626	0.165	0.266	0.431
<b>MA Total:</b>	<b>2,714,477</b>	<b>6</b>	<b>303</b>	<b>418,406</b>	<b>1,174,358</b>	<b>268,096</b>	<b>699,065</b>	<b>2,559,924</b>	<b>0.587</b>	<b>0.356</b>	<b>0.943</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.738	1.157	.
(14) Massachusetts Credibility:	0.360	0.550	.
(15) Countrywide Pure Premium:	1.613	0.722	2.334
(16) Countrywide Indicated Relativity:	2.034	2.306	.
(17) Countrywide Credibility:	0.320	0.230	.
(18) Countrywide Lost-Time Claims:	4501.0	.	.
(19) Pure Premium Underlying Present Rate:	0.966	0.499	1.466
(20) Relativity to Underlying Present Rate:	1.483	1.713	.
(21) Credibility to Underlying Relativity:	0.320	0.220	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.391	1.544	.
(24) Balanced Formula Relativity:	1.377	1.536	1.421

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 Exhibit 2

## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
0016 FARM: ORCHARDS & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	76,542	0	5	0	26,898	0	41,473	68,371	0.351	0.542	0.893
2018	83,745	1	6	137,549	75,697	17,343	19,892	250,480	2.546	0.445	2.991
2019	87,336	0	15	0	99,956	0	72,345	172,301	1.144	0.828	1.973
2020	81,382	1	7	95,069	21,051	116,003	58,371	290,494	1.427	2.143	3.570
2021	86,588	1	1	833,323	0	63,682	911	897,916	9.624	0.746	10.370
<b>MA Total:</b>	<b>415,593</b>	<b>3</b>	<b>34</b>	<b>1,065,940</b>	<b>223,602</b>	<b>197,028</b>	<b>192,992</b>	<b>1,679,562</b>	<b>3.103</b>	<b>0.938</b>	<b>4.041</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.904	3.047	.
(14) Massachusetts Credibility:	0.200	0.300	.
(15) Countrywide Pure Premium:	1.662	0.876	2.538
(16) Countrywide Indicated Relativity:	2.096	2.800	.
(17) Countrywide Credibility:	0.400	0.350	.
(18) Countrywide Lost-Time Claims:	707.00	.	.
(19) Pure Premium Underlying Present Rate:	1.378	0.736	2.114
(20) Relativity to Underlying Present Rate:	2.115	2.527	.
(21) Credibility to Underlying Relativity:	0.400	0.350	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.465	2.778	.
(24) Balanced Formula Relativity:	2.440	2.764	2.530

Class(es):		Effective: 7/1/2024							Goods and Services		
0034 FARM: POULTRY OR EGG PRODUCERS & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	102,311	0	19	0	70,175	0	37,835	108,010	0.686	0.370	1.056
2018	115,173	0	21	0	12,797	0	44,933	57,730	0.111	0.390	0.501
2019	104,744	0	12	0	15,769	0	29,443	45,212	0.151	0.281	0.432
2020	109,172	1	9	22,256	49,823	4,208	35,659	111,945	0.660	0.365	1.025
2021	113,651	0	9	0	41,509	0	74,441	115,950	0.365	0.655	1.020
<b>MA Total:</b>	<b>545,051</b>	<b>1</b>	<b>70</b>	<b>22,256</b>	<b>190,073</b>	<b>4,208</b>	<b>222,311</b>	<b>438,848</b>	<b>0.390</b>	<b>0.416</b>	<b>0.805</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.490	1.349	.
(14) Massachusetts Credibility:	0.200	0.300	.
(15) Countrywide Pure Premium:	1.904	0.691	2.595
(16) Countrywide Indicated Relativity:	2.401	2.209	.
(17) Countrywide Credibility:	0.400	0.350	.
(18) Countrywide Lost-Time Claims:	3625.0	.	.
(19) Pure Premium Underlying Present Rate:	1.091	0.538	1.629
(20) Relativity to Underlying Present Rate:	1.675	1.846	.
(21) Credibility to Underlying Relativity:	0.400	0.350	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.728	1.824	.
(24) Balanced Formula Relativity:	1.711	1.815	1.740

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
0035 FARM: FLORIST & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	485,829	0	43	0	63,156	0	64,157	127,313	0.130	0.132	0.262
2018	802,660	3	82	281,288	541,990	225,038	178,670	1,226,986	1.026	0.503	1.529
2019	1,340,097	6	86	668,879	221,859	127,589	205,469	1,223,797	0.665	0.249	0.913
2020	1,386,389	7	113	642,941	940,005	316,615	266,218	2,165,780	1.142	0.420	1.562
2021	1,787,942	6	172	279,269	990,048	132,946	456,411	1,858,674	0.710	0.330	1.040
<b>MA Total:</b>	<b>5,802,918</b>	<b>22</b>	<b>496</b>	<b>1,872,378</b>	<b>2,757,059</b>	<b>802,189</b>	<b>1,170,925</b>	<b>6,602,549</b>	<b>0.798</b>	<b>0.340</b>	<b>1.138</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.004	1.104	.
(14) Massachusetts Credibility:	0.430	0.620	.
(15) Countrywide Pure Premium:	0.854	0.457	1.312
(16) Countrywide Indicated Relativity:	1.077	1.462	.
(17) Countrywide Credibility:	0.290	0.190	.
(18) Countrywide Lost-Time Claims:	1713.0	.	.
(19) Pure Premium Underlying Present Rate:	0.684	0.314	0.997
(20) Relativity to Underlying Present Rate:	1.049	1.076	.
(21) Credibility to Underlying Relativity:	0.280	0.190	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.038	1.167	.
(24) Balanced Formula Relativity:	1.027	1.161	1.064

Class(es):		Effective: 7/1/2024							Goods and Services		
0042 LANDSCAPE GARDENING & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	6,383,281	39	718	5,677,156	5,741,692	1,363,648	3,534,919	16,317,416	1.789	0.767	2.556
2018	6,958,991	39	785	4,302,199	6,463,957	924,988	3,399,491	15,090,635	1.547	0.621	2.169
2019	7,103,612	27	725	2,997,739	9,291,345	1,105,738	4,588,703	17,983,525	1.730	0.802	2.532
2020	7,466,211	31	638	5,458,027	9,629,429	1,984,730	5,048,135	22,120,321	2.021	0.942	2.963
2021	8,375,343	25	592	3,513,030	8,605,118	1,434,591	5,282,704	18,835,443	1.447	0.802	2.249
<b>MA Total:</b>	<b>36,287,438</b>	<b>161</b>	<b>3,458</b>	<b>21,948,151</b>	<b>39,731,541</b>	<b>6,813,696</b>	<b>21,853,953</b>	<b>90,347,341</b>	<b>1.700</b>	<b>0.790</b>	<b>2.490</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.139	2.565	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	2.410	0.903	3.313
(16) Countrywide Indicated Relativity:	3.040	2.885	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	7497.0	.	.
(19) Pure Premium Underlying Present Rate:	1.403	0.741	2.143
(20) Relativity to Underlying Present Rate:	2.153	2.543	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.139	2.565	.
(24) Balanced Formula Relativity:	2.117	2.552	2.238

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services			
0046 FERTILIZER OR PESTICIDE APPLICATION-COMM OR DOMESTIC, DRIVERS												
Converted Unlimited Losses												
Amount												
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	168,314	2	24	267,709	243,680	240,496	149,222	901,108	3,038	2,315	5,354	
2018	192,482	0	23	0	40,192	0	19,866	60,059	0,209	0,103	0,312	
2019	238,472	2	19	260,139	5,022	28,486	16,534	310,181	1,112	0,189	1,301	
2020	246,062	0	16	0	108,522	0	54,772	163,294	0,441	0,223	0,664	
2021	294,485	0	19	0	125,805	0	56,921	182,726	0,427	0,193	0,620	
<b>MA Total:</b>	<b>1,139,814</b>	<b>4</b>	<b>101</b>	<b>527,848</b>	<b>523,222</b>	<b>268,982</b>	<b>297,315</b>	<b>1,617,368</b>	<b>0,922</b>	<b>0,497</b>	<b>1,419</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.160	1.613	.
(14) Massachusetts Credibility:	0.280	0.470	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	1.766	2.636	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	1.163	0.777	1.940
(20) Relativity to Underlying Present Rate:	1.785	2.666	.
(21) Credibility to Underlying Relativity:	0.720	0.530	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.610	2.171	.
(24) Balanced Formula Relativity:	1.594	2.160	1.752

Class(es):		Effective: 7/1/2024							Construction			
0050 FARM MACHINERY OPERATION-BY CONTRACTOR & DRIVERS												
Converted Unlimited Losses												
Amount												
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	16,971	0	0	0	0	0	0	0	0.000	0.000	0.000	
2018	15,552	0	0	0	0	0	0	0	0.000	0.000	0.000	
2019	25,450	0	3	0	13,233	0	55,469	68,702	0.520	2,180	2,699	
2020	28,169	0	3	0	88,968	0	71,299	160,267	3,158	2,531	5,690	
2021	13,552	0	0	0	0	0	0	0	0.000	0.000	0.000	
<b>MA Total:</b>	<b>99,694</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>102,201</b>	<b>0</b>	<b>126,768</b>	<b>228,969</b>	<b>1,025</b>	<b>1,272</b>	<b>2,297</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.433	1.478	.
(14) Massachusetts Credibility:	0.130	0.190	.
(15) Countrywide Pure Premium:	2.863	1.075	3.937
(16) Countrywide Indicated Relativity:	1.216	1.247	.
(17) Countrywide Credibility:	0.440	0.410	.
(18) Countrywide Lost-Time Claims:	725.00	.	.
(19) Pure Premium Underlying Present Rate:	1.974	0.956	2.930
(20) Relativity to Underlying Present Rate:	0.975	1.184	.
(21) Credibility to Underlying Relativity:	0.430	0.400	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.011	1.266	.
(24) Balanced Formula Relativity:	1.021	1.270	1.088

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
0079 FARM: BERRY OR VINEYARD & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	155,835	0	13	0	80,069	0	82,477	162,546	0.514	0.529	1.043
2018	174,134	2	11	198,566	59,004	38,205	41,475	337,250	1.479	0.458	1.937
2019	179,496	1	22	390	59,088	590	97,822	157,891	0.331	0.548	0.880
2020	190,342	1	5	1,051,475	48,495	80,352	23,577	1,203,899	5.779	0.546	6.325
2021	215,413	0	9	0	112,820	0	105,770	218,590	0.524	0.491	1.015
<b>MA Total:</b>	<b>915,220</b>	<b>4</b>	<b>60</b>	<b>1,250,431</b>	<b>359,477</b>	<b>119,147</b>	<b>351,121</b>	<b>2,080,177</b>	<b>1.759</b>	<b>0.514</b>	<b>2.273</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.213	1.668	.
(14) Massachusetts Credibility:	0.250	0.360	.
(15) Countrywide Pure Premium:	0.882	0.414	1.296
(16) Countrywide Indicated Relativity:	1.112	1.322	.
(17) Countrywide Credibility:	0.380	0.320	.
(18) Countrywide Lost-Time Claims:	229.00	.	.
(19) Pure Premium Underlying Present Rate:	1.146	0.510	1.656
(20) Relativity to Underlying Present Rate:	1.760	1.750	.
(21) Credibility to Underlying Relativity:	0.370	0.320	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.627	1.583	.
(24) Balanced Formula Relativity:	1.610	1.575	1.601

Class(es):		Effective: 7/1/2024							Goods and Services		
0083 FARM: CATTLE OR LIVESTOCK RAISING NOC & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	76,331	1	4	91,069	1,991	17,526	4,944	115,530	1.219	0.294	1.514
2018	71,854	0	9	0	8,827	0	39,422	48,249	0.123	0.549	0.671
2019	70,008	0	5	0	4,264	0	8,176	12,441	0.061	0.117	0.178
2020	72,118	1	10	9,395	52,641	4,142	32,101	98,279	0.860	0.503	1.363
2021	76,341	0	6	0	3,508	0	7,294	10,802	0.046	0.096	0.141
<b>MA Total:</b>	<b>366,651</b>	<b>2</b>	<b>34</b>	<b>100,464</b>	<b>71,231</b>	<b>21,668</b>	<b>91,937</b>	<b>285,301</b>	<b>0.468</b>	<b>0.310</b>	<b>0.778</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.589	1.006	.
(14) Massachusetts Credibility:	0.190	0.280	.
(15) Countrywide Pure Premium:	2.348	0.981	3.329
(16) Countrywide Indicated Relativity:	2.961	3.135	.
(17) Countrywide Credibility:	0.410	0.360	.
(18) Countrywide Lost-Time Claims:	2672.0	.	.
(19) Pure Premium Underlying Present Rate:	1.398	0.665	2.063
(20) Relativity to Underlying Present Rate:	2.145	2.284	.
(21) Credibility to Underlying Relativity:	0.400	0.360	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.184	2.232	.
(24) Balanced Formula Relativity:	2.162	2.221	2.178

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Miscellaneous		
0106 TREE PRUNING, SPRAYING, REPAIRING & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	584,233	3	95	511,930	1,063,588	331,822	713,181	2,620,521	2,697	1,789	4,485
2018	661,181	5	113	560,254	2,459,831	404,293	1,151,407	4,575,785	4,568	2,353	6,921
2019	640,210	5	80	492,498	2,278,953	210,190	1,314,937	4,296,577	4,329	2,382	6,711
2020	797,023	4	129	444,433	2,081,656	354,811	1,615,221	4,496,121	3,169	2,472	5,641
2021	931,337	6	105	1,085,145	1,902,270	293,503	1,219,453	4,500,371	3,208	1,624	4,832
<b>MA Total:</b>	<b>3,613,984</b>	<b>23</b>	<b>522</b>	<b>3,094,260</b>	<b>9,786,298</b>	<b>1,594,618</b>	<b>6,014,198</b>	<b>20,489,375</b>	<b>3,564</b>	<b>2,105</b>	<b>5,669</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.295	2.123	.
(14) Massachusetts Credibility:	0.680	1.000	.
(15) Countrywide Pure Premium:	4.479	1.969	6.448
(16) Countrywide Indicated Relativity:	1.691	2.084	.
(17) Countrywide Credibility:	0.160	0.000	.
(18) Countrywide Lost-Time Claims:	3249.0	.	.
(19) Pure Premium Underlying Present Rate:	3.461	2.169	5.630
(20) Relativity to Underlying Present Rate:	1.530	2.302	.
(21) Credibility to Underlying Relativity:	0.160	0.000	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	1.396	2.123	.
(24) Balanced Formula Relativity:	1.385	2.128	1.582

Class(es):		Effective: 7/1/2024							Goods and Services		
0908 DOMESTIC WORKERS-INSIDE-OCCASIONAL-NOC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	3,513	1	16	587	23,741	1,085	42,656	68,069	6,926	12,453	19,379
2018	3,478	1	18	354,230	114,371	122,397	61,527	652,524	134.73	52,879	187.60
2019	3,423	1	20	95,013	506,019	14,926	139,649	755,606	175.61	45,164	220.77
2020	4,146	2	16	376,709	36,112	48,647	90,171	551,638	99,578	33,485	133.06
2021	4,931	1	14	172,771	532,895	24,936	190,153	920,755	143.10	43,616	186.71
<b>MA Total:</b>	<b>19,490</b>	<b>6</b>	<b>84</b>	<b>999,309</b>	<b>1,213,137</b>	<b>211,991</b>	<b>524,155</b>	<b>2,948,593</b>	<b>113.51</b>	<b>37,770</b>	<b>151.28</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	142.82	122.61	.
(14) Massachusetts Credibility:	0.310	0.430	.
(15) Countrywide Pure Premium:	163.80	58.240	222.04
(16) Countrywide Indicated Relativity:	135.83	123.86	.
(17) Countrywide Credibility:	0.350	0.290	.
(18) Countrywide Lost-Time Claims:	441.00	.	.
(19) Pure Premium Underlying Present Rate:	89.475	36.494	125.97
(20) Relativity to Underlying Present Rate:	137.35	125.25	.
(21) Credibility to Underlying Relativity:	0.340	0.280	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	138.52	123.71	.
(24) Balanced Formula Relativity:	137.09	123.08	133.18

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services			
0909 DOMESTIC WORKERS-OUTSIDE-OCCASIONAL-INCL OCCASNL PRIV CHAUFF												
Converted Unlimited Losses												
Amount												
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	299	0	2	0	0	0	18,690	18,690	0.000	62,539	62,539	
2018	294	0	4	0	265	0	6,046	6,311	0.902	20,547	21,448	
2019	285	2	6	341,041	391,950	69,883	58,273	861,147	2576.4	450.46	3026.9	
2020	302	1	2	45,862	31,033	59,281	31,961	168,138	254.92	302.48	557.39	
2021	274	0	3	0	0	0	2,466	2,466	0.000	9,006	9,006	
<b>MA Total:</b>	<b>1,453</b>	<b>3</b>	<b>17</b>	<b>386,903</b>	<b>423,248</b>	<b>129,164</b>	<b>117,436</b>	<b>1,056,751</b>	<b>557.55</b>	<b>169.71</b>	<b>727.26</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	701.51	550.94	.
(14) Massachusetts Credibility:	0.150	0.270	.
(15) Countrywide Pure Premium:	1834.7	206.79	2041.5
(16) Countrywide Indicated Relativity:	316.12	526.76	.
(17) Countrywide Credibility:	0.120	0.130	.
(18) Countrywide Lost-Time Claims:	6.000	.	.
(19) Pure Premium Underlying Present Rate:	208.23	155.20	363.44
(20) Relativity to Underlying Present Rate:	319.65	532.66	.
(21) Credibility to Underlying Relativity:	0.730	0.600	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	376.51	536.83	.
(24) Balanced Formula Relativity:	372.63	534.10	417.73

Class(es):		Effective: 7/1/2024							Goods and Services			
0917 DOMESTIC SERVICE CONTRACTOR-INSIDE												
Converted Unlimited Losses												
Amount												
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	496,604	3	39	208,837	174,076	51,976	67,872	502,762	0.771	0.241	1.012	
2018	637,984	3	52	216,338	455,956	41,582	176,959	890,835	1.054	0.343	1.396	
2019	679,536	3	46	177,724	414,018	24,121	250,880	866,743	0.871	0.405	1.275	
2020	641,248	2	26	74,507	361,903	16,304	176,788	629,502	0.681	0.301	0.982	
2021	834,715	2	40	354,982	788,181	98,564	216,718	1,458,444	1.370	0.378	1.747	
<b>MA Total:</b>	<b>3,290,087</b>	<b>13</b>	<b>203</b>	<b>1,032,388</b>	<b>2,194,134</b>	<b>232,546</b>	<b>889,217</b>	<b>4,348,286</b>	<b>0.981</b>	<b>0.341</b>	<b>1.322</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.234	1.107	.
(14) Massachusetts Credibility:	0.400	0.540	.
(15) Countrywide Pure Premium:	1.836	0.710	2.546
(16) Countrywide Indicated Relativity:	2.315	2.269	.
(17) Countrywide Credibility:	0.300	0.230	.
(18) Countrywide Lost-Time Claims:	958.00	.	.
(19) Pure Premium Underlying Present Rate:	1.023	0.399	1.422
(20) Relativity to Underlying Present Rate:	1.570	1.369	.
(21) Credibility to Underlying Relativity:	0.300	0.230	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.659	1.435	.
(24) Balanced Formula Relativity:	1.642	1.427	1.582

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
0918 DOMESTIC WORKERS-INSIDE-PHYSICAL ASSISTANCE											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	8,654,614	13	82	580,419	1,442,329	96,724	525,990	2,645,462	0.234	0.072	0.306
2018	8,914,428	11	93	1,009,463	1,074,601	145,742	233,682	2,463,489	0.234	0.043	0.276
2019	10,265,684	0	85	0	1,661,743	0	473,057	2,134,800	0.162	0.046	0.208
2020	10,106,041	4	68	883,400	1,643,866	134,678	511,713	3,173,658	0.250	0.064	0.314
2021	12,939,225	4	49	520,937	1,765,677	71,988	340,884	2,699,487	0.177	0.032	0.209
<b>MA Total:</b>	<b>50,879,991</b>	<b>32</b>	<b>377</b>	<b>2,994,220</b>	<b>7,588,216</b>	<b>449,133</b>	<b>2,085,327</b>	<b>13,116,896</b>	<b>0.208</b>	<b>0.050</b>	<b>0.258</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.262	0.162	.
(14) Massachusetts Credibility:	0.640	0.720	.
(15) Countrywide Pure Premium:	0.392	0.093	0.485
(16) Countrywide Indicated Relativity:	0.494	0.296	.
(17) Countrywide Credibility:	0.180	0.140	.
(18) Countrywide Lost-Time Claims:	100.00	.	.
(19) Pure Premium Underlying Present Rate:	0.214	0.053	0.266
(20) Relativity to Underlying Present Rate:	0.328	0.180	.
(21) Credibility to Underlying Relativity:	0.180	0.140	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.316	0.183	.
(24) Balanced Formula Relativity:	0.312	0.182	0.276

Class(es):		Effective: 7/1/2024							Manufacturing		
1430 SMELTING, SINTERING OR REFINING-LEAD & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	0	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.000	0.000	.
(15) Countrywide Pure Premium:	1.359	0.397	1.756
(16) Countrywide Indicated Relativity:	1.527	1.227	.
(17) Countrywide Credibility:	0.250	0.260	.
(18) Countrywide Lost-Time Claims:	36.000	.	.
(19) Pure Premium Underlying Present Rate:	1.528	0.642	2.170
(20) Relativity to Underlying Present Rate:	1.964	1.897	.
(21) Credibility to Underlying Relativity:	0.750	0.740	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.855	1.723	.
(24) Balanced Formula Relativity:	1.853	1.710	1.814

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
1438 SMELTING, SINTERING OR REFINING-METALS-NOT IRON OR LEAD-NOC & D											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	144,211	0	16	0	91,932	0	55,376	147,308	0.637	0.384	1.021
2018	156,408	0	23	0	81,615	0	74,192	155,807	0.522	0.474	0.996
2019	161,796	1	24	99,970	49,915	12,932	62,690	225,508	0.926	0.467	1.394
2020	150,356	0	13	0	209,229	0	91,083	300,312	1.392	0.606	1.997
2021	162,947	2	14	115,505	120,295	117,470	87,469	440,739	1.447	1.258	2.705
<b>MA Total:</b>	<b>775,718</b>	<b>3</b>	<b>90</b>	<b>215,476</b>	<b>552,985</b>	<b>130,403</b>	<b>370,811</b>	<b>1,269,674</b>	<b>0.991</b>	<b>0.646</b>	<b>1.637</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.041	1.831	.
(14) Massachusetts Credibility:	0.270	0.360	.
(15) Countrywide Pure Premium:	2.022	0.654	2.676
(16) Countrywide Indicated Relativity:	2.271	2.023	.
(17) Countrywide Credibility:	0.370	0.320	.
(18) Countrywide Lost-Time Claims:	537.00	.	.
(19) Pure Premium Underlying Present Rate:	1.555	0.594	2.149
(20) Relativity to Underlying Present Rate:	1.999	1.755	.
(21) Credibility to Underlying Relativity:	0.360	0.320	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.841	1.868	.
(24) Balanced Formula Relativity:	1.839	1.853	1.843

Class(es):		Effective: 7/1/2024							Manufacturing		
1463 ASPHALT WORKS & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	103,477	2	21	116,416	289,053	29,560	83,084	518,113	3.918	1.089	5.007
2018	97,814	0	26	0	277,425	0	165,763	443,188	2.836	1.695	4.531
2019	87,512	1	18	216,713	198,050	58,694	359,781	833,239	4.739	4.782	9.521
2020	107,478	0	16	0	344,581	0	124,219	468,799	3.206	1.156	4.362
2021	104,415	1	22	257,292	1,048,760	104,010	289,565	1,699,627	12.508	3.769	16.278
<b>MA Total:</b>	<b>500,697</b>	<b>4</b>	<b>103</b>	<b>590,421</b>	<b>2,157,868</b>	<b>192,264</b>	<b>1,022,412</b>	<b>3,962,966</b>	<b>5.489</b>	<b>2.426</b>	<b>7.915</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	5.766	6.875	.
(14) Massachusetts Credibility:	0.330	0.590	.
(15) Countrywide Pure Premium:	4.013	1.359	5.373
(16) Countrywide Indicated Relativity:	4.508	4.202	.
(17) Countrywide Credibility:	0.340	0.210	.
(18) Countrywide Lost-Time Claims:	640.00	.	.
(19) Pure Premium Underlying Present Rate:	4.228	3.147	7.375
(20) Relativity to Underlying Present Rate:	5.434	9.302	.
(21) Credibility to Underlying Relativity:	0.330	0.200	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	5.229	6.799	.
(24) Balanced Formula Relativity:	5.222	6.746	5.635

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## Calculation of Class Relativities

Class(es): 1624 QUARRY NOC & DRIVERS		Effective: 7/1/2024							Miscellaneous		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	514,950	3	69	284,073	616,595	52,155	255,001	1,207,823	1,749	0,596	2,346
2018	557,496	1	66	59,807	1,162,262	80,627	413,371	1,715,867	2,192	0,886	3,078
2019	541,926	0	53	0	1,783,666	0	702,803	2,486,469	3,291	1,297	4,588
2020	474,980	0	38	0	394,882	0	259,152	654,035	0,831	0,546	1,377
2021	526,706	1	37	125,054	1,558,231	76,654	683,345	2,443,284	3,196	1,443	4,639
<b>MA Total:</b>	<b>2,616,057</b>	<b>5</b>	<b>263</b>	<b>468,734</b>	<b>5,515,635</b>	<b>209,436</b>	<b>2,313,672</b>	<b>8,507,477</b>	<b>2,288</b>	<b>0,964</b>	<b>3,252</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.831	0.973	.
(14) Massachusetts Credibility:	0.470	0.680	.
(15) Countrywide Pure Premium:	1.659	0.654	2.313
(16) Countrywide Indicated Relativity:	0.626	0.693	.
(17) Countrywide Credibility:	0.270	0.160	.
(18) Countrywide Lost-Time Claims:	1094.0	.	.
(19) Pure Premium Underlying Present Rate:	1.907	0.882	2.789
(20) Relativity to Underlying Present Rate:	0.843	0.936	.
(21) Credibility to Underlying Relativity:	0.260	0.160	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.779	0.922	.
(24) Balanced Formula Relativity:	0.773	0.924	0.813

Class(es): 1655 LIME MFG-QUARRY-SURFACE & DRIVERS		Effective: 7/1/2024							Miscellaneous		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,018	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	462	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	0	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>2,480</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.020	0.030	.
(15) Countrywide Pure Premium:	3.359	0.605	3.965
(16) Countrywide Indicated Relativity:	1.268	0.641	.
(17) Countrywide Credibility:	0.100	0.110	.
(18) Countrywide Lost-Time Claims:	4.000	.	.
(19) Pure Premium Underlying Present Rate:	1.296	0.452	1.748
(20) Relativity to Underlying Present Rate:	0.573	0.480	.
(21) Credibility to Underlying Relativity:	0.880	0.860	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.631	0.483	.
(24) Balanced Formula Relativity:	0.626	0.484	0.589

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 Subsection G - Class Relativities  
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Section IX - G  
 Exhibit 11

## Calculation of Class Relativities

Class(es): 1701 CEMENT MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	422	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	710	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	832	1	0	154,985	0	23,439	0	178,423	186.37	28,185	214.55
2020	791	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	0	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>2,754</b>	<b>1</b>	<b>0</b>	<b>154,985</b>	<b>0</b>	<b>23,439</b>	<b>0</b>	<b>178,423</b>	<b>56.268</b>	<b>8.510</b>	<b>64.778</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	59.108	24.115	.
(14) Massachusetts Credibility:	0.030	0.040	.
(15) Countrywide Pure Premium:	1.501	0.505	2.005
(16) Countrywide Indicated Relativity:	1.685	1.561	.
(17) Countrywide Credibility:	0.490	0.480	.
(18) Countrywide Lost-Time Claims:	433.00	.	.
(19) Pure Premium Underlying Present Rate:	1.990	0.633	2.623
(20) Relativity to Underlying Present Rate:	2.558	1.872	.
(21) Credibility to Underlying Relativity:	0.480	0.480	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	3.827	2.612	.
(24) Balanced Formula Relativity:	3.822	2.592	3.489

Class(es): 1747 EMERY WORKS & DRIVERS		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	52,458	0	3	0	522	0	659	1,181	0.010	0.013	0.023
2018	53,351	0	3	0	7,187	0	995	8,182	0.135	0.019	0.153
2019	50,873	0	5	0	9,049	0	3,719	12,768	0.178	0.073	0.251
2020	47,836	0	3	0	393	0	10,400	10,794	0.008	0.217	0.226
2021	54,997	1	7	158,241	20,157	33,519	7,415	219,331	3,244	0.744	3,988
<b>MA Total:</b>	<b>259,515</b>	<b>1</b>	<b>21</b>	<b>158,241</b>	<b>37,308</b>	<b>33,519</b>	<b>23,188</b>	<b>252,256</b>	<b>0.754</b>	<b>0.219</b>	<b>0.972</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.792	0.619	.
(14) Massachusetts Credibility:	0.140	0.190	.
(15) Countrywide Pure Premium:	1.858	0.553	2.411
(16) Countrywide Indicated Relativity:	2.087	1.709	.
(17) Countrywide Credibility:	0.300	0.320	.
(18) Countrywide Lost-Time Claims:	56.000	.	.
(19) Pure Premium Underlying Present Rate:	1.011	0.366	1.377
(20) Relativity to Underlying Present Rate:	1.299	1.081	.
(21) Credibility to Underlying Relativity:	0.560	0.490	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.465	1.194	.
(24) Balanced Formula Relativity:	1.463	1.185	1.388

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Section IX - G  
 Exhibit 12

## Calculation of Class Relativities

Class(es): 1748 ABRASIVE WHEEL MFG & DRIVERS		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	50,469	0	12	0	20,419	0	10,875	31,295	0.405	0.215	0.620
2018	51,014	0	7	0	0	0	4,317	4,317	0.000	0.085	0.085
2019	43,574	0	11	0	111,333	0	36,847	148,180	2.555	0.846	3.401
2020	39,284	0	6	0	11,343	0	9,868	21,211	0.289	0.251	0.540
2021	44,567	0	11	0	11,915	0	19,359	31,274	0.267	0.434	0.702
<b>MA Total:</b>	<b>228,908</b>	<b>0</b>	<b>47</b>	<b>0</b>	<b>155,010</b>	<b>0</b>	<b>81,266</b>	<b>236,276</b>	<b>0.677</b>	<b>0.355</b>	<b>1.032</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.711	1.006	.
(14) Massachusetts Credibility:	0.160	0.250	.
(15) Countrywide Pure Premium:	1.760	0.731	2.491
(16) Countrywide Indicated Relativity:	1.977	2.259	.
(17) Countrywide Credibility:	0.290	0.300	.
(18) Countrywide Lost-Time Claims:	51.000	.	.
(19) Pure Premium Underlying Present Rate:	1.445	0.803	2.248
(20) Relativity to Underlying Present Rate:	1.857	2.373	.
(21) Credibility to Underlying Relativity:	0.550	0.450	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.709	1.997	.
(24) Balanced Formula Relativity:	1.707	1.981	1.781

Class(es): 1853 MICA GOODS MFG & MICA PREPARING		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	957	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	957	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	1,316	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	1,320	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	1,973	0	1	0	9,048	0	64,450	73,498	4.586	32.663	37.248
<b>MA Total:</b>	<b>6,523</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>9,048</b>	<b>0</b>	<b>64,450</b>	<b>73,498</b>	<b>1.387</b>	<b>9.881</b>	<b>11.268</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.457	28.001	.
(14) Massachusetts Credibility:	0.030	0.030	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	0.786	0.446	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.619	0.153	0.771
(20) Relativity to Underlying Present Rate:	0.795	0.452	.
(21) Credibility to Underlying Relativity:	0.970	0.970	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.815	1.278	.
(24) Balanced Formula Relativity:	0.814	1.268	0.937

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
1924 WIRE DRAWING OR CABLE MFG-NOT IRON OR STEEL											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	126.667	0	22	0	29.009	0	41.165	70.174	0.229	0.325	0.554
2018	138.111	1	16	180.386	430.402	25.412	93.163	729.364	4.422	0.859	5.281
2019	146.824	1	31	259.109	415.212	11.088	92.200	777.610	4.593	0.703	5.296
2020	135.249	2	15	224.956	168.108	88.086	189.428	670.578	2.906	2.052	4.958
2021	144.266	0	23	0	233.218	0	74.807	308.025	1.617	0.519	2.135
<b>MA Total:</b>	<b>691.118</b>	<b>4</b>	<b>107</b>	<b>664.451</b>	<b>1,275.950</b>	<b>124.586</b>	<b>490.763</b>	<b>2,555.750</b>	<b>2.808</b>	<b>0.890</b>	<b>3.698</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.949	2.523	.
(14) Massachusetts Credibility:	0.240	0.340	.
(15) Countrywide Pure Premium:	1.250	0.465	1.715
(16) Countrywide Indicated Relativity:	1.404	1.437	.
(17) Countrywide Credibility:	0.380	0.330	.
(18) Countrywide Lost-Time Claims:	573.00	.	.
(19) Pure Premium Underlying Present Rate:	1.384	0.599	1.983
(20) Relativity to Underlying Present Rate:	1.779	1.769	.
(21) Credibility to Underlying Relativity:	0.380	0.330	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.917	1.916	.
(24) Balanced Formula Relativity:	1.915	1.901	1.911

Class(es):		Effective: 7/1/2024							Manufacturing		
1925 DIE CASTING MFG											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	823	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	464	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	0	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>1,288</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.020	0.050	.
(15) Countrywide Pure Premium:	1.200	0.488	1.688
(16) Countrywide Indicated Relativity:	1.348	1.508	.
(17) Countrywide Credibility:	0.490	0.480	.
(18) Countrywide Lost-Time Claims:	597.00	.	.
(19) Pure Premium Underlying Present Rate:	1.311	2.295	3.606
(20) Relativity to Underlying Present Rate:	1.685	6.785	.
(21) Credibility to Underlying Relativity:	0.490	0.470	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.486	3.913	.
(24) Balanced Formula Relativity:	1.484	3.882	2.133

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
2003 BAKERY & DRIVERS, ROUTE SUPERVISORS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,509,327	15	334	1,541,130	2,909,892	262,779	1,105,212	5,819,012	1,774	0,545	2,319
2018	2,686,597	14	345	1,404,463	3,414,045	438,066	1,176,344	6,432,918	1,794	0,601	2,394
2019	2,793,019	11	288	1,489,818	3,435,000	358,346	1,233,840	6,517,004	1,763	0,570	2,333
2020	2,800,322	8	265	781,568	3,987,768	216,506	1,565,085	6,550,927	1,703	0,636	2,339
2021	3,086,733	9	220	1,187,933	2,771,679	404,973	1,178,865	5,543,450	1,283	0,513	1,796
<b>MA Total:</b>	<b>13,875,999</b>	<b>57</b>	<b>1,452</b>	<b>6,404,911</b>	<b>16,518,383</b>	<b>1,680,671</b>	<b>6,259,346</b>	<b>30,863,311</b>	<b>1,652</b>	<b>0,572</b>	<b>2,224</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.735	1.622	.
(14) Massachusetts Credibility:	0.840	1.000	.
(15) Countrywide Pure Premium:	1.752	0.592	2,344
(16) Countrywide Indicated Relativity:	1.968	1.831	.
(17) Countrywide Credibility:	0.080	0.000	.
(18) Countrywide Lost-Time Claims:	6551.0	.	.
(19) Pure Premium Underlying Present Rate:	1.551	0.562	2,114
(20) Relativity to Underlying Present Rate:	1.994	1.662	.
(21) Credibility to Underlying Relativity:	0.080	0.000	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1,305
(23) Formula Relativity:	1.775	1.622	.
(24) Balanced Formula Relativity:	1.773	1.609	1,728

Class(es):		Effective: 7/1/2024							Manufacturing		
2014 GRAIN MILLING											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,351	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	1,740	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	1,408	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	5,170	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	10,225	0	1	0	0	0	9,212	9,212	0.000	0.901	0.901
<b>MA Total:</b>	<b>20,894</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9,212</b>	<b>9,212</b>	<b>0.000</b>	<b>0.441</b>	<b>0.441</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	1.249	.
(14) Massachusetts Credibility:	0.060	0.090	.
(15) Countrywide Pure Premium:	2.060	0.763	2,823
(16) Countrywide Indicated Relativity:	2.314	2.359	.
(17) Countrywide Credibility:	0.470	0.460	.
(18) Countrywide Lost-Time Claims:	1126.0	.	.
(19) Pure Premium Underlying Present Rate:	1.656	0.713	2,369
(20) Relativity to Underlying Present Rate:	2.128	2.108	.
(21) Credibility to Underlying Relativity:	0.470	0.450	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1,305
(23) Formula Relativity:	2.088	2.146	.
(24) Balanced Formula Relativity:	2.085	2.129	2,097

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
2021 SUGAR REFINING-ALL OPERATIONS & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,135	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	1,410	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	6,015	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	1,504	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	1,222	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>12,286</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.050	0.070	.
(15) Countrywide Pure Premium:	1.444	0.618	2.062
(16) Countrywide Indicated Relativity:	1.622	1.909	.
(17) Countrywide Credibility:	0.480	0.470	.
(18) Countrywide Lost-Time Claims:	272.00	.	.
(19) Pure Premium Underlying Present Rate:	1.205	0.562	1.767
(20) Relativity to Underlying Present Rate:	1.548	1.661	.
(21) Credibility to Underlying Relativity:	0.470	0.460	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.506	1.662	.
(24) Balanced Formula Relativity:	1.504	1.649	1.543

Class(es):		Effective: 7/1/2024							Manufacturing		
2039 ICE CREAM MFG & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	59,707	1	7	1	2,461	0	3,155	5,617	0.041	0.053	0.094
2018	59,489	0	42	0	60,844	0	101,312	162,156	1.023	1.703	2,726
2019	60,515	1	15	42,352	508,682	6,162	150,102	707,297	9,106	2,582	11,688
2020	47,479	1	11	229,478	29,722	28,135	14,372	301,707	5,459	0,895	6,355
2021	54,111	0	37	0	244,016	0	144,793	388,809	4,510	2,676	7,185
<b>MA Total:</b>	<b>281,301</b>	<b>3</b>	<b>112</b>	<b>271,831</b>	<b>845,724</b>	<b>34,298</b>	<b>413,733</b>	<b>1,565,586</b>	<b>3,973</b>	<b>1,593</b>	<b>5,566</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.173	4.514	.
(14) Massachusetts Credibility:	0.190	0.270	.
(15) Countrywide Pure Premium:	1.392	0.505	1.897
(16) Countrywide Indicated Relativity:	1.563	1.561	.
(17) Countrywide Credibility:	0.410	0.370	.
(18) Countrywide Lost-Time Claims:	440.00	.	.
(19) Pure Premium Underlying Present Rate:	1.845	0.815	2,659
(20) Relativity to Underlying Present Rate:	2.371	2.409	.
(21) Credibility to Underlying Relativity:	0.400	0.360	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	2.382	2.663	.
(24) Balanced Formula Relativity:	2.379	2.643	2,451

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## Calculation of Class Relativities

Class(es): 2041 CONFECTION MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	175,099	0	21	0	22,529	0	31,469	53,998	0.129	0.180	0.308
2018	103,393	0	7	0	16,417	0	8,384	24,801	0.159	0.081	0.240
2019	102,657	1	9	312,659	73,745	20,371	13,627	420,402	3.764	0.331	4.095
2020	105,420	0	12	0	44,864	0	16,723	61,587	0.426	0.159	0.584
2021	149,212	0	5	0	106,959	0	35,948	142,908	0.717	0.241	0.958
<b>MA Total:</b>	<b>635,780</b>	<b>1</b>	<b>54</b>	<b>312,659</b>	<b>264,514</b>	<b>20,371</b>	<b>106,151</b>	<b>703,695</b>	<b>0.908</b>	<b>0.199</b>	<b>1.107</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.954	0.564	.
(14) Massachusetts Credibility:	0.210	0.280	.
(15) Countrywide Pure Premium:	1.332	0.460	1.793
(16) Countrywide Indicated Relativity:	1.496	1.423	.
(17) Countrywide Credibility:	0.400	0.360	.
(18) Countrywide Lost-Time Claims:	1009.0	.	.
(19) Pure Premium Underlying Present Rate:	1.077	0.394	1.471
(20) Relativity to Underlying Present Rate:	1.385	1.164	.
(21) Credibility to Underlying Relativity:	0.390	0.360	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.339	1.089	.
(24) Balanced Formula Relativity:	1.337	1.081	1.268

Class(es): 2070 CREAMERY OR DAIRY & ROUTE SUPERVISORS, DRIVERS		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	150,023	1	14	813	54,519	336	44,417	100,085	0.369	0.298	0.667
2018	151,559	1	17	13,637	46,042	4,137	32,585	96,401	0.394	0.242	0.636
2019	177,540	0	18	0	464,741	0	126,863	591,604	2.618	0.715	3.332
2020	74,369	0	9	0	292,086	0	48,712	340,797	3.927	0.655	4.582
2021	87,264	0	15	0	185,580	0	106,824	292,404	2.127	1.224	3.351
<b>MA Total:</b>	<b>640,755</b>	<b>2</b>	<b>73</b>	<b>14,451</b>	<b>1,042,969</b>	<b>4,473</b>	<b>359,400</b>	<b>1,421,292</b>	<b>1.650</b>	<b>0.568</b>	<b>2.218</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.734	1.609	.
(14) Massachusetts Credibility:	0.250	0.320	.
(15) Countrywide Pure Premium:	2.018	0.609	2.627
(16) Countrywide Indicated Relativity:	2.266	1.884	.
(17) Countrywide Credibility:	0.380	0.340	.
(18) Countrywide Lost-Time Claims:	3418.0	.	.
(19) Pure Premium Underlying Present Rate:	1.611	0.532	2.143
(20) Relativity to Underlying Present Rate:	2.071	1.573	.
(21) Credibility to Underlying Relativity:	0.370	0.340	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	2.061	1.690	.
(24) Balanced Formula Relativity:	2.058	1.677	1.955

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## Calculation of Class Relativities

Class(es): 2081 BUTCHERING		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	27,808	0	16	0	20,336	0	23,135	43,471	0.731	0.832	1,563
2018	32,556	1	19	20,834	19,707	7,394	42,465	90,399	1,245	1,532	2,777
2019	34,604	0	30	0	43,116	0	38,989	82,106	1,246	1,127	2,373
2020	38,315	0	18	0	201,073	0	109,696	310,769	5,248	2,863	8,111
2021	35,603	0	10	0	47,163	0	38,554	85,717	1,325	1,083	2,408
<b>MA Total:</b>	<b>168,885</b>	<b>1</b>	<b>93</b>	<b>20,834</b>	<b>331,395</b>	<b>7,394</b>	<b>252,839</b>	<b>612,462</b>	<b>2,086</b>	<b>1,541</b>	<b>3,626</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.191	4.367	.
(14) Massachusetts Credibility:	0.130	0.210	.
(15) Countrywide Pure Premium:	1.502	0.579	2.081
(16) Countrywide Indicated Relativity:	1.687	1.790	.
(17) Countrywide Credibility:	0.440	0.400	.
(18) Countrywide Lost-Time Claims:	1653.0	.	.
(19) Pure Premium Underlying Present Rate:	1.234	0.753	1.987
(20) Relativity to Underlying Present Rate:	1.586	2.226	.
(21) Credibility to Underlying Relativity:	0.430	0.390	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.709	2.501	.
(24) Balanced Formula Relativity:	1.707	2.482	1.917

Class(es): 2089 PACKING HOUSE- ALL OPERATIONS		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,971,416	9	271	755,205	2,150,986	108,953	743,409	3,758,553	1,474	0.432	1,907
2018	2,112,369	6	333	890,569	2,563,552	308,516	789,320	4,551,957	1,635	0.520	2,155
2019	2,229,847	7	288	714,454	2,201,662	100,872	1,155,634	4,172,624	1,308	0.563	1,871
2020	2,315,821	10	276	877,718	2,639,387	178,548	871,518	4,567,172	1,519	0.453	1,972
2021	2,627,728	6	225	788,687	2,176,888	115,254	802,297	3,883,125	1,129	0.349	1,478
<b>MA Total:</b>	<b>11,257,182</b>	<b>38</b>	<b>1,393</b>	<b>4,026,632</b>	<b>11,732,476</b>	<b>812,144</b>	<b>4,362,178</b>	<b>20,933,431</b>	<b>1,400</b>	<b>0.460</b>	<b>1,860</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.471	1.303	.
(14) Massachusetts Credibility:	0.690	0.950	.
(15) Countrywide Pure Premium:	1.182	0.458	1.640
(16) Countrywide Indicated Relativity:	1.327	1.416	.
(17) Countrywide Credibility:	0.160	0.030	.
(18) Countrywide Lost-Time Claims:	11319	.	.
(19) Pure Premium Underlying Present Rate:	1.159	0.467	1.626
(20) Relativity to Underlying Present Rate:	1.490	1.379	.
(21) Credibility to Underlying Relativity:	0.150	0.020	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.451	1.308	.
(24) Balanced Formula Relativity:	1.449	1.297	1.408

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
2095 MEAT PRODUCTS MFG-NOC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	493.673	3	78	292.745	589.167	100.050	183.900	1.165.861	1.786	0.575	2.362
2018	573.447	2	79	90.202	229.664	37.779	144.494	502.139	0.558	0.318	0.876
2019	628.540	4	47	1.455.135	483.664	281.614	165.018	2.385.430	3.085	0.711	3.795
2020	686.400	3	77	304.014	1.197.019	87.521	348.695	1.937.250	2.187	0.636	2.822
2021	687.025	0	78	0	1.213.564	0	431.908	1.645.471	1.766	0.629	2.395
<b>MA Total:</b>	<b>3.069.085</b>	<b>12</b>	<b>359</b>	<b>2.142.095</b>	<b>3.713.077</b>	<b>506.964</b>	<b>1.274.015</b>	<b>7.636.152</b>	<b>1.908</b>	<b>0.580</b>	<b>2.488</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.004	1.644	.
(14) Massachusetts Credibility:	0.430	0.580	.
(15) Countrywide Pure Premium:	1.500	0.607	2.106
(16) Countrywide Indicated Relativity:	1.684	1.875	.
(17) Countrywide Credibility:	0.290	0.210	.
(18) Countrywide Lost-Time Claims:	3440.0	.	.
(19) Pure Premium Underlying Present Rate:	1.316	0.511	1.827
(20) Relativity to Underlying Present Rate:	1.691	1.511	.
(21) Credibility to Underlying Relativity:	0.280	0.210	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.824	1.665	.
(24) Balanced Formula Relativity:	1.822	1.652	1.776

Class(es):		Effective: 7/1/2024							Manufacturing		
2111 CANNERY NOC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	4.054	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	17.365	1	4	1	1.244	1	2.354	3.600	0.072	0.136	0.207
2019	8.847	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	8.934	1	1	11.978	0	4.490	446	16.914	1.341	0.552	1.893
2021	6.266	0	1	0	0	0	71	71	0.000	0.011	0.011
<b>MA Total:</b>	<b>45.466</b>	<b>2</b>	<b>6</b>	<b>11.979</b>	<b>1.244</b>	<b>4.491</b>	<b>2.870</b>	<b>20.584</b>	<b>0.291</b>	<b>0.162</b>	<b>0.453</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.306	0.459	.
(14) Massachusetts Credibility:	0.070	0.100	.
(15) Countrywide Pure Premium:	1.126	0.401	1.527
(16) Countrywide Indicated Relativity:	1.265	1.239	.
(17) Countrywide Credibility:	0.470	0.450	.
(18) Countrywide Lost-Time Claims:	1065.0	.	.
(19) Pure Premium Underlying Present Rate:	0.919	0.443	1.362
(20) Relativity to Underlying Present Rate:	1.182	1.308	.
(21) Credibility to Underlying Relativity:	0.460	0.450	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.159	1.192	.
(24) Balanced Formula Relativity:	1.158	1.183	1.165

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 Exhibit 19

## Calculation of Class Relativities

Class(es): 2115 SEAFOOD PRODUCTS MFG-NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	71,351	0	18	0	15,228	0	21,279	36,507	0.213	0.298	0.512
2018	63,005	1	13	11,323	121,008	865	153,973	287,170	2.100	2.458	4.558
2019	55,376	0	10	0	36,800	0	12,515	49,315	0.665	0.226	0.891
2020	72,737	0	9	0	281,000	0	116,679	397,678	3.863	1.604	5.467
2021	93,412	0	10	0	427,602	0	86,908	514,511	4.578	0.930	5.508
<b>MA Total:</b>	<b>355,882</b>	<b>1</b>	<b>60</b>	<b>11,323</b>	<b>881,639</b>	<b>865</b>	<b>391,354</b>	<b>1,285,181</b>	<b>2.509</b>	<b>1.102</b>	<b>3.611</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.636	3.123	.
(14) Massachusetts Credibility:	0.230	0.330	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	3.102	3.168	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	2.440	1.085	3.525
(20) Relativity to Underlying Present Rate:	3.136	3.206	.
(21) Credibility to Underlying Relativity:	0.770	0.670	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	3.021	3.179	.
(24) Balanced Formula Relativity:	3.018	3.154	3.055

Class(es): 2121 BREWERY & DRIVERS		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	307,327	1	38	40,319	22,635	8,822	30,936	102,712	0.205	0.129	0.334
2018	348,049	0	39	0	30,645	0	39,840	70,485	0.088	0.114	0.203
2019	365,484	1	33	113,332	28,303	9,821	60,168	211,624	0.388	0.191	0.579
2020	396,054	0	36	0	57,458	0	86,973	144,432	0.145	0.220	0.365
2021	452,689	0	40	0	42,808	0	31,364	74,172	0.095	0.069	0.164
<b>MA Total:</b>	<b>1,869,602</b>	<b>2</b>	<b>186</b>	<b>153,652</b>	<b>181,849</b>	<b>18,643</b>	<b>249,281</b>	<b>603,425</b>	<b>0.179</b>	<b>0.143</b>	<b>0.323</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.189	0.406	.
(14) Massachusetts Credibility:	0.250	0.380	.
(15) Countrywide Pure Premium:	0.782	0.267	1.049
(16) Countrywide Indicated Relativity:	0.878	0.825	.
(17) Countrywide Credibility:	0.380	0.310	.
(18) Countrywide Lost-Time Claims:	653.00	.	.
(19) Pure Premium Underlying Present Rate:	0.579	0.278	0.856
(20) Relativity to Underlying Present Rate:	0.744	0.821	.
(21) Credibility to Underlying Relativity:	0.370	0.310	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.656	0.665	.
(24) Balanced Formula Relativity:	0.655	0.659	0.656

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 Exhibit 20

## Calculation of Class Relativities

Class(es): 2130 SPIRITUOUS LIQUOR DISTILLERY		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	9.182	0	1	0	0	0	612	612	0.000	0.067	0.067
2018	14.640	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	15.800	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	13.591	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	15.833	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>69.045</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>612</b>	<b>612</b>	<b>0.000</b>	<b>0.009</b>	<b>0.009</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.025	.
(14) Massachusetts Credibility:	0.070	0.100	.
(15) Countrywide Pure Premium:	0.833	0.316	1.149
(16) Countrywide Indicated Relativity:	0.936	0.977	.
(17) Countrywide Credibility:	0.470	0.450	.
(18) Countrywide Lost-Time Claims:	284.00	.	.
(19) Pure Premium Underlying Present Rate:	0.662	0.299	0.961
(20) Relativity to Underlying Present Rate:	0.850	0.885	.
(21) Credibility to Underlying Relativity:	0.460	0.450	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.831	0.840	.
(24) Balanced Formula Relativity:	0.830	0.834	0.831

Class(es): 2131 SPIRITUOUS LIQUOR BOTTLING		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	64.821	0	19	0	19.911	0	37.984	57.896	0.307	0.586	0.893
2018	62.202	1	24	203.883	85.387	38.795	87.126	415.191	4.650	2.024	6.675
2019	67.918	0	26	0	127.504	0	90.105	217.609	1.877	1.327	3.204
2020	68.574	0	13	0	52.626	0	22.552	75.178	0.767	0.329	1.096
2021	74.689	1	19	82.394	727.678	18.373	191.792	1,020.238	10.846	2.814	13.660
<b>MA Total:</b>	<b>338.205</b>	<b>2</b>	<b>101</b>	<b>286.277</b>	<b>1,013.107</b>	<b>57.169</b>	<b>429.559</b>	<b>1,786.112</b>	<b>3.842</b>	<b>1.439</b>	<b>5.281</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.036	4.078	.
(14) Massachusetts Credibility:	0.170	0.270	.
(15) Countrywide Pure Premium:	0.936	0.359	1.295
(16) Countrywide Indicated Relativity:	1.052	1.109	.
(17) Countrywide Credibility:	0.420	0.370	.
(18) Countrywide Lost-Time Claims:	184.00	.	.
(19) Pure Premium Underlying Present Rate:	1.238	0.666	1.904
(20) Relativity to Underlying Present Rate:	1.591	1.968	.
(21) Credibility to Underlying Relativity:	0.410	0.360	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.780	2.220	.
(24) Balanced Formula Relativity:	1.778	2.202	1.893

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## Calculation of Class Relativities

Class(es): 2143 FRUIT JUICE MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	71,010	1	8	169,575	6,852	8,683	1,893	187,003	2,485	0.149	2,633
2018	74,426	0	15	0	22,606	0	13,091	35,697	0.304	0.176	0.480
2019	77,662	1	9	104,046	4,703	18,087	9,189	136,025	1,400	0.351	1,751
2020	79,910	0	6	0	22,240	0	36,196	58,436	0.278	0.453	0.731
2021	88,653	0	12	0	554,483	0	58,998	613,482	6,255	0.665	6,920
<b>MA Total:</b>	<b>391,662</b>	<b>2</b>	<b>50</b>	<b>273,621</b>	<b>610,884</b>	<b>26,770</b>	<b>119,368</b>	<b>1,030,642</b>	<b>2,258</b>	<b>0.373</b>	<b>2,631</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.372	1.057	.
(14) Massachusetts Credibility:	0.160	0.220	.
(15) Countrywide Pure Premium:	0.816	0.358	1.173
(16) Countrywide Indicated Relativity:	0.916	1.106	.
(17) Countrywide Credibility:	0.420	0.390	.
(18) Countrywide Lost-Time Claims:	316.00	.	.
(19) Pure Premium Underlying Present Rate:	0.915	0.333	1.248
(20) Relativity to Underlying Present Rate:	1.176	0.984	.
(21) Credibility to Underlying Relativity:	0.420	0.390	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.258	1.048	.
(24) Balanced Formula Relativity:	1.257	1.039	1.198

Class(es): 2150 ICE MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	11,783	0	3	0	86,029	0	77,612	163,641	7,301	6.586	13,887
2018	11,938	0	2	0	0	0	792	792	0.000	0.066	0.066
2019	14,688	0	4	0	18,064	0	7,940	26,003	1,230	0.541	1,770
2020	20,209	0	4	0	9,385	0	4,591	13,977	0.464	0.227	0.692
2021	16,744	0	3	0	24,340	0	42,898	67,238	1,454	2.562	4,016
<b>MA Total:</b>	<b>75,362</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>137,818</b>	<b>0</b>	<b>133,832</b>	<b>271,650</b>	<b>1,829</b>	<b>1.776</b>	<b>3,605</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.921	5.032	.
(14) Massachusetts Credibility:	0.100	0.150	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	1.935	2.147	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	1.522	0.735	2.257
(20) Relativity to Underlying Present Rate:	1.957	2.173	.
(21) Credibility to Underlying Relativity:	0.900	0.850	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.953	2.602	.
(24) Balanced Formula Relativity:	1.951	2.581	2.121

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## Calculation of Class Relativities

Class(es): 2156 BOTTLING-NOT CARBONATED LIQUIDS OR SPIRIT LIQRS & RTE SUP,DR									Effective: 7/1/2024 Manufacturing		
Converted Unlimited Losses											
Amount											
		Claim Count		Indemnity		Medical				MA Indicated Pure Premiums	
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	113.880	0	10	0	111.115	0	70.793	181.907	0.976	0.622	1.597
2018	115.290	0	17	0	18.042	0	24.515	42.557	0.156	0.213	0.369
2019	99.504	0	7	0	23.794	0	64.277	88.072	0.239	0.646	0.885
2020	86.058	1	7	197.465	66.802	25.978	24.289	314.535	3.071	0.584	3.655
2021	184.231	1	14	114.025	223.583	25.587	54.105	417.301	1.833	0.433	2.265
<b>MA Total:</b>	<b>598.963</b>	<b>2</b>	<b>55</b>	<b>311.491</b>	<b>443.336</b>	<b>51.565</b>	<b>237.980</b>	<b>1,044.372</b>	<b>1.260</b>	<b>0.483</b>	<b>1.744</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.324	1.370	.
(14) Massachusetts Credibility:	0.230	0.330	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	1.711	1.874	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	1.346	0.642	1.988
(20) Relativity to Underlying Present Rate:	1.730	1.897	.
(21) Credibility to Underlying Relativity:	0.770	0.670	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.637	1.723	.
(24) Balanced Formula Relativity:	1.635	1.710	1.655

Class(es): 2157 BOTTLING NOC & ROUTE SUPERVISORS, DRIVERS									Effective: 7/1/2024 Manufacturing		
Converted Unlimited Losses											
Amount											
		Claim Count		Indemnity		Medical				MA Indicated Pure Premiums	
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	404.074	2	119	269.975	581.871	214.718	228.513	1,295.077	2.108	1.097	3.205
2018	480.417	1	143	309.774	1,074.913	78.653	349.331	1,812.671	2.882	0.891	3.773
2019	522.875	2	117	361.638	297.484	75.692	124.390	859.205	1.261	0.383	1.643
2020	577.516	1	89	259.996	669.223	27.993	183.984	1,141.197	1.609	0.367	1.976
2021	812.471	5	92	2,318.694	1,184.982	427.835	272.186	4,203.697	4.312	0.862	5.174
<b>MA Total:</b>	<b>2,797.354</b>	<b>11</b>	<b>560</b>	<b>3,520.077</b>	<b>3,808.474</b>	<b>824.891</b>	<b>1,158.405</b>	<b>9,311.847</b>	<b>2.620</b>	<b>0.709</b>	<b>3.329</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.752	2.009	.
(14) Massachusetts Credibility:	0.480	0.610	.
(15) Countrywide Pure Premium:	2.242	0.616	2.858
(16) Countrywide Indicated Relativity:	2.518	1.904	.
(17) Countrywide Credibility:	0.260	0.200	.
(18) Countrywide Lost-Time Claims:	5844.0	.	.
(19) Pure Premium Underlying Present Rate:	1.932	0.624	2.557
(20) Relativity to Underlying Present Rate:	2.483	1.846	.
(21) Credibility to Underlying Relativity:	0.260	0.190	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	2.621	1.957	.
(24) Balanced Formula Relativity:	2.618	1.942	2.435

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## Calculation of Class Relativities

Class(es): 2172 CIGARETTE MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	0	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.000	0.000	.
(15) Countrywide Pure Premium:	1.048	0.360	1.408
(16) Countrywide Indicated Relativity:	1.177	1.114	.
(17) Countrywide Credibility:	0.500	0.500	.
(18) Countrywide Lost-Time Claims:	217.00	.	.
(19) Pure Premium Underlying Present Rate:	0.749	0.299	1.048
(20) Relativity to Underlying Present Rate:	0.963	0.884	.
(21) Credibility to Underlying Relativity:	0.500	0.500	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.070	0.999	.
(24) Balanced Formula Relativity:	1.069	0.991	1.048

Class(es): 2211 COTTON BATTING,WADDING OR WASTE MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	858	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	2,367	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	894	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	176	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	0	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>4,294</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.040	0.060	.
(15) Countrywide Pure Premium:	3.466	1.218	4.685
(16) Countrywide Indicated Relativity:	3.893	3.766	.
(17) Countrywide Credibility:	0.300	0.320	.
(18) Countrywide Lost-Time Claims:	59.000	.	.
(19) Pure Premium Underlying Present Rate:	2.284	1.074	3.358
(20) Relativity to Underlying Present Rate:	2.936	3.175	.
(21) Credibility to Underlying Relativity:	0.660	0.620	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	3.106	3.173	.
(24) Balanced Formula Relativity:	3.102	3.149	3.115

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## Calculation of Class Relativities

Class(es): 2220 YARN OR THREAD MFG-COTTON		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	106.153	0	21	0	270.661	0	67.632	338.293	2.550	0.637	3.187
2018	103.224	1	23	183.730	261.166	14.719	174.266	633.881	4.310	1.831	6.141
2019	108.799	0	21	0	238.375	0	81.208	319.582	2.191	0.746	2.937
2020	81.537	1	24	310.471	145.542	22.327	64.328	542.667	5.593	1.063	6.655
2021	104.357	0	19	0	184.710	0	78.970	263.680	1.770	0.757	2.527
<b>MA Total:</b>	<b>504.071</b>	<b>2</b>	<b>108</b>	<b>494.201</b>	<b>1,100.453</b>	<b>37.046</b>	<b>466.403</b>	<b>2,098.103</b>	<b>3.164</b>	<b>0.999</b>	<b>4.162</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.323	2.830	.
(14) Massachusetts Credibility:	0.210	0.310	.
(15) Countrywide Pure Premium:	1.122	0.435	1.557
(16) Countrywide Indicated Relativity:	1.260	1.345	.
(17) Countrywide Credibility:	0.400	0.350	.
(18) Countrywide Lost-Time Claims:	790.00	.	.
(19) Pure Premium Underlying Present Rate:	1.316	0.658	1.974
(20) Relativity to Underlying Present Rate:	1.691	1.945	.
(21) Credibility to Underlying Relativity:	0.390	0.340	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.861	2.009	.
(24) Balanced Formula Relativity:	1.859	1.994	1.896

Class(es): 2260 WOOL COMBING OR SCOURING		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	534	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	324	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	0	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>858</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.020	0.030	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	2.879	2.309	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	2.265	0.790	3.056
(20) Relativity to Underlying Present Rate:	2.912	2.337	.
(21) Credibility to Underlying Relativity:	0.980	0.970	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	2.853	2.267	.
(24) Balanced Formula Relativity:	2.850	2.249	2.687

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## Calculation of Class Relativities

Class(es): 2288 FELTING MFG		Effective: 7/1/2024							Manufacturing		
Converted Unlimited Losses											
Amount											
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	31,564	0	7	0	78,923	0	32,029	110,952	2,500	1,015	3,515
2018	26,418	0	5	0	1,034	0	2,676	3,710	0,039	0,101	0,140
2019	28,437	0	6	0	87	0	1,870	1,957	0,003	0,066	0,069
2020	28,958	0	9	0	7,663	0	7,426	15,089	0,265	0,256	0,521
2021	30,954	0	9	0	127	0	8,754	8,880	0,004	0,283	0,287
<b>MA Total:</b>	<b>146,330</b>	<b>0</b>	<b>36</b>	<b>0</b>	<b>87,833</b>	<b>0</b>	<b>52,756</b>	<b>140,589</b>	<b>0,600</b>	<b>0,361</b>	<b>0,961</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.631	1.022	.
(14) Massachusetts Credibility:	0.140	0.200	.
(15) Countrywide Pure Premium:	2.175	0.842	3.017
(16) Countrywide Indicated Relativity:	2.443	2.602	.
(17) Countrywide Credibility:	0.430	0.400	.
(18) Countrywide Lost-Time Claims:	187.00	.	.
(19) Pure Premium Underlying Present Rate:	1.617	0.760	2.377
(20) Relativity to Underlying Present Rate:	2.079	2.245	.
(21) Credibility to Underlying Relativity:	0.430	0.400	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	2.033	2.143	.
(24) Balanced Formula Relativity:	2.030	2.127	2.056

Class(es): 2305 TEXTILE FIBER MFG-SYNTHETIC		Effective: 7/1/2024							Manufacturing		
Converted Unlimited Losses											
Amount											
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	4,509	0	3	0	5,213	0	4,615	9,828	1,156	1,023	2,180
2018	5,438	0	6	0	591	0	2,128	2,719	0,109	0,391	0,500
2019	2,204	0	0	0	0	0	0	0	0,000	0,000	0,000
2020	6,148	0	5	0	10,149	0	5,166	15,315	1,651	0,840	2,491
2021	8,317	0	4	0	640	0	4,807	5,448	0,077	0,578	0,655
<b>MA Total:</b>	<b>26,616</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>16,593</b>	<b>0</b>	<b>16,716</b>	<b>33,309</b>	<b>0,623</b>	<b>0,628</b>	<b>1,251</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.655	1.780	.
(14) Massachusetts Credibility:	0.060	0.080	.
(15) Countrywide Pure Premium:	1.078	0.424	1.502
(16) Countrywide Indicated Relativity:	1.211	1.311	.
(17) Countrywide Credibility:	0.470	0.460	.
(18) Countrywide Lost-Time Claims:	673.00	.	.
(19) Pure Premium Underlying Present Rate:	1.029	0.462	1.491
(20) Relativity to Underlying Present Rate:	1.322	1.367	.
(21) Credibility to Underlying Relativity:	0.470	0.460	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.230	1.374	.
(24) Balanced Formula Relativity:	1.229	1.363	1.265

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## Calculation of Class Relativities

Class(es): 2362 KNIT GOODS MFG NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	21,300	0	1	0	0	0	396	396	0.000	0.019	0.019
2018	16,826	0	6	0	0	0	1,170	1,170	0.000	0.070	0.070
2019	17,513	0	3	0	3,601	0	5,606	9,206	0.206	0.320	0.526
2020	20,390	0	3	0	8,772	0	6,297	15,069	0.430	0.309	0.739
2021	19,426	0	2	0	24,019	0	5,422	29,441	1.236	0.279	1.516
<b>MA Total:</b>	<b>95,455</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>36,392</b>	<b>0</b>	<b>18,890</b>	<b>55,282</b>	<b>0.381</b>	<b>0.198</b>	<b>0.579</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.400	0.561	.
(14) Massachusetts Credibility:	0.090	0.140	.
(15) Countrywide Pure Premium:	1.421	0.609	2.031
(16) Countrywide Indicated Relativity:	1.596	1.884	.
(17) Countrywide Credibility:	0.460	0.430	.
(18) Countrywide Lost-Time Claims:	174.00	.	.
(19) Pure Premium Underlying Present Rate:	0.862	0.463	1.325
(20) Relativity to Underlying Present Rate:	1.108	1.370	.
(21) Credibility to Underlying Relativity:	0.450	0.430	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.269	1.477	.
(24) Balanced Formula Relativity:	1.267	1.466	1.321

Class(es): 2380 WEBBING MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	56,467	0	5	0	3,096	0	3,987	7,083	0.055	0.071	0.125
2018	45,089	0	2	0	179	0	985	1,164	0.004	0.022	0.026
2019	48,144	0	7	0	23,848	0	30,297	54,144	0.495	0.629	1.125
2020	43,730	0	5	0	55,814	0	46,326	102,140	1.276	1.059	2.336
2021	46,316	0	4	0	38,850	0	9,544	48,394	0.839	0.206	1.045
<b>MA Total:</b>	<b>239,747</b>	<b>0</b>	<b>23</b>	<b>0</b>	<b>121,787</b>	<b>0</b>	<b>91,138</b>	<b>212,926</b>	<b>0.508</b>	<b>0.380</b>	<b>0.888</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.534	1.077	.
(14) Massachusetts Credibility:	0.120	0.180	.
(15) Countrywide Pure Premium:	1.055	0.439	1.494
(16) Countrywide Indicated Relativity:	1.185	1.358	.
(17) Countrywide Credibility:	0.440	0.410	.
(18) Countrywide Lost-Time Claims:	198.00	.	.
(19) Pure Premium Underlying Present Rate:	0.654	0.366	1.019
(20) Relativity to Underlying Present Rate:	0.840	1.081	.
(21) Credibility to Underlying Relativity:	0.440	0.410	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.955	1.194	.
(24) Balanced Formula Relativity:	0.954	1.184	1.016

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## Calculation of Class Relativities

Class(es): 2402 CARPET OR RUG MFG NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	9,820	0	1	0	0	0	377	377	0.000	0.038	0.038
2018	8,583	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	9,862	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	12,269	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	10,853	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>51,387</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>377</b>	<b>377</b>	<b>0.000</b>	<b>0.007</b>	<b>0.007</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.021	.
(14) Massachusetts Credibility:	0.070	0.110	.
(15) Countrywide Pure Premium:	1.101	0.496	1.596
(16) Countrywide Indicated Relativity:	1.236	1.533	.
(17) Countrywide Credibility:	0.470	0.450	.
(18) Countrywide Lost-Time Claims:	458.00	.	.
(19) Pure Premium Underlying Present Rate:	0.889	0.424	1.314
(20) Relativity to Underlying Present Rate:	1.143	1.254	.
(21) Credibility to Underlying Relativity:	0.460	0.440	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.107	1.244	.
(24) Balanced Formula Relativity:	1.105	1.234	1.140

Class(es): 2413 TEXTILE - BLEACHING, DYEING, MERCERZNG, FINISH		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	113,159	0	16	0	145,866	0	49,052	194,918	1,289	0.433	1,723
2018	85,106	1	7	181,199	20,189	72,975	14,678	289,041	2,366	1,030	3,396
2019	73,247	0	4	0	54,966	0	29,826	84,792	0,750	0,407	1,158
2020	73,197	0	14	0	60,888	0	37,802	98,690	0,832	0,516	1,348
2021	72,316	0	15	0	96,913	0	41,468	138,381	1,340	0,573	1,914
<b>MA Total:</b>	<b>417,025</b>	<b>1</b>	<b>56</b>	<b>181,199</b>	<b>378,822</b>	<b>72,975</b>	<b>172,826</b>	<b>805,823</b>	<b>1,343</b>	<b>0,589</b>	<b>1,932</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.411	1.670	.
(14) Massachusetts Credibility:	0.190	0.270	.
(15) Countrywide Pure Premium:	0.930	0.380	1.309
(16) Countrywide Indicated Relativity:	1.044	1.174	.
(17) Countrywide Credibility:	0.410	0.370	.
(18) Countrywide Lost-Time Claims:	186.00	.	.
(19) Pure Premium Underlying Present Rate:	1.180	0.540	1.720
(20) Relativity to Underlying Present Rate:	1.517	1.595	.
(21) Credibility to Underlying Relativity:	0.400	0.360	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.303	1.460	.
(24) Balanced Formula Relativity:	1.301	1.448	1.341

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
2416 YARN OR THREAD DYEING OR FINISHING											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	20,981	0	7	0	0	0	3,827	3,827	0.000	0.182	0.182
2018	23,058	0	6	0	2,797	0	6,029	8,826	0.121	0.261	0.383
2019	19,271	1	9	134,154	176,378	10,501	91,054	412,087	16.114	5.270	21.384
2020	26,499	1	4	178,044	0	19,389	1,837	199,271	6.719	0.801	7.520
2021	25,090	0	5	0	59,739	0	14,542	74,281	2.381	0.580	2.961
<b>MA Total:</b>	<b>114,898</b>	<b>2</b>	<b>31</b>	<b>312,198</b>	<b>238,914</b>	<b>29,890</b>	<b>117,289</b>	<b>698,291</b>	<b>4.797</b>	<b>1.281</b>	<b>6.077</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	5.039	3.630	.
(14) Massachusetts Credibility:	0.110	0.170	.
(15) Countrywide Pure Premium:	1.871	0.617	2.488
(16) Countrywide Indicated Relativity:	2.101	1.909	.
(17) Countrywide Credibility:	0.220	0.230	.
(18) Countrywide Lost-Time Claims:	26.000	.	.
(19) Pure Premium Underlying Present Rate:	1.259	0.626	1.885
(20) Relativity to Underlying Present Rate:	1.618	1.851	.
(21) Credibility to Underlying Relativity:	0.670	0.600	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	2.100	2.166	.
(24) Balanced Formula Relativity:	2.098	2.150	2.112

Class(es):		Effective: 7/1/2024							Manufacturing		
2417 CLOTH PRINTING											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,061	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	11,784	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	12,904	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	4,126	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	5,619	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>36,495</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.060	0.070	.
(15) Countrywide Pure Premium:	0.613	0.242	0.855
(16) Countrywide Indicated Relativity:	0.689	0.749	.
(17) Countrywide Credibility:	0.250	0.270	.
(18) Countrywide Lost-Time Claims:	37.000	.	.
(19) Pure Premium Underlying Present Rate:	0.691	0.229	0.920
(20) Relativity to Underlying Present Rate:	0.888	0.677	.
(21) Credibility to Underlying Relativity:	0.690	0.660	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.785	0.649	.
(24) Balanced Formula Relativity:	0.784	0.644	0.746

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## Calculation of Class Relativities

Class(es): 2501 CLOTHING MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	969,529	1	100	77,028	545,773	11,910	211,405	846,115	0.642	0.230	0.873
2018	962,981	1	82	6,935	1,053,924	7,584	534,848	1,603,290	1.102	0.563	1.665
2019	1,019,166	5	80	702,784	812,407	131,008	225,719	1,871,919	1.487	0.350	1.837
2020	1,021,082	1	64	465,411	465,836	306,649	230,427	1,468,323	0.912	0.526	1.438
2021	1,234,213	0	72	0	230,584	0	211,407	441,991	0.187	0.171	0.358
<b>MA Total:</b>	<b>5,206,971</b>	<b>8</b>	<b>398</b>	<b>1,252,158</b>	<b>3,108,523</b>	<b>457,151</b>	<b>1,413,806</b>	<b>6,231,638</b>	<b>0.837</b>	<b>0.359</b>	<b>1.197</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.880	1.018	.
(14) Massachusetts Credibility:	0.460	0.680	.
(15) Countrywide Pure Premium:	1.051	0.422	1.473
(16) Countrywide Indicated Relativity:	1.181	1.304	.
(17) Countrywide Credibility:	0.270	0.160	.
(18) Countrywide Lost-Time Claims:	2467.0	.	.
(19) Pure Premium Underlying Present Rate:	0.928	0.436	1.364
(20) Relativity to Underlying Present Rate:	1.193	1.289	.
(21) Credibility to Underlying Relativity:	0.270	0.160	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.046	1.107	.
(24) Balanced Formula Relativity:	1.044	1.099	1.059

Class(es): 2503 DRESSMAKING OR TAILORING-CUSTOM EXCLUSIVELY		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	41,958	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	36,099	0	1	0	0	0	697	697	0.000	0.019	0.019
2019	28,816	0	1	0	37,199	0	83,072	120,271	1.291	2.883	4.174
2020	23,296	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	26,412	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>156,581</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>37,199</b>	<b>0</b>	<b>83,769</b>	<b>120,968</b>	<b>0.238</b>	<b>0.535</b>	<b>0.773</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.250	1.516	.
(14) Massachusetts Credibility:	0.080	0.120	.
(15) Countrywide Pure Premium:	0.432	0.167	0.599
(16) Countrywide Indicated Relativity:	0.486	0.517	.
(17) Countrywide Credibility:	0.240	0.250	.
(18) Countrywide Lost-Time Claims:	31.000	.	.
(19) Pure Premium Underlying Present Rate:	0.445	0.197	0.641
(20) Relativity to Underlying Present Rate:	0.571	0.582	.
(21) Credibility to Underlying Relativity:	0.680	0.630	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.525	0.678	.
(24) Balanced Formula Relativity:	0.524	0.672	0.564

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
2570 MATTRESS OR BOX SPRING MFG											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	44,344	1	8	208,413	6,475	10,570	8,774	234,232	4,846	0,436	5,282
2018	51,633	0	5	0	30,404	0	16,023	46,426	0,589	0,310	0,899
2019	28,959	0	3	0	546	0	3,126	3,672	0,019	0,108	0,127
2020	36,690	0	3	0	155,508	0	31,033	186,541	4,238	0,846	5,084
2021	144,984	1	14	417,814	677,379	33,170	129,600	1,257,962	7,554	1,123	8,677
<b>MA Total:</b>	<b>306,610</b>	<b>2</b>	<b>33</b>	<b>626,227</b>	<b>870,312</b>	<b>43,740</b>	<b>188,554</b>	<b>1,728,833</b>	<b>4,881</b>	<b>0,758</b>	<b>5,639</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	5.127	2.147	.
(14) Massachusetts Credibility:	0.180	0.230	.
(15) Countrywide Pure Premium:	1.765	0.599	2.364
(16) Countrywide Indicated Relativity:	1.982	1.851	.
(17) Countrywide Credibility:	0.410	0.390	.
(18) Countrywide Lost-Time Claims:	371.00	.	.
(19) Pure Premium Underlying Present Rate:	1.479	0.523	2.002
(20) Relativity to Underlying Present Rate:	1.901	1.546	.
(21) Credibility to Underlying Relativity:	0.410	0.380	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	2.515	1.803	.
(24) Balanced Formula Relativity:	2.512	1.789	2.317

Class(es):		Effective: 7/1/2024							Manufacturing		
2576 CANVAS GOODS MFG NOC-SHOP											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	128,065	2	14	147,518	253,448	23,992	42,956	467,914	3,131	0,523	3,654
2018	127,202	0	12	0	10,931	0	23,189	34,120	0,086	0,182	0,268
2019	137,926	0	11	0	6,072	0	4,727	10,798	0,044	0,034	0,078
2020	133,939	0	6	0	55,784	0	40,042	95,826	0,416	0,299	0,715
2021	161,862	0	6	0	230,010	0	91,408	321,418	1,421	0,565	1,986
<b>MA Total:</b>	<b>688,993</b>	<b>2</b>	<b>49</b>	<b>147,518</b>	<b>556,244</b>	<b>23,992</b>	<b>202,322</b>	<b>930,077</b>	<b>1,021</b>	<b>0,328</b>	<b>1,350</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.073	0.931	.
(14) Massachusetts Credibility:	0.200	0.290	.
(15) Countrywide Pure Premium:	1.053	0.436	1.488
(16) Countrywide Indicated Relativity:	1.182	1.347	.
(17) Countrywide Credibility:	0.080	0.080	.
(18) Countrywide Lost-Time Claims:	2.000	.	.
(19) Pure Premium Underlying Present Rate:	0.869	0.386	1.254
(20) Relativity to Underlying Present Rate:	1.116	1.141	.
(21) Credibility to Underlying Relativity:	0.720	0.630	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.113	1.096	.
(24) Balanced Formula Relativity:	1.112	1.088	1.105

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
2585 LAUNDRY NOC & ROUTE SUPERVISORS, DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums		
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	847.139	5	120	721.206	853.790	269.424	380.899	2,225.320	1.859	0.768	2.627
2018	814.325	2	116	141.651	1,567.622	13.722	380.708	2,103.703	2.099	0.484	2.583
2019	779.813	3	114	456.862	1,043.937	92.655	383.025	1,976.480	1.925	0.610	2.535
2020	702.964	2	58	149.346	324.520	161.179	255.102	890.147	0.674	0.592	1.266
2021	912.218	3	73	710.476	390.401	81.131	247.916	1,429.925	1.207	0.361	1.568
<b>MA Total:</b>	<b>4,056.459</b>	<b>15</b>	<b>481</b>	<b>2,179,541</b>	<b>4,180,271</b>	<b>618,111</b>	<b>1,647,650</b>	<b>8,625,574</b>	<b>1.568</b>	<b>0.559</b>	<b>2.126</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.647	1.583	.
(14) Massachusetts Credibility:	0.480	0.660	.
(15) Countrywide Pure Premium:	1.734	0.595	2.330
(16) Countrywide Indicated Relativity:	1.948	1.841	.
(17) Countrywide Credibility:	0.260	0.170	.
(18) Countrywide Lost-Time Claims:	3285.0	.	.
(19) Pure Premium Underlying Present Rate:	1.313	0.529	1.842
(20) Relativity to Underlying Present Rate:	1.688	1.563	.
(21) Credibility to Underlying Relativity:	0.260	0.170	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.736	1.623	.
(24) Balanced Formula Relativity:	1.734	1.611	1.701

Class(es):		Effective: 7/1/2024							Manufacturing		
2586 CLEANING OR DYEING & ROUTE SUPERVISORS, DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums		
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	491.949	1	21	2.257	153.203	822	27.012	183.294	0.316	0.057	0.373
2018	446.396	0	24	0	256.119	0	124.139	380.258	0.574	0.278	0.852
2019	391.883	1	21	55.199	281.798	27.911	49.609	414.517	0.860	0.198	1.058
2020	283.777	1	12	34.966	63.934	11.433	109.901	220.234	0.349	0.428	0.776
2021	317.479	0	13	0	59.081	0	32.569	91.649	0.186	0.103	0.289
<b>MA Total:</b>	<b>1,931.484</b>	<b>3</b>	<b>91</b>	<b>92.422</b>	<b>814.134</b>	<b>40.166</b>	<b>343.230</b>	<b>1,289.952</b>	<b>0.469</b>	<b>0.198</b>	<b>0.668</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.493	0.563	.
(14) Massachusetts Credibility:	0.310	0.470	.
(15) Countrywide Pure Premium:	1.400	0.624	2.024
(16) Countrywide Indicated Relativity:	1.572	1.930	.
(17) Countrywide Credibility:	0.350	0.270	.
(18) Countrywide Lost-Time Claims:	281.00	.	.
(19) Pure Premium Underlying Present Rate:	0.908	0.459	1.367
(20) Relativity to Underlying Present Rate:	1.167	1.357	.
(21) Credibility to Underlying Relativity:	0.340	0.260	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.100	1.138	.
(24) Balanced Formula Relativity:	1.099	1.129	1.107

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
2587 TOWEL OR TOILET SUPPLY CO & RTE SUPERVISORS, DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	37,788	0	1	0	0	0	834	834	0.000	0.022	0.022
2018	63,628	0	5	0	4,347	0	4,374	8,721	0.068	0.069	0.137
2019	26,924	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	21,061	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	29,421	0	1	0	12,448	0	533	12,981	0.423	0.018	0.441
<b>MA Total:</b>	<b>178,820</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>16,795</b>	<b>0</b>	<b>5,741</b>	<b>22,536</b>	<b>0.094</b>	<b>0.032</b>	<b>0.126</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.118	0.104	.
(14) Massachusetts Credibility:	0.120	0.160	.
(15) Countrywide Pure Premium:	1.993	0.621	2.614
(16) Countrywide Indicated Relativity:	2.513	1.984	.
(17) Countrywide Credibility:	0.240	0.260	.
(18) Countrywide Lost-Time Claims:	34.000	.	.
(19) Pure Premium Underlying Present Rate:	0.954	0.352	1.306
(20) Relativity to Underlying Present Rate:	1.465	1.209	.
(21) Credibility to Underlying Relativity:	0.640	0.580	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.555	1.234	.
(24) Balanced Formula Relativity:	1.539	1.228	1.452

Class(es):		Effective: 7/1/2024							Manufacturing		
2623 TANNING											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	205	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	198	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	144	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	356	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	325	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>1,228</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.020	0.030	.
(15) Countrywide Pure Premium:	1.163	0.714	1.877
(16) Countrywide Indicated Relativity:	1.307	2.207	.
(17) Countrywide Credibility:	0.310	0.330	.
(18) Countrywide Lost-Time Claims:	61.000	.	.
(19) Pure Premium Underlying Present Rate:	1.773	0.845	2.618
(20) Relativity to Underlying Present Rate:	2.279	2.498	.
(21) Credibility to Underlying Relativity:	0.670	0.640	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.932	2.327	.
(24) Balanced Formula Relativity:	1.930	2.309	2.032

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## Calculation of Class Relativities

Class(es): 2651 SHOE STOCK MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	47,248	0	5	0	10,349	0	3,652	14,001	0.219	0.077	0.296
2018	47,245	0	4	0	912	0	4,689	5,601	0.019	0.099	0.119
2019	57,896	0	8	0	18,241	0	8,054	26,294	0.315	0.139	0.454
2020	33,351	1	1	242,642	459	35,923	481	279,505	7.289	1.092	8.381
2021	36,913	0	3	0	328	0	712	1,040	0.009	0.019	0.028
<b>MA Total:</b>	<b>222,653</b>	<b>1</b>	<b>21</b>	<b>242,642</b>	<b>30,289</b>	<b>35,923</b>	<b>17,588</b>	<b>326,441</b>	<b>1.226</b>	<b>0.240</b>	<b>1.466</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.288	0.681	.
(14) Massachusetts Credibility:	0.110	0.150	.
(15) Countrywide Pure Premium:	0.462	0.167	0.630
(16) Countrywide Indicated Relativity:	0.519	0.517	.
(17) Countrywide Credibility:	0.300	0.320	.
(18) Countrywide Lost-Time Claims:	59.000	.	.
(19) Pure Premium Underlying Present Rate:	0.555	0.252	0.806
(20) Relativity to Underlying Present Rate:	0.713	0.744	.
(21) Credibility to Underlying Relativity:	0.590	0.530	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.718	0.662	.
(24) Balanced Formula Relativity:	0.717	0.657	0.701

Class(es): 2660 BOOT OR SHOE MFG NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	52,045	0	3	0	1,293	0	2,405	3,698	0.025	0.046	0.071
2018	53,397	0	5	0	32,326	0	9,391	41,717	0.605	0.176	0.781
2019	48,778	0	4	0	0	0	1,005	1,005	0.000	0.021	0.021
2020	39,161	0	3	0	106,079	0	8,881	114,960	2.709	0.227	2.936
2021	49,626	0	1	0	1,596	0	7,206	8,802	0.032	0.145	0.177
<b>MA Total:</b>	<b>243,006</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>141,294</b>	<b>0</b>	<b>28,888</b>	<b>170,182</b>	<b>0.581</b>	<b>0.119</b>	<b>0.700</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.611	0.337	.
(14) Massachusetts Credibility:	0.130	0.180	.
(15) Countrywide Pure Premium:	0.763	0.337	1.099
(16) Countrywide Indicated Relativity:	0.857	1.041	.
(17) Countrywide Credibility:	0.440	0.410	.
(18) Countrywide Lost-Time Claims:	181.00	.	.
(19) Pure Premium Underlying Present Rate:	0.818	0.359	1.176
(20) Relativity to Underlying Present Rate:	1.051	1.060	.
(21) Credibility to Underlying Relativity:	0.430	0.410	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.908	0.922	.
(24) Balanced Formula Relativity:	0.907	0.915	0.909

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## Calculation of Class Relativities

Class(es): 2683 LUGGAGE MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2.131	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	2.201	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	2.015	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	1.647	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	2.088	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>10,083</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.040	0.060	.
(15) Countrywide Pure Premium:	0.627	0.079	0.706
(16) Countrywide Indicated Relativity:	0.704	0.243	.
(17) Countrywide Credibility:	0.060	0.060	.
(18) Countrywide Lost-Time Claims:	1.000	.	.
(19) Pure Premium Underlying Present Rate:	0.841	0.424	1.265
(20) Relativity to Underlying Present Rate:	1.081	1.254	.
(21) Credibility to Underlying Relativity:	0.900	0.880	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.015	1.118	.
(24) Balanced Formula Relativity:	1.014	1.109	1.040

Class(es): 2688 LEATHER GOODS MFG NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	82.441	0	12	0	2,541	0	8,468	11,009	0.031	0.103	0.134
2018	80.590	0	2	0	124	0	1,941	2,064	0.002	0.024	0.026
2019	58.187	0	4	0	365,456	0	136,395	501,851	6.281	2.344	8.625
2020	44.321	0	2	0	0	0	613	613	0.000	0.014	0.014
2021	54.427	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>319,966</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>368,121</b>	<b>0</b>	<b>147,417</b>	<b>515,538</b>	<b>1.151</b>	<b>0.461</b>	<b>1.611</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.209	1.306	.
(14) Massachusetts Credibility:	0.150	0.220	.
(15) Countrywide Pure Premium:	0.734	0.369	1.103
(16) Countrywide Indicated Relativity:	0.824	1.142	.
(17) Countrywide Credibility:	0.390	0.390	.
(18) Countrywide Lost-Time Claims:	110.00	.	.
(19) Pure Premium Underlying Present Rate:	0.843	0.403	1.246
(20) Relativity to Underlying Present Rate:	1.083	1.192	.
(21) Credibility to Underlying Relativity:	0.460	0.390	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.001	1.197	.
(24) Balanced Formula Relativity:	1.000	1.188	1.051

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## Calculation of Class Relativities

Class(es): 2702 LOGGING OR LUMBERING & DRIVERS		Effective: 7/1/2024							Miscellaneous		
Converted Unlimited Losses											
Amount											
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	44,769	0	3	0	18,845	0	25,186	44,031	0,421	0,563	0,984
2018	50,222	0	9	0	778,198	0	588,774	1,366,971	15,495	11,723	27,219
2019	56,859	0	8	0	412,952	0	166,818	579,770	7,263	2,934	10,197
2020	59,278	0	7	0	855,357	0	468,152	1,323,510	14,430	7,898	22,327
2021	71,131	0	6	0	50,652	0	46,563	97,215	0,712	0,655	1,367
<b>MA Total:</b>	<b>282,259</b>	<b>0</b>	<b>33</b>	<b>0</b>	<b>2,116,005</b>	<b>0</b>	<b>1,295,493</b>	<b>3,411,497</b>	<b>7,497</b>	<b>4,590</b>	<b>12,086</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.724	4.629	.
(14) Massachusetts Credibility:	0.320	0.550	.
(15) Countrywide Pure Premium:	10.088	3.642	13.730
(16) Countrywide Indicated Relativity:	3.808	3.854	.
(17) Countrywide Credibility:	0.340	0.230	.
(18) Countrywide Lost-Time Claims:	1187.0	.	.
(19) Pure Premium Underlying Present Rate:	6.980	4.834	11.814
(20) Relativity to Underlying Present Rate:	3.086	5.129	.
(21) Credibility to Underlying Relativity:	0.340	0.220	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	3.216	4.561	.
(24) Balanced Formula Relativity:	3.191	4.570	3.556

Class(es): 2710 SAWMILLS		Effective: 7/1/2024							Manufacturing		
Converted Unlimited Losses											
Amount											
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	33,841	0	5	0	1,598	0	4,625	6,223	0,047	0,137	0,184
2018	26,758	0	1	0	132,276	0	17,796	150,072	4,943	0,665	5,609
2019	28,779	0	7	0	12,314	0	15,063	27,376	0,428	0,523	0,951
2020	38,565	0	5	0	19,667	0	4,462	24,129	0,510	0,116	0,626
2021	38,420	0	10	0	473,681	0	372,651	846,332	12,329	9,699	22,028
<b>MA Total:</b>	<b>166,364</b>	<b>0</b>	<b>28</b>	<b>0</b>	<b>639,535</b>	<b>0</b>	<b>414,597</b>	<b>1,054,132</b>	<b>3,844</b>	<b>2,492</b>	<b>6,336</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.038	7.062	.
(14) Massachusetts Credibility:	0.180	0.250	.
(15) Countrywide Pure Premium:	3.269	1.316	4.585
(16) Countrywide Indicated Relativity:	3.672	4.069	.
(17) Countrywide Credibility:	0.410	0.380	.
(18) Countrywide Lost-Time Claims:	1898.0	.	.
(19) Pure Premium Underlying Present Rate:	2.578	1.132	3.710
(20) Relativity to Underlying Present Rate:	3.314	3.346	.
(21) Credibility to Underlying Relativity:	0.410	0.370	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	3.591	4.550	.
(24) Balanced Formula Relativity:	3.587	4.514	3.837

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## Calculation of Class Relativities

Class(es): 2731 PLANING OR MOLDING MILL		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	41,093	1	9	1,242	14,848	95	12,808	28,993	0.392	0.314	0.706
2018	43,590	0	11	0	267,403	0	64,800	332,203	6.135	1.487	7.621
2019	33,824	0	4	0	0	0	1,988	1,988	0.000	0.059	0.059
2020	30,861	0	5	0	13,689	0	10,868	24,557	0.444	0.352	0.796
2021	38,315	0	5	0	0	0	10,073	10,073	0.000	0.263	0.263
<b>MA Total:</b>	<b>187,682</b>	<b>1</b>	<b>34</b>	<b>1,242</b>	<b>295,940</b>	<b>95</b>	<b>100,538</b>	<b>397,814</b>	<b>1.583</b>	<b>0.536</b>	<b>2.120</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.663	1.519	.
(14) Massachusetts Credibility:	0.140	0.200	.
(15) Countrywide Pure Premium:	1.705	0.704	2.408
(16) Countrywide Indicated Relativity:	1.914	2.176	.
(17) Countrywide Credibility:	0.430	0.400	.
(18) Countrywide Lost-Time Claims:	1303.0	.	.
(19) Pure Premium Underlying Present Rate:	1.200	0.600	1.800
(20) Relativity to Underlying Present Rate:	1.542	1.774	.
(21) Credibility to Underlying Relativity:	0.430	0.400	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.719	1.884	.
(24) Balanced Formula Relativity:	1.717	1.869	1.758

Class(es): 2747 COOPERAGE ASSEMBLY		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	1,459	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>1,460</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.030	0.040	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	3.019	2.787	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	2.375	0.954	3.330
(20) Relativity to Underlying Present Rate:	3.053	2.821	.
(21) Credibility to Underlying Relativity:	0.970	0.960	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	2.961	2.708	.
(24) Balanced Formula Relativity:	2.958	2.687	2.885

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## Calculation of Class Relativities

Class(es): 2790 PATTERN MAKING NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	49,425	0	11	0	201,373	0	76,318	277,691	4,074	1,544	5,618
2018	43,851	1	5	226,928	0	16,776	1,081	244,784	5,175	0,407	5,582
2019	44,435	0	7	0	4,748	0	2,429	7,177	0,107	0,055	0,162
2020	59,328	0	2	0	0	0	1,380	1,380	0,000	0,023	0,023
2021	123,271	0	8	0	213	0	5,073	5,286	0,002	0,041	0,043
<b>MA Total:</b>	<b>320,310</b>	<b>1</b>	<b>33</b>	<b>226,928</b>	<b>206,334</b>	<b>16,776</b>	<b>86,281</b>	<b>536,318</b>	<b>1,353</b>	<b>0,322</b>	<b>1,674</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.421	0.912	.
(14) Massachusetts Credibility:	0.150	0.210	.
(15) Countrywide Pure Premium:	0.793	0.311	1.105
(16) Countrywide Indicated Relativity:	0.891	0.963	.
(17) Countrywide Credibility:	0.420	0.400	.
(18) Countrywide Lost-Time Claims:	131.00	.	.
(19) Pure Premium Underlying Present Rate:	0.945	0.400	1.345
(20) Relativity to Underlying Present Rate:	1.215	1.182	.
(21) Credibility to Underlying Relativity:	0.430	0.390	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.110	1.038	.
(24) Balanced Formula Relativity:	1.108	1.030	1.087

Class(es): 2802 CARPENTRY-SHOP ONLY & DRIVERS		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,236,699	7	161	734,142	2,050,125	411,661	731,432	3,927,359	2,251	0,924	3,176
2018	1,270,061	4	179	426,335	1,146,162	98,693	559,191	2,230,380	1,238	0,518	1,756
2019	1,275,576	6	118	797,131	1,113,744	276,923	437,508	2,625,306	1,498	0,560	2,058
2020	1,273,144	6	129	331,653	2,070,163	129,333	1,123,674	3,654,823	1,887	0,984	2,871
2021	1,464,799	2	129	22,442	1,767,081	22,880	693,631	2,506,034	1,222	0,489	1,711
<b>MA Total:</b>	<b>6,520,280</b>	<b>25</b>	<b>716</b>	<b>2,311,703</b>	<b>8,147,275</b>	<b>939,488</b>	<b>3,545,435</b>	<b>14,943,902</b>	<b>1,604</b>	<b>0,688</b>	<b>2,292</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.685	1.949	.
(14) Massachusetts Credibility:	0.610	0.900	.
(15) Countrywide Pure Premium:	2.061	0.847	2.908
(16) Countrywide Indicated Relativity:	2.315	2.618	.
(17) Countrywide Credibility:	0.200	0.050	.
(18) Countrywide Lost-Time Claims:	6128.0	.	.
(19) Pure Premium Underlying Present Rate:	1.483	0.711	2.194
(20) Relativity to Underlying Present Rate:	1.905	2.102	.
(21) Credibility to Underlying Relativity:	0.190	0.050	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.853	1.990	.
(24) Balanced Formula Relativity:	1.851	1.975	1.884

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
2835 BRUSH OR BROOM ASSEMBLY											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	53,322	0	6	0	0	0	2,820	2,820	0.000	0.053	0.053
2018	65,105	0	14	0	184,015	0	16,701	200,716	2.826	0.257	3.083
2019	71,388	0	4	0	4,913	0	8,347	13,260	0.069	0.117	0.186
2020	88,761	0	11	0	17,102	0	7,954	25,056	0.193	0.090	0.282
2021	93,410	1	12	116,192	26,223	23,738	9,649	175,802	1.525	0.357	1.882
<b>MA Total:</b>	<b>371,987</b>	<b>1</b>	<b>47</b>	<b>116,192</b>	<b>232,253</b>	<b>23,738</b>	<b>45,471</b>	<b>417,654</b>	<b>0.937</b>	<b>0.186</b>	<b>1.123</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.984	0.527	.
(14) Massachusetts Credibility:	0.160	0.220	.
(15) Countrywide Pure Premium:	0.946	0.411	1.357
(16) Countrywide Indicated Relativity:	1.063	1.270	.
(17) Countrywide Credibility:	0.310	0.330	.
(18) Countrywide Lost-Time Claims:	64.000	.	.
(19) Pure Premium Underlying Present Rate:	0.910	0.356	1.266
(20) Relativity to Underlying Present Rate:	1.169	1.052	.
(21) Credibility to Underlying Relativity:	0.530	0.450	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.107	1.008	.
(24) Balanced Formula Relativity:	1.105	1.001	1.077

Class(es):		Effective: 7/1/2024							Manufacturing		
2836 BRUSH OR BROOM MFG NOC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	7,209	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	7,632	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	10,360	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	6,994	0	1	0	0	0	211	211	0.000	0.030	0.030
2021	4,410	0	1	0	16,344	0	1,749	18,093	3.706	0.397	4.103
<b>MA Total:</b>	<b>36,605</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>16,344</b>	<b>0</b>	<b>1,960</b>	<b>18,304</b>	<b>0.446</b>	<b>0.054</b>	<b>0.500</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.469	0.152	.
(14) Massachusetts Credibility:	0.070	0.090	.
(15) Countrywide Pure Premium:	1.153	0.449	1.602
(16) Countrywide Indicated Relativity:	1.295	1.389	.
(17) Countrywide Credibility:	0.320	0.340	.
(18) Countrywide Lost-Time Claims:	69.000	.	.
(19) Pure Premium Underlying Present Rate:	1.171	0.394	1.565
(20) Relativity to Underlying Present Rate:	1.505	1.165	.
(21) Credibility to Underlying Relativity:	0.610	0.570	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.365	1.150	.
(24) Balanced Formula Relativity:	1.364	1.141	1.303

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## Calculation of Class Relativities

Class(es): 2841 WOODENWARE MFG NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	32,136	1	0	239,564	0	101,114	0	340,678	7,455	3,146	10,601
2018	41,549	0	5	0	1,004	0	3,426	4,430	0,024	0,082	0,107
2019	46,891	0	2	0	558	0	2,959	3,517	0,012	0,063	0,075
2020	50,212	0	1	0	2,877	0	360	3,237	0,057	0,007	0,064
2021	60,614	0	9	0	50,132	0	27,412	77,544	0,827	0,452	1,279
<b>MA Total:</b>	<b>231,402</b>	<b>1</b>	<b>17</b>	<b>239,564</b>	<b>54,571</b>	<b>101,114</b>	<b>34,157</b>	<b>429,405</b>	<b>1,271</b>	<b>0,585</b>	<b>1,856</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.335	1.657	.
(14) Massachusetts Credibility:	0.150	0.240	.
(15) Countrywide Pure Premium:	1.297	0.653	1.949
(16) Countrywide Indicated Relativity:	1.456	2.018	.
(17) Countrywide Credibility:	0.430	0.380	.
(18) Countrywide Lost-Time Claims:	166.00	.	.
(19) Pure Premium Underlying Present Rate:	1.185	0.735	1.920
(20) Relativity to Underlying Present Rate:	1.523	2.173	.
(21) Credibility to Underlying Relativity:	0.420	0.380	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.466	1.990	.
(24) Balanced Formula Relativity:	1.465	1.975	1.603

Class(es): 2883 FURNITURE MFG-WOOD-NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	536,783	5	82	1,081,323	530,026	254,675	195,947	2,061,971	3,002	0,839	3,841
2018	508,882	0	67	0	610,958	0	218,588	829,546	1,201	0,430	1,630
2019	507,224	1	58	161,814	128,418	121,603	59,198	471,034	0,572	0,356	0,929
2020	437,266	2	59	78,771	489,798	68,112	247,783	884,464	1,300	0,722	2,023
2021	508,258	1	58	110,146	271,371	23,023	98,084	502,623	0,751	0,238	0,989
<b>MA Total:</b>	<b>2,498,413</b>	<b>9</b>	<b>324</b>	<b>1,432,053</b>	<b>2,030,571</b>	<b>467,413</b>	<b>819,601</b>	<b>4,749,637</b>	<b>1,386</b>	<b>0,515</b>	<b>1,901</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.456	1.460	.
(14) Massachusetts Credibility:	0.390	0.560	.
(15) Countrywide Pure Premium:	1.431	0.557	1.987
(16) Countrywide Indicated Relativity:	1.607	1.721	.
(17) Countrywide Credibility:	0.310	0.220	.
(18) Countrywide Lost-Time Claims:	4289.0	.	.
(19) Pure Premium Underlying Present Rate:	1.277	0.551	1.828
(20) Relativity to Underlying Present Rate:	1.641	1.629	.
(21) Credibility to Underlying Relativity:	0.300	0.220	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.558	1.554	.
(24) Balanced Formula Relativity:	1.556	1.542	1.553

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## Calculation of Class Relativities

Class(es): 2923 PIANO MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	58,733	0	4	0	0	0	808	808	0.000	0.014	0.014
2018	62,085	0	5	0	4,309	0	8,243	12,551	0.069	0.133	0.202
2019	51,140	0	4	0	1,888	0	6,673	8,561	0.037	0.130	0.167
2020	40,412	0	1	0	0	0	1,013	1,013	0.000	0.025	0.025
2021	63,418	0	3	0	0	0	10,496	10,496	0.000	0.166	0.166
<b>MA Total:</b>	<b>275,787</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>6,196</b>	<b>0</b>	<b>27,233</b>	<b>33,429</b>	<b>0.022</b>	<b>0.099</b>	<b>0.121</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.024	0.280	.
(14) Massachusetts Credibility:	0.110	0.160	.
(15) Countrywide Pure Premium:	0.718	0.302	1.020
(16) Countrywide Indicated Relativity:	0.806	0.935	.
(17) Countrywide Credibility:	0.320	0.340	.
(18) Countrywide Lost-Time Claims:	65,000	.	.
(19) Pure Premium Underlying Present Rate:	0.507	0.227	0.734
(20) Relativity to Underlying Present Rate:	0.652	0.671	.
(21) Credibility to Underlying Relativity:	0.570	0.500	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.632	0.698	.
(24) Balanced Formula Relativity:	0.632	0.693	0.648

Class(es): 2942 PENCIL, PENHOLDER OR CRAYON MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	160,530	0	18	0	202,993	0	60,663	263,656	1.265	0.378	1.642
2018	188,079	0	16	0	7,448	0	12,546	19,994	0.040	0.067	0.106
2019	182,960	0	15	0	11,002	0	16,333	27,334	0.060	0.089	0.149
2020	221,520	1	7	159,237	26,499	6,814	12,900	205,450	0.838	0.089	0.927
2021	268,655	2	24	84,496	41,741	25,881	42,573	194,691	0.470	0.255	0.725
<b>MA Total:</b>	<b>1,021,743</b>	<b>3</b>	<b>80</b>	<b>243,733</b>	<b>289,683</b>	<b>32,695</b>	<b>145,014</b>	<b>711,125</b>	<b>0.522</b>	<b>0.174</b>	<b>0.696</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.548	0.493	.
(14) Massachusetts Credibility:	0.210	0.300	.
(15) Countrywide Pure Premium:	0.833	0.369	1.202
(16) Countrywide Indicated Relativity:	0.936	1.142	.
(17) Countrywide Credibility:	0.400	0.350	.
(18) Countrywide Lost-Time Claims:	350.00	.	.
(19) Pure Premium Underlying Present Rate:	0.661	0.293	0.954
(20) Relativity to Underlying Present Rate:	0.849	0.866	.
(21) Credibility to Underlying Relativity:	0.390	0.350	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.821	0.851	.
(24) Balanced Formula Relativity:	0.820	0.844	0.826

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
3018 IRON OR STEEL: MFG: ROLLING MILL & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	218,380	1	18	76,464	90,368	10,344	62,474	239,650	0.764	0.333	1.097
2018	228,390	3	23	388,718	141,849	79,353	66,642	676,561	2.323	0.639	2.962
2019	203,016	1	24	60,222	52,382	76,270	54,677	243,550	0.555	0.645	1.200
2020	337,420	0	19	0	203,430	0	72,609	276,039	0.603	0.215	0.818
2021	240,562	0	7	0	47,690	0	93,111	140,801	0.198	0.387	0.585
<b>MA Total:</b>	<b>1,227,767</b>	<b>5</b>	<b>91</b>	<b>525,404</b>	<b>535,718</b>	<b>165,967</b>	<b>349,513</b>	<b>1,576,601</b>	<b>0.864</b>	<b>0.420</b>	<b>1.284</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.908	1.190	.
(14) Massachusetts Credibility:	0.270	0.390	.
(15) Countrywide Pure Premium:	1.344	0.450	1.794
(16) Countrywide Indicated Relativity:	1.509	1.391	.
(17) Countrywide Credibility:	0.370	0.310	.
(18) Countrywide Lost-Time Claims:	323.00	.	.
(19) Pure Premium Underlying Present Rate:	1.026	0.462	1.488
(20) Relativity to Underlying Present Rate:	1.319	1.366	.
(21) Credibility to Underlying Relativity:	0.360	0.300	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.278	1.305	.
(24) Balanced Formula Relativity:	1.277	1.295	1.282

Class(es):		Effective: 7/1/2024							Manufacturing		
3022 PIPE OR TUBE MFG NOC & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	5,211	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	6,360	0	1	0	4,599	0	1,444	6,043	0.723	0.227	0.950
2019	5,026	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	4,263	0	1	0	51,223	0	31,444	82,667	12.016	7.376	19.392
2021	4,196	0	1	0	0	0	1,600	1,600	0.000	0.381	0.381
<b>MA Total:</b>	<b>25,056</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>55,822</b>	<b>0</b>	<b>34,488</b>	<b>90,310</b>	<b>2.228</b>	<b>1.376</b>	<b>3.604</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.340	3.901	.
(14) Massachusetts Credibility:	0.060	0.100	.
(15) Countrywide Pure Premium:	1.499	0.593	2.092
(16) Countrywide Indicated Relativity:	1.683	1.833	.
(17) Countrywide Credibility:	0.470	0.450	.
(18) Countrywide Lost-Time Claims:	416.00	.	.
(19) Pure Premium Underlying Present Rate:	1.361	0.723	2.084
(20) Relativity to Underlying Present Rate:	1.750	2.137	.
(21) Credibility to Underlying Relativity:	0.470	0.450	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.754	2.176	.
(24) Balanced Formula Relativity:	1.752	2.159	1.862

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
3027 ROLLING MILL NOC & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	7,162	0	1	0	0	0	264	264	0.000	0.037	0.037
2018	188	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	15	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	0	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>7,364</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>264</b>	<b>264</b>	<b>0.000</b>	<b>0.036</b>	<b>0.036</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.101	.
(14) Massachusetts Credibility:	0.030	0.050	.
(15) Countrywide Pure Premium:	1.127	0.352	1.479
(16) Countrywide Indicated Relativity:	1.266	1.088	.
(17) Countrywide Credibility:	0.490	0.480	.
(18) Countrywide Lost-Time Claims:	329.00	.	.
(19) Pure Premium Underlying Present Rate:	0.897	0.428	1.325
(20) Relativity to Underlying Present Rate:	1.153	1.265	.
(21) Credibility to Underlying Relativity:	0.480	0.470	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.174	1.122	.
(24) Balanced Formula Relativity:	1.173	1.113	1.157

Class(es):		Effective: 7/1/2024							Manufacturing		
3028 PIPE OR TUBE MFG - IRON OR STEEL & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	5,763	0	3	0	8,393	0	3,638	12,031	1,456	0.631	2,088
2018	5,715	0	2	0	0	0	651	651	0.000	0.114	0.114
2019	2,251	0	1	0	49,018	0	14,900	63,918	21,777	6.620	28,397
2020	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	0	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>13,729</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>57,411</b>	<b>0</b>	<b>19,189</b>	<b>76,600</b>	<b>4.182</b>	<b>1.398</b>	<b>5.580</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.393	3.961	.
(14) Massachusetts Credibility:	0.050	0.070	.
(15) Countrywide Pure Premium:	1.630	0.575	2.205
(16) Countrywide Indicated Relativity:	1.831	1.778	.
(17) Countrywide Credibility:	0.480	0.470	.
(18) Countrywide Lost-Time Claims:	955.00	.	.
(19) Pure Premium Underlying Present Rate:	1.259	0.589	1.848
(20) Relativity to Underlying Present Rate:	1.618	1.741	.
(21) Credibility to Underlying Relativity:	0.470	0.460	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.859	1.914	.
(24) Balanced Formula Relativity:	1.857	1.899	1.868

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## Calculation of Class Relativities

Class(es):									Effective: 7/1/2024			Manufacturing		
3030 IRON OR STEEL: FABRICATION: IRON/STEEL WORK-SHOP-STRUCT & DR														
Converted Unlimited Losses														
Amount														
		Claim Count		Indemnity		Medical		Total	MA Indicated Pure Premiums					
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	(9)	Indemnity (10)	Medical (11)	Total (12)			
2017	120.391	1	20	14.702	383.219	21.028	112.704	531.653	3.305	1.111	4.416			
2018	134.213	1	19	232.350	105.314	127.723	78.424	543.810	2.516	1.536	4.052			
2019	126.331	2	21	192.838	380.139	50.379	73.734	697.090	4.536	0.982	5.518			
2020	127.544	0	25	0	91.603	0	44.714	136.317	0.718	0.351	1.069			
2021	142.083	2	35	327.656	258.100	171.467	238.362	995.584	4.123	2.884	7.007			
<b>MA Total:</b>	<b>650.563</b>	<b>6</b>	<b>120</b>	<b>767.546</b>	<b>1,218.375</b>	<b>370.596</b>	<b>547.937</b>	<b>2,904.455</b>	<b>3.053</b>	<b>1.412</b>	<b>4.465</b>			

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.207	4.001	.
(14) Massachusetts Credibility:	0.280	0.410	.
(15) Countrywide Pure Premium:	2.165	0.769	2.933
(16) Countrywide Indicated Relativity:	2.431	2.376	.
(17) Countrywide Credibility:	0.360	0.300	.
(18) Countrywide Lost-Time Claims:	2358.0	.	.
(19) Pure Premium Underlying Present Rate:	2.064	1.018	3.083
(20) Relativity to Underlying Present Rate:	2.653	3.010	.
(21) Credibility to Underlying Relativity:	0.360	0.290	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	2.728	3.226	.
(24) Balanced Formula Relativity:	2.725	3.201	2.854

Class(es):									Effective: 7/1/2024			Manufacturing		
3040 IRON OR STEEL: FABRICATION: IRON WORKS-SHOP-ORNAMENTAL & DR														
Converted Unlimited Losses														
Amount														
		Claim Count		Indemnity		Medical		Total	MA Indicated Pure Premiums					
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	(9)	Indemnity (10)	Medical (11)	Total (12)			
2017	239.716	0	40	0	272.653	0	119.109	391.763	1.137	0.497	1.634			
2018	251.942	2	45	858.870	911.454	178.941	270.250	2,219.515	7.027	1.783	8.810			
2019	269.558	2	31	580.786	487.721	93.304	187.444	1,349.255	3.964	1.042	5.005			
2020	264.799	2	28	572.942	228.320	283.794	167.833	1,252.890	3.026	1.706	4.731			
2021	286.265	0	17	0	760.897	0	288.100	1,048.997	2.658	1.006	3.664			
<b>MA Total:</b>	<b>1,312.280</b>	<b>6</b>	<b>161</b>	<b>2,012.598</b>	<b>2,661.045</b>	<b>556.039</b>	<b>1,032.737</b>	<b>6,262.420</b>	<b>3.561</b>	<b>1.211</b>	<b>4.772</b>			

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.741	3.431	.
(14) Massachusetts Credibility:	0.400	0.540	.
(15) Countrywide Pure Premium:	2.306	0.835	3.141
(16) Countrywide Indicated Relativity:	2.590	2.582	.
(17) Countrywide Credibility:	0.300	0.230	.
(18) Countrywide Lost-Time Claims:	1582.0	.	.
(19) Pure Premium Underlying Present Rate:	2.631	0.960	3.591
(20) Relativity to Underlying Present Rate:	3.381	2.838	.
(21) Credibility to Underlying Relativity:	0.300	0.230	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	3.288	3.099	.
(24) Balanced Formula Relativity:	3.284	3.075	3.227

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
3041 IRON OR STEEL: FABRICATION: IRON WORKS-SHP-DEC/ART &FNDRS,DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	50,813	0	6	0	808	0	3,829	4,637	0.016	0.075	0.091
2018	55,058	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	55,657	0	5	0	0	0	4,660	4,660	0.000	0.084	0.084
2020	58,403	1	6	699	0	2,363	9,985	13,046	0.012	0.211	0.223
2021	70,420	0	5	0	263,548	0	56,170	319,718	3.742	0.798	4.540
<b>MA Total:</b>	<b>290,352</b>	<b>1</b>	<b>22</b>	<b>699</b>	<b>264,356</b>	<b>2,363</b>	<b>74,645</b>	<b>342,062</b>	<b>0.913</b>	<b>0.265</b>	<b>1.178</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.959	0.752	.
(14) Massachusetts Credibility:	0.160	0.210	.
(15) Countrywide Pure Premium:	1.383	0.488	1.871
(16) Countrywide Indicated Relativity:	1.553	1.509	.
(17) Countrywide Credibility:	0.410	0.400	.
(18) Countrywide Lost-Time Claims:	126.00	.	.
(19) Pure Premium Underlying Present Rate:	1.196	0.436	1.633
(20) Relativity to Underlying Present Rate:	1.538	1.290	.
(21) Credibility to Underlying Relativity:	0.430	0.390	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.451	1.264	.
(24) Balanced Formula Relativity:	1.450	1.255	1.397

Class(es):		Effective: 7/1/2024							Manufacturing		
3042 ELEVATOR OR ESCALATOR MFG											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	8,752	0	2	0	0	0	1,786	1,786	0.000	0.204	0.204
2018	14,292	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	13,865	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	12,026	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	10,910	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>59,845</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,786</b>	<b>1,786</b>	<b>0.000</b>	<b>0.030</b>	<b>0.030</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.085	.
(14) Massachusetts Credibility:	0.090	0.120	.
(15) Countrywide Pure Premium:	1.363	0.402	1.766
(16) Countrywide Indicated Relativity:	1.531	1.244	.
(17) Countrywide Credibility:	0.430	0.440	.
(18) Countrywide Lost-Time Claims:	139.00	.	.
(19) Pure Premium Underlying Present Rate:	1.363	0.528	1.891
(20) Relativity to Underlying Present Rate:	1.752	1.559	.
(21) Credibility to Underlying Relativity:	0.480	0.440	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.500	1.244	.
(24) Balanced Formula Relativity:	1.498	1.234	1.426

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## Calculation of Class Relativities

Class(es): 3066 SHEET METAL WORK - SHOP		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	988,826	3	132	667,249	979,430	73,322	595,852	2,315,852	1,665	0,677	2,342
2018	1,034,565	4	111	314,505	551,038	171,231	266,490	1,303,263	0,837	0,423	1,260
2019	1,053,145	1	116	16,331	396,134	2,479	279,316	694,260	0,392	0,268	0,659
2020	1,127,917	0	118	0	1,060,331	0	740,865	1,801,196	0,940	0,657	1,597
2021	1,143,356	2	103	448,771	1,048,565	62,641	458,533	2,018,511	1,310	0,456	1,765
<b>MA Total:</b>	<b>5,347,810</b>	<b>10</b>	<b>580</b>	<b>1,446,855</b>	<b>4,035,498</b>	<b>309,674</b>	<b>2,341,056</b>	<b>8,133,082</b>	<b>1,025</b>	<b>0,496</b>	<b>1,521</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.077	1.405	.
(14) Massachusetts Credibility:	0.480	0.710	.
(15) Countrywide Pure Premium:	1.362	0.500	1.862
(16) Countrywide Indicated Relativity:	1.530	1.546	.
(17) Countrywide Credibility:	0.260	0.150	.
(18) Countrywide Lost-Time Claims:	891.00	.	.
(19) Pure Premium Underlying Present Rate:	0.967	0.481	1.447
(20) Relativity to Underlying Present Rate:	1.242	1.421	.
(21) Credibility to Underlying Relativity:	0.260	0.140	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.238	1.428	.
(24) Balanced Formula Relativity:	1.236	1.417	1.285

Class(es): 3076 FIREPROOF EQUIPMENT MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	290,946	2	31	63,132	15,408	9,382	27,888	115,810	0,270	0,128	0,398
2018	311,984	1	47	454,578	295,919	144,841	129,179	1,024,517	2,406	0,878	3,284
2019	278,458	1	35	40,762	1,102,612	7,936	205,004	1,356,314	4,106	0,765	4,871
2020	296,652	0	34	0	182,444	0	88,785	271,229	0,615	0,299	0,914
2021	358,426	1	22	377,777	103,277	45,985	56,550	583,588	1,342	0,286	1,628
<b>MA Total:</b>	<b>1,536,464</b>	<b>5</b>	<b>169</b>	<b>936,249</b>	<b>1,699,659</b>	<b>208,144</b>	<b>507,406</b>	<b>3,351,458</b>	<b>1,716</b>	<b>0,466</b>	<b>2,181</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.802	1.320	.
(14) Massachusetts Credibility:	0.320	0.440	.
(15) Countrywide Pure Premium:	1.314	0.514	1.827
(16) Countrywide Indicated Relativity:	1.475	1.589	.
(17) Countrywide Credibility:	0.340	0.280	.
(18) Countrywide Lost-Time Claims:	7667.0	.	.
(19) Pure Premium Underlying Present Rate:	1.216	0.497	1.713
(20) Relativity to Underlying Present Rate:	1.562	1.471	.
(21) Credibility to Underlying Relativity:	0.340	0.280	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.610	1.437	.
(24) Balanced Formula Relativity:	1.608	1.426	1.559

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## Calculation of Class Relativities

Class(es): 3081 FOUNDRY-FERROUS-NOC		Effective: 7/1/2024							Manufacturing		
Converted Unlimited Losses											
Amount											
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	19.902	1	4	14.308	1.159	15.938	2.323	33.728	0.777	0.918	1.695
2018	18.143	0	5	0	34.899	0	22.014	56.913	1.924	1.213	3.137
2019	18.284	0	5	0	22.725	0	16.599	39.324	1.243	0.908	2.151
2020	20.600	0	5	0	3.215	0	3.374	6.588	0.156	0.164	0.320
2021	19.142	0	4	0	4.413	0	791	5.204	0.231	0.041	0.272
<b>MA Total:</b>	<b>96.071</b>	<b>1</b>	<b>23</b>	<b>14.308</b>	<b>66.411</b>	<b>15.938</b>	<b>45.100</b>	<b>141.756</b>	<b>0.840</b>	<b>0.635</b>	<b>1.476</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.883	1.800	.
(14) Massachusetts Credibility:	0.120	0.170	.
(15) Countrywide Pure Premium:	2.020	0.733	2.753
(16) Countrywide Indicated Relativity:	2.269	2.266	.
(17) Countrywide Credibility:	0.440	0.420	.
(18) Countrywide Lost-Time Claims:	1677.0	.	.
(19) Pure Premium Underlying Present Rate:	1.706	0.798	2.504
(20) Relativity to Underlying Present Rate:	2.193	2.360	.
(21) Credibility to Underlying Relativity:	0.440	0.410	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	2.069	2.225	.
(24) Balanced Formula Relativity:	2.067	2.208	2.105

Class(es): 3085 FOUNDRY-NON FERROUS		Effective: 7/1/2024							Manufacturing		
Converted Unlimited Losses											
Amount											
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	134.230	0	31	0	174.970	0	82.016	256.986	1.304	0.611	1.915
2018	120.913	0	33	0	445.679	0	291.835	737.514	3.686	2.414	6.100
2019	112.385	0	21	0	45.978	0	42.577	88.554	0.409	0.379	0.788
2020	120.437	1	12	297.444	6.844	30.535	13.655	348.477	2.527	0.367	2.893
2021	146.373	0	32	0	54.877	0	56.123	111.000	0.375	0.383	0.758
<b>MA Total:</b>	<b>634.338</b>	<b>1</b>	<b>129</b>	<b>297.444</b>	<b>728.348</b>	<b>30.535</b>	<b>486.205</b>	<b>1,542.531</b>	<b>1.617</b>	<b>0.815</b>	<b>2.432</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.699	2.308	.
(14) Massachusetts Credibility:	0.250	0.380	.
(15) Countrywide Pure Premium:	1.685	0.672	2.357
(16) Countrywide Indicated Relativity:	1.892	2.078	.
(17) Countrywide Credibility:	0.380	0.310	.
(18) Countrywide Lost-Time Claims:	881.00	.	.
(19) Pure Premium Underlying Present Rate:	1.698	0.849	2.547
(20) Relativity to Underlying Present Rate:	2.182	2.509	.
(21) Credibility to Underlying Relativity:	0.370	0.310	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.951	2.299	.
(24) Balanced Formula Relativity:	1.949	2.281	2.039

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
3110 FORGING WORK - DROP OR MACHINE											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	17,397	0	9	0	99,879	0	31,887	131,766	5,741	1,833	7,574
2018	15,634	1	3	175,447	1,450	19,966	2,507	199,370	11,315	1,437	12,753
2019	12,321	0	1	0	0	0	781	781	0,000	0,063	0,063
2020	30,704	0	10	0	14,787	0	6,972	21,759	0,482	0,227	0,709
2021	27,696	1	14	50,376	57,967	2,686	21,431	132,460	3,912	0,871	4,783
<b>MA Total:</b>	<b>103,751</b>	<b>2</b>	<b>37</b>	<b>225,824</b>	<b>174,082</b>	<b>22,652</b>	<b>63,578</b>	<b>486,136</b>	<b>3,854</b>	<b>0,831</b>	<b>4,686</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.049	2.355	.
(14) Massachusetts Credibility:	0.160	0.210	.
(15) Countrywide Pure Premium:	1.754	0.611	2.365
(16) Countrywide Indicated Relativity:	1.970	1.888	.
(17) Countrywide Credibility:	0.420	0.400	.
(18) Countrywide Lost-Time Claims:	311.00	.	.
(19) Pure Premium Underlying Present Rate:	3.166	1.183	4.349
(20) Relativity to Underlying Present Rate:	4.070	3.496	.
(21) Credibility to Underlying Relativity:	0.420	0.390	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	3.185	2.613	.
(24) Balanced Formula Relativity:	3.181	2.593	3.022

Class(es):		Effective: 7/1/2024							Manufacturing		
3111 BLACKSMITH											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	81,346	0	7	0	99,630	0	27,161	126,792	1,225	0,334	1,559
2018	130,223	0	16	0	242,428	0	110,255	352,683	1,862	0,847	2,708
2019	129,562	0	10	0	138,260	0	60,880	199,139	1,067	0,470	1,537
2020	137,389	0	13	0	134,139	0	85,195	219,334	0,976	0,620	1,596
2021	160,515	2	14	329,223	60,321	54,696	13,360	457,599	2,427	0,424	2,851
<b>MA Total:</b>	<b>639,035</b>	<b>2</b>	<b>60</b>	<b>329,223</b>	<b>674,778</b>	<b>54,696</b>	<b>296,851</b>	<b>1,355,548</b>	<b>1,571</b>	<b>0,550</b>	<b>2,121</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.650	1.559	.
(14) Massachusetts Credibility:	0.210	0.290	.
(15) Countrywide Pure Premium:	0.931	0.356	1.287
(16) Countrywide Indicated Relativity:	1.045	1.102	.
(17) Countrywide Credibility:	0.400	0.360	.
(18) Countrywide Lost-Time Claims:	191.00	.	.
(19) Pure Premium Underlying Present Rate:	0.996	0.433	1.429
(20) Relativity to Underlying Present Rate:	1.280	1.280	.
(21) Credibility to Underlying Relativity:	0.390	0.350	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.264	1.297	.
(24) Balanced Formula Relativity:	1.262	1.287	1.269

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing			
3113 TOOL MFG-NOT DROP OR MACHINE FORGED-NOC												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical					MA Indicated Pure Premiums	
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	751,772	2	65	293,822	637,738	71,891	203,778	1,207,229	1,239	0,367	1,606	
2018	754,877	2	66	173,470	421,988	132,415	186,314	914,187	0,789	0,422	1,211	
2019	698,509	0	46	0	894,592	0	165,291	1,059,883	1,281	0,237	1,517	
2020	728,437	2	33	482,004	426,094	125,343	81,751	1,115,192	1,247	0,284	1,531	
2021	663,518	0	40	0	255,823	0	177,415	433,237	0,386	0,267	0,653	
<b>MA Total:</b>	<b>3,597,112</b>	<b>6</b>	<b>250</b>	<b>949,296</b>	<b>2,636,235</b>	<b>329,650</b>	<b>814,548</b>	<b>4,729,729</b>	<b>0,997</b>	<b>0,318</b>	<b>1,315</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.047	0.901	.
(14) Massachusetts Credibility:	0.360	0.510	.
(15) Countrywide Pure Premium:	0.741	0.286	1.027
(16) Countrywide Indicated Relativity:	0.832	0.885	.
(17) Countrywide Credibility:	0.320	0.250	.
(18) Countrywide Lost-Time Claims:	1279.0	.	.
(19) Pure Premium Underlying Present Rate:	0.736	0.314	1.050
(20) Relativity to Underlying Present Rate:	0.946	0.930	.
(21) Credibility to Underlying Relativity:	0.320	0.240	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.946	0.904	.
(24) Balanced Formula Relativity:	0.945	0.897	0.932

Class(es):		Effective: 7/1/2024							Manufacturing			
3114 TOOL MFG-DROP OR MACHINE FORGED-NOC: MACHINING OR FINISHING												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical					MA Indicated Pure Premiums	
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	30,261	0	9	0	911	0	4,585	5,496	0,030	0,152	0,182	
2018	51,565	0	12	0	8,956	0	10,825	19,781	0,174	0,210	0,384	
2019	45,136	0	9	0	96,295	0	70,069	166,364	2,133	1,552	3,686	
2020	41,490	0	10	0	0	0	5,830	5,830	0,000	0,141	0,141	
2021	44,303	0	8	0	63,677	0	18,095	81,772	1,437	0,408	1,846	
<b>MA Total:</b>	<b>212,755</b>	<b>0</b>	<b>48</b>	<b>0</b>	<b>169,838</b>	<b>0</b>	<b>109,404</b>	<b>279,242</b>	<b>0,798</b>	<b>0,514</b>	<b>1,313</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.839	1.457	.
(14) Massachusetts Credibility:	0.140	0.200	.
(15) Countrywide Pure Premium:	1.010	0.475	1.485
(16) Countrywide Indicated Relativity:	1.134	1.469	.
(17) Countrywide Credibility:	0.430	0.400	.
(18) Countrywide Lost-Time Claims:	231.00	.	.
(19) Pure Premium Underlying Present Rate:	1.059	0.519	1.578
(20) Relativity to Underlying Present Rate:	1.362	1.533	.
(21) Credibility to Underlying Relativity:	0.430	0.400	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.190	1.492	.
(24) Balanced Formula Relativity:	1.189	1.481	1.268

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## Calculation of Class Relativities

Class(es): 3118 SAW MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	90.032	0	9	0	67.804	0	88.570	156.373	0.753	0.984	1.737
2018	68.594	0	3	0	10.201	0	3.428	13.629	0.149	0.050	0.199
2019	54.871	0	3	0	1.294	0	2.517	3.811	0.024	0.046	0.069
2020	51.015	0	3	0	7.529	0	1.918	9.447	0.148	0.038	0.185
2021	44.737	0	3	0	63.218	0	18.611	81.829	1.413	0.416	1.829
<b>MA Total:</b>	<b>309.249</b>	<b>0</b>	<b>21</b>	<b>0</b>	<b>150.045</b>	<b>0</b>	<b>115.044</b>	<b>265.089</b>	<b>0.485</b>	<b>0.372</b>	<b>0.857</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.510	1.054	.
(14) Massachusetts Credibility:	0.120	0.180	.
(15) Countrywide Pure Premium:	0.776	0.347	1.123
(16) Countrywide Indicated Relativity:	0.872	1.072	.
(17) Countrywide Credibility:	0.350	0.370	.
(18) Countrywide Lost-Time Claims:	86.000	.	.
(19) Pure Premium Underlying Present Rate:	0.571	0.261	0.832
(20) Relativity to Underlying Present Rate:	0.734	0.771	.
(21) Credibility to Underlying Relativity:	0.530	0.450	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.755	0.933	.
(24) Balanced Formula Relativity:	0.755	0.926	0.801

Class(es): 3119 NEEDLE MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	58.683	0	2	0	0	0	4.556	4.556	0.000	0.078	0.078
2018	65.473	1	4	96.775	6.117	16.185	7.690	126.767	1.572	0.365	1.936
2019	69.288	0	1	0	0	0	948	948	0.000	0.014	0.014
2020	59.689	0	2	0	90.610	0	16.002	106.612	1.518	0.268	1.786
2021	70.513	0	2	0	28.105	0	19.955	48.060	0.399	0.283	0.682
<b>MA Total:</b>	<b>323.646</b>	<b>1</b>	<b>11</b>	<b>96.775</b>	<b>124.832</b>	<b>16.185</b>	<b>49.151</b>	<b>286.943</b>	<b>0.685</b>	<b>0.202</b>	<b>0.887</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.719	0.572	.
(14) Massachusetts Credibility:	0.110	0.160	.
(15) Countrywide Pure Premium:	0.080	0.059	0.139
(16) Countrywide Indicated Relativity:	0.090	0.181	.
(17) Countrywide Credibility:	0.140	0.140	.
(18) Countrywide Lost-Time Claims:	8.000	.	.
(19) Pure Premium Underlying Present Rate:	0.402	0.191	0.594
(20) Relativity to Underlying Present Rate:	0.517	0.565	.
(21) Credibility to Underlying Relativity:	0.750	0.700	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.480	0.513	.
(24) Balanced Formula Relativity:	0.479	0.509	0.487

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## Calculation of Class Relativities

Class(es): 3120 RAZOR MFG-SAFETY		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums		
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	60,462	1	4	12,006	38,662	4,025	11,651	66,345	0.838	0.259	1.097
2018	30,728	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	3,026	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	3,915	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>98,132</b>	<b>1</b>	<b>4</b>	<b>12,006</b>	<b>38,662</b>	<b>4,025</b>	<b>11,651</b>	<b>66,345</b>	<b>0.516</b>	<b>0.160</b>	<b>0.676</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.542	0.453	.
(14) Massachusetts Credibility:	0.080	0.100	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	0.704	0.538	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.554	0.184	0.738
(20) Relativity to Underlying Present Rate:	0.711	0.545	.
(21) Credibility to Underlying Relativity:	0.920	0.900	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.698	0.535	.
(24) Balanced Formula Relativity:	0.697	0.531	0.652

Class(es): 3122 CUTLERY MFG-NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums		
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	127,683	0	39	0	11,890	0	23,914	35,804	0.093	0.187	0.280
2018	119,055	1	37	98,986	16,580	4,530	23,285	143,381	0.971	0.234	1.204
2019	126,791	0	31	0	312,280	0	50,746	363,025	2.463	0.400	2.863
2020	121,937	0	15	0	6,529	0	37,299	43,828	0.054	0.306	0.359
2021	129,158	2	21	249,572	40,225	29,541	37,271	356,609	2.244	0.517	2.761
<b>MA Total:</b>	<b>624,624</b>	<b>3</b>	<b>143</b>	<b>348,558</b>	<b>387,503</b>	<b>34,072</b>	<b>172,516</b>	<b>942,648</b>	<b>1.178</b>	<b>0.331</b>	<b>1.509</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.238	0.937	.
(14) Massachusetts Credibility:	0.200	0.270	.
(15) Countrywide Pure Premium:	0.928	0.299	1.227
(16) Countrywide Indicated Relativity:	1.043	0.924	.
(17) Countrywide Credibility:	0.360	0.370	.
(18) Countrywide Lost-Time Claims:	88.000	.	.
(19) Pure Premium Underlying Present Rate:	0.922	0.374	1.296
(20) Relativity to Underlying Present Rate:	1.184	1.107	.
(21) Credibility to Underlying Relativity:	0.440	0.360	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.144	0.994	.
(24) Balanced Formula Relativity:	1.143	0.986	1.100

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
3127 PRECISION MEASURING TOOL MFG-NOC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,642	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	4,287	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	2,904	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	2,234	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	2,195	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>13,263</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.040	0.060	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	1.196	1.090	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.941	0.373	1.314
(20) Relativity to Underlying Present Rate:	1.209	1.103	.
(21) Credibility to Underlying Relativity:	0.960	0.940	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.160	1.037	.
(24) Balanced Formula Relativity:	1.159	1.029	1.124

Class(es):		Effective: 7/1/2024							Manufacturing		
3131 BUTTON OR FASTENER MFG-METAL											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	9,894	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	7,903	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	10,580	0	2	0	3,034	0	3,637	6,671	0.287	0.344	0.631
2020	7,381	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	12,715	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>48,474</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>3,034</b>	<b>0</b>	<b>3,637</b>	<b>6,671</b>	<b>0.063</b>	<b>0.075</b>	<b>0.138</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.066	0.213	.
(14) Massachusetts Credibility:	0.060	0.090	.
(15) Countrywide Pure Premium:	0.772	0.341	1.113
(16) Countrywide Indicated Relativity:	0.868	1.054	.
(17) Countrywide Credibility:	0.470	0.460	.
(18) Countrywide Lost-Time Claims:	188.00	.	.
(19) Pure Premium Underlying Present Rate:	0.545	0.298	0.843
(20) Relativity to Underlying Present Rate:	0.701	0.880	.
(21) Credibility to Underlying Relativity:	0.470	0.450	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.741	0.900	.
(24) Balanced Formula Relativity:	0.740	0.893	0.781

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## Calculation of Class Relativities

Class(es): 3132 NUT OR BOLT MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	15,421	0	1	0	0	0	601	601	0.000	0.039	0.039
2018	28,384	0	7	0	11,313	0	12,384	23,697	0.399	0.436	0.835
2019	16,483	0	2	0	11,211	0	1,907	13,118	0.680	0.116	0.796
2020	20,511	0	4	0	1,171	0	4,208	5,379	0.057	0.205	0.262
2021	24,444	0	4	0	22,167	0	17,264	39,431	0.907	0.706	1.613
<b>MA Total:</b>	<b>105,244</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>45,862</b>	<b>0</b>	<b>36,365</b>	<b>82,226</b>	<b>0.436</b>	<b>0.346</b>	<b>0.781</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.458	0.979	.
(14) Massachusetts Credibility:	0.090	0.140	.
(15) Countrywide Pure Premium:	1.043	0.435	1.478
(16) Countrywide Indicated Relativity:	1.172	1.344	.
(17) Countrywide Credibility:	0.460	0.430	.
(18) Countrywide Lost-Time Claims:	265.00	.	.
(19) Pure Premium Underlying Present Rate:	0.852	0.409	1.260
(20) Relativity to Underlying Present Rate:	1.094	1.209	.
(21) Credibility to Underlying Relativity:	0.450	0.430	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.073	1.235	.
(24) Balanced Formula Relativity:	1.071	1.225	1.113

Class(es): 3145 SCREW MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	344,237	0	15	0	765,211	0	86,308	851,519	2.223	0.251	2.474
2018	221,442	0	12	0	2,290	0	8,934	11,224	0.010	0.040	0.051
2019	422,538	0	26	0	95,670	0	28,629	124,299	0.226	0.068	0.294
2020	388,111	0	21	0	63,491	0	62,134	125,625	0.164	0.160	0.324
2021	234,738	0	7	0	6,849	0	9,174	16,023	0.029	0.039	0.068
<b>MA Total:</b>	<b>1,611,066</b>	<b>0</b>	<b>81</b>	<b>0</b>	<b>933,512</b>	<b>0</b>	<b>195,178</b>	<b>1,128,690</b>	<b>0.579</b>	<b>0.121</b>	<b>0.701</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.609	0.343	.
(14) Massachusetts Credibility:	0.240	0.340	.
(15) Countrywide Pure Premium:	0.718	0.304	1.022
(16) Countrywide Indicated Relativity:	0.806	0.939	.
(17) Countrywide Credibility:	0.380	0.330	.
(18) Countrywide Lost-Time Claims:	417.00	.	.
(19) Pure Premium Underlying Present Rate:	0.608	0.249	0.856
(20) Relativity to Underlying Present Rate:	0.781	0.735	.
(21) Credibility to Underlying Relativity:	0.380	0.330	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.749	0.669	.
(24) Balanced Formula Relativity:	0.748	0.664	0.725

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## Calculation of Class Relativities

Class(es): 3146 HARDWARE MFG-NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	91,785	0	17	0	10,591	0	17,162	27,753	0.115	0.187	0.302
2018	91,813	0	14	0	16,718	0	12,009	28,727	0.182	0.131	0.313
2019	203,094	2	14	417,114	22,497	46,063	23,102	508,776	2.165	0.341	2.505
2020	99,886	0	15	0	23,052	0	29,587	52,639	0.231	0.296	0.527
2021	352,606	3	43	336,835	884,774	50,684	517,648	1,789,941	3.465	1.612	5.076
<b>MA Total:</b>	<b>839,184</b>	<b>5</b>	<b>103</b>	<b>753,949</b>	<b>957,632</b>	<b>96,747</b>	<b>599,508</b>	<b>2,407,836</b>	<b>2.040</b>	<b>0.830</b>	<b>2.869</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.143	2.351	.
(14) Massachusetts Credibility:	0.210	0.310	.
(15) Countrywide Pure Premium:	0.872	0.369	1.241
(16) Countrywide Indicated Relativity:	0.979	1.140	.
(17) Countrywide Credibility:	0.400	0.350	.
(18) Countrywide Lost-Time Claims:	1196.0	.	.
(19) Pure Premium Underlying Present Rate:	0.832	0.379	1.211
(20) Relativity to Underlying Present Rate:	1.070	1.121	.
(21) Credibility to Underlying Relativity:	0.390	0.340	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.259	1.509	.
(24) Balanced Formula Relativity:	1.257	1.497	1.322

Class(es): 3169 STOVE MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	451,102	0	60	0	121,400	0	117,540	238,940	0.269	0.261	0.530
2018	503,174	0	62	0	296,329	0	117,913	414,242	0.589	0.234	0.823
2019	462,179	0	61	0	311,813	0	220,201	532,014	0.675	0.476	1.151
2020	517,389	0	56	0	593,108	0	321,957	915,065	1.146	0.622	1.769
2021	569,432	3	62	956,484	808,113	150,008	321,162	2,235,767	3.099	0.827	3.926
<b>MA Total:</b>	<b>2,503,276</b>	<b>3</b>	<b>301</b>	<b>956,484</b>	<b>2,130,762</b>	<b>150,008</b>	<b>1,098,773</b>	<b>4,336,028</b>	<b>1.233</b>	<b>0.499</b>	<b>1.732</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.296	1.414	.
(14) Massachusetts Credibility:	0.330	0.530	.
(15) Countrywide Pure Premium:	1.213	0.478	1.691
(16) Countrywide Indicated Relativity:	1.362	1.479	.
(17) Countrywide Credibility:	0.340	0.240	.
(18) Countrywide Lost-Time Claims:	5990.0	.	.
(19) Pure Premium Underlying Present Rate:	0.859	0.492	1.350
(20) Relativity to Underlying Present Rate:	1.103	1.453	.
(21) Credibility to Underlying Relativity:	0.330	0.230	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.255	1.438	.
(24) Balanced Formula Relativity:	1.253	1.427	1.300

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
3179 ELECTRICAL APPARATUS MFG-NOC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,545,662	1	92	7,450	878,878	19,890	248,680	1,154,897	0.573	0.174	0.747
2018	1,804,470	4	78	288,617	304,584	92,734	221,198	907,133	0.329	0.174	0.503
2019	1,891,213	0	68	0	800,628	0	356,815	1,157,442	0.423	0.189	0.612
2020	1,975,636	1	55	46,958	485,750	2,009	294,045	828,762	0.270	0.150	0.419
2021	2,223,307	4	55	633,336	914,961	378,606	431,906	2,358,809	0.696	0.365	1.061
<b>MA Total:</b>	<b>9,440,287</b>	<b>10</b>	<b>348</b>	<b>976,361</b>	<b>3,384,800</b>	<b>493,239</b>	<b>1,552,644</b>	<b>6,407,044</b>	<b>0.462</b>	<b>0.217</b>	<b>0.679</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.485	0.614	.
(14) Massachusetts Credibility:	0.450	0.620	.
(15) Countrywide Pure Premium:	0.866	0.300	1.166
(16) Countrywide Indicated Relativity:	0.973	0.928	.
(17) Countrywide Credibility:	0.280	0.190	.
(18) Countrywide Lost-Time Claims:	3745.0	.	.
(19) Pure Premium Underlying Present Rate:	0.477	0.194	0.671
(20) Relativity to Underlying Present Rate:	0.613	0.574	.
(21) Credibility to Underlying Relativity:	0.270	0.190	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.656	0.666	.
(24) Balanced Formula Relativity:	0.655	0.661	0.657

Class(es):		Effective: 7/1/2024							Manufacturing		
3180 ELECTRIC OR GAS LIGHTING FIXTURES MFG											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	130,353	0	25	0	174,115	0	55,263	229,379	1.336	0.424	1.760
2018	121,517	1	17	80,500	278,414	92,995	28,104	480,013	2.954	0.997	3.950
2019	125,675	1	21	4,351	97,976	3,511	39,507	145,345	0.814	0.342	1.157
2020	121,285	1	8	80,464	580	11,140	7,382	99,566	0.668	0.153	0.821
2021	121,386	1	17	44,434	501	108,342	8,086	161,363	0.370	0.959	1.329
<b>MA Total:</b>	<b>620,216</b>	<b>4</b>	<b>88</b>	<b>209,748</b>	<b>551,588</b>	<b>215,988</b>	<b>138,342</b>	<b>1,115,666</b>	<b>1.228</b>	<b>0.571</b>	<b>1.799</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.289	1.619	.
(14) Massachusetts Credibility:	0.210	0.290	.
(15) Countrywide Pure Premium:	1.066	0.420	1.486
(16) Countrywide Indicated Relativity:	1.197	1.297	.
(17) Countrywide Credibility:	0.400	0.360	.
(18) Countrywide Lost-Time Claims:	286.00	.	.
(19) Pure Premium Underlying Present Rate:	1.025	0.422	1.447
(20) Relativity to Underlying Present Rate:	1.317	1.247	.
(21) Credibility to Underlying Relativity:	0.390	0.350	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.264	1.373	.
(24) Balanced Formula Relativity:	1.262	1.362	1.289

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## Calculation of Class Relativities

Class(es): 3188 PLUMBERS SUPPLIES MFG-NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	21,811	0	4	0	6,937	0	9,367	16,304	0.318	0.429	0.748
2018	26,987	0	1	0	0	0	390	390	0.000	0.014	0.014
2019	22,708	0	5	0	44,316	0	24,513	68,829	1.952	1.079	3.031
2020	15,734	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	17,719	0	1	0	25,107	0	6,308	31,414	1.417	0.356	1.773
<b>MA Total:</b>	<b>104,959</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>76,359</b>	<b>0</b>	<b>40,578</b>	<b>116,937</b>	<b>0.728</b>	<b>0.387</b>	<b>1.114</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.764	1.096	.
(14) Massachusetts Credibility:	0.090	0.140	.
(15) Countrywide Pure Premium:	0.904	0.314	1.218
(16) Countrywide Indicated Relativity:	1.015	0.972	.
(17) Countrywide Credibility:	0.460	0.430	.
(18) Countrywide Lost-Time Claims:	350.00	.	.
(19) Pure Premium Underlying Present Rate:	0.867	0.388	1.255
(20) Relativity to Underlying Present Rate:	1.114	1.147	.
(21) Credibility to Underlying Relativity:	0.450	0.430	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.037	1.064	.
(24) Balanced Formula Relativity:	1.036	1.056	1.041

Class(es): 3200 ARMS MFG-SMALL		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	58,551	0	7	0	156,601	0	28,128	184,729	2.675	0.480	3.155
2018	20,249	0	6	0	8,633	0	20,296	28,930	0.426	1.002	1.429
2019	191,041	1	18	121,944	47,220	18,922	33,502	221,588	0.885	0.274	1.160
2020	258,109	1	26	190,710	251,019	42,800	66,809	551,338	1.711	0.425	2.136
2021	256,006	0	35	0	403,814	0	89,056	492,869	1.577	0.348	1.925
<b>MA Total:</b>	<b>783,957</b>	<b>2</b>	<b>92</b>	<b>312,654</b>	<b>867,287</b>	<b>61,722</b>	<b>237,792</b>	<b>1,479,455</b>	<b>1.505</b>	<b>0.382</b>	<b>1.887</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.581	1.083	.
(14) Massachusetts Credibility:	0.220	0.320	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	1.234	1.282	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.971	0.439	1.410
(20) Relativity to Underlying Present Rate:	1.248	1.297	.
(21) Credibility to Underlying Relativity:	0.780	0.680	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.321	1.228	.
(24) Balanced Formula Relativity:	1.320	1.219	1.292

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## Calculation of Class Relativities

Class(es): 3220 CAN MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	101,274	0	6	0	151,196	0	32,127	183,323	1,493	0,317	1,810
2018	0	0	0	0	0	0	0	0	0,000	0,000	0,000
2019	39,299	0	3	0	23,320	0	21,252	44,572	0,593	0,541	1,134
2020	183	0	0	0	0	0	0	0	0,000	0,000	0,000
2021	0	0	0	0	0	0	0	0	0,000	0,000	0,000
<b>MA Total:</b>	<b>140,757</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>174,516</b>	<b>0</b>	<b>53,379</b>	<b>227,894</b>	<b>1,240</b>	<b>0,379</b>	<b>1,619</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.302	1.075	.
(14) Massachusetts Credibility:	0.110	0.150	.
(15) Countrywide Pure Premium:	0.901	0.270	1.171
(16) Countrywide Indicated Relativity:	1.012	0.836	.
(17) Countrywide Credibility:	0.450	0.430	.
(18) Countrywide Lost-Time Claims:	265.00	.	.
(19) Pure Premium Underlying Present Rate:	0.952	0.394	1.346
(20) Relativity to Underlying Present Rate:	1.224	1.165	.
(21) Credibility to Underlying Relativity:	0.440	0.420	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.137	1.010	.
(24) Balanced Formula Relativity:	1.136	1.002	1.100

Class(es): 3255 WIRE CLOTH MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,331	0	0	0	0	0	0	0	0,000	0,000	0,000
2018	1,155	0	0	0	0	0	0	0	0,000	0,000	0,000
2019	1,021	0	0	0	0	0	0	0	0,000	0,000	0,000
2020	1,663	0	2	0	0	0	590	590	0,000	0,355	0,355
2021	2,604	0	1	0	325	0	290	616	0,125	0,112	0,237
<b>MA Total:</b>	<b>7,774</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>325</b>	<b>0</b>	<b>881</b>	<b>1,206</b>	<b>0,042</b>	<b>0,113</b>	<b>0,155</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.044	0.321	.
(14) Massachusetts Credibility:	0.030	0.050	.
(15) Countrywide Pure Premium:	0.484	0.274	0.758
(16) Countrywide Indicated Relativity:	0.543	0.847	.
(17) Countrywide Credibility:	0.220	0.230	.
(18) Countrywide Lost-Time Claims:	25,000	.	.
(19) Pure Premium Underlying Present Rate:	0.847	0.383	1.231
(20) Relativity to Underlying Present Rate:	1.089	1.133	.
(21) Credibility to Underlying Relativity:	0.750	0.720	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.938	1.027	.
(24) Balanced Formula Relativity:	0.937	1.019	0.959

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## Calculation of Class Relativities

Class(es): 3257 WIRE GOODS MFG - NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	251.847	0	62	0	101.040	0	57.770	158.809	0.401	0.229	0.631
2018	264.351	0	29	0	225.990	0	232.894	458.883	0.855	0.881	1.736
2019	226.741	1	27	254.074	92.622	160.227	116.410	623.334	1.529	1.220	2.749
2020	254.474	3	19	754.919	86.596	184.268	23.469	1,049.252	3.307	0.816	4.123
2021	278.807	1	37	30.739	401.515	10.140	116.080	558.474	1.550	0.453	2.003
<b>MA Total:</b>	<b>1,276.220</b>	<b>5</b>	<b>174</b>	<b>1,039.732</b>	<b>907.762</b>	<b>354.635</b>	<b>546.623</b>	<b>2,848.753</b>	<b>1.526</b>	<b>0.706</b>	<b>2.232</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.603	2.001	.
(14) Massachusetts Credibility:	0.270	0.420	.
(15) Countrywide Pure Premium:	1.104	0.445	1.549
(16) Countrywide Indicated Relativity:	1.240	1.375	.
(17) Countrywide Credibility:	0.370	0.290	.
(18) Countrywide Lost-Time Claims:	857.00	.	.
(19) Pure Premium Underlying Present Rate:	0.961	0.545	1.506
(20) Relativity to Underlying Present Rate:	1.236	1.611	.
(21) Credibility to Underlying Relativity:	0.360	0.290	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.336	1.706	.
(24) Balanced Formula Relativity:	1.335	1.693	1.432

Class(es): 3270 EYELET MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	5.750	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	9.623	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	5.916	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	5.863	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	7.521	1	0	5.220	0	11.034	0	16.255	0.694	1.467	2.161
<b>MA Total:</b>	<b>34.674</b>	<b>1</b>	<b>0</b>	<b>5.220</b>	<b>0</b>	<b>11.034</b>	<b>0</b>	<b>16.255</b>	<b>0.151</b>	<b>0.318</b>	<b>0.469</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.158	0.902	.
(14) Massachusetts Credibility:	0.060	0.080	.
(15) Countrywide Pure Premium:	0.671	0.329	1.000
(16) Countrywide Indicated Relativity:	0.753	1.018	.
(17) Countrywide Credibility:	0.350	0.370	.
(18) Countrywide Lost-Time Claims:	84.000	.	.
(19) Pure Premium Underlying Present Rate:	0.749	0.347	1.096
(20) Relativity to Underlying Present Rate:	0.963	1.027	.
(21) Credibility to Underlying Relativity:	0.590	0.550	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.841	1.014	.
(24) Balanced Formula Relativity:	0.840	1.006	0.885

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
3300 BED SPRING OR WIRE MATTRESS MFG											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	286	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	1,538	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	20	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	0	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>1,845</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.020	0.040	.
(15) Countrywide Pure Premium:	1.758	0.799	2.557
(16) Countrywide Indicated Relativity:	1.974	2.469	.
(17) Countrywide Credibility:	0.490	0.480	.
(18) Countrywide Lost-Time Claims:	378.00	.	.
(19) Pure Premium Underlying Present Rate:	1.319	0.805	2.124
(20) Relativity to Underlying Present Rate:	1.695	2.379	.
(21) Credibility to Underlying Relativity:	0.490	0.480	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.798	2.327	.
(24) Balanced Formula Relativity:	1.796	2.309	1.935

Class(es):		Effective: 7/1/2024							Manufacturing		
3315 BRASS OR COPPER GOODS MFG											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	217.137	0	35	0	494.282	0	163.396	657.678	2.276	0.752	3.029
2018	207.391	0	24	0	194.673	0	95.078	289.751	0.939	0.458	1.397
2019	232.967	1	34	72.443	231.617	76.055	100.051	480.165	1.305	0.756	2.061
2020	172.442	1	15	19.238	228.904	9.228	66.183	323.553	1.439	0.437	1.876
2021	180.675	0	16	0	331.365	0	36.366	367.732	1.834	0.201	2.035
<b>MA Total:</b>	<b>1,010.612</b>	<b>2</b>	<b>124</b>	<b>91.681</b>	<b>1,480.842</b>	<b>85.283</b>	<b>461.074</b>	<b>2,118.880</b>	<b>1.556</b>	<b>0.541</b>	<b>2.097</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.635	1.532	.
(14) Massachusetts Credibility:	0.270	0.390	.
(15) Countrywide Pure Premium:	1.526	0.481	2.007
(16) Countrywide Indicated Relativity:	1.714	1.486	.
(17) Countrywide Credibility:	0.370	0.310	.
(18) Countrywide Lost-Time Claims:	144.00	.	.
(19) Pure Premium Underlying Present Rate:	1.248	0.574	1.822
(20) Relativity to Underlying Present Rate:	1.604	1.696	.
(21) Credibility to Underlying Relativity:	0.360	0.300	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.653	1.567	.
(24) Balanced Formula Relativity:	1.651	1.555	1.625

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## Calculation of Class Relativities

Class(es): 3336 TYPE FOUNDRY		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	4,022	0	1	0	0	0	142	142	0.000	0.035	0.035
2018	6,990	0	5	0	18,226	0	5,323	23,549	2.607	0.761	3.369
2019	7,981	0	2	0	0	0	822	822	0.000	0.103	0.103
2020	3,836	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	6,972	0	1	0	0	0	417	417	0.000	0.060	0.060
<b>MA Total:</b>	<b>29,801</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>18,226</b>	<b>0</b>	<b>6,704</b>	<b>24,930</b>	<b>0.612</b>	<b>0.225</b>	<b>0.837</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.642	0.638	.
(14) Massachusetts Credibility:	0.060	0.080	.
(15) Countrywide Pure Premium:	1.278	0.435	1.713
(16) Countrywide Indicated Relativity:	1.435	1.346	.
(17) Countrywide Credibility:	0.470	0.460	.
(18) Countrywide Lost-Time Claims:	317.00	.	.
(19) Pure Premium Underlying Present Rate:	1.052	0.399	1.451
(20) Relativity to Underlying Present Rate:	1.351	1.180	.
(21) Credibility to Underlying Relativity:	0.470	0.460	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.348	1.213	.
(24) Balanced Formula Relativity:	1.347	1.203	1.308

Class(es): 3365 WELDING OR CUTTING - NOC & DRIVERS		Effective: 7/1/2024							Construction		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	162,505	0	19	0	337,218	0	153,721	490,940	2.075	0.946	3.021
2018	140,986	1	19	20,242	262,761	31,667	380,290	694,959	2.007	2.922	4.929
2019	125,391	0	9	0	159,252	0	52,222	211,474	1.270	0.416	1.687
2020	134,835	0	13	0	229,442	0	73,770	303,212	1.702	0.547	2.249
2021	155,808	0	9	0	61,657	0	93,702	155,359	0.396	0.601	0.997
<b>MA Total:</b>	<b>719,525</b>	<b>1</b>	<b>69</b>	<b>20,242</b>	<b>1,050,331</b>	<b>31,667</b>	<b>753,706</b>	<b>1,855,945</b>	<b>1.488</b>	<b>1.092</b>	<b>2.579</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.629	1.268	.
(14) Massachusetts Credibility:	0.270	0.420	.
(15) Countrywide Pure Premium:	2.514	0.779	3.293
(16) Countrywide Indicated Relativity:	1.068	0.904	.
(17) Countrywide Credibility:	0.370	0.290	.
(18) Countrywide Lost-Time Claims:	863.00	.	.
(19) Pure Premium Underlying Present Rate:	1.758	0.957	2.715
(20) Relativity to Underlying Present Rate:	0.868	1.186	.
(21) Credibility to Underlying Relativity:	0.360	0.290	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.878	1.139	.
(24) Balanced Formula Relativity:	0.887	1.143	0.955

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## Calculation of Class Relativities

Class(es): 3372 ELECTROPLATING		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	586,890	2	54	88,003	162,831	88,045	115,571	454,449	0.427	0.347	0.774
2018	608,214	6	70	622,886	529,411	139,289	242,898	1,534,484	1.895	0.628	2.523
2019	684,836	1	77	176,757	1,008,478	41,987	270,052	1,497,274	1.731	0.456	2.186
2020	553,973	1	33	13,355	40,974	910	36,200	91,439	0.098	0.067	0.165
2021	573,631	1	33	4,145	349,490	23,254	126,918	503,807	0.616	0.262	0.878
<b>MA Total:</b>	<b>3,007,544</b>	<b>11</b>	<b>267</b>	<b>905,145</b>	<b>2,091,184</b>	<b>293,486</b>	<b>791,638</b>	<b>4,081,454</b>	<b>0.996</b>	<b>0.361</b>	<b>1.357</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.047	1.022	.
(14) Massachusetts Credibility:	0.380	0.530	.
(15) Countrywide Pure Premium:	1.167	0.431	1.599
(16) Countrywide Indicated Relativity:	1.311	1.333	.
(17) Countrywide Credibility:	0.310	0.240	.
(18) Countrywide Lost-Time Claims:	882.00	.	.
(19) Pure Premium Underlying Present Rate:	0.959	0.412	1.371
(20) Relativity to Underlying Present Rate:	1.232	1.219	.
(21) Credibility to Underlying Relativity:	0.310	0.230	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.186	1.142	.
(24) Balanced Formula Relativity:	1.185	1.133	1.171

Class(es): 3373 GALVANIZING OR TINNING - NOT ELECTROLYTIC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	7,270	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	9,883	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	16,016	0	1	0	0	0	1,069	1,069	0.000	0.067	0.067
2020	11,198	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	11,788	0	2	0	32,936	0	34,308	67,244	2.794	2.911	5.705
<b>MA Total:</b>	<b>56,155</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>32,936</b>	<b>0</b>	<b>35,378</b>	<b>68,314</b>	<b>0.587</b>	<b>0.630</b>	<b>1.217</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.616	1.785	.
(14) Massachusetts Credibility:	0.100	0.130	.
(15) Countrywide Pure Premium:	2.126	0.686	2.813
(16) Countrywide Indicated Relativity:	2.388	2.122	.
(17) Countrywide Credibility:	0.450	0.440	.
(18) Countrywide Lost-Time Claims:	235.00	.	.
(19) Pure Premium Underlying Present Rate:	1.689	0.602	2.291
(20) Relativity to Underlying Present Rate:	2.171	1.780	.
(21) Credibility to Underlying Relativity:	0.450	0.430	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	2.113	1.931	.
(24) Balanced Formula Relativity:	2.111	1.916	2.058

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## Calculation of Class Relativities

Class(es): 3381 SILVERWARE MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	7,161	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	7,276	0	1	0	0	0	100	100	0.000	0.014	0.014
2019	7,328	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	5,049	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	5,856	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>32,670</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>100</b>	<b>0.000</b>	<b>0.003</b>	<b>0.003</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.009	.
(14) Massachusetts Credibility:	0.060	0.080	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	0.963	0.865	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.758	0.296	1.054
(20) Relativity to Underlying Present Rate:	0.974	0.876	.
(21) Credibility to Underlying Relativity:	0.940	0.920	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.915	0.807	.
(24) Balanced Formula Relativity:	0.914	0.800	0.883

Class(es): 3383 JEWELRY MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	521,522	0	40	0	174,144	0	79,519	253,663	0.334	0.152	0.486
2018	629,724	1	36	73,340	316,827	71,566	121,690	583,423	0.620	0.307	0.926
2019	516,372	0	42	0	240,114	0	106,229	346,342	0.465	0.206	0.671
2020	526,435	0	49	0	418,589	0	234,387	652,976	0.795	0.445	1.240
2021	524,353	2	28	300,261	30,045	76,728	48,514	455,548	0.630	0.239	0.869
<b>MA Total:</b>	<b>2,718,406</b>	<b>3</b>	<b>195</b>	<b>373,601</b>	<b>1,179,719</b>	<b>148,294</b>	<b>590,339</b>	<b>2,291,953</b>	<b>0.571</b>	<b>0.272</b>	<b>0.843</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.600	0.770	.
(14) Massachusetts Credibility:	0.290	0.430	.
(15) Countrywide Pure Premium:	0.625	0.256	0.882
(16) Countrywide Indicated Relativity:	0.702	0.792	.
(17) Countrywide Credibility:	0.360	0.290	.
(18) Countrywide Lost-Time Claims:	230.00	.	.
(19) Pure Premium Underlying Present Rate:	0.558	0.265	0.824
(20) Relativity to Underlying Present Rate:	0.718	0.784	.
(21) Credibility to Underlying Relativity:	0.350	0.280	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.678	0.780	.
(24) Balanced Formula Relativity:	0.677	0.774	0.704

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## Calculation of Class Relativities

Class(es): 3385 WATCH MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	24,734	0	2	0	0	0	1,092	1,092	0.000	0.044	0.044
2018	19,496	0	2	0	0	0	1,145	1,145	0.000	0.059	0.059
2019	16,616	0	1	0	744	0	8,451	9,195	0.045	0.509	0.553
2020	17,285	0	1	0	0	0	1,126	1,126	0.000	0.065	0.065
2021	16,014	0	1	0	0	0	1,172	1,172	0.000	0.073	0.073
<b>MA Total:</b>	<b>94,145</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>744</b>	<b>0</b>	<b>12,986</b>	<b>13,730</b>	<b>0.008</b>	<b>0.138</b>	<b>0.146</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.008	0.391	.
(14) Massachusetts Credibility:	0.060	0.100	.
(15) Countrywide Pure Premium:	0.437	0.340	0.776
(16) Countrywide Indicated Relativity:	0.490	1.050	.
(17) Countrywide Credibility:	0.160	0.170	.
(18) Countrywide Lost-Time Claims:	12.000	.	.
(19) Pure Premium Underlying Present Rate:	0.358	0.188	0.547
(20) Relativity to Underlying Present Rate:	0.460	0.557	.
(21) Credibility to Underlying Relativity:	0.780	0.730	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.438	0.624	.
(24) Balanced Formula Relativity:	0.438	0.619	0.487

Class(es): 3507 CONSTRUCTION OR AGRICULTURAL MACHINERY MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	26,520	0	5	0	198,278	0	31,411	229,689	7.477	1.184	8.661
2018	31,839	0	4	0	0	0	4,856	4,856	0.000	0.153	0.153
2019	29,840	0	6	0	1,543	0	4,587	6,130	0.052	0.154	0.205
2020	26,369	1	6	51,129	19,246	23,826	10,473	104,675	2.669	1.301	3.970
2021	27,378	0	5	0	177,141	0	63,005	240,147	6.470	2.301	8.772
<b>MA Total:</b>	<b>141,945</b>	<b>1</b>	<b>26</b>	<b>51,129</b>	<b>396,209</b>	<b>23,826</b>	<b>114,332</b>	<b>585,496</b>	<b>3.151</b>	<b>0.973</b>	<b>4.125</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.311	2.758	.
(14) Massachusetts Credibility:	0.120	0.170	.
(15) Countrywide Pure Premium:	1.132	0.427	1.559
(16) Countrywide Indicated Relativity:	1.272	1.320	.
(17) Countrywide Credibility:	0.440	0.420	.
(18) Countrywide Lost-Time Claims:	4136.0	.	.
(19) Pure Premium Underlying Present Rate:	1.187	0.469	1.655
(20) Relativity to Underlying Present Rate:	1.525	1.385	.
(21) Credibility to Underlying Relativity:	0.440	0.410	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.628	1.591	.
(24) Balanced Formula Relativity:	1.626	1.579	1.613

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
3515 TEXTILE MACHINERY MFG											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	49,945	0	12	0	30,723	0	15,653	46,377	0.615	0.313	0.929
2018	48,410	0	16	0	45,261	0	10,372	55,632	0.935	0.214	1.149
2019	50,787	0	12	0	35,726	0	29,994	65,720	0.703	0.591	1.294
2020	49,247	0	8	0	43,255	0	22,156	65,411	0.878	0.450	1.328
2021	55,528	0	15	0	212,308	0	33,670	245,978	3.823	0.606	4.430
<b>MA Total:</b>	<b>253,918</b>	<b>0</b>	<b>63</b>	<b>0</b>	<b>367,273</b>	<b>0</b>	<b>111,845</b>	<b>479,117</b>	<b>1.446</b>	<b>0.440</b>	<b>1.887</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.519	1.248	.
(14) Massachusetts Credibility:	0.140	0.210	.
(15) Countrywide Pure Premium:	0.682	0.217	0.899
(16) Countrywide Indicated Relativity:	0.766	0.672	.
(17) Countrywide Credibility:	0.240	0.250	.
(18) Countrywide Lost-Time Claims:	31.000	.	.
(19) Pure Premium Underlying Present Rate:	1.017	0.474	1.491
(20) Relativity to Underlying Present Rate:	1.307	1.402	.
(21) Credibility to Underlying Relativity:	0.620	0.540	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.207	1.187	.
(24) Balanced Formula Relativity:	1.205	1.178	1.198

Class(es):		Effective: 7/1/2024							Manufacturing		
3558 BOOT OR SHOE MACHINERY MFG											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,374	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	2,557	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	2,561	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	2,280	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	2,182	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>11,954</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.020	0.040	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	0.325	0.513	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.256	0.176	0.432
(20) Relativity to Underlying Present Rate:	0.329	0.520	.
(21) Credibility to Underlying Relativity:	0.980	0.960	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.322	0.499	.
(24) Balanced Formula Relativity:	0.322	0.495	0.369

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
3571 STEAM OR AIR PRESSURE GAUGE MFG											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	9.343	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	11.801	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	12.689	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	4.946	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	16.002	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>54.780</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.050	0.060	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	0.341	0.298	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.268	0.102	0.370
(20) Relativity to Underlying Present Rate:	0.345	0.301	.
(21) Credibility to Underlying Relativity:	0.950	0.940	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.327	0.283	.
(24) Balanced Formula Relativity:	0.327	0.281	0.315

Class(es):		Effective: 7/1/2024							Manufacturing		
3574 CASH REGISTER MFG											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	5.938.310	10	419	1.695.582	2.655.088	517.893	1.378.759	6.247.321	0.733	0.319	1.052
2018	6.412.676	10	410	700.911	3.204.802	106.859	1.633.994	5.646.566	0.609	0.271	0.881
2019	6.647.603	7	317	1.281.335	3.093.117	425.279	1.454.545	6.254.276	0.658	0.283	0.941
2020	6.560.624	10	353	1.871.676	5.268.598	338.313	1.976.019	9.454.606	1.088	0.353	1.441
2021	6.543.124	8	314	1.751.697	4.767.451	437.051	1.856.601	8.812.799	0.996	0.351	1.347
<b>MA Total:</b>	<b>32.102.337</b>	<b>45</b>	<b>1.813</b>	<b>7.301.201</b>	<b>18.989.056</b>	<b>1.825.395</b>	<b>8.299.917</b>	<b>36.415.569</b>	<b>0.819</b>	<b>0.315</b>	<b>1.134</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.860	0.894	.
(14) Massachusetts Credibility:	0.850	1.000	.
(15) Countrywide Pure Premium:	0.846	0.297	1.144
(16) Countrywide Indicated Relativity:	0.950	0.919	.
(17) Countrywide Credibility:	0.080	0.000	.
(18) Countrywide Lost-Time Claims:	15858	.	.
(19) Pure Premium Underlying Present Rate:	0.682	0.304	0.986
(20) Relativity to Underlying Present Rate:	0.876	0.900	.
(21) Credibility to Underlying Relativity:	0.070	0.000	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.869	0.894	.
(24) Balanced Formula Relativity:	0.868	0.887	0.873

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## Calculation of Class Relativities

Class(es): 3612 PUMP MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	274.512	0	15	0	27.912	0	15.505	43.417	0.102	0.056	0.158
2018	236.794	0	14	0	484.527	0	178.698	663.225	2.046	0.755	2.801
2019	230.999	0	12	0	4.196	0	18.636	22.832	0.018	0.081	0.099
2020	243.857	0	15	0	104.717	0	89.161	193.878	0.429	0.366	0.795
2021	275.899	1	14	316.092	9.258	72.382	18.797	416.530	1.179	0.330	1.510
<b>MA Total:</b>	<b>1,262,061</b>	<b>1</b>	<b>70</b>	<b>316,092</b>	<b>630,610</b>	<b>72,382</b>	<b>320,797</b>	<b>1,339,882</b>	<b>0.750</b>	<b>0.312</b>	<b>1.062</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.788	0.883	.
(14) Massachusetts Credibility:	0.220	0.320	.
(15) Countrywide Pure Premium:	0.884	0.312	1.196
(16) Countrywide Indicated Relativity:	0.993	0.964	.
(17) Countrywide Credibility:	0.390	0.340	.
(18) Countrywide Lost-Time Claims:	1494.0	.	.
(19) Pure Premium Underlying Present Rate:	0.568	0.268	0.836
(20) Relativity to Underlying Present Rate:	0.729	0.793	.
(21) Credibility to Underlying Relativity:	0.390	0.340	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.845	0.880	.
(24) Balanced Formula Relativity:	0.844	0.873	0.852

Class(es): 3620 BOILERMAKING		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	129.551	1	16	253.763	140.665	62.452	48.513	505.394	3.045	0.857	3.901
2018	127.865	0	16	0	61.344	0	101.640	162.984	0.480	0.795	1.275
2019	137.530	0	11	0	396.716	0	87.481	484.197	2.885	0.636	3.521
2020	163.617	0	18	0	51.501	0	37.316	88.817	0.315	0.228	0.543
2021	266.088	1	18	226.803	138.956	30.504	86.414	482.677	1.375	0.439	1.814
<b>MA Total:</b>	<b>824.651</b>	<b>2</b>	<b>79</b>	<b>480,566</b>	<b>789,182</b>	<b>92,956</b>	<b>361,365</b>	<b>1,724,070</b>	<b>1.540</b>	<b>0.551</b>	<b>2.091</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.617	1.561	.
(14) Massachusetts Credibility:	0.260	0.360	.
(15) Countrywide Pure Premium:	1.250	0.423	1.674
(16) Countrywide Indicated Relativity:	1.404	1.309	.
(17) Countrywide Credibility:	0.370	0.320	.
(18) Countrywide Lost-Time Claims:	935.00	.	.
(19) Pure Premium Underlying Present Rate:	1.403	0.547	1.950
(20) Relativity to Underlying Present Rate:	1.803	1.616	.
(21) Credibility to Underlying Relativity:	0.370	0.320	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.607	1.498	.
(24) Balanced Formula Relativity:	1.605	1.486	1.573

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## Calculation of Class Relativities

Class(es): 3634 VALVE MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums		
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	251,348	0	21	0	58,114	0	40,990	99,104	0.231	0.163	0.394
2018	368,076	3	16	552,835	202,664	92,707	62,667	910,873	2.053	0.422	2.475
2019	219,396	2	13	289,540	87,631	58,545	68,636	504,352	1.719	0.580	2.299
2020	298,266	1	14	380,154	150,833	22,881	83,284	637,152	1.780	0.356	2.136
2021	451,771	1	15	5,649	112,110	16,333	57,883	191,975	0.261	0.164	0.425
<b>MA Total:</b>	<b>1,588,857</b>	<b>7</b>	<b>79</b>	<b>1,228,178</b>	<b>611,352</b>	<b>190,466</b>	<b>313,461</b>	<b>2,343,457</b>	<b>1.158</b>	<b>0.317</b>	<b>1.475</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.216	0.899	.
(14) Massachusetts Credibility:	0.270	0.360	.
(15) Countrywide Pure Premium:	0.680	0.265	0.945
(16) Countrywide Indicated Relativity:	0.763	0.821	.
(17) Countrywide Credibility:	0.370	0.320	.
(18) Countrywide Lost-Time Claims:	719.00	.	.
(19) Pure Premium Underlying Present Rate:	0.782	0.295	1.077
(20) Relativity to Underlying Present Rate:	1.005	0.871	.
(21) Credibility to Underlying Relativity:	0.360	0.320	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.973	0.865	.
(24) Balanced Formula Relativity:	0.972	0.858	0.941

Class(es): 3635 GEAR MFG OR GRINDING		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums		
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	55,670	0	5	0	1,970	0	1,838	3,807	0.035	0.033	0.068
2018	75,529	0	5	0	21,898	0	9,157	31,055	0.290	0.121	0.411
2019	332,597	0	20	0	23,229	0	28,688	51,917	0.070	0.086	0.156
2020	266,867	1	18	9,576	56,496	10,892	62,712	139,676	0.248	0.276	0.523
2021	65,176	0	1	0	0	0	212	212	0.000	0.003	0.003
<b>MA Total:</b>	<b>795,839</b>	<b>1</b>	<b>49</b>	<b>9,576</b>	<b>103,593</b>	<b>10,892</b>	<b>102,607</b>	<b>226,668</b>	<b>0.142</b>	<b>0.143</b>	<b>0.285</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.149	0.404	.
(14) Massachusetts Credibility:	0.200	0.340	.
(15) Countrywide Pure Premium:	0.643	0.219	0.862
(16) Countrywide Indicated Relativity:	0.723	0.677	.
(17) Countrywide Credibility:	0.400	0.330	.
(18) Countrywide Lost-Time Claims:	358.00	.	.
(19) Pure Premium Underlying Present Rate:	0.734	0.524	1.258
(20) Relativity to Underlying Present Rate:	0.943	1.549	.
(21) Credibility to Underlying Relativity:	0.400	0.330	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.696	0.872	.
(24) Balanced Formula Relativity:	0.695	0.865	0.741

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## Calculation of Class Relativities

Class(es): 3642 BATTERY MFG-DRY		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	68.163	0	1	0	0	0	909	909	0.000	0.013	0.013
2018	79.481	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	50.226	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	68.267	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	135.140	0	1	0	0	0	1,532	1,532	0.000	0.011	0.011
<b>MA Total:</b>	<b>401.277</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,441</b>	<b>2,441</b>	<b>0.000</b>	<b>0.006</b>	<b>0.006</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.017	.
(14) Massachusetts Credibility:	0.130	0.180	.
(15) Countrywide Pure Premium:	0.957	0.330	1.287
(16) Countrywide Indicated Relativity:	1.075	1.020	.
(17) Countrywide Credibility:	0.390	0.410	.
(18) Countrywide Lost-Time Claims:	112.00	.	.
(19) Pure Premium Underlying Present Rate:	0.545	0.218	0.764
(20) Relativity to Underlying Present Rate:	0.701	0.645	.
(21) Credibility to Underlying Relativity:	0.480	0.410	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.755	0.686	.
(24) Balanced Formula Relativity:	0.755	0.681	0.735

Class(es): 3643 ELECTRIC POWER OR TRANSMISSION EQUIP MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,061.762	2	66	109.490	754.013	36.955	270.012	1,170.469	0.813	0.289	1.102
2018	1,093.376	7	59	1,114.753	429.601	195.558	125.557	1,865.469	1.412	0.294	1.706
2019	925.512	2	61	197.980	1,227.197	17.908	515.847	1,958.932	1.540	0.577	2.117
2020	894.392	4	35	717.629	878.472	144.591	197.075	1,937.767	1.785	0.382	2.167
2021	975.717	2	39	174.360	797.396	39.937	231.049	1,242.742	0.996	0.278	1.274
<b>MA Total:</b>	<b>4,950.759</b>	<b>17</b>	<b>260</b>	<b>2,314.212</b>	<b>4,086.679</b>	<b>434.950</b>	<b>1,339.540</b>	<b>8,175.380</b>	<b>1.293</b>	<b>0.358</b>	<b>1.651</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.358	1.016	.
(14) Massachusetts Credibility:	0.420	0.590	.
(15) Countrywide Pure Premium:	0.911	0.309	1.220
(16) Countrywide Indicated Relativity:	1.023	0.955	.
(17) Countrywide Credibility:	0.290	0.210	.
(18) Countrywide Lost-Time Claims:	1730.0	.	.
(19) Pure Premium Underlying Present Rate:	0.787	0.324	1.111
(20) Relativity to Underlying Present Rate:	1.011	0.957	.
(21) Credibility to Underlying Relativity:	0.290	0.200	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.160	0.991	.
(24) Balanced Formula Relativity:	1.159	0.983	1.112

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## Calculation of Class Relativities

Class(es): 3647 BATTERY MFG-STORAGE		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	3.828	0	1	0	0	0	119	119	0.000	0.031	0.031
2018	2.071	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	8.336	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	26.168	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	2.852	0	1	0	0	0	805	805	0.000	0.282	0.282
<b>MA Total:</b>	<b>43,254</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>923</b>	<b>923</b>	<b>0.000</b>	<b>0.021</b>	<b>0.021</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.060	.
(14) Massachusetts Credibility:	0.070	0.100	.
(15) Countrywide Pure Premium:	1.173	0.414	1.587
(16) Countrywide Indicated Relativity:	1.317	1.280	.
(17) Countrywide Credibility:	0.470	0.450	.
(18) Countrywide Lost-Time Claims:	551.00	.	.
(19) Pure Premium Underlying Present Rate:	0.960	0.390	1.350
(20) Relativity to Underlying Present Rate:	1.234	1.152	.
(21) Credibility to Underlying Relativity:	0.460	0.450	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.187	1.100	.
(24) Balanced Formula Relativity:	1.185	1.092	1.160

Class(es): 3648 AUTOMOTIVE LIGHTING, IGNITION APPARATUS MFG NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	31.529	0	1	0	0	0	40	40	0.000	0.001	0.001
2018	36.729	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	23.071	0	1	0	0	0	2.002	2.002	0.000	0.087	0.087
2020	39.174	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	6.199	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>136,702</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,042</b>	<b>2,042</b>	<b>0.000</b>	<b>0.015</b>	<b>0.015</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.042	.
(14) Massachusetts Credibility:	0.080	0.120	.
(15) Countrywide Pure Premium:	0.528	0.206	0.734
(16) Countrywide Indicated Relativity:	0.593	0.638	.
(17) Countrywide Credibility:	0.460	0.440	.
(18) Countrywide Lost-Time Claims:	511.00	.	.
(19) Pure Premium Underlying Present Rate:	0.438	0.207	0.645
(20) Relativity to Underlying Present Rate:	0.563	0.611	.
(21) Credibility to Underlying Relativity:	0.460	0.440	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.531	0.555	.
(24) Balanced Formula Relativity:	0.531	0.551	0.536

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
3681 TELEVISION, RADIO, TELEPHONE OR TELECOMMUNCTN DEVICE MFG NOC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	5,730,181	10	184	653,327	880,563	193,827	392,761	2,120,478	0.268	0.102	0.370
2018	5,613,814	2	184	304,417	1,019,771	46,624	478,196	1,849,008	0.236	0.093	0.329
2019	6,413,543	5	163	473,576	1,100,940	100,777	416,941	2,092,233	0.245	0.081	0.326
2020	6,671,966	4	144	561,446	1,986,538	84,830	528,896	3,161,710	0.382	0.092	0.474
2021	6,906,986	2	141	182,672	2,043,352	27,486	600,767	2,854,278	0.322	0.091	0.413
<b>MA Total:</b>	<b>31,336,490</b>	<b>23</b>	<b>816</b>	<b>2,175,438</b>	<b>7,031,165</b>	<b>453,544</b>	<b>2,417,561</b>	<b>12,077,707</b>	<b>0.294</b>	<b>0.092</b>	<b>0.385</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.309	0.260	.
(14) Massachusetts Credibility:	0.570	0.780	.
(15) Countrywide Pure Premium:	0.298	0.114	0.413
(16) Countrywide Indicated Relativity:	0.335	0.354	.
(17) Countrywide Credibility:	0.220	0.110	.
(18) Countrywide Lost-Time Claims:	2568.0	.	.
(19) Pure Premium Underlying Present Rate:	0.258	0.101	0.360
(20) Relativity to Underlying Present Rate:	0.332	0.300	.
(21) Credibility to Underlying Relativity:	0.210	0.110	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.319	0.274	.
(24) Balanced Formula Relativity:	0.319	0.272	0.306

Class(es):		Effective: 7/1/2024							Manufacturing		
3685 INSTRUMENT MFG NOC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	6,500,676	6	229	708,797	331,102	76,610	334,057	1,450,566	0.160	0.063	0.223
2018	6,726,817	6	210	267,402	1,185,658	156,148	625,502	2,234,709	0.216	0.116	0.332
2019	6,425,318	5	136	482,040	1,140,630	117,174	690,093	2,429,938	0.253	0.126	0.378
2020	7,339,575	4	171	718,606	1,105,972	163,464	347,864	2,335,906	0.249	0.070	0.318
2021	7,285,623	4	168	232,127	2,657,599	149,411	829,729	3,868,867	0.397	0.134	0.531
<b>MA Total:</b>	<b>34,278,009</b>	<b>25</b>	<b>914</b>	<b>2,408,972</b>	<b>6,420,961</b>	<b>662,807</b>	<b>2,827,245</b>	<b>12,319,986</b>	<b>0.258</b>	<b>0.102</b>	<b>0.359</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.271	0.289	.
(14) Massachusetts Credibility:	0.540	0.770	.
(15) Countrywide Pure Premium:	0.362	0.138	0.499
(16) Countrywide Indicated Relativity:	0.406	0.425	.
(17) Countrywide Credibility:	0.230	0.120	.
(18) Countrywide Lost-Time Claims:	1870.0	.	.
(19) Pure Premium Underlying Present Rate:	0.210	0.090	0.300
(20) Relativity to Underlying Present Rate:	0.270	0.265	.
(21) Credibility to Underlying Relativity:	0.230	0.110	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.302	0.302	.
(24) Balanced Formula Relativity:	0.301	0.300	0.301

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
3724 MACHINERY OR EQUIPMENT ERECT OR REPAIR NOC &DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	3,531,964	17	370	3,136,258	5,124,306	641,858	2,375,525	11,277,948	2,339	0,854	3,193
2018	4,087,015	13	372	2,246,534	4,909,728	483,362	1,879,301	9,518,926	1,751	0,578	2,329
2019	3,940,164	15	361	3,524,107	6,284,216	893,558	3,041,376	13,743,258	2,489	0,999	3,488
2020	4,213,819	16	284	2,338,979	5,319,833	783,317	2,920,047	11,362,176	1,818	0,879	2,696
2021	4,747,312	12	326	2,728,257	7,126,613	625,166	3,960,234	14,440,270	2,076	0,966	3,042
<b>MA Total:</b>	<b>20,520,274</b>	<b>73</b>	<b>1,713</b>	<b>13,974,135</b>	<b>28,764,696</b>	<b>3,427,263</b>	<b>14,176,484</b>	<b>60,342,578</b>	<b>2,083</b>	<b>0,858</b>	<b>2,941</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.881	0.997	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	1.825	0.624	2.449
(16) Countrywide Indicated Relativity:	0.775	0.724	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	8012.0	.	.
(19) Pure Premium Underlying Present Rate:	1.820	0.801	2.621
(20) Relativity to Underlying Present Rate:	0.899	0.992	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.881	0.997	.
(24) Balanced Formula Relativity:	0.890	1.000	0.919

Class(es):		Effective: 7/1/2024							Construction		
3726 BOILER INSTALLATION OR REPAIR-STEAM											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	154,068	0	5	0	78,584	0	22,628	101,212	0.510	0.147	0.657
2018	105,264	0	1	0	0	0	1,068	1,068	0.000	0.010	0.010
2019	114,841	0	5	0	0	0	6,212	6,212	0.000	0.054	0.054
2020	93,033	0	4	0	52,825	0	184,523	237,348	0.568	1.983	2.551
2021	94,785	1	2	564,354	361,388	206,803	63,571	1,196,117	9.767	2.853	12.619
<b>MA Total:</b>	<b>561,991</b>	<b>1</b>	<b>17</b>	<b>564,354</b>	<b>492,797</b>	<b>206,803</b>	<b>278,002</b>	<b>1,541,957</b>	<b>1.881</b>	<b>0.863</b>	<b>2.744</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.795	1.002	.
(14) Massachusetts Credibility:	0.240	0.300	.
(15) Countrywide Pure Premium:	1.859	0.576	2.435
(16) Countrywide Indicated Relativity:	0.790	0.668	.
(17) Countrywide Credibility:	0.380	0.350	.
(18) Countrywide Lost-Time Claims:	444.00	.	.
(19) Pure Premium Underlying Present Rate:	1.602	0.535	2.137
(20) Relativity to Underlying Present Rate:	0.791	0.663	.
(21) Credibility to Underlying Relativity:	0.380	0.350	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.792	0.767	.
(24) Balanced Formula Relativity:	0.800	0.770	0.792

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## Calculation of Class Relativities

Class(es): 3808 AUTOMOBILE MFG OR ASSEMBLY		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	280.125	1	60	232.916	537.382	33.232	337.512	1,141.043	2.750	1.323	4.073
2018	352.933	1	61	80.282	335.787	11.640	202.040	629.749	1.179	0.605	1.784
2019	310.888	1	49	50.962	155.855	46.479	130.209	383.504	0.665	0.568	1.234
2020	515.891	1	79	31.418	502.643	15.153	176.475	725.688	1.035	0.371	1.407
2021	630.403	2	83	291.805	198.661	40.279	130.331	661.075	0.778	0.271	1.049
<b>MA Total:</b>	<b>2,090,240</b>	<b>6</b>	<b>332</b>	<b>687,383</b>	<b>1,730,327</b>	<b>146,783</b>	<b>976,566</b>	<b>3,541,059</b>	<b>1.157</b>	<b>0.537</b>	<b>1.694</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.215	1.523	.
(14) Massachusetts Credibility:	0.370	0.540	.
(15) Countrywide Pure Premium:	1.792	0.518	2.310
(16) Countrywide Indicated Relativity:	2.012	1.602	.
(17) Countrywide Credibility:	0.320	0.230	.
(18) Countrywide Lost-Time Claims:	6399.0	.	.
(19) Pure Premium Underlying Present Rate:	1.339	0.610	1.949
(20) Relativity to Underlying Present Rate:	1.721	1.804	.
(21) Credibility to Underlying Relativity:	0.310	0.230	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.627	1.606	.
(24) Balanced Formula Relativity:	1.625	1.593	1.616

Class(es): 3821 AUTOMOBILE DISMANTLING & DRIVERS		Effective: 7/1/2024							Goods and Services		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	189.775	1	21	221.617	192.012	162.637	54.332	630.598	2.180	1.143	3.323
2018	182.727	0	16	0	51	0	5.913	5.964	0.000	0.032	0.033
2019	169.287	1	23	270.342	192.171	75.234	106.726	644.472	2.732	1.075	3.807
2020	145.079	1	6	186.361	258.189	149.139	40.168	633.857	3.064	1.305	4.369
2021	158.201	0	12	0	70.887	0	29.417	100.304	0.448	0.186	0.634
<b>MA Total:</b>	<b>845,069</b>	<b>3</b>	<b>78</b>	<b>678,319</b>	<b>713,309</b>	<b>387,011</b>	<b>236,556</b>	<b>2,015,195</b>	<b>1.647</b>	<b>0.738</b>	<b>2.385</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.072	2.395	.
(14) Massachusetts Credibility:	0.300	0.470	.
(15) Countrywide Pure Premium:	2.692	1.067	3.759
(16) Countrywide Indicated Relativity:	3.395	3.412	.
(17) Countrywide Credibility:	0.350	0.270	.
(18) Countrywide Lost-Time Claims:	911.00	.	.
(19) Pure Premium Underlying Present Rate:	1.980	1.096	3.076
(20) Relativity to Underlying Present Rate:	3.039	3.763	.
(21) Credibility to Underlying Relativity:	0.350	0.260	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.873	3.025	.
(24) Balanced Formula Relativity:	2.844	3.010	2.890

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## Calculation of Class Relativities

Class(es): 3826 AIRCRAFT ENGINE MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,282,308	11	151	745,818	2,877,705	192,198	1,377,032	5,192,752	1,588	0,688	2,275
2018	2,291,202	10	145	1,222,146	3,613,264	345,444	1,434,834	6,615,689	2,110	0,777	2,887
2019	2,444,600	13	116	3,398,642	4,340,762	827,022	1,658,085	10,224,511	3,166	1,017	4,182
2020	2,493,671	7	73	1,689,619	2,498,010	464,946	1,076,897	5,729,471	1,679	0,618	2,298
2021	2,215,032	12	69	1,312,761	2,568,897	764,497	1,356,942	6,003,097	1,752	0,958	2,710
<b>MA Total:</b>	<b>11,726,814</b>	<b>53</b>	<b>554</b>	<b>8,368,986</b>	<b>15,898,638</b>	<b>2,594,107</b>	<b>6,903,790</b>	<b>33,765,521</b>	<b>2,069</b>	<b>0,810</b>	<b>2,879</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.174	2.295	.
(14) Massachusetts Credibility:	0.770	1.000	.
(15) Countrywide Pure Premium:	0.369	0.125	0.494
(16) Countrywide Indicated Relativity:	0.414	0.388	.
(17) Countrywide Credibility:	0.120	0.000	.
(18) Countrywide Lost-Time Claims:	336.00	.	.
(19) Pure Premium Underlying Present Rate:	1.455	0.715	2.170
(20) Relativity to Underlying Present Rate:	1.870	2.113	.
(21) Credibility to Underlying Relativity:	0.110	0.000	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.929	2.295	.
(24) Balanced Formula Relativity:	1.927	2.277	2.022

Class(es): 3841 TUBULAR METAL PRODUCTS MFG OR ASSEMBLY		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	61,442	0	4	0	3,409	0	7,146	10,555	0.055	0.116	0.172
2018	64,393	0	6	0	4,417	0	2,970	7,387	0.069	0.046	0.115
2019	67,768	0	5	0	1,935	0	4,723	6,658	0.029	0.070	0.098
2020	51,704	0	2	0	450	0	1,929	2,379	0.009	0.037	0.046
2021	54,262	1	4	82,617	7,478	15,913	3,951	109,959	1.660	0.366	2.026
<b>MA Total:</b>	<b>299,569</b>	<b>1</b>	<b>21</b>	<b>82,617</b>	<b>17,689</b>	<b>15,913</b>	<b>20,720</b>	<b>136,938</b>	<b>0.335</b>	<b>0.122</b>	<b>0.457</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.352	0.347	.
(14) Massachusetts Credibility:	0.140	0.200	.
(15) Countrywide Pure Premium:	1.267	0.463	1.730
(16) Countrywide Indicated Relativity:	1.423	1.431	.
(17) Countrywide Credibility:	0.380	0.400	.
(18) Countrywide Lost-Time Claims:	101.00	.	.
(19) Pure Premium Underlying Present Rate:	0.833	0.338	1.171
(20) Relativity to Underlying Present Rate:	1.070	0.999	.
(21) Credibility to Underlying Relativity:	0.480	0.400	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.104	1.041	.
(24) Balanced Formula Relativity:	1.103	1.033	1.084

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Miscellaneous			
4000 SAND OR GRAVEL DIGGING & DRIVERS												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	496,267	0	41	0	1,434,256	0	479,163	1,913,419	2,890	0,966	3,856	
2018	519,175	3	51	1,053,070	1,635,005	225,969	514,205	3,428,249	5,178	1,426	6,603	
2019	443,512	1	25	571,425	343,309	221,722	260,866	1,397,322	2,062	1,088	3,151	
2020	452,082	1	14	610,671	187,380	296,842	102,394	1,197,287	1,765	0,883	2,648	
2021	497,154	4	27	1,318,188	435,158	364,734	416,296	2,534,377	3,527	1,571	5,098	
<b>MA Total:</b>	<b>2,408,189</b>	<b>9</b>	<b>158</b>	<b>3,553,354</b>	<b>4,035,109</b>	<b>1,109,267</b>	<b>1,772,924</b>	<b>10,470,654</b>	<b>3,151</b>	<b>1,197</b>	<b>4,348</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.145	1.207	.
(14) Massachusetts Credibility:	0.510	0.730	.
(15) Countrywide Pure Premium:	2.917	0.991	3.908
(16) Countrywide Indicated Relativity:	1.101	1.049	.
(17) Countrywide Credibility:	0.250	0.140	.
(18) Countrywide Lost-Time Claims:	982.00	.	.
(19) Pure Premium Underlying Present Rate:	2.610	1.149	3.759
(20) Relativity to Underlying Present Rate:	1.154	1.220	.
(21) Credibility to Underlying Relativity:	0.240	0.130	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	1.136	1.187	.
(24) Balanced Formula Relativity:	1.127	1.189	1.144

Class(es):		Effective: 7/1/2024							Manufacturing			
4021 BRICK OR CLAY PRODUCTS MFG NOC & DRIVERS												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	7,427	0	0	0	0	0	0	0	0.000	0.000	0.000	
2018	11,696	0	0	0	0	0	0	0	0.000	0.000	0.000	
2019	12,065	0	1	0	3,825	0	9,399	13,224	0.317	0.779	1,096	
2020	12,344	0	1	0	808	0	2,354	3,162	0.065	0.191	0,256	
2021	15,248	0	1	0	0	0	1,844	1,844	0.000	0.121	0,121	
<b>MA Total:</b>	<b>58,780</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>4,633</b>	<b>0</b>	<b>13,597</b>	<b>18,230</b>	<b>0.079</b>	<b>0.231</b>	<b>0.310</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.083	0.656	.
(14) Massachusetts Credibility:	0.090	0.130	.
(15) Countrywide Pure Premium:	1.729	0.620	2.349
(16) Countrywide Indicated Relativity:	1.941	1.917	.
(17) Countrywide Credibility:	0.460	0.440	.
(18) Countrywide Lost-Time Claims:	232.00	.	.
(19) Pure Premium Underlying Present Rate:	1.298	0.606	1.904
(20) Relativity to Underlying Present Rate:	1.668	1.791	.
(21) Credibility to Underlying Relativity:	0.450	0.430	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.651	1.699	.
(24) Balanced Formula Relativity:	1.649	1.686	1.659

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
4024 REFRACTORY PRODUCTS MFG & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	1,593	0	1	0	0	0	976	976	0.000	0.612	0.612
2019	1,604	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	2,607	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	2,475	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>8,279</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>976</b>	<b>976</b>	<b>0.000</b>	<b>0.118</b>	<b>0.118</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.334	.
(14) Massachusetts Credibility:	0.040	0.060	.
(15) Countrywide Pure Premium:	1.409	0.457	1.866
(16) Countrywide Indicated Relativity:	1.583	1.412	.
(17) Countrywide Credibility:	0.370	0.390	.
(18) Countrywide Lost-Time Claims:	94.000	.	.
(19) Pure Premium Underlying Present Rate:	1.600	0.617	2.217
(20) Relativity to Underlying Present Rate:	2.056	1.824	.
(21) Credibility to Underlying Relativity:	0.590	0.550	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.799	1.574	.
(24) Balanced Formula Relativity:	1.797	1.562	1.733

Class(es):		Effective: 7/1/2024							Manufacturing		
4034 CONCRETE PRODUCTS MFG & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	204,441	0	36	0	869,838	0	197,347	1,067,185	4,255	0,965	5,220
2018	234,855	4	37	1,050,462	24,256	377,697	66,519	1,518,935	4,576	1,891	6,468
2019	238,794	1	43	42,090	1,115,358	211,134	437,035	1,805,616	4,847	2,714	7,561
2020	255,097	1	31	401,367	1,505,151	200,127	598,380	2,705,025	7,474	3,130	10,604
2021	379,751	2	50	182,570	872,773	70,608	301,569	1,427,521	2,779	0,980	3,759
<b>MA Total:</b>	<b>1,312,938</b>	<b>8</b>	<b>197</b>	<b>1,676,489</b>	<b>4,387,377</b>	<b>859,566</b>	<b>1,600,850</b>	<b>8,524,281</b>	<b>4,619</b>	<b>1,874</b>	<b>6,493</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.852	5.311	.
(14) Massachusetts Credibility:	0.420	0.640	.
(15) Countrywide Pure Premium:	2.910	1.127	4.037
(16) Countrywide Indicated Relativity:	3.269	3.484	.
(17) Countrywide Credibility:	0.290	0.180	.
(18) Countrywide Lost-Time Claims:	2683.0	.	.
(19) Pure Premium Underlying Present Rate:	2.832	1.506	4.339
(20) Relativity to Underlying Present Rate:	3.640	4.452	.
(21) Credibility to Underlying Relativity:	0.290	0.180	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	4.041	4.827	.
(24) Balanced Formula Relativity:	4.037	4.790	4.240

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
4036 PLASTERBOARD OR PLASTER BLOCK MFG & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	11,931	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	11,361	0	1	0	0	0	650	650	0.000	0.057	0.057
2019	12,524	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	10,361	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	13,692	0	1	0	9,596	0	2,189	11,784	0.701	0.160	0.861
<b>MA Total:</b>	<b>59,870</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>9,596</b>	<b>0</b>	<b>2,838</b>	<b>12,434</b>	<b>0.160</b>	<b>0.047</b>	<b>0.208</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.168	0.134	.
(14) Massachusetts Credibility:	0.070	0.100	.
(15) Countrywide Pure Premium:	1.160	0.440	1.600
(16) Countrywide Indicated Relativity:	1.303	1.361	.
(17) Countrywide Credibility:	0.470	0.450	.
(18) Countrywide Lost-Time Claims:	296.00	.	.
(19) Pure Premium Underlying Present Rate:	0.769	0.335	1.105
(20) Relativity to Underlying Present Rate:	0.989	0.991	.
(21) Credibility to Underlying Relativity:	0.460	0.450	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.079	1.072	.
(24) Balanced Formula Relativity:	1.078	1.064	1.074

Class(es):		Effective: 7/1/2024							Manufacturing		
4038 PLASTER STATUARY OR ORNAMENT MFG											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	14,182	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	14,055	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	3,988	0	1	0	0	0	1,094	1,094	0.000	0.274	0.274
2020	11,442	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	18,880	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>62,547</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,094</b>	<b>1,094</b>	<b>0.000</b>	<b>0.017</b>	<b>0.017</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.050	.
(14) Massachusetts Credibility:	0.080	0.110	.
(15) Countrywide Pure Premium:	1.016	0.480	1.497
(16) Countrywide Indicated Relativity:	1.141	1.485	.
(17) Countrywide Credibility:	0.250	0.260	.
(18) Countrywide Lost-Time Claims:	36.000	.	.
(19) Pure Premium Underlying Present Rate:	1.096	0.355	1.451
(20) Relativity to Underlying Present Rate:	1.409	1.050	.
(21) Credibility to Underlying Relativity:	0.670	0.630	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.229	1.053	.
(24) Balanced Formula Relativity:	1.228	1.045	1.178

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
4053 POTTERY MFG: CHINA OR TABLEWARE											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	83.652	0	12	0	23.316	0	12.428	35.743	0.279	0.149	0.427
2018	87.442	0	19	0	22.910	0	25.303	48.213	0.262	0.289	0.551
2019	120.604	0	6	0	12.309	0	20.646	32.954	0.102	0.171	0.273
2020	48.660	0	3	0	53.977	0	81.345	135.323	1.109	1.672	2.781
2021	49.593	0	2	0	32.780	0	4.610	37.390	0.661	0.093	0.754
<b>MA Total:</b>	<b>389.951</b>	<b>0</b>	<b>42</b>	<b>0</b>	<b>145.292</b>	<b>0</b>	<b>144.332</b>	<b>289.624</b>	<b>0.373</b>	<b>0.370</b>	<b>0.743</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.391	1.049	.
(14) Massachusetts Credibility:	0.200	0.230	.
(15) Countrywide Pure Premium:	8.878	0.206	9.084
(16) Countrywide Indicated Relativity:	9.972	0.636	.
(17) Countrywide Credibility:	0.060	0.060	.
(18) Countrywide Lost-Time Claims:	1.000	.	.
(19) Pure Premium Underlying Present Rate:	1.456	0.406	1.862
(20) Relativity to Underlying Present Rate:	1.871	1.201	.
(21) Credibility to Underlying Relativity:	0.740	0.710	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	2.061	1.132	.
(24) Balanced Formula Relativity:	2.059	1.123	1.806

Class(es):		Effective: 7/1/2024							Manufacturing		
4062 POTTERY MFG: PORCELAIN WARE-MECHANICAL PRESS FORMING											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	84.799	0	3	0	223.986	0	41.425	265.411	2.641	0.489	3.130
2018	85.131	1	6	86.373	3.397	14.796	4.290	108.857	1.054	0.224	1.279
2019	80.047	1	0	290.140	0	39.615	0	329.754	3.625	0.495	4.120
2020	87.153	0	2	0	6.094	0	35.188	41.282	0.070	0.404	0.474
2021	107.982	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>445.112</b>	<b>2</b>	<b>11</b>	<b>376.513</b>	<b>233.476</b>	<b>54.411</b>	<b>80.903</b>	<b>745.304</b>	<b>1.370</b>	<b>0.304</b>	<b>1.674</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.440	0.861	.
(14) Massachusetts Credibility:	0.180	0.240	.
(15) Countrywide Pure Premium:	1.003	0.412	1.415
(16) Countrywide Indicated Relativity:	1.127	1.274	.
(17) Countrywide Credibility:	0.410	0.380	.
(18) Countrywide Lost-Time Claims:	240.00	.	.
(19) Pure Premium Underlying Present Rate:	0.975	0.372	1.347
(20) Relativity to Underlying Present Rate:	1.253	1.099	.
(21) Credibility to Underlying Relativity:	0.410	0.380	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.235	1.108	.
(24) Balanced Formula Relativity:	1.233	1.100	1.197

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## Calculation of Class Relativities

Class(es): 4112 INCANDESCENT LAMP MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	62,700	0	2	0	308	0	1,851	2,158	0.005	0.030	0.034
2018	99,209	0	7	0	25,731	0	4,580	30,311	0.259	0.046	0.306
2019	450,958	0	7	0	42,048	0	33,335	75,383	0.093	0.074	0.167
2020	519,559	0	2	0	1,313	0	120	1,433	0.003	0.000	0.003
2021	644,575	1	3	203,942	0	19,597	1,783	225,322	0.316	0.033	0.350
<b>MA Total:</b>	<b>1,777,002</b>	<b>1</b>	<b>21</b>	<b>203,942</b>	<b>69,399</b>	<b>19,597</b>	<b>41,668</b>	<b>334,607</b>	<b>0.154</b>	<b>0.034</b>	<b>0.188</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.162	0.098	.
(14) Massachusetts Credibility:	0.140	0.210	.
(15) Countrywide Pure Premium:	0.013	0.001	0.014
(16) Countrywide Indicated Relativity:	0.015	0.004	.
(17) Countrywide Credibility:	0.060	0.060	.
(18) Countrywide Lost-Time Claims:	1.000	.	.
(19) Pure Premium Underlying Present Rate:	0.130	0.065	0.194
(20) Relativity to Underlying Present Rate:	0.167	0.191	.
(21) Credibility to Underlying Relativity:	0.800	0.730	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.157	0.160	.
(24) Balanced Formula Relativity:	0.157	0.159	0.157

Class(es): 4114 GLASSWARE MFG-NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	39,083	1	10	259,498	89,261	54,396	10,304	413,459	8,924	1,655	10,579
2018	25,005	0	9	0	37,738	0	46,853	84,590	1,509	1,874	3,383
2019	31,142	0	6	0	0	0	2,005	2,005	0.000	0.064	0.064
2020	19,915	0	3	0	0	0	2,084	2,084	0.000	0.105	0.105
2021	19,887	0	4	0	77,915	0	27,499	105,414	3,918	1,383	5,301
<b>MA Total:</b>	<b>135,032</b>	<b>1</b>	<b>32</b>	<b>259,498</b>	<b>204,914</b>	<b>54,396</b>	<b>88,744</b>	<b>607,553</b>	<b>3.439</b>	<b>1.060</b>	<b>4.499</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.613	3.004	.
(14) Massachusetts Credibility:	0.130	0.170	.
(15) Countrywide Pure Premium:	1.407	0.436	1.842
(16) Countrywide Indicated Relativity:	1.580	1.347	.
(17) Countrywide Credibility:	0.440	0.420	.
(18) Countrywide Lost-Time Claims:	323.00	.	.
(19) Pure Premium Underlying Present Rate:	1.485	0.535	2.019
(20) Relativity to Underlying Present Rate:	1.908	1.581	.
(21) Credibility to Underlying Relativity:	0.430	0.410	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.985	1.725	.
(24) Balanced Formula Relativity:	1.983	1.711	1.909

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## Calculation of Class Relativities

Class(es): 4130 GLASS MERCHANT		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	293.894	0	45	0	240.934	0	89.204	330.139	0.820	0.304	1.123
2018	294.747	6	31	1,313.690	555.565	307.735	300.274	2,477.264	6.342	2.063	8.405
2019	319.891	2	43	263.996	553.344	55.122	284.229	1,156.691	2.555	1.061	3.616
2020	328.026	3	68	800.690	1,632.328	124.409	436.117	2,993.544	7.417	1.709	9.126
2021	324.289	1	43	384.558	890.111	42.795	171.278	1,488.741	3.931	0.660	4.591
<b>MA Total:</b>	<b>1,560.847</b>	<b>12</b>	<b>230</b>	<b>2,762.933</b>	<b>3,872.282</b>	<b>530.061</b>	<b>1,281.102</b>	<b>8,446.379</b>	<b>4.251</b>	<b>1.160</b>	<b>5.411</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.466	3.288	.
(14) Massachusetts Credibility:	0.390	0.540	.
(15) Countrywide Pure Premium:	1.585	0.521	2.105
(16) Countrywide Indicated Relativity:	1.780	1.609	.
(17) Countrywide Credibility:	0.310	0.230	.
(18) Countrywide Lost-Time Claims:	901.00	.	.
(19) Pure Premium Underlying Present Rate:	2.014	0.841	2.855
(20) Relativity to Underlying Present Rate:	2.588	2.487	.
(21) Credibility to Underlying Relativity:	0.300	0.230	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	3.070	2.718	.
(24) Balanced Formula Relativity:	3.066	2.697	2.966

Class(es): 4133 CATHEDRAL OR ART GLASS WINDOW MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	11.462	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	10.877	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	11.407	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	9.520	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	9.999	0	1	0	0	0	842	842	0.000	0.084	0.084
<b>MA Total:</b>	<b>53.266</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>842</b>	<b>842</b>	<b>0.000</b>	<b>0.016</b>	<b>0.016</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.045	.
(14) Massachusetts Credibility:	0.070	0.100	.
(15) Countrywide Pure Premium:	1.233	0.716	1.949
(16) Countrywide Indicated Relativity:	1.385	2.215	.
(17) Countrywide Credibility:	0.240	0.250	.
(18) Countrywide Lost-Time Claims:	31.000	.	.
(19) Pure Premium Underlying Present Rate:	0.816	0.372	1.188
(20) Relativity to Underlying Present Rate:	1.048	1.100	.
(21) Credibility to Underlying Relativity:	0.690	0.650	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.056	1.273	.
(24) Balanced Formula Relativity:	1.054	1.264	1.111

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## Calculation of Class Relativities

Class(es): 4150 OPTICAL GOODS MFG-NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,723,773	4	71	379,779	491,891	48,298	117,576	1,037,543	0.506	0.096	0.602
2018	1,919,466	1	61	181,579	305,752	72,781	202,172	762,284	0.254	0.143	0.397
2019	2,206,000	2	88	81,813	498,394	43,871	213,161	837,239	0.263	0.117	0.380
2020	2,341,349	0	49	0	729,580	0	221,319	950,900	0.312	0.095	0.406
2021	2,184,699	0	61	0	215,636	0	150,132	365,768	0.099	0.069	0.167
<b>MA Total:</b>	<b>10,375,287</b>	<b>7</b>	<b>330</b>	<b>643,170</b>	<b>2,241,253</b>	<b>164,950</b>	<b>904,360</b>	<b>3,953,734</b>	<b>0.278</b>	<b>0.103</b>	<b>0.381</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.292	0.292	.
(14) Massachusetts Credibility:	0.400	0.520	.
(15) Countrywide Pure Premium:	0.343	0.118	0.460
(16) Countrywide Indicated Relativity:	0.385	0.363	.
(17) Countrywide Credibility:	0.300	0.240	.
(18) Countrywide Lost-Time Claims:	55,000	.	.
(19) Pure Premium Underlying Present Rate:	0.330	0.111	0.441
(20) Relativity to Underlying Present Rate:	0.424	0.328	.
(21) Credibility to Underlying Relativity:	0.300	0.240	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.360	0.318	.
(24) Balanced Formula Relativity:	0.359	0.315	0.347

Class(es): 4239 PAPER MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	155,440	2	18	390,869	217,246	109,671	88,683	806,470	3.912	1.276	5.188
2018	143,099	1	34	231,119	177,550	71,168	60,801	540,638	2.856	0.922	3.778
2019	205,140	0	10	0	513,779	0	103,913	617,692	2.505	0.507	3.011
2020	203,719	0	19	0	91,118	0	51,235	142,352	0.447	0.251	0.699
2021	213,630	0	23	0	771,278	0	371,058	1,142,337	3.610	1.737	5.347
<b>MA Total:</b>	<b>921,028</b>	<b>3</b>	<b>104</b>	<b>621,988</b>	<b>1,770,971</b>	<b>180,839</b>	<b>675,690</b>	<b>3,249,489</b>	<b>2.598</b>	<b>0.930</b>	<b>3.528</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.729	2.635	.
(14) Massachusetts Credibility:	0.260	0.370	.
(15) Countrywide Pure Premium:	1.101	0.359	1.460
(16) Countrywide Indicated Relativity:	1.237	1.111	.
(17) Countrywide Credibility:	0.370	0.320	.
(18) Countrywide Lost-Time Claims:	1582.0	.	.
(19) Pure Premium Underlying Present Rate:	1.192	0.553	1.745
(20) Relativity to Underlying Present Rate:	1.532	1.634	.
(21) Credibility to Underlying Relativity:	0.370	0.310	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.734	1.837	.
(24) Balanced Formula Relativity:	1.732	1.823	1.757

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## Calculation of Class Relativities

Class(es): 4243 BOX MFG-FOLDING PAPER-NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	257,211	3	26	239,669	353,670	33,720	97,250	724,309	2,307	0,509	2,816
2018	325,489	0	37	0	177,956	0	133,674	311,630	0,547	0,411	0,957
2019	299,156	1	34	296,197	205,696	33,977	65,915	601,784	1,678	0,334	2,012
2020	321,859	1	45	170,410	172,958	15,098	124,114	482,580	1,067	0,433	1,499
2021	310,714	0	27	0	268,807	0	89,639	358,446	0,865	0,288	1,154
<b>MA Total:</b>	<b>1,514,428</b>	<b>5</b>	<b>169</b>	<b>706,277</b>	<b>1,179,087</b>	<b>82,794</b>	<b>510,592</b>	<b>2,478,750</b>	<b>1,245</b>	<b>0,392</b>	<b>1,637</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.308	1.110	.
(14) Massachusetts Credibility:	0.310	0.410	.
(15) Countrywide Pure Premium:	1.019	0.354	1.372
(16) Countrywide Indicated Relativity:	1.144	1.094	.
(17) Countrywide Credibility:	0.350	0.300	.
(18) Countrywide Lost-Time Claims:	893.00	.	.
(19) Pure Premium Underlying Present Rate:	1.169	0.432	1.601
(20) Relativity to Underlying Present Rate:	1.502	1.277	.
(21) Credibility to Underlying Relativity:	0.340	0.290	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.316	1.154	.
(24) Balanced Formula Relativity:	1.315	1.145	1.269

Class(es): 4244 CORRUGATED OR FIBERBOARD CONTAINER MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	247,774	0	35	0	234,848	0	95,241	330,089	0,948	0,384	1,332
2018	273,166	2	41	177,277	468,983	34,730	500,128	1,181,118	2,366	1,958	4,324
2019	265,749	2	35	147,755	112,013	55,443	50,163	365,375	0,977	0,397	1,375
2020	258,029	1	30	2,557	45,848	2,704	65,550	116,659	0,188	0,265	0,452
2021	265,938	1	31	678,183	701,556	114,286	230,010	1,724,036	5,188	1,295	6,483
<b>MA Total:</b>	<b>1,310,657</b>	<b>6</b>	<b>172</b>	<b>1,005,772</b>	<b>1,563,248</b>	<b>207,164</b>	<b>941,093</b>	<b>3,717,277</b>	<b>1,960</b>	<b>0,876</b>	<b>2,836</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.059	2.483	.
(14) Massachusetts Credibility:	0.300	0.470	.
(15) Countrywide Pure Premium:	1.116	0.413	1.528
(16) Countrywide Indicated Relativity:	1.253	1.275	.
(17) Countrywide Credibility:	0.350	0.270	.
(18) Countrywide Lost-Time Claims:	1521.0	.	.
(19) Pure Premium Underlying Present Rate:	1.258	0.676	1.934
(20) Relativity to Underlying Present Rate:	1.617	1.997	.
(21) Credibility to Underlying Relativity:	0.350	0.260	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.622	2.031	.
(24) Balanced Formula Relativity:	1.620	2.015	1.727

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## Calculation of Class Relativities

Class(es): 4250 PAPER COATING		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	677,713	2	55	322,091	929,809	68,106	238,232	1,558,238	1,847	0,452	2,299
2018	702,306	6	74	1,041,315	648,456	134,779	490,877	2,315,427	2,406	0,891	3,297
2019	845,425	1	65	221,066	864,569	11,788	278,755	1,376,178	1,284	0,344	1,628
2020	932,199	1	59	129,975	860,545	13,298	215,094	1,218,912	1,063	0,245	1,308
2021	926,547	3	73	524,137	954,207	118,863	553,580	2,150,787	1,596	0,726	2,321
<b>MA Total:</b>	<b>4,084,190</b>	<b>13</b>	<b>326</b>	<b>2,238,584</b>	<b>4,257,585</b>	<b>346,834</b>	<b>1,776,538</b>	<b>8,619,541</b>	<b>1,591</b>	<b>0,520</b>	<b>2,110</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.671	1.473	.
(14) Massachusetts Credibility:	0.440	0.620	.
(15) Countrywide Pure Premium:	1.029	0.338	1.367
(16) Countrywide Indicated Relativity:	1.156	1.044	.
(17) Countrywide Credibility:	0.280	0.190	.
(18) Countrywide Lost-Time Claims:	668.00	.	.
(19) Pure Premium Underlying Present Rate:	1.057	0.453	1.510
(20) Relativity to Underlying Present Rate:	1.358	1.340	.
(21) Credibility to Underlying Relativity:	0.280	0.190	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.439	1.367	.
(24) Balanced Formula Relativity:	1.437	1.356	1.415

Class(es): 4251 STATIONERY MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	102,812	0	6	0	987	0	3,925	4,912	0,010	0,038	0,048
2018	92,536	0	4	0	73,689	0	24,350	98,039	0,796	0,263	1,059
2019	89,183	2	7	473,449	457,221	78,405	76,850	1,085,925	10,435	1,741	12,176
2020	91,302	0	1	0	2,370	0	126	2,497	0,026	0,001	0,027
2021	102,618	0	10	0	138,682	0	64,812	203,494	1,351	0,632	1,983
<b>MA Total:</b>	<b>478,451</b>	<b>2</b>	<b>28</b>	<b>473,449</b>	<b>672,950</b>	<b>78,405</b>	<b>170,063</b>	<b>1,394,867</b>	<b>2,396</b>	<b>0,519</b>	<b>2,915</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.517	1.472	.
(14) Massachusetts Credibility:	0.200	0.260	.
(15) Countrywide Pure Premium:	1.466	0.460	1.927
(16) Countrywide Indicated Relativity:	1.647	1.423	.
(17) Countrywide Credibility:	0.400	0.370	.
(18) Countrywide Lost-Time Claims:	250.00	.	.
(19) Pure Premium Underlying Present Rate:	1.315	0.437	1.752
(20) Relativity to Underlying Present Rate:	1.690	1.292	.
(21) Credibility to Underlying Relativity:	0.400	0.370	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.838	1.387	.
(24) Balanced Formula Relativity:	1.836	1.376	1.712

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## Calculation of Class Relativities

Class(es): 4273 BAG MFG-PAPER OR PLASTIC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	52,552	0	8	0	108,420	0	24,943	133,363	2,063	0,475	2,538
2018	36,584	0	10	0	6,775	0	8,632	15,407	0,185	0,236	0,421
2019	26,979	1	2	26,251	2,846	2,923	6,426	38,446	1,078	0,347	1,425
2020	25,595	0	7	0	97,411	0	20,844	118,255	3,806	0,814	4,620
2021	14,940	0	3	0	14,584	0	2,637	17,221	0,976	0,177	1,153
<b>MA Total:</b>	<b>156,651</b>	<b>1</b>	<b>30</b>	<b>26,251</b>	<b>230,036</b>	<b>2,923</b>	<b>63,482</b>	<b>322,692</b>	<b>1,636</b>	<b>0,424</b>	<b>2,060</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.719	1.201	.
(14) Massachusetts Credibility:	0.130	0.180	.
(15) Countrywide Pure Premium:	1.080	0.378	1.458
(16) Countrywide Indicated Relativity:	1.213	1.167	.
(17) Countrywide Credibility:	0.440	0.410	.
(18) Countrywide Lost-Time Claims:	846.00	.	.
(19) Pure Premium Underlying Present Rate:	1.247	0.526	1.774
(20) Relativity to Underlying Present Rate:	1.603	1.556	.
(21) Credibility to Underlying Relativity:	0.430	0.410	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.447	1.333	.
(24) Balanced Formula Relativity:	1.445	1.322	1.412

Class(es): 4279 PAPER GOODS MFG NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	511,109	3	67	299,156	263,046	35,778	140,685	738,664	1,100	0,345	1,445
2018	600,390	1	56	12,283	322,202	73,875	343,282	751,642	0,557	0,695	1,252
2019	681,569	1	52	117,743	471,484	13,746	87,983	690,956	0,865	0,149	1,014
2020	764,654	1	62	196,874	1,077,168	23,491	550,290	1,847,823	1,666	0,750	2,417
2021	629,296	0	45	0	358,042	0	133,505	491,547	0,569	0,212	0,781
<b>MA Total:</b>	<b>3,187,018</b>	<b>6</b>	<b>282</b>	<b>626,056</b>	<b>2,491,942</b>	<b>146,890</b>	<b>1,255,744</b>	<b>4,520,632</b>	<b>0,978</b>	<b>0,440</b>	<b>1,418</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.028	1.247	.
(14) Massachusetts Credibility:	0.400	0.570	.
(15) Countrywide Pure Premium:	1.433	0.467	1.901
(16) Countrywide Indicated Relativity:	1.610	1.445	.
(17) Countrywide Credibility:	0.300	0.220	.
(18) Countrywide Lost-Time Claims:	1598.0	.	.
(19) Pure Premium Underlying Present Rate:	1.076	0.466	1.542
(20) Relativity to Underlying Present Rate:	1.383	1.377	.
(21) Credibility to Underlying Relativity:	0.300	0.210	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.309	1.318	.
(24) Balanced Formula Relativity:	1.307	1.308	1.307

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
4283 BUILDING OR ROOFING PAPER OR FELT PREPARATION-NO INSTALLATION											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	15,363	0	2	0	413	0	1,766	2,179	0.027	0.115	0.142
2018	22,803	0	6	0	4,718	0	5,499	10,217	0.207	0.241	0.448
2019	14,347	1	3	238,981	22,154	62,139	3,091	326,363	18,201	4,547	22,748
2020	9,943	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	9,118	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>71,574</b>	<b>1</b>	<b>11</b>	<b>238,981</b>	<b>27,284</b>	<b>62,139</b>	<b>10,356</b>	<b>338,759</b>	<b>3.720</b>	<b>1.013</b>	<b>4.733</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.908	2.870	.
(14) Massachusetts Credibility:	0.090	0.110	.
(15) Countrywide Pure Premium:	1.209	0.366	1.575
(16) Countrywide Indicated Relativity:	1.357	1.133	.
(17) Countrywide Credibility:	0.410	0.440	.
(18) Countrywide Lost-Time Claims:	127.00	.	.
(19) Pure Premium Underlying Present Rate:	1.031	0.304	1.336
(20) Relativity to Underlying Present Rate:	1.326	0.899	.
(21) Credibility to Underlying Relativity:	0.500	0.450	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.571	1.219	.
(24) Balanced Formula Relativity:	1.569	1.209	1.472

Class(es):		Effective: 7/1/2024							Manufacturing		
4299 PRINTING											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,279,712	5	182	558,622	1,638,382	59,482	787,116	3,043,601	0.964	0.371	1.335
2018	2,105,330	7	168	626,957	1,094,544	173,728	331,734	2,226,963	0.818	0.240	1.058
2019	2,127,613	5	143	811,893	1,376,922	117,152	546,267	2,852,233	1.029	0.312	1.341
2020	1,817,534	6	96	753,452	512,228	163,231	337,452	1,766,364	0.696	0.275	0.972
2021	1,783,259	4	110	865,963	476,538	152,442	351,300	1,846,243	0.753	0.282	1.035
<b>MA Total:</b>	<b>10,113,449</b>	<b>27</b>	<b>699</b>	<b>3,616,887</b>	<b>5,098,614</b>	<b>666,034</b>	<b>2,353,869</b>	<b>11,735,405</b>	<b>0.862</b>	<b>0.299</b>	<b>1.160</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.905	0.846	.
(14) Massachusetts Credibility:	0.560	0.760	.
(15) Countrywide Pure Premium:	0.848	0.335	1.183
(16) Countrywide Indicated Relativity:	0.953	1.034	.
(17) Countrywide Credibility:	0.220	0.120	.
(18) Countrywide Lost-Time Claims:	4096.0	.	.
(19) Pure Premium Underlying Present Rate:	0.764	0.297	1.061
(20) Relativity to Underlying Present Rate:	0.982	0.877	.
(21) Credibility to Underlying Relativity:	0.220	0.120	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.933	0.872	.
(24) Balanced Formula Relativity:	0.932	0.866	0.914

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## Calculation of Class Relativities

Class(es): 4304 NEWSPAPER PUBLISHING		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	333,639	4	50	978,143	744,137	229,639	250,449	2,202,368	5,162	1,439	6,601
2018	292,900	1	47	136,871	1,511,397	356,179	587,216	2,591,662	5,627	3,221	8,848
2019	268,967	5	27	885,158	162,796	245,294	64,337	1,357,585	3,896	1,151	5,047
2020	226,787	3	21	624,568	635,632	234,856	241,690	1,736,746	5,557	2,101	7,658
2021	217,046	2	14	191,415	238,900	491,253	101,847	1,023,416	1,983	2,733	4,715
<b>MA Total:</b>	<b>1,339,339</b>	<b>15</b>	<b>159</b>	<b>2,816,154</b>	<b>3,292,863</b>	<b>1,557,221</b>	<b>1,245,539</b>	<b>8,911,777</b>	<b>4,561</b>	<b>2,093</b>	<b>6,654</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.791	5.930	.
(14) Massachusetts Credibility:	0.390	0.610	.
(15) Countrywide Pure Premium:	2.481	0.858	3.338
(16) Countrywide Indicated Relativity:	2.786	2.652	.
(17) Countrywide Credibility:	0.310	0.200	.
(18) Countrywide Lost-Time Claims:	735.00	.	.
(19) Pure Premium Underlying Present Rate:	2.395	1.293	3.688
(20) Relativity to Underlying Present Rate:	3.078	3.822	.
(21) Credibility to Underlying Relativity:	0.300	0.190	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	3.656	4.874	.
(24) Balanced Formula Relativity:	3.651	4.836	3.972

Class(es): 4307 BOOKBINDING		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	156,740	0	10	0	26,579	0	29,017	55,596	0.170	0.185	0.355
2018	121,094	1	9	162,048	5,527	23,598	15,516	206,688	1.384	0.323	1.707
2019	110,333	0	6	0	43,346	0	28,184	71,530	0.393	0.255	0.648
2020	97,530	0	6	0	2,850	0	9,901	12,751	0.029	0.102	0.131
2021	111,670	0	7	0	13,929	0	9,425	23,354	0.125	0.084	0.209
<b>MA Total:</b>	<b>597,366</b>	<b>1</b>	<b>38</b>	<b>162,048</b>	<b>92,231</b>	<b>23,598</b>	<b>92,043</b>	<b>369,920</b>	<b>0.426</b>	<b>0.194</b>	<b>0.619</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.447	0.549	.
(14) Massachusetts Credibility:	0.160	0.240	.
(15) Countrywide Pure Premium:	0.607	0.227	0.834
(16) Countrywide Indicated Relativity:	0.682	0.701	.
(17) Countrywide Credibility:	0.420	0.380	.
(18) Countrywide Lost-Time Claims:	143.00	.	.
(19) Pure Premium Underlying Present Rate:	0.556	0.292	0.848
(20) Relativity to Underlying Present Rate:	0.715	0.864	.
(21) Credibility to Underlying Relativity:	0.420	0.380	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.658	0.726	.
(24) Balanced Formula Relativity:	0.657	0.721	0.674

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
4308 LINOTYPE OR HAND COMPOSITION											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	323	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	118	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	121	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	1,549	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	1,758	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>3,868</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.030	0.020	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	1.490	0.376	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	1.172	0.129	1.301
(20) Relativity to Underlying Present Rate:	1.507	0.380	.
(21) Credibility to Underlying Relativity:	0.970	0.980	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.462	0.373	.
(24) Balanced Formula Relativity:	1.460	0.370	1.165

Class(es):		Effective: 7/1/2024							Manufacturing		
4351 PHOTOENGRAVING											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	328,065	1	36	58,270	17,497	3,107	18,174	97,048	0.231	0.065	0.296
2018	345,870	0	45	0	183,653	0	41,540	225,194	0.531	0.120	0.651
2019	376,529	0	43	0	115,108	0	49,777	164,885	0.306	0.132	0.438
2020	376,794	0	33	0	32,423	0	27,137	59,561	0.086	0.072	0.158
2021	360,746	0	30	0	264,486	0	93,312	357,798	0.733	0.259	0.992
<b>MA Total:</b>	<b>1,788,004</b>	<b>1</b>	<b>187</b>	<b>58,270</b>	<b>613,167</b>	<b>3,107</b>	<b>229,941</b>	<b>904,486</b>	<b>0.376</b>	<b>0.130</b>	<b>0.506</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.394	0.369	.
(14) Massachusetts Credibility:	0.220	0.300	.
(15) Countrywide Pure Premium:	0.452	0.184	0.635
(16) Countrywide Indicated Relativity:	0.507	0.568	.
(17) Countrywide Credibility:	0.250	0.260	.
(18) Countrywide Lost-Time Claims:	35.000	.	.
(19) Pure Premium Underlying Present Rate:	0.421	0.167	0.589
(20) Relativity to Underlying Present Rate:	0.541	0.495	.
(21) Credibility to Underlying Relativity:	0.530	0.440	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.501	0.476	.
(24) Balanced Formula Relativity:	0.500	0.472	0.493

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## Calculation of Class Relativities

Class(es): 4352 ENGRAVING		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	71.041	0	4	0	0	0	2.169	2.169	0.000	0.031	0.031
2018	65.726	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	66.429	0	1	0	0	0	102	102	0.000	0.002	0.002
2020	68.540	0	1	0	0	0	1.723	1.723	0.000	0.025	0.025
2021	67.300	0	2	0	0	0	3.320	3.320	0.000	0.049	0.049
<b>MA Total:</b>	<b>339.037</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7.314</b>	<b>7.314</b>	<b>0.000</b>	<b>0.022</b>	<b>0.022</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.061	.
(14) Massachusetts Credibility:	0.120	0.160	.
(15) Countrywide Pure Premium:	0.464	0.184	0.648
(16) Countrywide Indicated Relativity:	0.521	0.569	.
(17) Countrywide Credibility:	0.330	0.350	.
(18) Countrywide Lost-Time Claims:	71.000	.	.
(19) Pure Premium Underlying Present Rate:	0.439	0.190	0.629
(20) Relativity to Underlying Present Rate:	0.564	0.561	.
(21) Credibility to Underlying Relativity:	0.550	0.490	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.482	0.484	.
(24) Balanced Formula Relativity:	0.482	0.480	0.481

Class(es): 4360 MOTION PICTURE: DEVLPMNT OF NEGATIVES, PRINTING & ALL SUB OP		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	576.657	0	1	0	0	0	127	127	0.000	0.000	0.000
2018	614.549	0	2	0	2.155	0	487	2.642	0.004	0.001	0.004
2019	924.765	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	320.486	0	1	0	0	0	15.730	15.730	0.000	0.049	0.049
2021	142.155	0	2	0	222	0	2.161	2.383	0.002	0.015	0.017
<b>MA Total:</b>	<b>2,578.612</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>2,377</b>	<b>0</b>	<b>18,506</b>	<b>20,883</b>	<b>0.001</b>	<b>0.007</b>	<b>0.008</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.001	0.020	.
(14) Massachusetts Credibility:	0.210	0.290	.
(15) Countrywide Pure Premium:	0.869	0.309	1.178
(16) Countrywide Indicated Relativity:	0.976	0.955	.
(17) Countrywide Credibility:	0.370	0.360	.
(18) Countrywide Lost-Time Claims:	93.000	.	.
(19) Pure Premium Underlying Present Rate:	0.270	0.103	0.373
(20) Relativity to Underlying Present Rate:	0.347	0.303	.
(21) Credibility to Underlying Relativity:	0.420	0.350	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.507	0.456	.
(24) Balanced Formula Relativity:	0.506	0.452	0.492

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Office and Clerical			
4361 PHOTOGRAPHER - ALL EMP & CLERICAL, SALES, DRIVERS												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		Total	MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	590,655	1	19	98,949	2,177	33,308	13,265	147,700	0.171	0.079	0.250	
2018	617,313	0	20	0	94,564	0	50,806	145,370	0.153	0.082	0.235	
2019	508,453	3	25	44,078	53,340	49,088	35,412	181,917	0.192	0.166	0.358	
2020	448,790	0	5	0	6,113	0	34,758	40,870	0.014	0.077	0.091	
2021	543,624	1	5	79,833	348,254	39,857	69,111	537,055	0.787	0.200	0.988	
<b>MA Total:</b>	<b>2,708,836</b>	<b>5</b>	<b>74</b>	<b>222,860</b>	<b>504,447</b>	<b>122,253</b>	<b>203,351</b>	<b>1,052,912</b>	<b>0.268</b>	<b>0.120</b>	<b>0.389</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.018	4.558	.
(14) Massachusetts Credibility:	0.200	0.310	.
(15) Countrywide Pure Premium:	0.292	0.112	0.404
(16) Countrywide Indicated Relativity:	5.627	4.942	.
(17) Countrywide Credibility:	0.400	0.350	.
(18) Countrywide Lost-Time Claims:	360.00	.	.
(19) Pure Premium Underlying Present Rate:	0.223	0.115	0.338
(20) Relativity to Underlying Present Rate:	4.083	4.649	.
(21) Credibility to Underlying Relativity:	0.400	0.340	.
(22) Industry Group Converted Pure Premium:	0.067	0.026	0.093
(23) Formula Relativity:	4.688	4.723	.
(24) Balanced Formula Relativity:	4.665	4.724	4.682

Class(es):		Effective: 7/1/2024							Goods and Services			
4362 MOTION PICTURE: FILM EXCH & PROJECTION RMS, CL												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		Total	MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	2,697	0	0	0	0	0	0	0	0.000	0.000	0.000	
2018	4,317	0	0	0	0	0	0	0	0.000	0.000	0.000	
2019	5,103	0	0	0	0	0	0	0	0.000	0.000	0.000	
2020	11,224	0	0	0	0	0	0	0	0.000	0.000	0.000	
2021	10,820	0	0	0	0	0	0	0	0.000	0.000	0.000	
<b>MA Total:</b>	<b>34,161</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.030	0.050	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	0.309	0.278	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.204	0.082	0.286
(20) Relativity to Underlying Present Rate:	0.312	0.281	.
(21) Credibility to Underlying Relativity:	0.970	0.950	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.303	0.267	.
(24) Balanced Formula Relativity:	0.300	0.266	0.290

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## Calculation of Class Relativities

Class(es): 4410 RUBBER GOODS MFG NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	427,530	1	43	121,034	193,195	171,469	136,223	621,921	0.735	0.720	1.455
2018	455,267	1	58	13,939	704,166	2,404	170,175	890,684	1.577	0.379	1.956
2019	448,292	1	53	290,776	421,437	143,670	161,482	1,017,364	1.589	0.681	2.269
2020	459,164	0	51	0	301,221	0	142,829	444,050	0.656	0.311	0.967
2021	527,575	0	37	0	133,750	0	165,398	299,148	0.254	0.314	0.567
<b>MA Total:</b>	<b>2,317,829</b>	<b>3</b>	<b>242</b>	<b>425,748</b>	<b>1,753,769</b>	<b>317,543</b>	<b>776,106</b>	<b>3,273,167</b>	<b>0.940</b>	<b>0.472</b>	<b>1.412</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.988	1.337	.
(14) Massachusetts Credibility:	0.360	0.560	.
(15) Countrywide Pure Premium:	1.307	0.462	1.769
(16) Countrywide Indicated Relativity:	1.468	1.428	.
(17) Countrywide Credibility:	0.320	0.220	.
(18) Countrywide Lost-Time Claims:	2234.0	.	.
(19) Pure Premium Underlying Present Rate:	1.093	0.601	1.694
(20) Relativity to Underlying Present Rate:	1.404	1.778	.
(21) Credibility to Underlying Relativity:	0.320	0.220	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.275	1.454	.
(24) Balanced Formula Relativity:	1.273	1.443	1.319

Class(es): 4432 FOUNTAIN PEN MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	63,484	0	10	0	2,249	0	3,403	5,651	0.035	0.054	0.089
2018	68,230	0	3	0	0	0	359	359	0.000	0.005	0.005
2019	62,340	0	3	0	4,996	0	10,582	15,578	0.080	0.170	0.250
2020	48,478	0	3	0	2,445	0	2,383	4,828	0.050	0.049	0.100
2021	45,632	0	3	0	34,313	0	9,342	43,655	0.752	0.205	0.957
<b>MA Total:</b>	<b>288,165</b>	<b>0</b>	<b>22</b>	<b>0</b>	<b>44,003</b>	<b>0</b>	<b>26,069</b>	<b>70,072</b>	<b>0.153</b>	<b>0.090</b>	<b>0.243</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.160	0.256	.
(14) Massachusetts Credibility:	0.100	0.140	.
(15) Countrywide Pure Premium:	0.974	0.257	1.231
(16) Countrywide Indicated Relativity:	1.094	0.796	.
(17) Countrywide Credibility:	0.310	0.330	.
(18) Countrywide Lost-Time Claims:	63.000	.	.
(19) Pure Premium Underlying Present Rate:	0.345	0.154	0.499
(20) Relativity to Underlying Present Rate:	0.444	0.454	.
(21) Credibility to Underlying Relativity:	0.590	0.530	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.617	0.539	.
(24) Balanced Formula Relativity:	0.616	0.535	0.594

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## Calculation of Class Relativities

Class(es): 4439 LACQUER OR SPIRIT VARNISH MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	44,734	0	6	0	26,742	0	10,143	36,885	0.598	0.227	0.825
2018	39,787	0	4	0	8,687	0	4,964	13,652	0.218	0.125	0.343
2019	41,740	0	7	0	0	0	5,270	5,270	0.000	0.126	0.126
2020	29,751	1	8	180,854	215,927	52,604	107,818	557,202	13.337	5.392	18.729
2021	38,784	0	10	0	82,400	0	33,565	115,964	2.125	0.865	2.990
<b>MA Total:</b>	<b>194,796</b>	<b>1</b>	<b>35</b>	<b>180,854</b>	<b>333,756</b>	<b>52,604</b>	<b>161,760</b>	<b>728,973</b>	<b>2.642</b>	<b>1.100</b>	<b>3.742</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.775	3.119	.
(14) Massachusetts Credibility:	0.170	0.270	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	2.634	3.539	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	2.073	1.212	3.284
(20) Relativity to Underlying Present Rate:	2.664	3.582	.
(21) Credibility to Underlying Relativity:	0.830	0.730	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	2.683	3.457	.
(24) Balanced Formula Relativity:	2.680	3.430	2.882

Class(es): 4452 PLASTICS MFG: FABRICATED PRODUCTS NOC		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	772,863	5	102	813,255	383,580	87,398	151,683	1,435,916	1.549	0.309	1.858
2018	867,665	2	118	214,814	1,453,431	15,138	411,066	2,094,449	1.923	0.491	2.414
2019	851,541	3	94	460,846	890,801	634,989	368,165	2,354,800	1.587	1.178	2.765
2020	888,459	2	92	535,342	1,549,951	121,451	473,412	2,680,156	2.347	0.670	3.017
2021	842,125	2	102	144,968	1,337,909	62,610	301,202	1,846,690	1.761	0.432	2.193
<b>MA Total:</b>	<b>4,222,653</b>	<b>14</b>	<b>508</b>	<b>2,169,225</b>	<b>5,615,673</b>	<b>921,585</b>	<b>1,705,528</b>	<b>10,412,012</b>	<b>1.844</b>	<b>0.622</b>	<b>2.466</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.937	1.763	.
(14) Massachusetts Credibility:	0.490	0.690	.
(15) Countrywide Pure Premium:	1.151	0.466	1.617
(16) Countrywide Indicated Relativity:	1.293	1.441	.
(17) Countrywide Credibility:	0.260	0.160	.
(18) Countrywide Lost-Time Claims:	1937.0	.	.
(19) Pure Premium Underlying Present Rate:	1.311	0.558	1.869
(20) Relativity to Underlying Present Rate:	1.685	1.648	.
(21) Credibility to Underlying Relativity:	0.250	0.150	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.706	1.694	.
(24) Balanced Formula Relativity:	1.704	1.681	1.698

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
4459 PLASTICS MFG: SHEETS, RODS OR TUBES											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	533,736	3	80	646,705	654,802	103,494	266,645	1,671,646	2,438	0,693	3,132
2018	657,597	5	75	312,480	563,171	95,867	326,237	1,297,756	1,332	0,642	1,973
2019	800,581	3	54	323,807	208,380	65,426	161,598	759,212	0,665	0,284	0,948
2020	720,811	1	56	78,230	329,653	12,546	199,584	620,013	0,566	0,294	0,860
2021	837,015	3	58	456,878	803,209	111,170	236,604	1,607,861	1,505	0,415	1,921
<b>MA Total:</b>	<b>3,549,740</b>	<b>15</b>	<b>323</b>	<b>1,818,101</b>	<b>2,559,215</b>	<b>388,503</b>	<b>1,190,669</b>	<b>5,956,488</b>	<b>1,233</b>	<b>0,445</b>	<b>1,678</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.295	1.261	.
(14) Massachusetts Credibility:	0.420	0.600	.
(15) Countrywide Pure Premium:	1.241	0.475	1.716
(16) Countrywide Indicated Relativity:	1.394	1.468	.
(17) Countrywide Credibility:	0.290	0.200	.
(18) Countrywide Lost-Time Claims:	2407.0	.	.
(19) Pure Premium Underlying Present Rate:	1.083	0.481	1.564
(20) Relativity to Underlying Present Rate:	1.392	1.421	.
(21) Credibility to Underlying Relativity:	0.290	0.200	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.352	1.334	.
(24) Balanced Formula Relativity:	1.350	1.324	1.343

Class(es):		Effective: 7/1/2024							Manufacturing		
4470 CABLE MFG - INSULATED ELECTRICAL											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	577,543	2	59	207,848	527,500	240,593	132,897	1,108,838	1,273	0,647	1,920
2018	652,433	2	51	222,723	267,158	51,972	122,997	664,850	0,751	0,268	1,019
2019	680,080	2	44	98,616	272,656	20,293	148,712	540,278	0,546	0,249	0,794
2020	699,738	1	49	33,335	210,385	31,551	108,104	383,375	0,348	0,200	0,548
2021	714,676	2	51	136,651	867,109	33,400	201,766	1,238,926	1,404	0,329	1,734
<b>MA Total:</b>	<b>3,324,470</b>	<b>9</b>	<b>254</b>	<b>699,173</b>	<b>2,144,809</b>	<b>377,809</b>	<b>714,476</b>	<b>3,936,268</b>	<b>0,855</b>	<b>0,329</b>	<b>1,184</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.899	0.931	.
(14) Massachusetts Credibility:	0.360	0.500	.
(15) Countrywide Pure Premium:	1.043	0.352	1.395
(16) Countrywide Indicated Relativity:	1.172	1.088	.
(17) Countrywide Credibility:	0.320	0.250	.
(18) Countrywide Lost-Time Claims:	429.00	.	.
(19) Pure Premium Underlying Present Rate:	0.800	0.326	1.126
(20) Relativity to Underlying Present Rate:	1.028	0.962	.
(21) Credibility to Underlying Relativity:	0.320	0.250	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.028	0.978	.
(24) Balanced Formula Relativity:	1.026	0.970	1.011

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
4484 PLASTICS MFG: MOLDED PRODUCTS NOC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,807,574	6	243	284,048	1,628,256	71,585	612,428	2,596,318	1,058	0,378	1,436
2018	2,083,549	7	260	894,849	1,898,141	162,671	625,096	3,580,757	1,340	0,378	1,719
2019	2,004,728	4	224	294,637	2,277,375	123,106	726,389	3,421,507	1,283	0,424	1,707
2020	2,129,899	10	204	1,317,077	1,853,413	204,718	890,357	4,265,564	1,489	0,514	2,003
2021	2,279,752	6	213	429,473	2,441,848	107,991	1,282,019	4,261,331	1,259	0,610	1,869
<b>MA Total:</b>	<b>10,305,502</b>	<b>33</b>	<b>1,144</b>	<b>3,220,084</b>	<b>10,099,033</b>	<b>670,071</b>	<b>4,136,289</b>	<b>18,125,477</b>	<b>1,292</b>	<b>0,466</b>	<b>1,759</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.358	1.322	.
(14) Massachusetts Credibility:	0.610	0.880	.
(15) Countrywide Pure Premium:	1.029	0.403	1.432
(16) Countrywide Indicated Relativity:	1.156	1.245	.
(17) Countrywide Credibility:	0.200	0.060	.
(18) Countrywide Lost-Time Claims:	9310.0	.	.
(19) Pure Premium Underlying Present Rate:	0.935	0.424	1.358
(20) Relativity to Underlying Present Rate:	1.201	1.252	.
(21) Credibility to Underlying Relativity:	0.190	0.060	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.288	1.313	.
(24) Balanced Formula Relativity:	1.286	1.303	1.291

Class(es):		Effective: 7/1/2024							Manufacturing		
4493 FABRIC COATING OR IMPREGNATING NOC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	330,057	1	37	148,883	100,856	30,308	88,863	368,911	0,757	0,361	1,118
2018	313,226	0	33	0	282,616	0	119,626	402,241	0,902	0,382	1,284
2019	304,595	0	34	0	229,784	0	71,876	301,661	0,754	0,236	0,990
2020	360,918	1	43	241,391	420,864	70,545	132,020	864,820	1,835	0,561	2,396
2021	322,236	1	33	72,155	412,733	41,368	150,305	676,561	1,505	0,595	2,100
<b>MA Total:</b>	<b>1,631,033</b>	<b>3</b>	<b>180</b>	<b>462,429</b>	<b>1,446,853</b>	<b>142,221</b>	<b>562,691</b>	<b>2,614,194</b>	<b>1,171</b>	<b>0,432</b>	<b>1,603</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.230	1.225	.
(14) Massachusetts Credibility:	0.290	0.400	.
(15) Countrywide Pure Premium:	0.892	0.353	1.245
(16) Countrywide Indicated Relativity:	1.002	1.091	.
(17) Countrywide Credibility:	0.360	0.300	.
(18) Countrywide Lost-Time Claims:	154.00	.	.
(19) Pure Premium Underlying Present Rate:	0.917	0.361	1.279
(20) Relativity to Underlying Present Rate:	1.179	1.068	.
(21) Credibility to Underlying Relativity:	0.350	0.300	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.130	1.138	.
(24) Balanced Formula Relativity:	1.129	1.129	1.129

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
4511 ANALYTICAL CHEMIST											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	5,818,522	2	84	266,664	84,922	88,538	145,847	585,971	0.060	0.040	0.101
2018	5,849,931	4	90	586,631	215,331	137,380	170,055	1,109,397	0.137	0.053	0.190
2019	6,388,564	4	79	607,573	540,079	184,038	341,818	1,673,507	0.180	0.082	0.262
2020	8,644,980	2	72	57,181	601,008	45,827	184,760	888,777	0.076	0.027	0.103
2021	11,715,311	4	108	213,837	327,144	75,121	249,371	865,474	0.046	0.028	0.074
<b>MA Total:</b>	<b>38,417,308</b>	<b>16</b>	<b>433</b>	<b>1,731,887</b>	<b>1,768,484</b>	<b>530,903</b>	<b>1,091,851</b>	<b>5,123,125</b>	<b>0.091</b>	<b>0.042</b>	<b>0.133</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.115	0.137	.
(14) Massachusetts Credibility:	0.470	0.670	.
(15) Countrywide Pure Premium:	0.209	0.092	0.301
(16) Countrywide Indicated Relativity:	0.263	0.294	.
(17) Countrywide Credibility:	0.270	0.170	.
(18) Countrywide Lost-Time Claims:	1789.0	.	.
(19) Pure Premium Underlying Present Rate:	0.129	0.057	0.186
(20) Relativity to Underlying Present Rate:	0.198	0.195	.
(21) Credibility to Underlying Relativity:	0.260	0.160	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.176	0.173	.
(24) Balanced Formula Relativity:	0.174	0.172	0.174

Class(es):		Effective: 7/1/2024							Goods and Services		
4512 BIOMEDICAL RESEARCH LABS-INCL OUTSIDE OPERATNS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	15,409,103	1	118	67,567	966,375	3,603	202,628	1,240,173	0.067	0.013	0.080
2018	19,053,947	2	146	468,176	260,943	65,810	257,634	1,052,563	0.038	0.017	0.055
2019	22,969,521	2	130	91,473	81,450	24,636	247,063	444,622	0.008	0.012	0.019
2020	26,925,256	3	104	1,247,030	592,624	127,386	261,556	2,228,596	0.068	0.014	0.083
2021	32,159,806	4	171	159,194	447,371	56,550	388,402	1,051,517	0.019	0.014	0.033
<b>MA Total:</b>	<b>116,517,633</b>	<b>12</b>	<b>669</b>	<b>2,033,440</b>	<b>2,348,763</b>	<b>277,984</b>	<b>1,357,283</b>	<b>6,017,470</b>	<b>0.038</b>	<b>0.014</b>	<b>0.052</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.047	0.046	.
(14) Massachusetts Credibility:	0.430	0.600	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	0.053	0.048	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.035	0.014	0.049
(20) Relativity to Underlying Present Rate:	0.053	0.048	.
(21) Credibility to Underlying Relativity:	0.570	0.400	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.051	0.047	.
(24) Balanced Formula Relativity:	0.050	0.046	0.049

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## Calculation of Class Relativities

Class(es): 4557 INK MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums		
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	459,827	3	24	552,270	281,771	109,772	54,743	998,556	1,814	0,358	2,172
2018	496,570	1	44	142,436	782,408	13,146	119,670	1,057,660	1,862	0,267	2,130
2019	484,749	1	22	113,660	166,810	24,789	67,352	372,611	0,579	0,190	0,769
2020	526,818	0	24	0	103,969	0	80,824	184,793	0,197	0,153	0,351
2021	463,666	2	27	566,584	293,567	96,832	132,977	1,089,961	1,855	0,496	2,351
<b>MA Total:</b>	<b>2,431,630</b>	<b>7</b>	<b>141</b>	<b>1,374,950</b>	<b>1,628,525</b>	<b>244,540</b>	<b>455,567</b>	<b>3,703,581</b>	<b>1,235</b>	<b>0,288</b>	<b>1,523</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.298	0.816	.
(14) Massachusetts Credibility:	0.340	0.420	.
(15) Countrywide Pure Premium:	0.961	0.351	1.312
(16) Countrywide Indicated Relativity:	1.079	1.086	.
(17) Countrywide Credibility:	0.330	0.290	.
(18) Countrywide Lost-Time Claims:	489.00	.	.
(19) Pure Premium Underlying Present Rate:	0.910	0.284	1.194
(20) Relativity to Underlying Present Rate:	1.170	0.838	.
(21) Credibility to Underlying Relativity:	0.330	0.290	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.183	0.901	.
(24) Balanced Formula Relativity:	1.182	0.894	1.104

Class(es): 4558 PAINT MFG		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums		
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	149,941	2	11	498,315	12,601	92,288	12,620	615,824	3,407	0,700	4,107
2018	133,252	1	11	3,623	0	40,935	5,334	49,892	0,027	0,347	0,374
2019	134,749	0	8	0	161	0	4,927	5,088	0,001	0,037	0,038
2020	139,681	2	5	439,571	283,617	173,002	83,950	980,140	5,177	1,840	7,017
2021	135,177	0	9	0	9,162	0	8,101	17,263	0,068	0,060	0,128
<b>MA Total:</b>	<b>692,800</b>	<b>5</b>	<b>44</b>	<b>941,509</b>	<b>305,541</b>	<b>306,225</b>	<b>114,932</b>	<b>1,668,206</b>	<b>1,800</b>	<b>0,608</b>	<b>2,408</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.891	1.723	.
(14) Massachusetts Credibility:	0.200	0.310	.
(15) Countrywide Pure Premium:	0.763	0.293	1.056
(16) Countrywide Indicated Relativity:	0.857	0.905	.
(17) Countrywide Credibility:	0.400	0.350	.
(18) Countrywide Lost-Time Claims:	548.00	.	.
(19) Pure Premium Underlying Present Rate:	0.882	0.460	1.342
(20) Relativity to Underlying Present Rate:	1.133	1.360	.
(21) Credibility to Underlying Relativity:	0.400	0.340	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.174	1.313	.
(24) Balanced Formula Relativity:	1.173	1.303	1.208

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
4583 FERTILIZER MFG & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	55,074	0	7	0	217,448	0	66,148	283,596	3,948	1,201	5,149
2018	51,235	0	10	0	47,649	0	25,630	73,279	0,930	0,500	1,430
2019	55,336	0	4	0	0	0	2,098	2,098	0,000	0,038	0,038
2020	50,981	0	7	0	13,564	0	10,586	24,150	0,266	0,208	0,474
2021	76,260	0	4	0	103,014	0	91,096	194,110	1,351	1,195	2,545
<b>MA Total:</b>	<b>288,887</b>	<b>0</b>	<b>32</b>	<b>0</b>	<b>381,676</b>	<b>0</b>	<b>195,558</b>	<b>577,234</b>	<b>1,321</b>	<b>0,677</b>	<b>1,998</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.388	1.918	.
(14) Massachusetts Credibility:	0.160	0.230	.
(15) Countrywide Pure Premium:	2.027	0.737	2.765
(16) Countrywide Indicated Relativity:	2.277	2.280	.
(17) Countrywide Credibility:	0.420	0.390	.
(18) Countrywide Lost-Time Claims:	481.00	.	.
(19) Pure Premium Underlying Present Rate:	1.147	0.522	1.669
(20) Relativity to Underlying Present Rate:	1.474	1.544	.
(21) Credibility to Underlying Relativity:	0.420	0.380	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.797	1.917	.
(24) Balanced Formula Relativity:	1.795	1.902	1.824

Class(es):		Effective: 7/1/2024							Manufacturing		
4611 DRUG MEDICINE OR PHARMACEUTICAL PREP-NO MFG OF INGREDIENTS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	573,823	2	32	68,427	364,383	17,350	81,569	531,728	0,754	0,172	0,927
2018	657,547	0	41	0	496,887	0	194,389	691,277	0,756	0,296	1,051
2019	4,986,409	0	46	0	625,569	0	277,504	903,073	0,125	0,056	0,181
2020	1,647,897	3	33	209,056	324,207	49,208	112,700	695,170	0,324	0,098	0,422
2021	3,385,563	3	51	158,324	375,921	200,934	275,048	1,010,227	0,158	0,141	0,298
<b>MA Total:</b>	<b>11,251,237</b>	<b>8</b>	<b>203</b>	<b>435,806</b>	<b>2,186,966</b>	<b>267,492</b>	<b>941,210</b>	<b>3,831,475</b>	<b>0,233</b>	<b>0,107</b>	<b>0,341</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.245	0.304	.
(14) Massachusetts Credibility:	0.430	0.590	.
(15) Countrywide Pure Premium:	0.448	0.182	0.630
(16) Countrywide Indicated Relativity:	0.503	0.562	.
(17) Countrywide Credibility:	0.290	0.210	.
(18) Countrywide Lost-Time Claims:	2030.0	.	.
(19) Pure Premium Underlying Present Rate:	0.351	0.141	0.491
(20) Relativity to Underlying Present Rate:	0.451	0.416	.
(21) Credibility to Underlying Relativity:	0.280	0.200	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.377	0.381	.
(24) Balanced Formula Relativity:	0.377	0.378	0.377

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
4635 OXYGEN OR HYDROGEN MFG & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	167,372	0	11	0	490,032	0	147,398	637,431	2,928	0,881	3,808
2018	157,648	1	20	472,764	272,531	203,390	341,099	1,289,783	4,728	3,454	8,181
2019	172,928	1	11	309,097	409,139	58,057	228,494	1,004,787	4,153	1,657	5,810
2020	159,147	0	15	0	129,032	0	138,317	267,348	0,811	0,869	1,680
2021	54,245	0	3	0	38,994	0	15,129	54,123	0,719	0,279	0,998
<b>MA Total:</b>	<b>711,341</b>	<b>2</b>	<b>60</b>	<b>781,861</b>	<b>1,339,727</b>	<b>261,447</b>	<b>870,437</b>	<b>3,253,472</b>	<b>2,983</b>	<b>1,591</b>	<b>4,574</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.133	4.509	.
(14) Massachusetts Credibility:	0.270	0.460	.
(15) Countrywide Pure Premium:	1.191	0.410	1.601
(16) Countrywide Indicated Relativity:	1.338	1.269	.
(17) Countrywide Credibility:	0.370	0.270	.
(18) Countrywide Lost-Time Claims:	585.00	.	.
(19) Pure Premium Underlying Present Rate:	1.763	1.180	2.942
(20) Relativity to Underlying Present Rate:	2.265	3.487	.
(21) Credibility to Underlying Relativity:	0.360	0.270	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	2.156	3.358	.
(24) Balanced Formula Relativity:	2.154	3.332	2.473

Class(es):		Effective: 7/1/2024							Manufacturing		
4653 GLUE MFG & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	46,048	0	5	0	267,995	0	63,225	331,220	5,820	1,373	7,193
2018	52,645	0	3	0	0	0	933	933	0,000	0,018	0,018
2019	37,799	0	2	0	0	0	684	684	0,000	0,018	0,018
2020	57,227	1	2	51,010	0	34,120	960	86,089	0,891	0,613	1,504
2021	38,294	0	3	0	21,186	0	8,135	29,320	0,553	0,212	0,766
<b>MA Total:</b>	<b>232,013</b>	<b>1</b>	<b>15</b>	<b>51,010</b>	<b>289,181</b>	<b>34,120</b>	<b>73,935</b>	<b>448,246</b>	<b>1,466</b>	<b>0,466</b>	<b>1,932</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.540	1.320	.
(14) Massachusetts Credibility:	0.130	0.180	.
(15) Countrywide Pure Premium:	1.112	0.470	1.583
(16) Countrywide Indicated Relativity:	1.249	1.454	.
(17) Countrywide Credibility:	0.350	0.370	.
(18) Countrywide Lost-Time Claims:	82,000	.	.
(19) Pure Premium Underlying Present Rate:	0.914	0.373	1.287
(20) Relativity to Underlying Present Rate:	1.175	1.102	.
(21) Credibility to Underlying Relativity:	0.520	0.450	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.249	1.271	.
(24) Balanced Formula Relativity:	1.247	1.261	1.251

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
4665 RENDERING WORKS NOC & DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	57,365	0	9	0	273,729	0	50,527	324,256	4,772	0,881	5,652
2018	61,497	1	18	181,511	39,856	25,850	61,430	308,646	3,600	1,419	5,019
2019	60,905	1	12	225,412	705,017	55,171	336,270	1,321,871	15,277	6,427	21,704
2020	146,242	2	15	676,340	425,192	98,417	650,145	1,850,094	7,532	5,119	12,651
2021	59,295	0	18	0	531,796	0	308,686	840,482	8,969	5,206	14,175
<b>MA Total:</b>	<b>385,303</b>	<b>4</b>	<b>72</b>	<b>1,083,264</b>	<b>1,975,591</b>	<b>179,437</b>	<b>1,407,057</b>	<b>4,645,348</b>	<b>7,939</b>	<b>4,118</b>	<b>12,056</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	8.339	11.668	.
(14) Massachusetts Credibility:	0.300	0.450	.
(15) Countrywide Pure Premium:	3.276	1.431	4.707
(16) Countrywide Indicated Relativity:	3.679	4.425	.
(17) Countrywide Credibility:	0.350	0.280	.
(18) Countrywide Lost-Time Claims:	465.00	.	.
(19) Pure Premium Underlying Present Rate:	4.121	2.153	6.274
(20) Relativity to Underlying Present Rate:	5.297	6.363	.
(21) Credibility to Underlying Relativity:	0.350	0.270	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	5.643	8.208	.
(24) Balanced Formula Relativity:	5.637	8.144	6.315

Class(es):		Effective: 7/1/2024							Manufacturing		
4692 DENTAL LABORATORY											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	405,304	0	5	0	275	0	2,939	3,214	0.001	0.007	0.008
2018	397,799	3	5	48,576	83,229	16,744	38,781	187,330	0.331	0.140	0.471
2019	424,490	0	4	0	14,457	0	7,602	22,059	0.034	0.018	0.052
2020	415,439	0	2	0	13,656	0	15,024	28,679	0.033	0.036	0.069
2021	515,414	0	5	0	7,296	0	12,213	19,509	0.014	0.024	0.038
<b>MA Total:</b>	<b>2,158,446</b>	<b>3</b>	<b>21</b>	<b>48,576</b>	<b>118,913</b>	<b>16,744</b>	<b>76,558</b>	<b>260,791</b>	<b>0.078</b>	<b>0.043</b>	<b>0.121</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.082	0.122	.
(14) Massachusetts Credibility:	0.180	0.260	.
(15) Countrywide Pure Premium:	0.316	0.107	0.423
(16) Countrywide Indicated Relativity:	0.355	0.330	.
(17) Countrywide Credibility:	0.410	0.370	.
(18) Countrywide Lost-Time Claims:	146.00	.	.
(19) Pure Premium Underlying Present Rate:	0.226	0.091	0.317
(20) Relativity to Underlying Present Rate:	0.290	0.270	.
(21) Credibility to Underlying Relativity:	0.410	0.370	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.279	0.254	.
(24) Balanced Formula Relativity:	0.279	0.252	0.272

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
4693 PHARMACEUTICAL OR SURGICAL GOODS MFG NOC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	612,234	2	31	158,049	138,459	20,373	64,747	381,629	0.484	0.139	0.623
2018	548,286	2	23	116,538	39,814	30,890	61,230	248,472	0.285	0.168	0.453
2019	472,847	0	7	0	4,569	0	24,828	29,398	0.010	0.053	0.062
2020	501,680	0	12	0	2,389	0	16,603	18,992	0.005	0.033	0.038
2021	785,616	0	16	0	241,849	0	74,421	316,269	0.308	0.095	0.403
<b>MA Total:</b>	<b>2,920,662</b>	<b>4</b>	<b>89</b>	<b>274,587</b>	<b>427,080</b>	<b>51,263</b>	<b>241,830</b>	<b>994,759</b>	<b>0.240</b>	<b>0.100</b>	<b>0.341</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.252	0.284	.
(14) Massachusetts Credibility:	0.240	0.360	.
(15) Countrywide Pure Premium:	0.435	0.173	0.608
(16) Countrywide Indicated Relativity:	0.489	0.535	.
(17) Countrywide Credibility:	0.380	0.320	.
(18) Countrywide Lost-Time Claims:	702.00	.	.
(19) Pure Premium Underlying Present Rate:	0.328	0.155	0.484
(20) Relativity to Underlying Present Rate:	0.422	0.459	.
(21) Credibility to Underlying Relativity:	0.380	0.320	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.407	0.420	.
(24) Balanced Formula Relativity:	0.406	0.417	0.409

Class(es):		Effective: 7/1/2024							Manufacturing		
4720 SOAP OR SYNTHETIC DETERGENT MFG											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	250,194	1	14	23,787	17,300	4,627	27,883	73,597	0.164	0.130	0.294
2018	226,157	0	20	0	257,143	0	96,640	353,783	1.137	0.427	1.564
2019	246,312	1	22	109,963	762,958	27,148	144,604	1,044,673	3.544	0.697	4.241
2020	262,979	1	21	154,067	230,636	34,373	98,171	517,247	1.463	0.504	1.967
2021	272,970	1	23	408,223	349,312	61,243	156,557	975,334	2.775	0.798	3.573
<b>MA Total:</b>	<b>1,258,613</b>	<b>4</b>	<b>100</b>	<b>696,041</b>	<b>1,617,349</b>	<b>127,391</b>	<b>523,855</b>	<b>2,964,635</b>	<b>1.838</b>	<b>0.517</b>	<b>2.355</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.931	1.466	.
(14) Massachusetts Credibility:	0.240	0.350	.
(15) Countrywide Pure Premium:	0.932	0.377	1.309
(16) Countrywide Indicated Relativity:	1.046	1.166	.
(17) Countrywide Credibility:	0.380	0.330	.
(18) Countrywide Lost-Time Claims:	418.00	.	.
(19) Pure Premium Underlying Present Rate:	0.732	0.356	1.088
(20) Relativity to Underlying Present Rate:	0.941	1.053	.
(21) Credibility to Underlying Relativity:	0.380	0.320	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.219	1.235	.
(24) Balanced Formula Relativity:	1.217	1.225	1.219

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Manufacturing		
4740 OIL REFINING - PETROLEUM & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	14,478	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	13,676	0	1	0	0	0	71	71	0.000	0.005	0.005
2019	9,253	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	23,561	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	28,611	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>89,579</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>71</b>	<b>71</b>	<b>0.000</b>	<b>0.001</b>	<b>0.001</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.002	.
(14) Massachusetts Credibility:	0.060	0.080	.
(15) Countrywide Pure Premium:	0.429	0.149	0.578
(16) Countrywide Indicated Relativity:	0.481	0.460	.
(17) Countrywide Credibility:	0.470	0.460	.
(18) Countrywide Lost-Time Claims:	484.00	.	.
(19) Pure Premium Underlying Present Rate:	0.336	0.121	0.456
(20) Relativity to Underlying Present Rate:	0.431	0.357	.
(21) Credibility to Underlying Relativity:	0.470	0.460	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.429	0.376	.
(24) Balanced Formula Relativity:	0.429	0.373	0.414

Class(es):		Effective: 7/1/2024							Manufacturing		
4741 ASPHALT OR TAR DISTILLING OR REFINING & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	3,531	0	1	0	4,365	0	2,706	7,070	1,236	0,766	2,002
2018	77,043	1	0	299,649	0	96,137	0	395,786	3,889	1,248	5,137
2019	73,203	1	5	729,946	11,184	60,945	19,347	821,422	10,124	1,097	11,221
2020	84,965	1	5	305,389	3,703	49,278	4,719	363,090	3,638	0,636	4,273
2021	97,475	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>336,216</b>	<b>3</b>	<b>11</b>	<b>1,334,984</b>	<b>19,252</b>	<b>206,361</b>	<b>26,771</b>	<b>1,587,368</b>	<b>4,028</b>	<b>0,693</b>	<b>4,721</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.231	1.965	.
(14) Massachusetts Credibility:	0.190	0.260	.
(15) Countrywide Pure Premium:	1.502	0.442	1.944
(16) Countrywide Indicated Relativity:	1.687	1.366	.
(17) Countrywide Credibility:	0.360	0.370	.
(18) Countrywide Lost-Time Claims:	87,000	.	.
(19) Pure Premium Underlying Present Rate:	1.545	0.618	2.162
(20) Relativity to Underlying Present Rate:	1.986	1.826	.
(21) Credibility to Underlying Relativity:	0.450	0.370	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	2.305	1.692	.
(24) Balanced Formula Relativity:	2.302	1.679	2.134

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## Calculation of Class Relativities

Class(es): 4771 EXPLOSIVES OR AMMUNITION MFG: NOC - & DRIVERS									Effective: 7/1/2024			Manufacturing		
Converted Unlimited Losses														
Amount														
		Claim Count		Indemnity		Medical				MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)			
2017	0	0	0	0	0	0	0	0	0.000	0.000	0.000			
2018	2,704	0	0	0	0	0	0	0	0.000	0.000	0.000			
2019	2,153	0	0	0	0	0	0	0	0.000	0.000	0.000			
2020	5,893	0	0	0	0	0	0	0	0.000	0.000	0.000			
2021	6,267	0	0	0	0	0	0	0	0.000	0.000	0.000			
<b>MA Total:</b>	<b>17,017</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>			

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.050	0.060	.
(15) Countrywide Pure Premium:	1.379	0.428	1.808
(16) Countrywide Indicated Relativity:	1.549	1.324	.
(17) Countrywide Credibility:	0.480	0.470	.
(18) Countrywide Lost-Time Claims:	391.00	.	.
(19) Pure Premium Underlying Present Rate:	0.960	0.352	1.312
(20) Relativity to Underlying Present Rate:	1.234	1.041	.
(21) Credibility to Underlying Relativity:	0.470	0.470	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.323	1.112	.
(24) Balanced Formula Relativity:	1.322	1.103	1.263

Class(es): 4825 DRUG, MEDICINE OR PHARM PREP MFG & INCIDENTAL MFG INGREDIENTS									Effective: 7/1/2024			Manufacturing		
Converted Unlimited Losses														
Amount														
		Claim Count		Indemnity		Medical				MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)			
2017	3,383,372	0	53	0	152,721	0	78,229	230,950	0.045	0.023	0.068			
2018	3,785,747	2	62	219,925	108,729	73,612	160,982	563,247	0.087	0.062	0.149			
2019	4,058,745	3	45	524,066	194,826	124,813	160,043	1,003,747	0.177	0.070	0.247			
2020	5,433,694	0	47	0	396,990	0	278,787	675,777	0.073	0.051	0.124			
2021	7,013,411	3	61	1,395,469	159,330	187,130	152,039	1,893,968	0.222	0.048	0.270			
<b>MA Total:</b>	<b>23,674,968</b>	<b>8</b>	<b>268</b>	<b>2,139,459</b>	<b>1,012,595</b>	<b>385,555</b>	<b>830,080</b>	<b>4,367,689</b>	<b>0.133</b>	<b>0.051</b>	<b>0.184</b>			

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.140	0.146	.
(14) Massachusetts Credibility:	0.420	0.570	.
(15) Countrywide Pure Premium:	0.406	0.150	0.556
(16) Countrywide Indicated Relativity:	0.455	0.464	.
(17) Countrywide Credibility:	0.290	0.220	.
(18) Countrywide Lost-Time Claims:	893.00	.	.
(19) Pure Premium Underlying Present Rate:	0.165	0.062	0.226
(20) Relativity to Underlying Present Rate:	0.212	0.182	.
(21) Credibility to Underlying Relativity:	0.290	0.210	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.252	0.223	.
(24) Balanced Formula Relativity:	0.252	0.222	0.244

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## Calculation of Class Relativities

Class(es):									Effective: 7/1/2024			Manufacturing		
4828 CHEMICAL BLENDING OR MIXING NOC- ALL OPERS & DR														
Converted Unlimited Losses														
Amount														
		Claim Count		Indemnity		Medical		Total	MA Indicated Pure Premiums					
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	(9)	Indemnity (10)	Medical (11)	Total (12)			
2017	1,155,740	0	23	0	81,502	0	79,316	160,818	0.071	0.069	0.139			
2018	810,784	0	23	0	39,330	0	112,275	151,606	0.049	0.138	0.187			
2019	845,493	1	20	198,602	128,773	40,332	159,384	527,090	0.387	0.236	0.623			
2020	804,353	1	21	363,206	1,238,820	62,171	379,741	2,043,937	1.992	0.549	2.541			
2021	924,463	1	21	110,548	273,006	58,792	228,622	670,968	0.415	0.311	0.726			
<b>MA Total:</b>	<b>4,540,833</b>	<b>3</b>	<b>108</b>	<b>672,356</b>	<b>1,761,430</b>	<b>161,294</b>	<b>959,338</b>	<b>3,554,419</b>	<b>0.536</b>	<b>0.247</b>	<b>0.783</b>			

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.563	0.699	.
(14) Massachusetts Credibility:	0.320	0.460	.
(15) Countrywide Pure Premium:	0.612	0.218	0.831
(16) Countrywide Indicated Relativity:	0.688	0.675	.
(17) Countrywide Credibility:	0.340	0.270	.
(18) Countrywide Lost-Time Claims:	2198.0	.	.
(19) Pure Premium Underlying Present Rate:	0.428	0.191	0.619
(20) Relativity to Underlying Present Rate:	0.549	0.566	.
(21) Credibility to Underlying Relativity:	0.340	0.270	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	0.601	0.657	.
(24) Balanced Formula Relativity:	0.600	0.652	0.614

Class(es):									Effective: 7/1/2024			Construction		
5020 CEILING INSTALLATION-SUSPENDED ACOUSTICAL GRID														
Converted Unlimited Losses														
Amount														
		Claim Count		Indemnity		Medical		Total	MA Indicated Pure Premiums					
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	(9)	Indemnity (10)	Medical (11)	Total (12)			
2017	242,102	0	14	0	29,860	0	20,588	50,447	0.123	0.085	0.208			
2018	285,125	1	21	327,515	85,641	53,197	66,012	532,365	1.449	0.418	1.867			
2019	278,761	2	18	338,045	927,239	95,430	167,404	1,528,117	4.539	0.943	5.482			
2020	268,074	0	11	0	940,205	0	323,591	1,263,796	3.507	1.207	4.714			
2021	351,129	3	20	774,138	1,182,347	167,597	350,484	2,474,565	5.572	1.475	7.047			
<b>MA Total:</b>	<b>1,425,191</b>	<b>6</b>	<b>84</b>	<b>1,439,698</b>	<b>3,165,291</b>	<b>316,223</b>	<b>928,078</b>	<b>5,849,290</b>	<b>3.231</b>	<b>0.873</b>	<b>4.104</b>			

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.366	1.015	.
(14) Massachusetts Credibility:	0.390	0.460	.
(15) Countrywide Pure Premium:	2.846	0.842	3.688
(16) Countrywide Indicated Relativity:	1.209	0.977	.
(17) Countrywide Credibility:	0.310	0.270	.
(18) Countrywide Lost-Time Claims:	253.00	.	.
(19) Pure Premium Underlying Present Rate:	2.157	0.596	2.753
(20) Relativity to Underlying Present Rate:	1.066	0.738	.
(21) Credibility to Underlying Relativity:	0.300	0.270	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.227	0.930	.
(24) Balanced Formula Relativity:	1.240	0.933	1.158

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## Calculation of Class Relativities

Class(es): 5022 MASONRY NOC		Effective: 7/1/2024							Construction		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,504,805	15	120	2,968,494	4,057,498	1,061,140	1,147,959	9,235,092	4,669	1,468	6,137
2018	1,676,815	7	111	2,169,819	5,919,498	585,664	2,295,754	10,970,735	4,824	1,718	6,543
2019	1,529,227	8	70	2,885,671	3,814,615	973,341	1,374,302	9,047,928	4,381	1,535	5,917
2020	1,639,688	9	96	2,676,048	4,980,337	1,215,843	1,881,509	10,753,738	4,669	1,889	6,558
2021	1,971,546	8	85	2,871,498	3,421,469	566,668	1,411,236	8,270,871	3,192	1,003	4,195
<b>MA Total:</b>	<b>8,322,081</b>	<b>47</b>	<b>482</b>	<b>13,571,531</b>	<b>22,193,417</b>	<b>4,402,656</b>	<b>8,110,759</b>	<b>48,278,363</b>	<b>4,298</b>	<b>1,504</b>	<b>5,801</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.817	1.747	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	3.736	1.179	4.916
(16) Countrywide Indicated Relativity:	1.587	1.369	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	4512.0	.	.
(19) Pure Premium Underlying Present Rate:	3.942	1.498	5.439
(20) Relativity to Underlying Present Rate:	1.947	1.855	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.817	1.747	.
(24) Balanced Formula Relativity:	1.836	1.753	1.814

Class(es): 5037 PAINTING: METAL STRUCTURES-OVER 2 STORIES IN HEIGHT & DRIVERS		Effective: 7/1/2024							Construction		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	89,725	1	7	356,186	457,431	62,236	81,909	957,762	9,068	1,607	10,674
2018	66,499	2	8	960,344	97,708	397,398	28,143	1,483,593	15,911	6,399	22,310
2019	60,508	1	0	1,872	0	20,618	0	22,491	0,031	0,341	0,372
2020	108,646	0	6	0	903,756	0	246,442	1,150,198	8,318	2,268	10,587
2021	69,520	0	3	0	325,801	0	151,866	477,668	4,686	2,185	6,871
<b>MA Total:</b>	<b>394,898</b>	<b>4</b>	<b>24</b>	<b>1,318,402</b>	<b>1,784,697</b>	<b>480,253</b>	<b>508,360</b>	<b>4,091,711</b>	<b>7,858</b>	<b>2,503</b>	<b>10,361</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.323	2.909	.
(14) Massachusetts Credibility:	0.330	0.440	.
(15) Countrywide Pure Premium:	4.009	0.923	4.932
(16) Countrywide Indicated Relativity:	1.702	1.071	.
(17) Countrywide Credibility:	0.320	0.280	.
(18) Countrywide Lost-Time Claims:	69,000	.	.
(19) Pure Premium Underlying Present Rate:	5.393	2.007	7.400
(20) Relativity to Underlying Present Rate:	2.664	2.486	.
(21) Credibility to Underlying Relativity:	0.350	0.280	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	2.574	2.276	.
(24) Balanced Formula Relativity:	2.601	2.284	2.516

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction			
5040 IRON OR STEEL: ERECTION: ERECTION-FRAME STRUCTURES												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	302,183	6	57	1,582,340	2,326,370	303,489	704,818	4,917,018	12,935	3,337	16,272	
2018	262,179	5	32	1,677,140	1,612,741	492,091	453,619	4,235,591	12,548	3,607	16,155	
2019	389,375	5	55	1,449,082	4,022,942	388,521	1,381,236	7,241,780	14,053	4,545	18,598	
2020	536,479	6	67	3,265,903	3,788,553	807,679	1,306,078	9,168,213	13,150	3,940	17,090	
2021	361,495	4	42	666,767	2,868,224	233,160	920,009	4,688,160	9,779	3,190	12,969	
<b>MA Total:</b>	<b>1,851,710</b>	<b>26</b>	<b>253</b>	<b>8,641,231</b>	<b>14,618,830</b>	<b>2,224,940</b>	<b>4,765,761</b>	<b>30,250,762</b>	<b>12,561</b>	<b>3,775</b>	<b>16,337</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	5.311	4.387	.
(14) Massachusetts Credibility:	0.810	1.000	.
(15) Countrywide Pure Premium:	3.885	1.174	5.059
(16) Countrywide Indicated Relativity:	1.650	1.362	.
(17) Countrywide Credibility:	0.100	0.000	.
(18) Countrywide Lost-Time Claims:	889.00	.	.
(19) Pure Premium Underlying Present Rate:	10.461	3.497	13.958
(20) Relativity to Underlying Present Rate:	5.167	4.332	.
(21) Credibility to Underlying Relativity:	0.090	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	4.932	4.387	.
(24) Balanced Formula Relativity:	4.984	4.403	4.829

Class(es):		Effective: 7/1/2024							Construction			
5057 IRON OR STEEL: ERECTION-NOC												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	32,070	0	8	0	89,741	0	46,411	136,152	2,798	1,447	4,246	
2018	23,087	0	5	0	333,145	0	67,682	400,827	14,430	2,932	17,361	
2019	18,638	0	3	0	0	0	8,790	8,790	0.000	0.472	0.472	
2020	33,262	0	3	0	728,702	0	391,889	1,120,591	21,908	11,782	33,690	
2021	11,227	0	0	0	0	0	0	0	0.000	0.000	0.000	
<b>MA Total:</b>	<b>118,285</b>	<b>0</b>	<b>19</b>	<b>0</b>	<b>1,151,588</b>	<b>0</b>	<b>514,772</b>	<b>1,666,360</b>	<b>9,736</b>	<b>4,352</b>	<b>14,088</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.117	5.057	.
(14) Massachusetts Credibility:	0.230	0.370	.
(15) Countrywide Pure Premium:	1.722	0.547	2.270
(16) Countrywide Indicated Relativity:	0.732	0.635	.
(17) Countrywide Credibility:	0.390	0.320	.
(18) Countrywide Lost-Time Claims:	821.00	.	.
(19) Pure Premium Underlying Present Rate:	6.841	4.291	11.132
(20) Relativity to Underlying Present Rate:	3.379	5.316	.
(21) Credibility to Underlying Relativity:	0.380	0.310	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	2.516	3.722	.
(24) Balanced Formula Relativity:	2.543	3.736	2.861

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
5059 IRON OR STEEL: ERECTION: FRAME STRUCT NOT OVER 2 STRS IN HGT											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	135,109	2	17	435,162	587,539	433,045	261,006	1,716,752	7,569	5,137	12,706
2018	148,888	8	23	1,469,620	995,663	760,631	371,425	3,597,340	16,558	7,603	24,161
2019	148,186	2	11	1,285,850	635,758	278,994	625,087	2,825,689	12,968	6,101	19,069
2020	120,189	2	9	276,402	687,314	45,892	236,832	1,246,439	8,018	2,352	10,371
2021	181,677	4	13	1,476,056	570,838	451,270	384,460	2,882,623	11,267	4,600	15,867
<b>MA Total:</b>	<b>734,049</b>	<b>18</b>	<b>73</b>	<b>4,943,090</b>	<b>3,477,112</b>	<b>1,969,831</b>	<b>1,878,810</b>	<b>12,268,844</b>	<b>11,471</b>	<b>5,243</b>	<b>16,714</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.850	6.092	.
(14) Massachusetts Credibility:	0.550	0.850	.
(15) Countrywide Pure Premium:	6.544	2.820	9.364
(16) Countrywide Indicated Relativity:	2.779	3.272	.
(17) Countrywide Credibility:	0.230	0.080	.
(18) Countrywide Lost-Time Claims:	359.00	.	.
(19) Pure Premium Underlying Present Rate:	10.211	5.519	15.730
(20) Relativity to Underlying Present Rate:	5.044	6.837	.
(21) Credibility to Underlying Relativity:	0.220	0.070	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	4.417	5.919	.
(24) Balanced Formula Relativity:	4.463	5.940	4.857

Class(es):		Effective: 7/1/2024							Construction		
5102 DOOR, DOOR FRAME OR SASH ERECTION - METAL OR METAL COVERED											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	830,919	9	78	1,987,277	2,642,429	494,781	894,550	6,019,038	5,572	1,672	7,244
2018	891,283	5	88	642,592	1,438,055	183,186	527,119	2,790,952	2,334	0,797	3,131
2019	834,354	3	61	1,885,984	1,609,088	237,957	769,649	4,502,678	4,189	1,208	5,397
2020	977,206	5	73	1,705,433	1,681,748	575,637	790,536	4,753,354	3,466	1,398	4,864
2021	1,133,473	3	75	1,515,372	2,178,165	255,151	993,922	4,942,609	3,259	1,102	4,361
<b>MA Total:</b>	<b>4,667,235</b>	<b>25</b>	<b>375</b>	<b>7,736,657</b>	<b>9,549,486</b>	<b>1,746,713</b>	<b>3,975,776</b>	<b>23,008,631</b>	<b>3,704</b>	<b>1,226</b>	<b>4,930</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.566	1.425	.
(14) Massachusetts Credibility:	0.700	0.910	.
(15) Countrywide Pure Premium:	2.795	1.026	3.821
(16) Countrywide Indicated Relativity:	1.187	1.191	.
(17) Countrywide Credibility:	0.150	0.050	.
(18) Countrywide Lost-Time Claims:	2271.0	.	.
(19) Pure Premium Underlying Present Rate:	2.954	1.006	3.960
(20) Relativity to Underlying Present Rate:	1.459	1.247	.
(21) Credibility to Underlying Relativity:	0.150	0.040	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.493	1.406	.
(24) Balanced Formula Relativity:	1.509	1.411	1.483

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Section IX - Classification Pricing  
 Subsection G - Class Relativities  
 7/1/2024

Section IX - G  
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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
5146 FURNITURE OR FIXTURES INSTALLATION - PORTABLE - NOC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	697,481	10	89	2,249,039	1,777,730	602,020	618,729	5,247,519	5,773	1,750	7,524
2018	651,501	2	74	663,349	798,550	107,509	326,749	1,896,157	2,244	0,667	2,910
2019	710,276	4	81	988,608	2,215,014	343,800	716,606	4,264,027	4,510	1,493	6,003
2020	554,896	4	28	610,457	604,745	172,433	290,202	1,677,838	2,190	0,834	3,024
2021	733,496	3	70	608,599	1,567,032	81,738	576,732	2,834,101	2,966	0,898	3,864
<b>MA Total:</b>	<b>3,347,650</b>	<b>23</b>	<b>342</b>	<b>5,120,052</b>	<b>6,963,072</b>	<b>1,307,500</b>	<b>2,529,018</b>	<b>15,919,642</b>	<b>3,609</b>	<b>1,146</b>	<b>4,755</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.526	1.332	.
(14) Massachusetts Credibility:	0.620	0.800	.
(15) Countrywide Pure Premium:	2.411	0.743	3.155
(16) Countrywide Indicated Relativity:	1.024	0.863	.
(17) Countrywide Credibility:	0.190	0.100	.
(18) Countrywide Lost-Time Claims:	1636.0	.	.
(19) Pure Premium Underlying Present Rate:	2.988	1.018	4.005
(20) Relativity to Underlying Present Rate:	1.476	1.261	.
(21) Credibility to Underlying Relativity:	0.190	0.100	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.421	1.278	.
(24) Balanced Formula Relativity:	1.436	1.282	1.395

Class(es):		Effective: 7/1/2024							Construction		
5160 ELEVATOR ERECTION OR REPAIR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,071,737	5	50	866,152	2,596,428	271,465	600,346	4,334,392	3,231	0,813	4,044
2018	1,159,864	4	43	1,732,263	1,479,099	332,816	432,950	3,977,128	2,769	0,660	3,429
2019	1,409,811	4	49	1,650,112	1,701,927	362,402	723,726	4,438,167	2,378	0,770	3,148
2020	1,099,686	2	34	791,895	1,128,649	119,976	456,975	2,497,495	1,746	0,525	2,271
2021	726,095	3	24	536,599	802,390	110,360	432,410	1,881,759	1,844	0,748	2,592
<b>MA Total:</b>	<b>5,467,193</b>	<b>18</b>	<b>200</b>	<b>5,577,021</b>	<b>7,708,493</b>	<b>1,197,019</b>	<b>2,646,408</b>	<b>17,128,941</b>	<b>2,430</b>	<b>0,703</b>	<b>3,133</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.028	0.817	.
(14) Massachusetts Credibility:	0.600	0.760	.
(15) Countrywide Pure Premium:	1.082	0.348	1.430
(16) Countrywide Indicated Relativity:	0.460	0.404	.
(17) Countrywide Credibility:	0.200	0.120	.
(18) Countrywide Lost-Time Claims:	539.00	.	.
(19) Pure Premium Underlying Present Rate:	1.688	0.557	2.245
(20) Relativity to Underlying Present Rate:	0.834	0.690	.
(21) Credibility to Underlying Relativity:	0.200	0.120	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.875	0.752	.
(24) Balanced Formula Relativity:	0.884	0.755	0.850

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
5183 PLUMBING NOC & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	8,706,015	30	700	5,954,434	8,970,686	1,473,539	3,685,937	20,084,596	1,714	0,593	2,307
2018	9,224,484	30	643	6,628,798	9,245,213	1,420,184	3,608,501	20,902,696	1,721	0,545	2,266
2019	9,317,678	32	555	7,915,721	11,945,886	1,830,988	4,305,248	25,997,843	2,132	0,659	2,790
2020	10,090,346	23	555	3,950,245	11,998,592	996,915	4,392,288	21,338,040	1,581	0,534	2,115
2021	10,995,224	28	584	6,339,074	10,062,777	1,910,422	4,536,783	22,849,055	1,492	0,586	2,078
<b>MA Total:</b>	<b>48,333,747</b>	<b>143</b>	<b>3,037</b>	<b>30,788,272</b>	<b>52,223,153</b>	<b>7,632,048</b>	<b>20,528,757</b>	<b>111,172,230</b>	<b>1,717</b>	<b>0,583</b>	<b>2,300</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.726	0.677	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	1.509	0.497	2.006
(16) Countrywide Indicated Relativity:	0.641	0.576	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	10440	.	.
(19) Pure Premium Underlying Present Rate:	1.505	0.550	2.055
(20) Relativity to Underlying Present Rate:	0.743	0.682	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.726	0.677	.
(24) Balanced Formula Relativity:	0.734	0.679	0.719

Class(es):		Effective: 7/1/2024							Construction		
5188 AUTOMATIC SPRINKLER INSTALLATION & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	987,831	2	67	807,755	1,566,765	206,758	309,406	2,890,685	2,404	0,523	2,926
2018	1,053,222	3	76	314,141	2,005,488	92,274	489,870	2,901,773	2,202	0,553	2,755
2019	1,036,731	2	72	388,754	1,061,435	112,332	319,630	1,882,150	1,399	0,417	1,815
2020	1,108,605	2	70	164,589	2,737,866	74,844	715,508	3,692,807	2,618	0,713	3,331
2021	1,067,210	4	59	972,349	1,317,560	280,144	333,711	2,903,764	2,146	0,575	2,721
<b>MA Total:</b>	<b>5,253,599</b>	<b>13</b>	<b>344</b>	<b>2,647,588</b>	<b>8,689,113</b>	<b>766,352</b>	<b>2,168,125</b>	<b>14,271,179</b>	<b>2,158</b>	<b>0,559</b>	<b>2,716</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.912	0.649	.
(14) Massachusetts Credibility:	0.590	0.750	.
(15) Countrywide Pure Premium:	1.586	0.556	2.142
(16) Countrywide Indicated Relativity:	0.674	0.645	.
(17) Countrywide Credibility:	0.210	0.130	.
(18) Countrywide Lost-Time Claims:	1037.0	.	.
(19) Pure Premium Underlying Present Rate:	1.721	0.556	2.277
(20) Relativity to Underlying Present Rate:	0.850	0.689	.
(21) Credibility to Underlying Relativity:	0.200	0.120	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.850	0.653	.
(24) Balanced Formula Relativity:	0.859	0.656	0.805

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
5190 ELECTRICAL WIRING - WITHIN BUILDINGS & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	10,008,427	24	664	2,981,617	8,537,786	894,596	3,076,045	15,490,044	1,151	0,397	1,548
2018	10,925,803	29	701	6,510,366	7,128,163	2,003,963	3,472,495	19,114,987	1,248	0,501	1,750
2019	11,206,099	14	588	3,394,769	7,553,186	1,311,350	3,033,658	15,292,963	0,977	0,388	1,365
2020	11,441,055	13	524	2,284,219	9,331,942	440,411	4,448,903	16,505,475	1,015	0,427	1,443
2021	13,177,503	14	554	2,338,485	11,766,075	1,264,145	5,050,400	20,419,105	1,070	0,479	1,550
<b>MA Total:</b>	<b>56,758,887</b>	<b>94</b>	<b>3,031</b>	<b>17,509,456</b>	<b>44,317,152</b>	<b>5,914,464</b>	<b>19,081,502</b>	<b>86,822,574</b>	<b>1,089</b>	<b>0,440</b>	<b>1,530</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.461	0.512	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	1.251	0.474	1.725
(16) Countrywide Indicated Relativity:	0.531	0.550	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	10680	.	.
(19) Pure Premium Underlying Present Rate:	0.992	0.421	1.413
(20) Relativity to Underlying Present Rate:	0.490	0.522	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.461	0.512	.
(24) Balanced Formula Relativity:	0.465	0.514	0.478

Class(es):		Effective: 7/1/2024							Goods and Services		
5191 OFFICE MACHICE OR APPLIANCE INSTALL, INSP, ADJSTMT OR REPAIR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	4,611,084	4	123	964,276	753,849	107,739	422,782	2,248,646	0,373	0,115	0,488
2018	4,840,562	3	128	110,254	1,785,520	40,456	911,984	2,848,214	0,392	0,197	0,588
2019	5,042,902	6	89	1,287,728	394,205	353,964	227,132	2,263,029	0,334	0,115	0,449
2020	4,783,057	6	92	729,840	415,682	213,245	394,484	1,753,251	0,239	0,127	0,367
2021	5,005,819	3	87	751,067	610,791	103,006	492,733	1,957,597	0,272	0,119	0,391
<b>MA Total:</b>	<b>24,283,423</b>	<b>22</b>	<b>519</b>	<b>3,843,165</b>	<b>3,960,046</b>	<b>818,411</b>	<b>2,449,116</b>	<b>11,070,738</b>	<b>0,321</b>	<b>0,135</b>	<b>0,456</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.404	0.437	.
(14) Massachusetts Credibility:	0.540	0.800	.
(15) Countrywide Pure Premium:	0.510	0.168	0.678
(16) Countrywide Indicated Relativity:	0.643	0.536	.
(17) Countrywide Credibility:	0.230	0.100	.
(18) Countrywide Lost-Time Claims:	3085.0	.	.
(19) Pure Premium Underlying Present Rate:	0.296	0.141	0.437
(20) Relativity to Underlying Present Rate:	0.455	0.484	.
(21) Credibility to Underlying Relativity:	0.230	0.100	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.471	0.451	.
(24) Balanced Formula Relativity:	0.466	0.449	0.461

# IX 000175

Section IX - Classification Pricing  
 Subsection G - Class Relativities  
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Section IX - G  
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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
5192 VENDING OR COIN OPERTD MACHINES-INSTALL, SRVC OR RPR &SALES, DR											
Converted Unlimited Losses											
Amount											
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	455.133	3	43	16.467	809.692	16.934	199.510	1,042.603	1.815	0.476	2.291
2018	402.028	6	52	554.620	227.083	54.158	264.849	1,100.710	1.944	0.793	2.738
2019	375.249	2	40	101.893	777.775	16.197	157.364	1,053.230	2.344	0.463	2.807
2020	287.582	2	14	156.767	315.704	44.457	70.732	587.661	1.643	0.401	2.043
2021	314.126	3	25	710.403	621.055	165.139	247.264	1,743.862	4.239	1.313	5.551
<b>MA Total:</b>	<b>1,834,119</b>	<b>16</b>	<b>174</b>	<b>1,540,152</b>	<b>2,751,309</b>	<b>296,886</b>	<b>939,719</b>	<b>5,528,066</b>	<b>2,340</b>	<b>0,674</b>	<b>3,014</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.944	2.189	.
(14) Massachusetts Credibility:	0.340	0.460	.
(15) Countrywide Pure Premium:	1.523	0.514	2.037
(16) Countrywide Indicated Relativity:	1.920	1.642	.
(17) Countrywide Credibility:	0.330	0.270	.
(18) Countrywide Lost-Time Claims:	1576.0	.	.
(19) Pure Premium Underlying Present Rate:	1.263	0.464	1.726
(20) Relativity to Underlying Present Rate:	1.938	1.591	.
(21) Credibility to Underlying Relativity:	0.330	0.270	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.274	1.880	.
(24) Balanced Formula Relativity:	2.251	1.870	2.145

Class(es):		Effective: 7/1/2024							Construction		
5213 CONCRETE CONSTRUCTION-NOC											
Converted Unlimited Losses											
Amount											
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	951.809	9	120	2,295.460	2,432.736	751.536	810.856	6,290.589	4.968	1.641	6.609
2018	784.120	6	120	664.229	2,823.322	153.645	1,087.990	4,729.186	4.448	1.583	6.031
2019	957.782	1	113	160.088	2,999.140	63.553	959.833	4,182.614	3.298	1.068	4.367
2020	1,046.222	4	116	1,198.709	2,852.397	322.003	1,054.974	5,428.083	3.872	1.316	5.188
2021	896.600	5	92	2,579.784	5,636.657	473.770	1,654.776	10,344.987	9.164	2.374	11.538
<b>MA Total:</b>	<b>4,636,532</b>	<b>25</b>	<b>561</b>	<b>6,898,270</b>	<b>16,744,251</b>	<b>1,764,508</b>	<b>5,568,429</b>	<b>30,975,459</b>	<b>5,099</b>	<b>1,582</b>	<b>6,681</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.156	1.838	.
(14) Massachusetts Credibility:	0.760	1.000	.
(15) Countrywide Pure Premium:	3.014	1.037	4.051
(16) Countrywide Indicated Relativity:	1.280	1.204	.
(17) Countrywide Credibility:	0.120	0.000	.
(18) Countrywide Lost-Time Claims:	4935.0	.	.
(19) Pure Premium Underlying Present Rate:	3.650	1.317	4.967
(20) Relativity to Underlying Present Rate:	1.803	1.632	.
(21) Credibility to Underlying Relativity:	0.120	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	2.009	1.838	.
(24) Balanced Formula Relativity:	2.030	1.844	1.980

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
5215 CONCRETE WORK - INCIDENTAL TO CONSTRUCTION OF PRIVATE RES											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	363,706	2	24	169,460	440,411	17,939	183,846	811,655	1,677	0,555	2,232
2018	365,152	3	34	214,916	367,981	30,787	296,706	910,390	1,596	0,897	2,493
2019	377,680	3	25	1,003,564	1,134,014	149,490	311,002	2,598,070	5,660	1,219	6,879
2020	373,033	6	26	1,867,016	424,821	454,787	90,057	2,836,681	6,144	1,461	7,604
2021	427,857	1	16	939	605,819	16,542	178,628	801,927	1,418	0,456	1,874
<b>MA Total:</b>	<b>1,907,429</b>	<b>15</b>	<b>125</b>	<b>3,255,895</b>	<b>2,973,046</b>	<b>669,544</b>	<b>1,060,238</b>	<b>7,958,723</b>	<b>3,266</b>	<b>0,907</b>	<b>4,172</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.381	1.054	.
(14) Massachusetts Credibility:	0.450	0.600	.
(15) Countrywide Pure Premium:	2.762	0.918	3.680
(16) Countrywide Indicated Relativity:	1.173	1.066	.
(17) Countrywide Credibility:	0.280	0.200	.
(18) Countrywide Lost-Time Claims:	1523.0	.	.
(19) Pure Premium Underlying Present Rate:	2.357	0.886	3.243
(20) Relativity to Underlying Present Rate:	1.164	1.098	.
(21) Credibility to Underlying Relativity:	0.270	0.200	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.264	1.065	.
(24) Balanced Formula Relativity:	1.278	1.069	1.222

Class(es):		Effective: 7/1/2024							Construction		
5221 CONCRETE OR CEMENT WORK-FLOORS DRIVEWAYS YRDS OR SIDEWALKS & DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,092,496	23	152	4,492,282	2,438,994	958,342	922,881	8,812,500	3,312	0,899	4,211
2018	2,362,184	13	199	1,586,563	5,840,929	509,642	2,260,716	10,197,850	3,144	1,173	4,317
2019	2,299,687	14	170	2,055,348	5,689,374	904,892	1,770,130	10,419,744	3,368	1,163	4,531
2020	2,539,427	8	192	1,736,480	10,177,903	578,839	3,181,084	15,674,305	4,692	1,481	6,172
2021	2,684,859	11	151	2,999,803	6,112,391	740,528	2,335,647	12,188,369	3,394	1,146	4,540
<b>MA Total:</b>	<b>11,978,651</b>	<b>69</b>	<b>864</b>	<b>12,870,477</b>	<b>30,259,591</b>	<b>3,692,242</b>	<b>10,470,458</b>	<b>57,292,768</b>	<b>3,601</b>	<b>1,182</b>	<b>4,783</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.522	1.374	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	2.278	0.756	3.034
(16) Countrywide Indicated Relativity:	0.968	0.877	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	7732.0	.	.
(19) Pure Premium Underlying Present Rate:	3.037	1.088	4.125
(20) Relativity to Underlying Present Rate:	1.500	1.348	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.522	1.374	.
(24) Balanced Formula Relativity:	1.539	1.379	1.496

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
5222 CONCRETE CONSTRUCTION IN CONNECTION WITH BRIDGES OR CULVERTS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	260.958	1	24	204.749	2.480.837	18.163	448.861	3.152.609	10.291	1.790	12.081
2018	176.257	1	12	312.831	66.523	45.982	37.500	462.836	2.152	0.474	2.626
2019	250.062	2	22	864.059	446.624	299.132	121.633	1.731.448	5.241	1.683	6.924
2020	315.595	1	11	200.592	579.646	246.253	150.932	1.177.423	2.472	1.259	3.731
2021	436.813	0	20	0	2.286.295	0	430.379	2.716.674	5.234	0.985	6.219
<b>MA Total:</b>	<b>1,439,687</b>	<b>5</b>	<b>89</b>	<b>1,582,231</b>	<b>5,859,925</b>	<b>609,529</b>	<b>1,189,305</b>	<b>9,240,989</b>	<b>5.169</b>	<b>1.249</b>	<b>6.419</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.186	1.452	.
(14) Massachusetts Credibility:	0.500	0.590	.
(15) Countrywide Pure Premium:	3.644	1.249	4.893
(16) Countrywide Indicated Relativity:	1.548	1.450	.
(17) Countrywide Credibility:	0.250	0.210	.
(18) Countrywide Lost-Time Claims:	964.00	.	.
(19) Pure Premium Underlying Present Rate:	4.130	1.103	5.233
(20) Relativity to Underlying Present Rate:	2.040	1.366	.
(21) Credibility to Underlying Relativity:	0.250	0.200	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.990	1.434	.
(24) Balanced Formula Relativity:	2.011	1.439	1.858

Class(es):		Effective: 7/1/2024							Construction		
5223 SWIMMING POOL CONSTRUCTN-NOT IRON OR STEEL &DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	238.937	1	22	104.941	109.397	48.367	81.209	343.914	0.897	0.542	1.439
2018	273.240	1	26	166.812	458.543	38.645	156.546	820.546	2.289	0.714	3.003
2019	308.263	0	22	0	87.465	0	74.910	162.374	0.284	0.243	0.527
2020	357.491	1	26	51.451	674.974	45.354	201.198	972.977	2.032	0.690	2.722
2021	454.910	3	23	1.176.674	197.917	231.290	176.802	1.782.682	3.022	0.897	3.919
<b>MA Total:</b>	<b>1,632,842</b>	<b>6</b>	<b>119</b>	<b>1,499,877</b>	<b>1,528,296</b>	<b>363,656</b>	<b>690,664</b>	<b>4,082,493</b>	<b>1.855</b>	<b>0.646</b>	<b>2.500</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.784	0.750	.
(14) Massachusetts Credibility:	0.360	0.490	.
(15) Countrywide Pure Premium:	1.858	0.696	2.554
(16) Countrywide Indicated Relativity:	0.789	0.808	.
(17) Countrywide Credibility:	0.320	0.260	.
(18) Countrywide Lost-Time Claims:	730.00	.	.
(19) Pure Premium Underlying Present Rate:	1.627	0.608	2.236
(20) Relativity to Underlying Present Rate:	0.804	0.754	.
(21) Credibility to Underlying Relativity:	0.320	0.250	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.792	0.766	.
(24) Balanced Formula Relativity:	0.800	0.769	0.792

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
5348 STONE, MOSAIC, TERRAZZO OR CERAMIC TILE WORK - INSIDE											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	938.536	8	50	1,446,575	1,171,857	211,528	506,982	3,336,942	2,790	0,766	3,555
2018	1,200,171	6	73	2,131,831	1,931,425	540,653	638,621	5,242,530	3,386	0,983	4,368
2019	1,161,954	1	45	187,567	1,397,667	61,405	297,771	1,944,410	1,364	0,309	1,673
2020	1,188,576	6	56	1,736,040	2,287,930	395,871	622,923	5,042,763	3,386	0,857	4,243
2021	1,467,498	2	32	1,169,395	731,776	165,600	293,004	2,359,774	1,296	0,313	1,608
<b>MA Total:</b>	<b>5,956,735</b>	<b>23</b>	<b>256</b>	<b>6,671,408</b>	<b>7,520,655</b>	<b>1,375,057</b>	<b>2,359,300</b>	<b>17,926,420</b>	<b>2,383</b>	<b>0,627</b>	<b>3,009</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.007	0.728	.
(14) Massachusetts Credibility:	0.670	0.830	.
(15) Countrywide Pure Premium:	1.983	0.613	2,596
(16) Countrywide Indicated Relativity:	0.842	0.711	.
(17) Countrywide Credibility:	0.170	0.090	.
(18) Countrywide Lost-Time Claims:	1801.0	.	.
(19) Pure Premium Underlying Present Rate:	2.032	0.627	2,658
(20) Relativity to Underlying Present Rate:	1.003	0.776	.
(21) Credibility to Underlying Relativity:	0.160	0.080	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3,226
(23) Formula Relativity:	0.979	0.731	.
(24) Balanced Formula Relativity:	0.989	0.733	0,921

Class(es):		Effective: 7/1/2024							Construction		
5402 HOTHOUSE ERECTION - ALL OPERATIONS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	6,876	0	1	0	7,839	0	6,192	14,031	1,140	0,901	2,041
2018	6,068	0	0	0	0	0	0	0	0,000	0,000	0,000
2019	8,322	0	0	0	0	0	0	0	0,000	0,000	0,000
2020	5,971	0	2	0	2,402	0	1,118	3,520	0,402	0,187	0,589
2021	6,419	0	0	0	0	0	0	0	0,000	0,000	0,000
<b>MA Total:</b>	<b>33,656</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>10,241</b>	<b>0</b>	<b>7,309</b>	<b>17,550</b>	<b>0,304</b>	<b>0,217</b>	<b>0,521</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.129	0.252	.
(14) Massachusetts Credibility:	0.090	0.120	.
(15) Countrywide Pure Premium:	4.899	1,413	6,312
(16) Countrywide Indicated Relativity:	2.081	1,640	.
(17) Countrywide Credibility:	0.240	0,260	.
(18) Countrywide Lost-Time Claims:	34,000	.	.
(19) Pure Premium Underlying Present Rate:	2,604	0,874	3,478
(20) Relativity to Underlying Present Rate:	1,286	1,083	.
(21) Credibility to Underlying Relativity:	0,670	0,620	.
(22) Industry Group Converted Pure Premium:	2,365	0,861	3,226
(23) Formula Relativity:	1,373	1,128	.
(24) Balanced Formula Relativity:	1,387	1,132	1,319

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Section IX - Classification Pricing  
Subsection G - Class Relativities  
7/1/2024

Section IX - G  
Exhibit 111

## Calculation of Class Relativities

Class(es): 5403 CARPENTRY NOC		Effective: 7/1/2024							Construction		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,235,709	21	284	3,440,659	5,435,407	1,071,881	2,167,001	12,114,949	3,970	1,449	5,419
2018	2,352,397	19	282	2,586,147	6,019,885	417,046	2,003,187	11,026,266	3,658	1,029	4,687
2019	2,526,671	18	222	3,708,183	9,224,864	993,786	3,004,603	16,931,436	5,119	1,582	6,701
2020	2,616,019	9	202	2,145,175	6,044,730	705,823	2,695,845	11,591,573	3,131	1,300	4,431
2021	2,731,871	15	181	1,675,844	5,424,556	462,225	3,313,064	10,875,689	2,599	1,382	3,981
<b>MA Total:</b>	<b>12,462,667</b>	<b>82</b>	<b>1,171</b>	<b>13,556,008</b>	<b>32,149,442</b>	<b>3,650,762</b>	<b>13,183,700</b>	<b>62,539,912</b>	<b>3,667</b>	<b>1,351</b>	<b>5,018</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.551	1.570	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	2.747	0.983	3.730
(16) Countrywide Indicated Relativity:	1.167	1.141	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	7185.0	.	.
(19) Pure Premium Underlying Present Rate:	3.829	1.357	5.186
(20) Relativity to Underlying Present Rate:	1.891	1.681	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.551	1.570	.
(24) Balanced Formula Relativity:	1.567	1.575	1.569

Class(es): 5437 CARPENTRY-INSTALL OF CABINET WORK OR INT TRIM		Effective: 7/1/2024							Construction		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	3,171,645	18	278	2,516,222	5,642,156	538,341	1,742,699	10,439,419	2,572	0,719	3,291
2018	3,346,334	10	222	961,221	2,756,730	194,293	1,186,521	5,098,766	1,111	0,413	1,524
2019	3,570,766	10	229	2,599,406	4,778,552	915,389	1,876,164	10,169,511	2,066	0,782	2,848
2020	3,314,921	10	159	1,529,007	3,455,202	366,583	1,357,671	6,708,463	1,504	0,520	2,024
2021	3,789,435	15	190	3,349,739	5,427,879	932,090	2,010,779	11,720,487	2,316	0,777	3,093
<b>MA Total:</b>	<b>17,193,102</b>	<b>63</b>	<b>1,078</b>	<b>10,955,595</b>	<b>22,060,520</b>	<b>2,946,696</b>	<b>8,173,834</b>	<b>44,136,645</b>	<b>1,920</b>	<b>0,647</b>	<b>2,567</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.812	0.752	.
(14) Massachusetts Credibility:	0.920	1.000	.
(15) Countrywide Pure Premium:	2.785	0.975	3.760
(16) Countrywide Indicated Relativity:	1.183	1.131	.
(17) Countrywide Credibility:	0.040	0.000	.
(18) Countrywide Lost-Time Claims:	4782.0	.	.
(19) Pure Premium Underlying Present Rate:	1.568	0.579	2.146
(20) Relativity to Underlying Present Rate:	0.774	0.717	.
(21) Credibility to Underlying Relativity:	0.040	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.825	0.752	.
(24) Balanced Formula Relativity:	0.834	0.754	0.813

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## Calculation of Class Relativities

Class(es): 5443 LATHING & DRIVERS		Effective: 7/1/2024							Construction		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	671	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	567	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	416	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	370	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	986	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>3,010</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.030	0.040	.
(15) Countrywide Pure Premium:	1.569	0.562	2.131
(16) Countrywide Indicated Relativity:	0.666	0.652	.
(17) Countrywide Credibility:	0.390	0.420	.
(18) Countrywide Lost-Time Claims:	111.00	.	.
(19) Pure Premium Underlying Present Rate:	1.313	0.501	1.814
(20) Relativity to Underlying Present Rate:	0.648	0.621	.
(21) Credibility to Underlying Relativity:	0.580	0.540	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.636	0.609	.
(24) Balanced Formula Relativity:	0.643	0.611	0.634

Class(es): 5445 WALLBOARD INSTALLATION WITHIN BUILDINGS & DR		Effective: 7/1/2024							Construction		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,808,298	16	176	2,784,125	7,139,222	512,003	1,922,055	12,357,406	3,534	0,867	4,400
2018	3,070,555	12	193	3,448,104	8,100,089	751,891	2,036,123	14,336,207	3,761	0,908	4,669
2019	2,789,739	4	123	705,995	5,914,274	229,294	1,596,259	8,445,822	2,373	0,654	3,027
2020	3,401,872	10	154	2,802,289	6,724,122	746,170	2,167,205	12,439,786	2,800	0,856	3,657
2021	3,373,440	8	114	2,027,167	10,393,182	485,646	3,040,052	15,946,047	3,682	1,045	4,727
<b>MA Total:</b>	<b>15,443,903</b>	<b>50</b>	<b>760</b>	<b>11,767,680</b>	<b>38,270,889</b>	<b>2,725,004</b>	<b>10,761,693</b>	<b>63,525,267</b>	<b>3,240</b>	<b>0,873</b>	<b>4,113</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.370	1.015	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	2.671	0.887	3.557
(16) Countrywide Indicated Relativity:	1.134	1.029	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	4281.0	.	.
(19) Pure Premium Underlying Present Rate:	2.811	0.812	3.623
(20) Relativity to Underlying Present Rate:	1.388	1.006	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.370	1.015	.
(24) Balanced Formula Relativity:	1.384	1.018	1.287

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
5462 GLAZIER-AWAY FROM SHOP & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	726,425	5	89	1,561,915	1,130,832	322,767	716,607	3,732,121	3,707	1,431	5,138
2018	845,673	3	82	1,181,582	773,927	168,585	232,639	2,356,732	2,312	0,474	2,787
2019	842,170	3	83	985,597	1,533,105	289,240	647,536	3,455,477	2,991	1,112	4,103
2020	958,851	4	63	1,968,341	2,145,987	695,839	697,295	5,507,462	4,291	1,453	5,744
2021	1,026,020	5	93	1,999,735	3,349,885	479,115	890,102	6,718,837	5,214	1,334	6,548
<b>MA Total:</b>	<b>4,399,139</b>	<b>20</b>	<b>410</b>	<b>7,697,169</b>	<b>8,933,736</b>	<b>1,955,546</b>	<b>3,184,180</b>	<b>21,770,630</b>	<b>3,780</b>	<b>1,168</b>	<b>4,949</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.599	1.358	.
(14) Massachusetts Credibility:	0.660	0.870	.
(15) Countrywide Pure Premium:	2.885	0.976	3.861
(16) Countrywide Indicated Relativity:	1.225	1.133	.
(17) Countrywide Credibility:	0.170	0.070	.
(18) Countrywide Lost-Time Claims:	1441.0	.	.
(19) Pure Premium Underlying Present Rate:	2.700	0.974	3.674
(20) Relativity to Underlying Present Rate:	1.334	1.206	.
(21) Credibility to Underlying Relativity:	0.170	0.060	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.490	1.333	.
(24) Balanced Formula Relativity:	1.506	1.338	1.461

Class(es):		Effective: 7/1/2024							Construction		
5472 ASBESTOS REMOVAL OP: ASBESTOS CONTR-PIPE&BOILER WORK EXCL &DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	129,475	0	6	0	335,466	0	118,382	453,848	2,591	0,914	3,505
2018	117,072	1	3	473,273	86,635	61,670	15,067	636,646	4,783	0,655	5,438
2019	124,621	1	5	198,166	425,211	42,030	220,261	885,669	5,002	2,105	7,107
2020	114,207	0	11	0	666,530	0	326,253	992,783	5,836	2,857	8,693
2021	104,399	1	5	242,461	85,399	77,127	29,439	434,426	3,140	1,021	4,161
<b>MA Total:</b>	<b>589,774</b>	<b>3</b>	<b>30</b>	<b>913,900</b>	<b>1,599,241</b>	<b>180,828</b>	<b>709,403</b>	<b>3,403,371</b>	<b>4,261</b>	<b>1,509</b>	<b>5,771</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.802	1.754	.
(14) Massachusetts Credibility:	0.340	0.440	.
(15) Countrywide Pure Premium:	3.309	1.027	4.335
(16) Countrywide Indicated Relativity:	1.405	1.192	.
(17) Countrywide Credibility:	0.330	0.280	.
(18) Countrywide Lost-Time Claims:	83.000	.	.
(19) Pure Premium Underlying Present Rate:	3.815	1.286	5.101
(20) Relativity to Underlying Present Rate:	1.884	1.593	.
(21) Credibility to Underlying Relativity:	0.330	0.280	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.698	1.551	.
(24) Balanced Formula Relativity:	1.716	1.557	1.674

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction			
5473 ASBESTOS REMOVAL OP: ASBESTOS CONTRCTR-NOC &DR												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	400,400	4	42	1,094,120	1,419,528	329,774	466,391	3,309,814	6,278	1,988	8,266	
2018	364,994	2	25	158,533	1,431,898	147,403	547,565	2,285,400	4,357	1,904	6,261	
2019	386,698	5	34	1,747,083	1,335,648	854,531	414,871	4,352,134	7,972	3,283	11,255	
2020	366,721	3	19	1,063,269	2,351,215	310,798	920,125	4,645,408	9,311	3,357	12,667	
2021	348,243	5	14	1,583,321	506,883	442,159	196,487	2,728,850	6,002	1,834	7,836	
<b>MA Total:</b>	<b>1,867,055</b>	<b>19</b>	<b>134</b>	<b>5,646,327</b>	<b>7,045,173</b>	<b>2,084,666</b>	<b>2,545,440</b>	<b>17,321,605</b>	<b>6,798</b>	<b>2,480</b>	<b>9,277</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.874	2.882	.
(14) Massachusetts Credibility:	0.590	0.820	.
(15) Countrywide Pure Premium:	4.392	1.342	5.735
(16) Countrywide Indicated Relativity:	1.866	1.558	.
(17) Countrywide Credibility:	0.210	0.090	.
(18) Countrywide Lost-Time Claims:	470.00	.	.
(19) Pure Premium Underlying Present Rate:	4.685	1.941	6.626
(20) Relativity to Underlying Present Rate:	2.314	2.405	.
(21) Credibility to Underlying Relativity:	0.200	0.090	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	2.550	2.720	.
(24) Balanced Formula Relativity:	2.577	2.729	2.618

Class(es):		Effective: 7/1/2024							Construction			
5474 PAINTING OR PAPERHANGING NOC & SHOP OPERS, DR												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	4,085,262	19	202	3,457,135	6,543,741	639,735	2,147,046	12,787,657	2,448	0,682	3,130	
2018	4,391,895	27	177	4,870,158	4,478,515	1,331,441	1,974,774	12,654,888	2,129	0,753	2,881	
2019	4,594,259	18	159	4,529,766	7,191,810	1,580,653	2,947,140	16,249,369	2,551	0,986	3,537	
2020	4,828,955	16	162	2,834,621	10,033,173	1,487,499	3,932,824	18,288,117	2,665	1,122	3,787	
2021	5,555,886	15	162	3,121,947	9,669,233	1,514,715	3,802,013	18,107,908	2,302	0,957	3,259	
<b>MA Total:</b>	<b>23,456,257</b>	<b>95</b>	<b>862</b>	<b>18,813,627</b>	<b>37,916,472</b>	<b>6,554,043</b>	<b>14,803,796</b>	<b>78,087,939</b>	<b>2,419</b>	<b>0,911</b>	<b>3,329</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.023	1.058	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	2.758	1.006	3.764
(16) Countrywide Indicated Relativity:	1.172	1.167	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	5729.0	.	.
(19) Pure Premium Underlying Present Rate:	1.985	0.827	2.812
(20) Relativity to Underlying Present Rate:	0.981	1.024	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.023	1.058	.
(24) Balanced Formula Relativity:	1.033	1.062	1.041

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
5478 CARPET, LINOLEUM, VINYL, ASPHALT OR RUBBER FLOOR TILE INSTAL											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	836.719	1	46	459.727	1,554.982	98.945	394.750	2,508.404	2.408	0.590	2.998
2018	1,044.529	5	61	834.769	874.391	81.560	324.120	2,114.839	1.636	0.388	2.025
2019	1,049.706	5	55	1,254.636	3,472.155	193.922	621.122	5,541.836	4.503	0.776	5.279
2020	942.494	3	35	826.658	2,120.959	148.874	580.330	3,676.820	3.127	0.774	3.901
2021	1,052.278	1	49	73.432	1,212.593	33.283	580.377	1,899.685	1.222	0.583	1.805
<b>MA Total:</b>	<b>4,925.726</b>	<b>15</b>	<b>246</b>	<b>3,449.223</b>	<b>9,235.079</b>	<b>556.583</b>	<b>2,500.699</b>	<b>15,741.584</b>	<b>2.575</b>	<b>0.621</b>	<b>3.196</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.089	0.721	.
(14) Massachusetts Credibility:	0.630	0.730	.
(15) Countrywide Pure Premium:	1.998	0.611	2.609
(16) Countrywide Indicated Relativity:	0.849	0.709	.
(17) Countrywide Credibility:	0.190	0.140	.
(18) Countrywide Lost-Time Claims:	1095.0	.	.
(19) Pure Premium Underlying Present Rate:	2.084	0.551	2.634
(20) Relativity to Underlying Present Rate:	1.029	0.682	.
(21) Credibility to Underlying Relativity:	0.180	0.130	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.033	0.714	.
(24) Balanced Formula Relativity:	1.043	0.717	0.956

Class(es):		Effective: 7/1/2024							Construction		
5479 INSULATION WORK NOC & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	593.133	3	86	159.729	865.034	23.667	371.887	1,420.317	1.728	0.667	2.395
2018	707.730	8	93	748.234	1,494.703	373.677	590.466	3,207.080	3.169	1.362	4.531
2019	720.548	2	98	232.425	1,724.276	74.515	647.027	2,678.244	2.716	1.001	3.717
2020	839.408	3	89	84.471	2,200.349	51.696	751.380	3,087.896	2.722	0.957	3.679
2021	958.149	4	113	785.235	2,129.329	240.711	880.079	4,035.354	3.042	1.170	4.212
<b>MA Total:</b>	<b>3,818.969</b>	<b>20</b>	<b>479</b>	<b>2,010.095</b>	<b>8,413.691</b>	<b>764.266</b>	<b>3,240.839</b>	<b>14,428.890</b>	<b>2.729</b>	<b>1.049</b>	<b>3.778</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.154	1.219	.
(14) Massachusetts Credibility:	0.590	0.820	.
(15) Countrywide Pure Premium:	2.630	1.162	3.792
(16) Countrywide Indicated Relativity:	1.117	1.348	.
(17) Countrywide Credibility:	0.210	0.090	.
(18) Countrywide Lost-Time Claims:	1809.0	.	.
(19) Pure Premium Underlying Present Rate:	2.298	0.951	3.249
(20) Relativity to Underlying Present Rate:	1.135	1.178	.
(21) Credibility to Underlying Relativity:	0.200	0.090	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.143	1.227	.
(24) Balanced Formula Relativity:	1.155	1.231	1.175

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Section IX - Classification Pricing  
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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction			
5480 PLASTERING NOC & DRIVERS												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	553,658	2	27	63,032	700,549	129,310	310,478	1,203,368	1,379	0,794	2,173	
2018	579,016	2	26	198,641	846,522	63,209	152,304	1,260,676	1,805	0,372	2,177	
2019	584,374	1	19	9,822	1,524,949	27,960	590,730	2,153,461	2,626	1,059	3,685	
2020	535,699	2	17	224,443	219,324	71,442	219,114	734,322	0,828	0,542	1,371	
2021	559,971	2	39	980,257	1,640,318	215,244	699,939	3,535,759	4,680	1,634	6,314	
<b>MA Total:</b>	<b>2,812,718</b>	<b>9</b>	<b>128</b>	<b>1,476,195</b>	<b>4,931,661</b>	<b>507,165</b>	<b>1,972,564</b>	<b>8,887,585</b>	<b>2,278</b>	<b>0,882</b>	<b>3,160</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.963	1.024	.
(14) Massachusetts Credibility:	0.490	0.630	.
(15) Countrywide Pure Premium:	3.469	1.165	4.634
(16) Countrywide Indicated Relativity:	1.473	1.352	.
(17) Countrywide Credibility:	0.260	0.190	.
(18) Countrywide Lost-Time Claims:	167.00	.	.
(19) Pure Premium Underlying Present Rate:	2.008	0.684	2.692
(20) Relativity to Underlying Present Rate:	0.992	0.847	.
(21) Credibility to Underlying Relativity:	0.250	0.180	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.103	1.055	.
(24) Balanced Formula Relativity:	1.115	1.059	1.100

Class(es):		Effective: 7/1/2024							Construction			
5506 STREET OR ROAD CONSTRUCTION: PAVING OR REPAVING & DRIVERS												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	682,200	7	50	1,667,258	567,427	490,516	225,254	2,950,456	3,276	1,049	4,325	
2018	694,351	5	41	1,455,480	1,347,904	862,566	368,556	4,034,506	4,037	1,773	5,810	
2019	710,426	1	42	260,874	483,165	44,594	219,954	1,008,586	1,047	0,372	1,420	
2020	955,347	2	19	671,900	1,774,742	346,209	697,959	3,490,811	2,561	1,093	3,654	
2021	876,339	2	20	362,335	315,939	150,975	128,039	957,289	0,774	0,318	1,092	
<b>MA Total:</b>	<b>3,918,663</b>	<b>17</b>	<b>172</b>	<b>4,417,848</b>	<b>4,489,177</b>	<b>1,894,860</b>	<b>1,639,762</b>	<b>12,441,648</b>	<b>2,273</b>	<b>0,902</b>	<b>3,175</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.961	1.048	.
(14) Massachusetts Credibility:	0.600	0.800	.
(15) Countrywide Pure Premium:	2.915	0.986	3.901
(16) Countrywide Indicated Relativity:	1.238	1.144	.
(17) Countrywide Credibility:	0.200	0.100	.
(18) Countrywide Lost-Time Claims:	4339.0	.	.
(19) Pure Premium Underlying Present Rate:	2.364	0.863	3.228
(20) Relativity to Underlying Present Rate:	1.168	1.070	.
(21) Credibility to Underlying Relativity:	0.200	0.100	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.058	1.060	.
(24) Balanced Formula Relativity:	1.069	1.064	1.068

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
5507 STREET OR ROAD CONSTRUCTION: SUB-SURFACE WORK & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	211,419	2	20	291,893	113,530	166,381	114,466	686,269	1,918	1,328	3,246
2018	180,895	0	16	0	126,846	0	61,553	188,399	0.701	0.340	1.041
2019	177,293	0	9	0	329,427	0	82,983	412,410	1.858	0.468	2.326
2020	340,940	0	12	0	578,002	0	106,200	684,202	1.695	0.311	2.007
2021	293,065	1	5	412,484	875,908	98,183	332,692	1,719,266	4.396	1.470	5.866
<b>MA Total:</b>	<b>1,203,612</b>	<b>3</b>	<b>62</b>	<b>704,376</b>	<b>2,023,712</b>	<b>264,564</b>	<b>697,894</b>	<b>3,690,546</b>	<b>2.267</b>	<b>0.800</b>	<b>3.066</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.958	0.929	.
(14) Massachusetts Credibility:	0.360	0.470	.
(15) Countrywide Pure Premium:	2.063	0.713	2.775
(16) Countrywide Indicated Relativity:	0.876	0.827	.
(17) Countrywide Credibility:	0.320	0.270	.
(18) Countrywide Lost-Time Claims:	1375.0	.	.
(19) Pure Premium Underlying Present Rate:	2.172	0.761	2.933
(20) Relativity to Underlying Present Rate:	1.073	0.943	.
(21) Credibility to Underlying Relativity:	0.320	0.260	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.969	0.905	.
(24) Balanced Formula Relativity:	0.979	0.908	0.960

Class(es):		Effective: 7/1/2024							Construction		
5509 STREET OR ROAD MAINTENANCE BY COUNTY OR MUNICIPAL EMP & DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	52,477	2	5	289,923	11,505	410,056	14,533	726,017	5.744	8.091	13.835
2018	39,799	0	8	0	1,007	0	2,416	3,423	0.025	0.061	0.086
2019	28,560	0	1	0	0	0	4,877	4,877	0.000	0.171	0.171
2020	22,997	0	1	0	1,304	0	3,288	4,591	0.057	0.143	0.200
2021	22,124	1	4	508	5,275	17,189	4,436	27,408	0.261	0.977	1.239
<b>MA Total:</b>	<b>165,957</b>	<b>3</b>	<b>19</b>	<b>290,431</b>	<b>19,090</b>	<b>427,245</b>	<b>29,550</b>	<b>766,317</b>	<b>1.865</b>	<b>2.752</b>	<b>4.618</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.789	3.198	.
(14) Massachusetts Credibility:	0.170	0.270	.
(15) Countrywide Pure Premium:	2.376	1.032	3.408
(16) Countrywide Indicated Relativity:	1.009	1.198	.
(17) Countrywide Credibility:	0.420	0.370	.
(18) Countrywide Lost-Time Claims:	464.00	.	.
(19) Pure Premium Underlying Present Rate:	2.343	1.369	3.711
(20) Relativity to Underlying Present Rate:	1.157	1.696	.
(21) Credibility to Underlying Relativity:	0.410	0.360	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.032	1.917	.
(24) Balanced Formula Relativity:	1.043	1.924	1.278

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
5538 SHEET METAL WORK-SHOP & OUTSIDE-NOC & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,810,210	13	318	1,564,875	4,344,825	766,034	1,592,986	8,268,720	2,103	0,839	2,942
2018	3,171,241	10	315	1,713,395	3,015,578	882,911	1,268,953	6,880,837	1,491	0,679	2,170
2019	3,652,738	9	301	2,021,964	6,136,436	460,154	2,677,950	11,296,504	2,234	0,859	3,093
2020	3,690,191	18	257	4,656,684	3,872,865	1,009,245	1,812,742	11,351,536	2,311	0,765	3,076
2021	4,520,561	12	256	3,759,127	5,887,723	928,365	2,223,761	12,798,976	2,134	0,697	2,831
<b>MA Total:</b>	<b>17,844,942</b>	<b>62</b>	<b>1,447</b>	<b>13,716,045</b>	<b>23,257,427</b>	<b>4,046,709</b>	<b>9,576,392</b>	<b>50,596,573</b>	<b>2,072</b>	<b>0,763</b>	<b>2,835</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.876	0.887	.
(14) Massachusetts Credibility:	0.960	1.000	.
(15) Countrywide Pure Premium:	3.420	1.431	4.851
(16) Countrywide Indicated Relativity:	1.453	1.660	.
(17) Countrywide Credibility:	0.020	0.000	.
(18) Countrywide Lost-Time Claims:	305.00	.	.
(19) Pure Premium Underlying Present Rate:	1.674	0.704	2.378
(20) Relativity to Underlying Present Rate:	0.827	0.872	.
(21) Credibility to Underlying Relativity:	0.020	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.887	0.887	.
(24) Balanced Formula Relativity:	0.896	0.890	0.894

Class(es):		Effective: 7/1/2024							Construction		
5545 ROOFING NOC & YARD EMP, DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	183,302	10	36	1,478,351	1,493,651	705,110	650,644	4,327,756	16,214	7,396	23,610
2018	200,506	8	56	1,131,736	3,757,895	440,946	1,983,486	7,314,063	24,387	12,092	36,478
2019	195,887	10	36	2,188,587	2,153,224	865,406	1,097,365	6,304,583	22,165	10,020	32,185
2020	230,694	9	33	1,680,905	3,254,874	1,228,954	1,704,840	7,869,572	21,395	12,717	34,113
2021	268,716	8	32	2,793,285	3,566,937	1,293,953	1,510,388	9,164,562	23,669	10,436	34,105
<b>MA Total:</b>	<b>1,079,104</b>	<b>45</b>	<b>193</b>	<b>9,272,863</b>	<b>14,226,580</b>	<b>4,534,370</b>	<b>6,946,723</b>	<b>34,980,537</b>	<b>21,777</b>	<b>10,639</b>	<b>32,416</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	9.208	12.363	.
(14) Massachusetts Credibility:	0.820	1.000	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	8.746	12.572	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	18.602	10.809	29.411
(20) Relativity to Underlying Present Rate:	9.189	13.391	.
(21) Credibility to Underlying Relativity:	0.180	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	9.205	12.363	.
(24) Balanced Formula Relativity:	9.302	12.407	10.130

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
5547 ROOFING-BUILT UP - YARD EMP & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	679,113	1	72	79,291	3,330,300	20,474	784,589	4,214,654	5,021	1,185	6,206
2018	749,747	1	82	187,085	3,942,332	73,622	1,421,691	5,624,730	5,508	1,994	7,502
2019	833,305	8	73	2,010,052	3,508,749	827,886	1,398,888	7,745,576	6,623	2,672	9,295
2020	865,564	3	53	581,756	1,696,259	239,529	1,505,300	4,022,843	2,632	2,016	4,648
2021	944,729	5	56	1,295,573	2,556,000	974,492	1,089,002	5,915,066	4,077	2,184	6,261
<b>MA Total:</b>	<b>4,072,457</b>	<b>18</b>	<b>336</b>	<b>4,153,757</b>	<b>15,033,641</b>	<b>2,136,002</b>	<b>6,199,470</b>	<b>27,522,869</b>	<b>4,712</b>	<b>2,047</b>	<b>6,758</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.992	2.378	.
(14) Massachusetts Credibility:	0.780	1.000	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	2.082	2.493	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	4.428	2.143	6.571
(20) Relativity to Underlying Present Rate:	2.187	2.655	.
(21) Credibility to Underlying Relativity:	0.220	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	2.035	2.378	.
(24) Balanced Formula Relativity:	2.057	2.387	2.145

Class(es):		Effective: 7/1/2024							Construction		
5606 CONTRACTOR-EXECUTIVE SUPERVISOR OR CONSTRUCT SUPERINTENDENT											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	8,734,920	11	152	2,278,404	4,643,681	641,706	1,597,893	9,161,684	0.792	0.256	1.049
2018	8,954,694	9	190	2,058,480	4,644,909	343,398	1,480,595	8,527,382	0.749	0.204	0.952
2019	9,283,769	5	149	1,195,469	3,831,621	293,381	1,725,912	7,046,383	0.541	0.218	0.759
2020	9,830,340	3	157	689,735	4,985,029	312,132	1,990,571	7,977,466	0.577	0.234	0.812
2021	10,482,295	8	147	1,847,939	3,164,194	405,491	1,758,293	7,175,917	0.478	0.206	0.685
<b>MA Total:</b>	<b>47,286,017</b>	<b>36</b>	<b>795</b>	<b>8,070,027</b>	<b>21,269,434</b>	<b>1,996,108</b>	<b>8,553,263</b>	<b>39,888,832</b>	<b>0.620</b>	<b>0.223</b>	<b>0.844</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.262	0.259	.
(14) Massachusetts Credibility:	0.900	1.000	.
(15) Countrywide Pure Premium:	0.452	0.175	0.627
(16) Countrywide Indicated Relativity:	0.192	0.203	.
(17) Countrywide Credibility:	0.050	0.000	.
(18) Countrywide Lost-Time Claims:	3973.0	.	.
(19) Pure Premium Underlying Present Rate:	0.535	0.217	0.753
(20) Relativity to Underlying Present Rate:	0.264	0.269	.
(21) Credibility to Underlying Relativity:	0.050	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.259	0.259	.
(24) Balanced Formula Relativity:	0.262	0.260	0.261

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
5610 CLEANER - DEBRIS REMOVAL											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	647,850	1	39	162,485	867,718	31,726	159,006	1,220,935	1,590	0,294	1,885
2018	642,257	3	44	718,538	4,306,062	71,555	658,697	5,754,852	7,823	1,137	8,960
2019	556,582	2	51	610,552	2,730,321	175,472	799,927	4,316,271	6,002	1,752	7,755
2020	388,400	3	28	738,971	368,034	128,066	96,990	1,332,061	2,850	0,579	3,430
2021	407,074	1	13	411,149	68,319	67,439	107,667	654,575	1,178	0,430	1,608
<b>MA Total:</b>	<b>2,642,163</b>	<b>10</b>	<b>175</b>	<b>2,641,696</b>	<b>8,340,455</b>	<b>474,257</b>	<b>1,822,287</b>	<b>13,278,695</b>	<b>4,156</b>	<b>0,869</b>	<b>5,026</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.758	1.010	.
(14) Massachusetts Credibility:	0.550	0.650	.
(15) Countrywide Pure Premium:	2.191	0.891	3.081
(16) Countrywide Indicated Relativity:	0.930	1.034	.
(17) Countrywide Credibility:	0.230	0.180	.
(18) Countrywide Lost-Time Claims:	456.00	.	.
(19) Pure Premium Underlying Present Rate:	2.873	0.787	3.660
(20) Relativity to Underlying Present Rate:	1.419	0.975	.
(21) Credibility to Underlying Relativity:	0.220	0.170	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.493	1.008	.
(24) Balanced Formula Relativity:	1.509	1.012	1.376

Class(es):		Effective: 7/1/2024							Construction		
5645 CARPENTRY-DETACHED ONE OR TWO FAMILY DWELLINGS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	7,032,665	54	691	7,463,224	11,982,868	3,019,377	6,375,877	28,841,347	2,765	1,336	4,101
2018	7,584,315	62	698	9,149,663	13,680,787	3,256,851	7,183,645	33,270,946	3,010	1,377	4,387
2019	7,907,692	46	625	8,408,414	18,816,674	3,072,864	8,534,504	38,832,456	3,443	1,468	4,911
2020	8,316,942	47	541	10,882,305	19,000,098	4,044,953	8,613,659	42,541,016	3,593	1,522	5,115
2021	9,616,693	46	638	10,119,988	22,483,904	4,836,192	11,959,410	49,399,493	3,390	1,747	5,137
<b>MA Total:</b>	<b>40,458,306</b>	<b>255</b>	<b>3,193</b>	<b>46,023,594</b>	<b>85,964,331</b>	<b>18,230,238</b>	<b>42,667,096</b>	<b>192,885,258</b>	<b>3,262</b>	<b>1,505</b>	<b>4,768</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.379	1.749	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	5.238	2.058	7.296
(16) Countrywide Indicated Relativity:	2.225	2.389	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	12766	.	.
(19) Pure Premium Underlying Present Rate:	2.727	1.390	4.117
(20) Relativity to Underlying Present Rate:	1.347	1.722	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.379	1.749	.
(24) Balanced Formula Relativity:	1.394	1.755	1.490

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
5701 WRECKING: BUILDING OR STRUCTURES-NOT MARINE- ALL OPERATIONS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	49,330	0	6	0	620,322	0	150,625	770,948	12,575	3,053	15,628
2018	40,801	0	2	0	146,389	0	33,212	179,601	3,588	0,814	4,402
2019	60,390	0	6	0	8,047	0	26,657	34,704	0,133	0,441	0,575
2020	171,737	1	3	88,807	346,750	12,325	108,039	555,920	2,536	0,701	3,237
2021	45,260	0	4	0	52,176	0	38,878	91,054	1,153	0,859	2,012
<b>MA Total:</b>	<b>367,518</b>	<b>1</b>	<b>21</b>	<b>88,807</b>	<b>1,173,684</b>	<b>12,325</b>	<b>357,412</b>	<b>1,632,227</b>	<b>3,435</b>	<b>1,006</b>	<b>4,441</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.453	1.169	.
(14) Massachusetts Credibility:	0.350	0.510	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	3.128	3.545	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	6.653	3.048	9.701
(20) Relativity to Underlying Present Rate:	3.286	3.776	.
(21) Credibility to Underlying Relativity:	0.650	0.490	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	2.644	2.446	.
(24) Balanced Formula Relativity:	2.672	2.455	2.614

Class(es):		Effective: 7/1/2024							Construction		
5703 BUILDING RAISING OR MOVING & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	17,361	0	1	0	8,433	0	4,998	13,431	0.486	0.288	0.774
2018	19,713	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	19,215	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	18,748	0	2	0	95,643	0	54,400	150,043	5.102	2.902	8.003
2021	12,290	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>87,326</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>104,077</b>	<b>0</b>	<b>59,397</b>	<b>163,474</b>	<b>1.192</b>	<b>0.680</b>	<b>1.872</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.504	0.790	.
(14) Massachusetts Credibility:	0.160	0.220	.
(15) Countrywide Pure Premium:	1.824	1.302	3.126
(16) Countrywide Indicated Relativity:	0.775	1.511	.
(17) Countrywide Credibility:	0.200	0.210	.
(18) Countrywide Lost-Time Claims:	20.000	.	.
(19) Pure Premium Underlying Present Rate:	3.888	1.540	5.428
(20) Relativity to Underlying Present Rate:	1.920	1.908	.
(21) Credibility to Underlying Relativity:	0.640	0.570	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.465	1.579	.
(24) Balanced Formula Relativity:	1.480	1.584	1.508

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
5705 SALVAGE OPERATION - NO WRECKING OR ANY STRUCTURAL OPERATIONS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	247	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	270	0	1	0	0	0	586	586	0.000	2.171	2.171
2019	329	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	179	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	0	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>1,024</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>586</b>	<b>586</b>	<b>0.000</b>	<b>0.572</b>	<b>0.572</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.665	.
(14) Massachusetts Credibility:	0.030	0.040	.
(15) Countrywide Pure Premium:	8.732	2.988	11.721
(16) Countrywide Indicated Relativity:	3.709	3.468	.
(17) Countrywide Credibility:	0.140	0.150	.
(18) Countrywide Lost-Time Claims:	9.000	.	.
(19) Pure Premium Underlying Present Rate:	4.615	1.727	6.342
(20) Relativity to Underlying Present Rate:	2.279	2.140	.
(21) Credibility to Underlying Relativity:	0.830	0.810	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	2.411	2.280	.
(24) Balanced Formula Relativity:	2.437	2.289	2.397

Class(es):		Effective: 7/1/2024							Construction		
6003 PILE DRIVING & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	66,365	0	1	0	0	0	67	67	0.000	0.001	0.001
2018	95,002	0	6	0	42,847	0	11,215	54,063	0.451	0.118	0.569
2019	77,338	0	8	0	725,125	0	187,256	912,381	9.376	2.421	11.797
2020	104,751	0	3	0	70,716	0	35,359	106,075	0.675	0.338	1.013
2021	134,983	0	8	0	335,554	0	154,064	489,618	2.486	1.141	3.627
<b>MA Total:</b>	<b>478,440</b>	<b>0</b>	<b>26</b>	<b>0</b>	<b>1,174,243</b>	<b>0</b>	<b>387,961</b>	<b>1,562,204</b>	<b>2.454</b>	<b>0.811</b>	<b>3.265</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.038	0.942	.
(14) Massachusetts Credibility:	0.280	0.350	.
(15) Countrywide Pure Premium:	2.975	0.911	3.886
(16) Countrywide Indicated Relativity:	1.264	1.058	.
(17) Countrywide Credibility:	0.360	0.330	.
(18) Countrywide Lost-Time Claims:	120.00	.	.
(19) Pure Premium Underlying Present Rate:	2.895	0.937	3.832
(20) Relativity to Underlying Present Rate:	1.430	1.161	.
(21) Credibility to Underlying Relativity:	0.360	0.320	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.260	1.050	.
(24) Balanced Formula Relativity:	1.274	1.054	1.215

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
6204 DRILLING NOC & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	194,706	0	10	0	56,954	0	30,316	87,270	0.293	0.156	0.448
2018	174,072	0	16	0	1,321,725	0	339,415	1,661,139	7.593	1.950	9.543
2019	222,169	1	11	283,419	472,017	48,538	117,654	921,628	3.400	0.748	4.148
2020	243,420	2	8	347,948	328,158	121,360	97,822	895,288	2.778	0.900	3.678
2021	220,511	2	7	241,575	218,601	106,542	163,489	730,206	2.087	1.225	3.311
<b>MA Total:</b>	<b>1,054,878</b>	<b>5</b>	<b>52</b>	<b>872,942</b>	<b>2,397,454</b>	<b>276,440</b>	<b>748,695</b>	<b>4,295,531</b>	<b>3.100</b>	<b>0.972</b>	<b>4.072</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.311	1.129	.
(14) Massachusetts Credibility:	0.380	0.470	.
(15) Countrywide Pure Premium:	3.848	1.144	4.992
(16) Countrywide Indicated Relativity:	1.634	1.327	.
(17) Countrywide Credibility:	0.310	0.270	.
(18) Countrywide Lost-Time Claims:	747.00	.	.
(19) Pure Premium Underlying Present Rate:	2.749	0.858	3.607
(20) Relativity to Underlying Present Rate:	1.358	1.063	.
(21) Credibility to Underlying Relativity:	0.310	0.260	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.426	1.165	.
(24) Balanced Formula Relativity:	1.441	1.170	1.368

Class(es):		Effective: 7/1/2024							Construction		
6217 EXCAVATION & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	4,579,109	28	266	6,569,187	7,231,252	1,778,140	2,218,826	17,797,403	3.014	0.873	3.887
2018	5,128,498	18	208	4,371,510	5,179,746	932,845	1,859,976	12,344,076	1.862	0.545	2.407
2019	5,179,034	11	200	2,769,497	4,850,358	788,313	2,098,863	10,507,031	1.471	0.557	2.029
2020	5,044,303	17	194	6,033,457	13,045,283	1,706,533	3,531,268	24,316,541	3.782	1.038	4.821
2021	5,443,892	14	214	1,932,819	7,683,973	956,945	3,107,561	13,681,298	1.767	0.747	2.513
<b>MA Total:</b>	<b>25,374,837</b>	<b>88</b>	<b>1,082</b>	<b>21,676,469</b>	<b>37,990,611</b>	<b>6,162,775</b>	<b>12,816,494</b>	<b>78,646,349</b>	<b>2.351</b>	<b>0.748</b>	<b>3.099</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.994	0.869	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	2.155	0.730	2.885
(16) Countrywide Indicated Relativity:	0.915	0.847	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	6481.0	.	.
(19) Pure Premium Underlying Present Rate:	1.990	0.714	2.703
(20) Relativity to Underlying Present Rate:	0.983	0.884	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.994	0.869	.
(24) Balanced Formula Relativity:	1.005	0.872	0.969

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
6229 IRRIGATION OR DRAINAGE SYSTEM CONSTRUCTION &DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	458,637	1	35	141,380	526,251	19,858	188,778	876,267	1,456	0,455	1,911
2018	477,861	2	40	143,876	1,094,687	36,635	361,850	1,637,047	2,592	0,834	3,426
2019	516,847	3	28	487,775	956,445	73,209	378,883	1,896,312	2,794	0,875	3,669
2020	513,347	3	26	1,138,800	459,741	251,453	193,563	2,043,557	3,114	0,867	3,981
2021	582,149	5	28	478,700	773,766	126,087	404,550	1,783,104	2,151	0,912	3,063
<b>MA Total:</b>	<b>2,548,841</b>	<b>14</b>	<b>157</b>	<b>2,390,531</b>	<b>3,810,891</b>	<b>507,242</b>	<b>1,527,624</b>	<b>8,236,288</b>	<b>2,433</b>	<b>0,798</b>	<b>3,231</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.029	0.928	.
(14) Massachusetts Credibility:	0.470	0.640	.
(15) Countrywide Pure Premium:	2.082	0.729	2.811
(16) Countrywide Indicated Relativity:	0.884	0.846	.
(17) Countrywide Credibility:	0.270	0.180	.
(18) Countrywide Lost-Time Claims:	540.00	.	.
(19) Pure Premium Underlying Present Rate:	1.964	0.765	2.728
(20) Relativity to Underlying Present Rate:	0.970	0.947	.
(21) Credibility to Underlying Relativity:	0.260	0.180	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.974	0.916	.
(24) Balanced Formula Relativity:	0.985	0.920	0.967

Class(es):		Effective: 7/1/2024							Construction		
6233 OIL OR GAS PIPELINE CONSTRUCTION & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	36,379	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	29,922	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	34,294	0	1	0	39,053	0	12,142	51,195	1,139	0,354	1,493
2020	41,692	0	2	0	0	0	8,840	8,840	0.000	0,212	0,212
2021	30,179	0	1	0	0	0	154	154	0.000	0,005	0,005
<b>MA Total:</b>	<b>172,466</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>39,053</b>	<b>0</b>	<b>21,136</b>	<b>60,189</b>	<b>0,226</b>	<b>0,123</b>	<b>0,349</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.096	0.142	.
(14) Massachusetts Credibility:	0.120	0.140	.
(15) Countrywide Pure Premium:	1.125	0.297	1.422
(16) Countrywide Indicated Relativity:	0.478	0.345	.
(17) Countrywide Credibility:	0.440	0.430	.
(18) Countrywide Lost-Time Claims:	465.00	.	.
(19) Pure Premium Underlying Present Rate:	0.958	0.269	1.227
(20) Relativity to Underlying Present Rate:	0.473	0.333	.
(21) Credibility to Underlying Relativity:	0.440	0.430	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.430	0.311	.
(24) Balanced Formula Relativity:	0.435	0.313	0.402

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
6251 TUNNELING - NOT PNEUMATIC - ALL OPERATIONS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	235	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	250	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	12,999	0	1	0	0	0	2,108	2,108	0.000	0.162	0.162
2021	5,488	0	1	0	0	0	10,555	10,555	0.000	1.923	1.923
<b>MA Total:</b>	<b>18,972</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12,664</b>	<b>12,664</b>	<b>0.000</b>	<b>0.667</b>	<b>0.667</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.776	.
(14) Massachusetts Credibility:	0.070	0.080	.
(15) Countrywide Pure Premium:	1.695	0.399	2.094
(16) Countrywide Indicated Relativity:	0.720	0.463	.
(17) Countrywide Credibility:	0.280	0.300	.
(18) Countrywide Lost-Time Claims:	49.000	.	.
(19) Pure Premium Underlying Present Rate:	2.040	0.573	2.614
(20) Relativity to Underlying Present Rate:	1.008	0.710	.
(21) Credibility to Underlying Relativity:	0.650	0.620	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.857	0.641	.
(24) Balanced Formula Relativity:	0.866	0.644	0.806

Class(es):		Effective: 7/1/2024							Construction		
6252 SHAFT SINKING - ALL OPERATIONS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	50,464	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	90,317	0	1	0	73,075	0	40,848	113,923	0.809	0.452	1.261
2019	100,837	0	4	0	17,124	0	56,666	73,790	0.170	0.562	0.732
2020	61,406	0	2	0	803,863	0	200,689	1,004,552	13.091	3.268	16.359
2021	59,884	0	4	0	180,775	0	67,942	248,717	3.019	1.135	4.153
<b>MA Total:</b>	<b>362,908</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>1,074,836</b>	<b>0</b>	<b>366,146</b>	<b>1,440,982</b>	<b>2.962</b>	<b>1.009</b>	<b>3.971</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.252	1.172	.
(14) Massachusetts Credibility:	0.200	0.270	.
(15) Countrywide Pure Premium:	2.218	0.768	2.986
(16) Countrywide Indicated Relativity:	0.942	0.891	.
(17) Countrywide Credibility:	0.310	0.330	.
(18) Countrywide Lost-Time Claims:	63.000	.	.
(19) Pure Premium Underlying Present Rate:	1.719	0.620	2.339
(20) Relativity to Underlying Present Rate:	0.849	0.768	.
(21) Credibility to Underlying Relativity:	0.490	0.400	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.958	0.918	.
(24) Balanced Formula Relativity:	0.969	0.921	0.956

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
6306 SEWER CONSTRUCTION - ALL OPERATIONS & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	254,204	2	21	586,107	952,055	139,312	240,825	1,918,299	6,051	1,495	7,546
2018	268,233	2	29	460,724	1,066,817	436,078	283,772	2,247,391	5,695	2,684	8,379
2019	265,201	3	21	763,702	941,787	150,230	186,477	2,042,196	6,431	1,270	7,701
2020	279,136	2	21	403,017	999,708	91,453	173,742	1,667,920	5,025	0,950	5,975
2021	253,811	0	19	0	576,298	0	347,646	923,944	2,271	1,370	3,640
<b>MA Total:</b>	<b>1,320,585</b>	<b>9</b>	<b>111</b>	<b>2,213,551</b>	<b>4,536,665</b>	<b>817,072</b>	<b>1,232,462</b>	<b>8,799,749</b>	<b>5,112</b>	<b>1,552</b>	<b>6,664</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.161	1.803	.
(14) Massachusetts Credibility:	0.500	0.620	.
(15) Countrywide Pure Premium:	2.302	0.861	3.162
(16) Countrywide Indicated Relativity:	0.978	0.999	.
(17) Countrywide Credibility:	0.250	0.190	.
(18) Countrywide Lost-Time Claims:	1545.0	.	.
(19) Pure Premium Underlying Present Rate:	4.376	1.374	5.750
(20) Relativity to Underlying Present Rate:	2.161	1.703	.
(21) Credibility to Underlying Relativity:	0.250	0.190	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.865	1.631	.
(24) Balanced Formula Relativity:	1.885	1.637	1.819

Class(es):		Effective: 7/1/2024							Construction		
6319 GAS MAIN OR CONNECTION CONSTRUCTION & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	910,626	2	23	316,291	990,972	34,568	458,615	1,800,446	1,436	0,542	1,977
2018	1,205,044	1	32	521,604	633,402	150,174	446,481	1,751,661	0,958	0,495	1,454
2019	1,068,279	0	31	0	934,738	0	430,221	1,364,960	0,875	0,403	1,278
2020	1,223,740	1	30	600,847	2,324,231	127,229	805,248	3,857,556	2,390	0,762	3,152
2021	1,395,888	3	35	44,563	1,006,794	21,631	292,763	1,365,751	0,753	0,225	0,978
<b>MA Total:</b>	<b>5,803,577</b>	<b>7</b>	<b>151</b>	<b>1,483,305</b>	<b>5,890,137</b>	<b>333,603</b>	<b>2,433,329</b>	<b>10,140,373</b>	<b>1,270</b>	<b>0,477</b>	<b>1,747</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.537	0.554	.
(14) Massachusetts Credibility:	0.520	0.710	.
(15) Countrywide Pure Premium:	1.415	0.521	1.936
(16) Countrywide Indicated Relativity:	0.601	0.605	.
(17) Countrywide Credibility:	0.240	0.150	.
(18) Countrywide Lost-Time Claims:	1373.0	.	.
(19) Pure Premium Underlying Present Rate:	1.095	0.439	1.534
(20) Relativity to Underlying Present Rate:	0.541	0.543	.
(21) Credibility to Underlying Relativity:	0.240	0.140	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.553	0.560	.
(24) Balanced Formula Relativity:	0.559	0.562	0.560

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
6325 CONDUIT CONSTRUCTION - FOR CABLES OR WIRES & DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	281.605	0	12	0	37.170	0	51.515	88.685	0.132	0.183	0.315
2018	357.932	0	4	0	64.373	0	13.148	77.521	0.180	0.037	0.217
2019	399.512	1	15	196.500	942.414	27.882	384.619	1,551.416	2.851	1.033	3.883
2020	409.622	2	11	155.573	57.425	130.542	152.304	495.844	0.520	0.691	1.210
2021	433.624	1	17	10.090	273.659	5.348	143.864	432.961	0.654	0.344	0.998
<b>MA Total:</b>	<b>1,882,295</b>	<b>4</b>	<b>59</b>	<b>362,163</b>	<b>1,375,042</b>	<b>163,772</b>	<b>745,449</b>	<b>2,646,426</b>	<b>0.923</b>	<b>0.483</b>	<b>1.406</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.390	0.561	.
(14) Massachusetts Credibility:	0.340	0.480	.
(15) Countrywide Pure Premium:	1.961	0.660	2.621
(16) Countrywide Indicated Relativity:	0.833	0.766	.
(17) Countrywide Credibility:	0.330	0.260	.
(18) Countrywide Lost-Time Claims:	1274.0	.	.
(19) Pure Premium Underlying Present Rate:	1.170	0.517	1.687
(20) Relativity to Underlying Present Rate:	0.578	0.641	.
(21) Credibility to Underlying Relativity:	0.330	0.260	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.598	0.635	.
(24) Balanced Formula Relativity:	0.605	0.638	0.613

Class(es):		Effective: 7/1/2024							Construction		
6400 FENCE ERECTION - ALL TYPES											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	430.680	2	61	68.243	960.171	10.259	295.152	1,333.825	2.388	0.709	3.097
2018	461.061	2	51	294.162	351.374	56.850	230.467	932.853	1.400	0.623	2.023
2019	486.981	3	54	393.955	960.040	64.962	386.074	1,805.031	2.780	0.926	3.707
2020	535.034	1	49	422.338	765.253	84.661	421.688	1,693.939	2.220	0.946	3.166
2021	637.731	2	46	345.334	896.258	91.518	316.663	1,649.773	1.947	0.640	2.587
<b>MA Total:</b>	<b>2,551,487</b>	<b>10</b>	<b>261</b>	<b>1,524,031</b>	<b>3,933,097</b>	<b>308,250</b>	<b>1,650,043</b>	<b>7,415,422</b>	<b>2.139</b>	<b>0.768</b>	<b>2.906</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.904	0.892	.
(14) Massachusetts Credibility:	0.470	0.690	.
(15) Countrywide Pure Premium:	2.117	0.856	2.974
(16) Countrywide Indicated Relativity:	0.899	0.994	.
(17) Countrywide Credibility:	0.270	0.160	.
(18) Countrywide Lost-Time Claims:	980.00	.	.
(19) Pure Premium Underlying Present Rate:	1.920	0.931	2.850
(20) Relativity to Underlying Present Rate:	0.948	1.153	.
(21) Credibility to Underlying Relativity:	0.260	0.150	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.914	0.947	.
(24) Balanced Formula Relativity:	0.924	0.951	0.931

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Miscellaneous		
6834 BOAT BUILDING OR REPAIRING & DRIVERS: MA ACT											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	279,223	1	26	11,793	105,404	4,058	74,744	195,999	0.420	0.282	0.702
2018	290,312	0	29	0	11,274	0	31,466	42,740	0.039	0.108	0.147
2019	300,352	1	29	23,452	562,036	18,960	204,660	809,108	1.949	0.745	2,694
2020	315,185	1	22	25,040	19,346	2,833	81,897	129,116	0.141	0.269	0.410
2021	348,668	1	28	130,015	686,426	29,458	239,835	1,085,735	2.342	0.772	3,114
<b>MA Total:</b>	<b>1,533,740</b>	<b>4</b>	<b>134</b>	<b>190,300</b>	<b>1,384,487</b>	<b>55,309</b>	<b>632,602</b>	<b>2,262,697</b>	<b>1.027</b>	<b>0.449</b>	<b>1.475</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.373	0.452	.
(14) Massachusetts Credibility:	0.290	0.450	.
(15) Countrywide Pure Premium:	1.262	0.577	1.840
(16) Countrywide Indicated Relativity:	0.476	0.611	.
(17) Countrywide Credibility:	0.360	0.280	.
(18) Countrywide Lost-Time Claims:	1001.0	.	.
(19) Pure Premium Underlying Present Rate:	0.970	0.527	1.496
(20) Relativity to Underlying Present Rate:	0.429	0.559	.
(21) Credibility to Underlying Relativity:	0.350	0.270	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.430	0.526	.
(24) Balanced Formula Relativity:	0.426	0.527	0.453

Class(es):		Effective: 7/1/2024							Miscellaneous		
6836 MARINA & DRIVERS: MA ACT											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	543,485	1	86	30,258	179,740	76,311	268,772	555,081	0.386	0.635	1.021
2018	563,590	1	58	34,640	170,111	14,431	241,594	460,775	0.363	0.454	0.818
2019	562,811	3	45	146,599	514,089	143,322	136,791	940,800	1.174	0.498	1.672
2020	553,958	0	47	0	651,243	0	451,205	1,102,448	1.176	0.815	1,990
2021	598,705	1	47	886,621	868,335	350,148	509,689	2,614,793	2.931	1.436	4,367
<b>MA Total:</b>	<b>2,822,549</b>	<b>6</b>	<b>283</b>	<b>1,098,117</b>	<b>2,383,519</b>	<b>584,211</b>	<b>1,608,050</b>	<b>5,673,896</b>	<b>1.234</b>	<b>0.777</b>	<b>2,010</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.448	0.783	.
(14) Massachusetts Credibility:	0.390	0.630	.
(15) Countrywide Pure Premium:	1.629	0.705	2.334
(16) Countrywide Indicated Relativity:	0.615	0.747	.
(17) Countrywide Credibility:	0.310	0.190	.
(18) Countrywide Lost-Time Claims:	609.00	.	.
(19) Pure Premium Underlying Present Rate:	1.100	0.657	1.757
(20) Relativity to Underlying Present Rate:	0.487	0.697	.
(21) Credibility to Underlying Relativity:	0.300	0.180	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.511	0.761	.
(24) Balanced Formula Relativity:	0.507	0.762	0.575

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Miscellaneous		
7219 TRUCKING: NOC - ALL EMP & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	3,197,857	35	410	6,007,174	7,440,533	1,399,471	2,489,414	17,336,593	4,205	1,216	5,421
2018	3,026,015	31	308	5,066,223	5,954,567	1,315,228	2,655,945	14,991,962	3,642	1,312	4,954
2019	3,006,791	36	288	5,641,401	8,066,962	1,922,694	2,899,278	18,530,335	4,559	1,604	6,163
2020	3,103,110	28	263	4,141,365	7,893,099	1,281,142	2,801,408	16,117,014	3,878	1,316	5,194
2021	3,135,092	20	272	3,816,478	8,483,144	1,534,411	3,518,544	17,352,576	3,923	1,612	5,535
<b>MA Total:</b>	<b>15,468,864</b>	<b>150</b>	<b>1,541</b>	<b>24,672,642</b>	<b>37,838,305</b>	<b>7,452,945</b>	<b>14,364,588</b>	<b>84,328,481</b>	<b>4,041</b>	<b>1,410</b>	<b>5,451</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.469	1.422	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	4.311	1.273	5.584
(16) Countrywide Indicated Relativity:	1.627	1.347	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	52935	.	.
(19) Pure Premium Underlying Present Rate:	3.360	1.371	4.731
(20) Relativity to Underlying Present Rate:	1.485	1.455	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	1.469	1.422	.
(24) Balanced Formula Relativity:	1.457	1.425	1.449

Class(es):		Effective: 7/1/2024							Miscellaneous		
7230 TRUCKING: PARCEL OR PACKAGE DELIVERY- ALL EMP & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	92,075	0	28	0	456,581	0	180,798	637,379	4,959	1,964	6,922
2018	110,087	1	35	204,617	536,081	111,110	187,613	1,039,421	6,728	2,714	9,442
2019	212,593	1	46	15,086	1,078,079	5,445	293,653	1,392,263	5,142	1,407	6,549
2020	43,700	0	7	0	281,036	0	147,820	428,856	6,431	3,383	9,814
2021	19,778	1	4	18,982	256,652	23,058	59,162	357,855	13,937	4,157	18,094
<b>MA Total:</b>	<b>478,232</b>	<b>3</b>	<b>120</b>	<b>238,685</b>	<b>2,608,430</b>	<b>139,613</b>	<b>869,047</b>	<b>3,855,775</b>	<b>5,953</b>	<b>2,109</b>	<b>8,063</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.163	2.127	.
(14) Massachusetts Credibility:	0.320	0.460	.
(15) Countrywide Pure Premium:	4.550	1.520	6.070
(16) Countrywide Indicated Relativity:	1.718	1.609	.
(17) Countrywide Credibility:	0.340	0.270	.
(18) Countrywide Lost-Time Claims:	2168.0	.	.
(19) Pure Premium Underlying Present Rate:	4.143	1.756	5.899
(20) Relativity to Underlying Present Rate:	1.832	1.863	.
(21) Credibility to Underlying Relativity:	0.340	0.270	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	1.899	1.916	.
(24) Balanced Formula Relativity:	1.884	1.920	1.894

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Miscellaneous			
7231 TRUCKING: MAIL, PARCEL OR PACKAGE DELIVERY-ALL EMP & DRIVERS												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	701,798	17	159	1,654,693	3,073,943	410,840	861,406	6,000,881	6,738	1,813	8,551	
2018	901,235	19	196	3,491,930	2,941,739	930,465	796,704	8,160,838	7,139	1,916	9,055	
2019	1,423,408	27	275	3,849,521	3,602,575	1,043,774	1,203,694	9,699,564	5,235	1,579	6,814	
2020	2,257,923	54	547	5,881,660	7,805,375	1,301,126	3,367,832	18,355,992	6,062	2,068	8,130	
2021	2,569,536	71	598	7,709,462	10,560,359	2,102,409	3,809,133	24,181,364	7,110	2,301	9,411	
<b>MA Total:</b>	<b>7,853,901</b>	<b>188</b>	<b>1,775</b>	<b>22,587,266</b>	<b>27,983,990</b>	<b>5,788,615</b>	<b>10,038,768</b>	<b>66,398,639</b>	<b>6,439</b>	<b>2,015</b>	<b>8,454</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.340	2.032	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	5.123	1.520	6.642
(16) Countrywide Indicated Relativity:	1.934	1.608	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	9802.0	.	.
(19) Pure Premium Underlying Present Rate:	5.267	1.963	7.230
(20) Relativity to Underlying Present Rate:	2.329	2.082	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	2.340	2.032	.
(24) Balanced Formula Relativity:	2.322	2.037	2.246

Class(es):		Effective: 7/1/2024							Miscellaneous			
7360 FREIGHT HANDLING NOC: MA ACT												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	116,769	2	18	54,533	337,785	12,729	84,678	489,725	3,360	0,834	4,194	
2018	134,299	1	32	73,517	563,048	26,774	148,265	811,605	4,740	1,303	6,043	
2019	210,128	1	20	90,677	228,913	11,558	189,051	520,199	1,521	0,955	2,476	
2020	229,711	2	22	363,704	54,117	74,024	20,645	512,491	1,819	0,412	2,231	
2021	341,554	0	29	0	288,525	0	97,130	385,655	0,845	0,284	1,129	
<b>MA Total:</b>	<b>1,032,462</b>	<b>6</b>	<b>121</b>	<b>582,431</b>	<b>1,472,388</b>	<b>125,086</b>	<b>539,769</b>	<b>2,719,674</b>	<b>1,990</b>	<b>0,644</b>	<b>2,634</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.723	0.649	.
(14) Massachusetts Credibility:	0.340	0.460	.
(15) Countrywide Pure Premium:	2.506	0.952	3.459
(16) Countrywide Indicated Relativity:	0.946	1.008	.
(17) Countrywide Credibility:	0.330	0.270	.
(18) Countrywide Lost-Time Claims:	1667.0	.	.
(19) Pure Premium Underlying Present Rate:	2.126	0.813	2.939
(20) Relativity to Underlying Present Rate:	0.940	0.863	.
(21) Credibility to Underlying Relativity:	0.330	0.270	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.868	0.804	.
(24) Balanced Formula Relativity:	0.862	0.805	0.847

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Miscellaneous			
7370 TAXICAB CO: ALL OTHER EMP & DRIVERS												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	1,792,415	14	528	1,544,181	1,909,910	352,035	981,833	4,787,959	1,927	0,744	2,671	
2018	1,825,475	15	506	1,277,794	2,127,793	373,054	1,223,140	5,001,782	1,866	0,874	2,740	
2019	1,778,307	22	433	1,919,365	1,582,894	365,327	1,109,747	4,977,332	1,969	0,829	2,799	
2020	1,751,357	18	402	2,537,247	3,823,143	568,420	1,255,236	8,184,046	3,632	1,041	4,673	
2021	1,850,110	12	334	1,697,054	1,988,954	601,631	1,160,753	5,448,392	1,992	0,953	2,945	
<b>MA Total:</b>	<b>8,997,664</b>	<b>81</b>	<b>2,203</b>	<b>8,975,642</b>	<b>11,432,694</b>	<b>2,260,467</b>	<b>5,730,709</b>	<b>28,399,511</b>	<b>2,268</b>	<b>0,888</b>	<b>3,156</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.824	0.896	.
(14) Massachusetts Credibility:	0.790	1.000	.
(15) Countrywide Pure Premium:	2.674	1.094	3.767
(16) Countrywide Indicated Relativity:	1.009	1.157	.
(17) Countrywide Credibility:	0.110	0.000	.
(18) Countrywide Lost-Time Claims:	1635.0	.	.
(19) Pure Premium Underlying Present Rate:	2.037	0.925	2.962
(20) Relativity to Underlying Present Rate:	0.901	0.981	.
(21) Credibility to Underlying Relativity:	0.100	0.000	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.852	0.896	.
(24) Balanced Formula Relativity:	0.846	0.898	0.859

Class(es):		Effective: 7/1/2024							Miscellaneous			
7380 DRIVERS, CHAUFFEURS AND HELPERS-NOC-COMMERCIAL												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	4,338,814	38	754	5,210,765	9,431,194	1,263,488	3,574,182	19,479,630	3,375	1,115	4,490	
2018	4,330,860	48	766	6,797,949	8,461,327	1,755,250	3,394,227	20,408,753	3,523	1,189	4,712	
2019	4,331,289	44	630	7,372,913	10,885,978	1,618,614	4,398,376	24,275,880	4,216	1,389	5,605	
2020	3,935,579	40	530	6,690,362	12,498,525	1,645,390	4,408,488	25,242,764	4,876	1,538	6,414	
2021	4,440,564	41	583	6,621,627	13,651,668	1,743,303	4,468,366	26,484,964	4,565	1,399	5,964	
<b>MA Total:</b>	<b>21,377,107</b>	<b>211</b>	<b>3,263</b>	<b>32,693,616</b>	<b>54,928,691</b>	<b>8,026,045</b>	<b>20,243,638</b>	<b>115,891,990</b>	<b>4,099</b>	<b>1,322</b>	<b>5,421</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.490	1.334	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	3.118	1.126	4.244
(16) Countrywide Indicated Relativity:	1.177	1.192	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	27946	.	.
(19) Pure Premium Underlying Present Rate:	3.040	1.202	4.242
(20) Relativity to Underlying Present Rate:	1.344	1.276	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	1.490	1.334	.
(24) Balanced Formula Relativity:	1.478	1.336	1.441

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Miscellaneous		
7382 BUS CO: ALL OTHER EMPLOYEES & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums		
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	3,874,954	43	617	2,074,884	4,521,263	461,404	1,715,510	8,773,061	1,702	0,562	2,264
2018	4,141,900	59	597	4,531,350	4,254,843	1,486,329	1,833,230	12,105,752	2,121	0,801	2,923
2019	3,471,770	31	429	2,247,442	2,755,821	654,138	1,136,963	6,794,364	1,441	0,516	1,957
2020	2,693,658	31	286	3,886,199	3,343,803	811,674	1,456,619	9,498,294	2,684	0,842	3,526
2021	2,996,177	35	271	4,194,469	3,209,139	1,567,566	1,318,265	10,289,439	2,471	0,963	3,434
<b>MA Total:</b>	<b>17,178,459</b>	<b>199</b>	<b>2,200</b>	<b>16,934,343</b>	<b>18,084,870</b>	<b>4,981,110</b>	<b>7,460,587</b>	<b>47,460,910</b>	<b>2,039</b>	<b>0,724</b>	<b>2,763</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.741	0.730	.
(14) Massachusetts Credibility:	0.940	1.000	.
(15) Countrywide Pure Premium:	2.565	1.019	3.584
(16) Countrywide Indicated Relativity:	0.968	1.079	.
(17) Countrywide Credibility:	0.030	0.000	.
(18) Countrywide Lost-Time Claims:	7273.0	.	.
(19) Pure Premium Underlying Present Rate:	1.657	0.664	2.322
(20) Relativity to Underlying Present Rate:	0.733	0.705	.
(21) Credibility to Underlying Relativity:	0.030	0.000	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.747	0.730	.
(24) Balanced Formula Relativity:	0.742	0.732	0.739

Class(es):		Effective: 7/1/2024							Miscellaneous		
7403 AIRCRAFT OR HELICOP OP: AIR CARRIER-SCHD/ SUPPL: A/O EMP & DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums		
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,935,320	12	260	1,419,745	1,318,493	332,423	848,143	3,918,804	1,415	0,610	2,025
2018	1,444,009	5	200	1,345,681	1,616,646	158,782	671,407	3,792,516	2,051	0,575	2,626
2019	1,352,347	2	129	206,265	1,570,458	38,656	566,676	2,382,055	1,314	0,448	1,761
2020	1,205,363	9	82	1,640,531	1,525,347	579,421	888,439	4,633,738	2,626	1,218	3,844
2021	1,414,601	4	161	666,345	2,065,085	268,900	1,257,990	4,258,319	1,931	1,079	3,010
<b>MA Total:</b>	<b>7,351,639</b>	<b>32</b>	<b>832</b>	<b>5,278,567</b>	<b>8,096,029</b>	<b>1,378,182</b>	<b>4,232,655</b>	<b>18,985,432</b>	<b>1,819</b>	<b>0,763</b>	<b>2,582</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.661	0.770	.
(14) Massachusetts Credibility:	0.620	0.880	.
(15) Countrywide Pure Premium:	1.912	0.691	2.603
(16) Countrywide Indicated Relativity:	0.722	0.731	.
(17) Countrywide Credibility:	0.190	0.060	.
(18) Countrywide Lost-Time Claims:	16077	.	.
(19) Pure Premium Underlying Present Rate:	1.372	0.601	1.973
(20) Relativity to Underlying Present Rate:	0.607	0.637	.
(21) Credibility to Underlying Relativity:	0.190	0.060	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.662	0.759	.
(24) Balanced Formula Relativity:	0.657	0.761	0.685

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## Calculation of Class Relativities

Class(es): 7405 AIRCRAFT OR HELICOP OP: AIR CARRIER-SCHD/ SUPPL: FLYING CREW									Miscellaneous		
Converted Unlimited Losses											
Amount											
Claim Count				Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	3,158,686	9	155	2,098,620	1,764,343	348,872	520,548	4,732,383	1,223	0,275	1,498
2018	950,567	1	34	20,874	1,125,587	13,178	324,004	1,483,644	1,206	0,355	1,561
2019	878,693	2	47	246,463	344,884	33,593	136,119	761,058	0,673	0,193	0,866
2020	684,748	2	15	569,672	120,043	358,370	49,942	1,098,026	1,007	0,596	1,604
2021	880,030	0	31	0	292,275	0	191,692	483,967	0,332	0,218	0,550
<b>MA Total:</b>	<b>6,552,723</b>	<b>14</b>	<b>282</b>	<b>2,935,629</b>	<b>3,647,131</b>	<b>754,013</b>	<b>1,222,306</b>	<b>8,559,079</b>	<b>1,005</b>	<b>0,302</b>	<b>1,306</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.365	0.304	.
(14) Massachusetts Credibility:	0.440	0.570	.
(15) Countrywide Pure Premium:	0.726	0.184	0.911
(16) Countrywide Indicated Relativity:	0.274	0.195	.
(17) Countrywide Credibility:	0.280	0.220	.
(18) Countrywide Lost-Time Claims:	5406.0	.	.
(19) Pure Premium Underlying Present Rate:	0.645	0.227	0.872
(20) Relativity to Underlying Present Rate:	0.285	0.241	.
(21) Credibility to Underlying Relativity:	0.280	0.210	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.317	0.267	.
(24) Balanced Formula Relativity:	0.315	0.267	0.302

Class(es): 7420 AIRCRAFT OR HELICOP OP: PUBLIC EXHIB STUNT FLYING: FLY CREW									Miscellaneous		
Converted Unlimited Losses											
Amount											
Claim Count				Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	3,061	0	1	0	124,365	0	26,377	150,742	40,626	8,617	49,243
2018	1,832	0	0	0	0	0	0	0	0,000	0,000	0,000
2019	2,649	0	0	0	0	0	0	0	0,000	0,000	0,000
2020	2,774	0	0	0	0	0	0	0	0,000	0,000	0,000
2021	3,440	0	0	0	0	0	0	0	0,000	0,000	0,000
<b>MA Total:</b>	<b>13,756</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>124,365</b>	<b>0</b>	<b>26,377</b>	<b>150,742</b>	<b>9,041</b>	<b>1,918</b>	<b>10,959</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.285	1.934	.
(14) Massachusetts Credibility:	0.110	0.190	.
(15) Countrywide Pure Premium:	3.310	0.979	4.290
(16) Countrywide Indicated Relativity:	1.250	1.037	.
(17) Countrywide Credibility:	0.200	0.210	.
(18) Countrywide Lost-Time Claims:	21,000	.	.
(19) Pure Premium Underlying Present Rate:	10,305	7,221	17,526
(20) Relativity to Underlying Present Rate:	4,556	7,663	.
(21) Credibility to Underlying Relativity:	0.690	0.600	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	3.755	5.183	.
(24) Balanced Formula Relativity:	3.726	5.194	4.115

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Miscellaneous			
7421 AIRCRAFT OR HELICOP OP: TRANSPORT PERS IN EMPLR BUS: FLY CRW												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	405.138	0	8	0	0	0	10.261	10.261	0.000	0.025	0.025	
2018	460.095	1	4	299.191	25.278	38.892	19.180	382.541	0.705	0.126	0.831	
2019	425.796	1	3	89.189	0	15.159	3.839	108.187	0.209	0.045	0.254	
2020	483.352	0	2	0	18.380	0	7.751	26.132	0.038	0.016	0.054	
2021	453.141	0	0	0	0	0	0	0	0.000	0.000	0.000	
<b>MA Total:</b>	<b>2,227,522</b>	<b>2</b>	<b>17</b>	<b>388,380</b>	<b>43,658</b>	<b>54,051</b>	<b>41,030</b>	<b>527,120</b>	<b>0.194</b>	<b>0.043</b>	<b>0.237</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.070	0.043	.
(14) Massachusetts Credibility:	0.270	0.300	.
(15) Countrywide Pure Premium:	0.798	0.140	0.938
(16) Countrywide Indicated Relativity:	0.301	0.148	.
(17) Countrywide Credibility:	0.370	0.350	.
(18) Countrywide Lost-Time Claims:	390.00	.	.
(19) Pure Premium Underlying Present Rate:	0.549	0.127	0.677
(20) Relativity to Underlying Present Rate:	0.243	0.135	.
(21) Credibility to Underlying Relativity:	0.360	0.350	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.218	0.112	.
(24) Balanced Formula Relativity:	0.216	0.112	0.189

Class(es):		Effective: 7/1/2024							Miscellaneous			
7425 AIRCRAFT OR HELICOP OP: NOC- HELICOPTERS: FLYING CREW												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	27.763	1	1	318.372	0	149.672	214	468.258	11.468	5.399	16.867	
2018	33.732	0	0	0	0	0	0	0	0.000	0.000	0.000	
2019	25.944	0	4	0	5.878	0	3.948	9.826	0.227	0.152	0.379	
2020	30.536	0	2	0	118.035	0	24.705	142.740	3.865	0.809	4.674	
2021	32.920	0	0	0	0	0	0	0	0.000	0.000	0.000	
<b>MA Total:</b>	<b>150,894</b>	<b>1</b>	<b>7</b>	<b>318,372</b>	<b>123,913</b>	<b>149,672</b>	<b>28,867</b>	<b>620,824</b>	<b>2.931</b>	<b>1.183</b>	<b>4.114</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.065	1.193	.
(14) Massachusetts Credibility:	0.130	0.170	.
(15) Countrywide Pure Premium:	1.301	0.284	1.585
(16) Countrywide Indicated Relativity:	0.491	0.301	.
(17) Countrywide Credibility:	0.440	0.420	.
(18) Countrywide Lost-Time Claims:	214.00	.	.
(19) Pure Premium Underlying Present Rate:	1.371	0.492	1.863
(20) Relativity to Underlying Present Rate:	0.606	0.522	.
(21) Credibility to Underlying Relativity:	0.430	0.410	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.615	0.543	.
(24) Balanced Formula Relativity:	0.610	0.544	0.593

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## Calculation of Class Relativities

Class(es):									Effective: 7/1/2024			Miscellaneous		
7502 GAS COMPANY: GAS CO-NATURAL GAS-LOCAL DISTRIBUTION & DR														
Converted Unlimited Losses														
Amount														
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums					
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)			
2017	267,378	1	22	79,208	148,251	6,053	82,939	316,452	0.851	0.333	1.184			
2018	257,535	0	15	0	40,574	0	50,718	91,292	0.158	0.197	0.354			
2019	227,412	1	18	349,858	568,275	38,770	97,754	1,054,657	4.037	0.600	4.638			
2020	251,084	0	6	0	3,737	0	30,840	34,577	0.015	0.123	0.138			
2021	257,643	0	14	0	253,696	0	53,748	307,445	0.985	0.209	1.193			
<b>MA Total:</b>	<b>1,261,053</b>	<b>2</b>	<b>75</b>	<b>429,066</b>	<b>1,014,534</b>	<b>44,823</b>	<b>316,000</b>	<b>1,804,423</b>	<b>1.145</b>	<b>0.286</b>	<b>1.431</b>			

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.416	0.289	.
(14) Massachusetts Credibility:	0.270	0.340	.
(15) Countrywide Pure Premium:	1.040	0.373	1.413
(16) Countrywide Indicated Relativity:	0.393	0.395	.
(17) Countrywide Credibility:	0.370	0.330	.
(18) Countrywide Lost-Time Claims:	445.00	.	.
(19) Pure Premium Underlying Present Rate:	0.972	0.325	1.298
(20) Relativity to Underlying Present Rate:	0.430	0.345	.
(21) Credibility to Underlying Relativity:	0.360	0.330	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.412	0.342	.
(24) Balanced Formula Relativity:	0.409	0.343	0.392

Class(es):									Effective: 7/1/2024			Miscellaneous		
7515 OIL OR GAS PIPELINE OPERATION & DRIVERS														
Converted Unlimited Losses														
Amount														
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums					
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)			
2017	4,220	0	0	0	0	0	0	0	0.000	0.000	0.000			
2018	5,649	0	1	0	0	0	154	154	0.000	0.027	0.027			
2019	5,751	0	0	0	0	0	0	0	0.000	0.000	0.000			
2020	7,733	0	0	0	0	0	0	0	0.000	0.000	0.000			
2021	7,271	0	1	0	0	0	3,763	3,763	0.000	0.518	0.518			
<b>MA Total:</b>	<b>30,624</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3,917</b>	<b>3,917</b>	<b>0.000</b>	<b>0.128</b>	<b>0.128</b>			

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.129	.
(14) Massachusetts Credibility:	0.050	0.110	.
(15) Countrywide Pure Premium:	0.598	0.199	0.797
(16) Countrywide Indicated Relativity:	0.226	0.211	.
(17) Countrywide Credibility:	0.480	0.450	.
(18) Countrywide Lost-Time Claims:	332.00	.	.
(19) Pure Premium Underlying Present Rate:	0.756	0.750	1.506
(20) Relativity to Underlying Present Rate:	0.334	0.796	.
(21) Credibility to Underlying Relativity:	0.470	0.440	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.265	0.459	.
(24) Balanced Formula Relativity:	0.263	0.460	0.315

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Miscellaneous			
7520 WATERWORKS OPERATION & DRIVERS												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	167,354	2	22	502,011	21,790	81,091	42,135	647,027	3,130	0,736	3,866	
2018	159,320	0	26	0	76,782	0	67,476	144,258	0,482	0,424	0,905	
2019	340,697	3	22	286,223	197,210	87,716	104,976	676,125	1,419	0,566	1,985	
2020	327,555	1	17	196,014	115,849	150,028	59,651	521,543	0,952	0,640	1,592	
2021	320,902	0	19	0	221,085	0	182,724	403,809	0,689	0,569	1,258	
<b>MA Total:</b>	<b>1,315,828</b>	<b>6</b>	<b>106</b>	<b>984,248</b>	<b>632,717</b>	<b>318,835</b>	<b>456,962</b>	<b>2,392,763</b>	<b>1,229</b>	<b>0,590</b>	<b>1,818</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.447	0.595	.
(14) Massachusetts Credibility:	0.310	0.450	.
(15) Countrywide Pure Premium:	1.453	0.623	2.076
(16) Countrywide Indicated Relativity:	0.548	0.660	.
(17) Countrywide Credibility:	0.350	0.280	.
(18) Countrywide Lost-Time Claims:	1841.0	.	.
(19) Pure Premium Underlying Present Rate:	1.401	0.635	2.036
(20) Relativity to Underlying Present Rate:	0.619	0.673	.
(21) Credibility to Underlying Relativity:	0.340	0.270	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.541	0.634	.
(24) Balanced Formula Relativity:	0.537	0.635	0.563

Class(es):		Effective: 7/1/2024							Construction			
7538 ELECTRIC LIGHT OR POWER LINE CONSTRUCTION & DRIVERS												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	237,828	0	9	0	27,045	0	11,864	38,909	0,114	0,050	0,164	
2018	306,010	1	33	2,841	164,753	4,840	269,796	442,230	0,548	0,897	1,445	
2019	373,551	0	14	0	162,780	0	87,714	250,493	0,436	0,235	0,671	
2020	342,676	0	18	0	242,434	0	194,760	437,195	0,707	0,568	1,276	
2021	392,746	0	15	0	467,286	0	127,960	595,246	1,190	0,326	1,516	
<b>MA Total:</b>	<b>1,652,811</b>	<b>1</b>	<b>89</b>	<b>2,841</b>	<b>1,064,299</b>	<b>4,840</b>	<b>692,094</b>	<b>1,764,074</b>	<b>0,646</b>	<b>0,422</b>	<b>1,067</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.273	0.490	.
(14) Massachusetts Credibility:	0.350	0.480	.
(15) Countrywide Pure Premium:	1.431	0.502	1.933
(16) Countrywide Indicated Relativity:	0.608	0.583	.
(17) Countrywide Credibility:	0.330	0.260	.
(18) Countrywide Lost-Time Claims:	1264.0	.	.
(19) Pure Premium Underlying Present Rate:	1.470	0.577	2.048
(20) Relativity to Underlying Present Rate:	0.726	0.715	.
(21) Credibility to Underlying Relativity:	0.320	0.260	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.529	0.573	.
(24) Balanced Formula Relativity:	0.534	0.575	0.545

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## Calculation of Class Relativities

Class(es): 7539 ELECTRIC LIGHT OR POWER CO NOC-ALL EMP & DRIVERS									Effective: 7/1/2024			Miscellaneous	
Converted Unlimited Losses													
Amount													
		Claim Count		Indemnity		Medical				MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)		
2017	1,128,701	4	39	253,302	292,972	116,868	109,970	773,112	0.484	0.201	0.685		
2018	1,038,994	1	35	375,425	1,098,823	38,149	355,055	1,867,451	1.419	0.378	1.797		
2019	1,480,306	0	33	0	352,745	0	283,210	635,955	0.238	0.191	0.430		
2020	1,130,187	1	14	1,029,087	220,988	124,964	64,823	1,439,862	1.106	0.168	1.274		
2021	1,106,599	1	21	30,848	417,554	22,480	158,115	628,996	0.405	0.163	0.568		
<b>MA Total:</b>	<b>5,884,787</b>	<b>7</b>	<b>142</b>	<b>1,688,662</b>	<b>2,383,083</b>	<b>302,461</b>	<b>971,172</b>	<b>5,345,377</b>	<b>0.692</b>	<b>0.216</b>	<b>0.908</b>		

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.251	0.218	.
(14) Massachusetts Credibility:	0.410	0.600	.
(15) Countrywide Pure Premium:	0.743	0.285	1.028
(16) Countrywide Indicated Relativity:	0.281	0.301	.
(17) Countrywide Credibility:	0.300	0.200	.
(18) Countrywide Lost-Time Claims:	1074.0	.	.
(19) Pure Premium Underlying Present Rate:	0.612	0.286	0.898
(20) Relativity to Underlying Present Rate:	0.270	0.304	.
(21) Credibility to Underlying Relativity:	0.290	0.200	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.266	0.252	.
(24) Balanced Formula Relativity:	0.264	0.253	0.261

Class(es): 7580 SEWAGE DISPOSAL PLANT OPERATION & DRIVERS									Effective: 7/1/2024			Miscellaneous	
Converted Unlimited Losses													
Amount													
		Claim Count		Indemnity		Medical				MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)		
2017	209,456	0	21	0	272,894	0	178,070	450,964	1.303	0.850	2.153		
2018	188,385	1	11	227,333	42,225	22,845	24,497	316,900	1.431	0.251	1.682		
2019	244,082	1	18	9,814	845,239	6,265	198,128	1,059,445	3.503	0.837	4.341		
2020	258,621	0	9	0	106,536	0	13,809	120,345	0.412	0.053	0.465		
2021	233,930	0	14	0	127,493	0	54,772	182,264	0.545	0.234	0.779		
<b>MA Total:</b>	<b>1,134,473</b>	<b>2</b>	<b>73</b>	<b>237,146</b>	<b>1,394,386</b>	<b>29,110</b>	<b>469,275</b>	<b>2,129,918</b>	<b>1.438</b>	<b>0.439</b>	<b>1.877</b>		

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.523	0.443	.
(14) Massachusetts Credibility:	0.300	0.400	.
(15) Countrywide Pure Premium:	1.198	0.558	1.757
(16) Countrywide Indicated Relativity:	0.452	0.591	.
(17) Countrywide Credibility:	0.350	0.300	.
(18) Countrywide Lost-Time Claims:	668.00	.	.
(19) Pure Premium Underlying Present Rate:	1.453	0.525	1.978
(20) Relativity to Underlying Present Rate:	0.642	0.557	.
(21) Credibility to Underlying Relativity:	0.350	0.300	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.540	0.522	.
(24) Balanced Formula Relativity:	0.536	0.523	0.532

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Miscellaneous		
7590 GARBAGE WORKS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	49,989	1	23	228,816	24,063	107,160	24,519	384,559	5,059	2,634	7,693
2018	39,609	1	5	8,692	240,793	37,761	55,532	342,779	6,299	2,355	8,654
2019	51,699	0	2	0	0	0	4,092	4,092	0,000	0,079	0,079
2020	56,437	0	6	0	20,644	0	34,189	54,833	0,366	0,606	0,972
2021	117,843	1	5	22,769	371,427	8,830	91,487	494,512	3,345	0,851	4,196
<b>MA Total:</b>	<b>315,576</b>	<b>3</b>	<b>41</b>	<b>260,277</b>	<b>656,928</b>	<b>153,751</b>	<b>209,819</b>	<b>1,280,774</b>	<b>2,906</b>	<b>1,152</b>	<b>4,059</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.056	1.162	.
(14) Massachusetts Credibility:	0.230	0.390	.
(15) Countrywide Pure Premium:	1.926	0.819	2.744
(16) Countrywide Indicated Relativity:	0.727	0.867	.
(17) Countrywide Credibility:	0.390	0.310	.
(18) Countrywide Lost-Time Claims:	424.00	.	.
(19) Pure Premium Underlying Present Rate:	2.787	1.801	4.588
(20) Relativity to Underlying Present Rate:	1.232	1.911	.
(21) Credibility to Underlying Relativity:	0.380	0.300	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.995	1.295	.
(24) Balanced Formula Relativity:	0.987	1.298	1.069

Class(es):		Effective: 7/1/2024							Miscellaneous		
7600 TELEPHONE OR TELEGRAPH CO: ALL OTHER EMP & DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	3,681,330	22	263	6,184,490	5,705,122	1,027,747	1,838,550	14,755,909	3,230	0,779	4,008
2018	3,896,640	22	264	4,372,669	5,687,512	1,102,696	1,716,335	12,879,212	2,582	0,723	3,305
2019	4,008,339	16	243	2,144,280	7,327,169	588,354	2,221,272	12,281,075	2,363	0,701	3,064
2020	3,870,754	16	196	4,625,541	6,063,542	748,205	1,876,458	13,313,746	2,761	0,678	3,440
2021	2,129,736	6	65	1,129,374	1,582,295	233,160	672,661	3,617,491	1,273	0,425	1,699
<b>MA Total:</b>	<b>17,586,799</b>	<b>82</b>	<b>1,031</b>	<b>18,456,355</b>	<b>26,365,640</b>	<b>3,700,162</b>	<b>8,325,277</b>	<b>56,847,433</b>	<b>2,549</b>	<b>0,684</b>	<b>3,232</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.926	0.690	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	2.809	0.863	3.672
(16) Countrywide Indicated Relativity:	1.060	0.913	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	11590	.	.
(19) Pure Premium Underlying Present Rate:	2.194	0.694	2.887
(20) Relativity to Underlying Present Rate:	0.970	0.736	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.926	0.690	.
(24) Balanced Formula Relativity:	0.919	0.691	0.859

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
7601 TELEPHONE, TELEGRAPH OR FIRE ALARM LINE CONSTRUCTION & DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	268,280	1	9	280,791	18,707	51,371	12,569	363,438	1,116	0,238	1,355
2018	252,633	1	12	234,364	29,284	46,729	29,554	339,931	1,044	0,302	1,346
2019	262,126	0	7	0	366,500	0	101,391	467,890	1,398	0,387	1,785
2020	248,820	0	3	0	151,941	0	72,230	224,172	0,611	0,290	0,901
2021	310,578	0	11	0	393,298	0	625,296	1,018,594	1,266	2,013	3,280
<b>MA Total:</b>	<b>1,342,438</b>	<b>2</b>	<b>42</b>	<b>515,155</b>	<b>959,730</b>	<b>98,100</b>	<b>841,040</b>	<b>2,414,025</b>	<b>1,099</b>	<b>0,700</b>	<b>1,798</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.465	0.813	.
(14) Massachusetts Credibility:	0.330	0.440	.
(15) Countrywide Pure Premium:	4.049	0.970	5.019
(16) Countrywide Indicated Relativity:	1.720	1.126	.
(17) Countrywide Credibility:	0.200	0.210	.
(18) Countrywide Lost-Time Claims:	20.000	.	.
(19) Pure Premium Underlying Present Rate:	1.528	0.571	2.099
(20) Relativity to Underlying Present Rate:	0.755	0.708	.
(21) Credibility to Underlying Relativity:	0.470	0.350	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.852	0.842	.
(24) Balanced Formula Relativity:	0.861	0.845	0.857

Class(es):		Effective: 7/1/2024							Office and Clerical		
7610 RADIO OR TV BROADCAST STATION-ALL EMP & CL, DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	4,294,239	4	82	296,564	681,889	43,358	247,326	1,269,137	0,228	0,068	0,296
2018	4,164,675	1	53	579,169	1,769,103	121,574	375,907	2,845,752	0,564	0,119	0,683
2019	4,742,832	2	49	31,219	103,989	39,303	118,534	293,046	0,029	0,033	0,062
2020	4,727,439	2	45	715,153	1,285,709	141,605	401,683	2,544,151	0,423	0,115	0,538
2021	4,905,924	3	80	1,690,167	1,018,046	260,778	416,907	3,385,899	0,552	0,138	0,690
<b>MA Total:</b>	<b>22,835,109</b>	<b>12</b>	<b>309</b>	<b>3,312,273</b>	<b>4,858,736</b>	<b>606,619</b>	<b>1,560,357</b>	<b>10,337,984</b>	<b>0,358</b>	<b>0,095</b>	<b>0,453</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	5.355	3.599	.
(14) Massachusetts Credibility:	0.480	0.610	.
(15) Countrywide Pure Premium:	0.160	0.060	0.220
(16) Countrywide Indicated Relativity:	3.078	2.675	.
(17) Countrywide Credibility:	0.260	0.200	.
(18) Countrywide Lost-Time Claims:	1689.0	.	.
(19) Pure Premium Underlying Present Rate:	0.235	0.076	0.310
(20) Relativity to Underlying Present Rate:	4.303	3.051	.
(21) Credibility to Underlying Relativity:	0.260	0.190	.
(22) Industry Group Converted Pure Premium:	0.067	0.026	0.093
(23) Formula Relativity:	4.489	3.310	.
(24) Balanced Formula Relativity:	4.467	3.311	4.140

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Miscellaneous		
7704 FIREFIGHTERS & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	15,353	0	2	0	0	0	2,300	2,300	0.000	0.150	0.150
2018	20	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	5,069	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	3,851	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	8,319	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>32,612</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,300</b>	<b>2,300</b>	<b>0.000</b>	<b>0.071</b>	<b>0.071</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.071	.
(14) Massachusetts Credibility:	0.080	0.120	.
(15) Countrywide Pure Premium:	2.341	1.183	3.523
(16) Countrywide Indicated Relativity:	0.884	1.251	.
(17) Countrywide Credibility:	0.460	0.440	.
(18) Countrywide Lost-Time Claims:	818.00	.	.
(19) Pure Premium Underlying Present Rate:	1.695	0.984	2.680
(20) Relativity to Underlying Present Rate:	0.749	1.045	.
(21) Credibility to Underlying Relativity:	0.460	0.440	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.751	1.019	.
(24) Balanced Formula Relativity:	0.745	1.021	0.818

Class(es):		Effective: 7/1/2024							Miscellaneous		
7720 POLICE OFFICERS & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,037,569	7	119	302,990	986,401	39,160	396,176	1,724,726	0.633	0.214	0.846
2018	2,308,905	5	117	118,388	1,820,899	24,875	703,232	2,667,394	0.840	0.315	1.155
2019	2,418,272	7	97	508,565	1,643,308	88,181	511,828	2,751,881	0.890	0.248	1.138
2020	2,929,772	2	77	355,574	666,399	183,300	327,716	1,532,988	0.349	0.174	0.523
2021	2,679,400	4	55	340,837	2,013,926	106,779	1,113,800	3,575,343	0.879	0.456	1.334
<b>MA Total:</b>	<b>12,373,918</b>	<b>25</b>	<b>465</b>	<b>1,626,354</b>	<b>7,130,933</b>	<b>442,294</b>	<b>3,052,751</b>	<b>12,252,333</b>	<b>0.708</b>	<b>0.282</b>	<b>0.990</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.257	0.285	.
(14) Massachusetts Credibility:	0.590	0.820	.
(15) Countrywide Pure Premium:	1.457	0.641	2.098
(16) Countrywide Indicated Relativity:	0.550	0.679	.
(17) Countrywide Credibility:	0.210	0.090	.
(18) Countrywide Lost-Time Claims:	12636	.	.
(19) Pure Premium Underlying Present Rate:	0.722	0.297	1.020
(20) Relativity to Underlying Present Rate:	0.319	0.315	.
(21) Credibility to Underlying Relativity:	0.200	0.090	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.331	0.323	.
(24) Balanced Formula Relativity:	0.329	0.324	0.327

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction			
7855 RAILROAD CONSTR: LAYING/RELAYING TRACK OR MAINT BY CONTR & DR												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	55,224	0	1	0	0	0	8,696	8,696	0.000	0.157	0.157	
2018	189,866	2	8	233,544	3,191	96,024	4,488	337,247	1,247	0.529	1.776	
2019	379,963	2	28	807,925	933,325	372,917	273,478	2,387,646	4,583	1.701	6.284	
2020	149,034	1	6	721,261	33,435	236,904	11,681	1,003,281	5,064	1.668	6.732	
2021	163,945	0	2	0	0	0	1,259	1,259	0.000	0.008	0.008	
<b>MA Total:</b>	<b>938,033</b>	<b>5</b>	<b>45</b>	<b>1,762,731</b>	<b>969,950</b>	<b>705,846</b>	<b>299,601</b>	<b>3,738,128</b>	<b>2,913</b>	<b>1.072</b>	<b>3.985</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.232	1.245	.
(14) Massachusetts Credibility:	0.310	0.410	.
(15) Countrywide Pure Premium:	1.989	0.641	2.630
(16) Countrywide Indicated Relativity:	0.845	0.744	.
(17) Countrywide Credibility:	0.350	0.300	.
(18) Countrywide Lost-Time Claims:	201.00	.	.
(19) Pure Premium Underlying Present Rate:	1.903	0.682	2.585
(20) Relativity to Underlying Present Rate:	0.940	0.844	.
(21) Credibility to Underlying Relativity:	0.340	0.290	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.997	0.979	.
(24) Balanced Formula Relativity:	1.008	0.982	1.001

Class(es):		Effective: 7/1/2024							Goods and Services			
8001 STORE: FLORISTS & DRIVERS												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	645,307	0	65	0	300,943	0	163,568	464,511	0.466	0.253	0.720	
2018	632,393	1	69	1,072	634,415	46	306,439	941,972	1.005	0.485	1.490	
2019	589,011	1	53	2,475	636,742	3,945	308,571	951,733	1.085	0.531	1.616	
2020	581,749	2	50	143,134	503,895	48,009	196,300	891,337	1.112	0.420	1.532	
2021	619,535	1	29	256,794	197,367	75,875	114,363	644,399	0.733	0.307	1.040	
<b>MA Total:</b>	<b>3,067,995</b>	<b>5</b>	<b>266</b>	<b>403,475</b>	<b>2,273,361</b>	<b>127,875</b>	<b>1,089,241</b>	<b>3,893,952</b>	<b>0.873</b>	<b>0.397</b>	<b>1.269</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.098	1.288	.
(14) Massachusetts Credibility:	0.340	0.530	.
(15) Countrywide Pure Premium:	0.917	0.440	1.357
(16) Countrywide Indicated Relativity:	1.156	1.407	.
(17) Countrywide Credibility:	0.330	0.240	.
(18) Countrywide Lost-Time Claims:	1133.0	.	.
(19) Pure Premium Underlying Present Rate:	0.709	0.400	1.109
(20) Relativity to Underlying Present Rate:	1.088	1.373	.
(21) Credibility to Underlying Relativity:	0.330	0.230	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.114	1.336	.
(24) Balanced Formula Relativity:	1.102	1.329	1.166

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
8002 AUTOMOBILE RENTAL CO: ALL OTHER EMP & COUNTER PERSONNEL, DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	86,443	0	12	0	122,776	0	81,223	203,999	1,420	0,940	2,360
2018	93,373	1	10	30,532	15,046	2,667	7,251	55,497	0,488	0,106	0,594
2019	96,356	0	9	0	55,801	0	137,266	193,066	0,579	1,425	2,004
2020	105,439	0	12	0	15,093	0	40,053	55,147	0,143	0,380	0,523
2021	141,790	1	9	101,417	2,500	44,422	4,212	152,550	0,733	0,343	1,076
<b>MA Total:</b>	<b>523,401</b>	<b>2</b>	<b>52</b>	<b>131,949</b>	<b>211,217</b>	<b>47,089</b>	<b>270,005</b>	<b>660,260</b>	<b>0,656</b>	<b>0,606</b>	<b>1,261</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.825	1.967	.
(14) Massachusetts Credibility:	0.160	0.280	.
(15) Countrywide Pure Premium:	0.843	0.402	1.245
(16) Countrywide Indicated Relativity:	1.063	1.284	.
(17) Countrywide Credibility:	0.420	0.360	.
(18) Countrywide Lost-Time Claims:	1803.0	.	.
(19) Pure Premium Underlying Present Rate:	0.673	0.488	1.161
(20) Relativity to Underlying Present Rate:	1.033	1.675	.
(21) Credibility to Underlying Relativity:	0.420	0.360	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.012	1.616	.
(24) Balanced Formula Relativity:	1.002	1.608	1.171

Class(es):		Effective: 7/1/2024							Goods and Services		
8006 STORE: GROCERY STORES-RETAIL-NO HANDLING OF FRESH MEATS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	3,346,561	10	275	381,315	675,817	69,684	698,350	1,825,166	0,316	0,229	0,545
2018	3,382,318	10	262	527,916	1,713,759	133,476	686,851	3,062,002	0,663	0,243	0,905
2019	3,542,570	9	240	854,673	1,111,100	189,812	648,142	2,803,727	0,555	0,237	0,791
2020	2,474,136	3	68	197,879	617,939	118,975	428,430	1,363,222	0,330	0,221	0,551
2021	2,943,786	7	93	876,098	780,825	264,053	755,789	2,676,765	0,563	0,346	0,909
<b>MA Total:</b>	<b>15,689,371</b>	<b>39</b>	<b>938</b>	<b>2,837,880</b>	<b>4,899,439</b>	<b>776,000</b>	<b>3,217,562</b>	<b>11,730,882</b>	<b>0,493</b>	<b>0,255</b>	<b>0,748</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.620	0.826	.
(14) Massachusetts Credibility:	0.540	0.770	.
(15) Countrywide Pure Premium:	0.913	0.358	1.271
(16) Countrywide Indicated Relativity:	1.151	1.145	.
(17) Countrywide Credibility:	0.230	0.120	.
(18) Countrywide Lost-Time Claims:	12936	.	.
(19) Pure Premium Underlying Present Rate:	0.443	0.197	0.641
(20) Relativity to Underlying Present Rate:	0.680	0.678	.
(21) Credibility to Underlying Relativity:	0.230	0.110	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.756	0.848	.
(24) Balanced Formula Relativity:	0.749	0.844	0.775

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
8008 STORE: CLOTHING, WEARING APPAREL OR DRY GOODS - RETAIL											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	3,277,596	5	174	613,262	764,875	148,955	309,111	1,836,203	0.420	0.140	0.560
2018	3,607,256	7	161	789,265	384,180	225,475	429,763	1,828,684	0.325	0.182	0.507
2019	3,480,603	6	189	834,690	349,774	115,500	344,439	1,644,403	0.340	0.132	0.472
2020	2,773,628	1	76	12,059	242,144	1,287	190,625	446,115	0.092	0.069	0.161
2021	3,304,614	2	83	304,940	544,890	52,753	417,858	1,320,441	0.257	0.142	0.400
<b>MA Total:</b>	<b>16,443,696</b>	<b>21</b>	<b>683</b>	<b>2,554,216</b>	<b>2,285,864</b>	<b>543,971</b>	<b>1,691,796</b>	<b>7,075,846</b>	<b>0.294</b>	<b>0.136</b>	<b>0.430</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.370	0.441	.
(14) Massachusetts Credibility:	0.470	0.690	.
(15) Countrywide Pure Premium:	0.465	0.223	0.688
(16) Countrywide Indicated Relativity:	0.587	0.713	.
(17) Countrywide Credibility:	0.270	0.160	.
(18) Countrywide Lost-Time Claims:	7712.0	.	.
(19) Pure Premium Underlying Present Rate:	0.313	0.146	0.459
(20) Relativity to Underlying Present Rate:	0.481	0.500	.
(21) Credibility to Underlying Relativity:	0.260	0.150	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.457	0.494	.
(24) Balanced Formula Relativity:	0.453	0.491	0.463

Class(es):		Effective: 7/1/2024							Goods and Services		
8010 STORE: HARDWARE											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,171,852	9	186	921,056	1,093,560	163,976	431,142	2,609,734	0.928	0.274	1.202
2018	2,176,138	4	143	196,337	997,074	35,183	631,587	1,860,180	0.548	0.306	0.855
2019	2,305,400	6	157	887,177	788,155	356,611	673,842	2,705,785	0.727	0.447	1.174
2020	2,174,510	5	98	624,312	772,612	121,052	263,656	1,781,632	0.642	0.177	0.819
2021	2,432,456	3	127	158,557	1,292,431	61,404	621,011	2,133,403	0.597	0.281	0.877
<b>MA Total:</b>	<b>11,260,356</b>	<b>27</b>	<b>711</b>	<b>2,787,438</b>	<b>4,943,832</b>	<b>738,225</b>	<b>2,621,238</b>	<b>11,090,734</b>	<b>0.687</b>	<b>0.298</b>	<b>0.985</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.864	0.969	.
(14) Massachusetts Credibility:	0.530	0.800	.
(15) Countrywide Pure Premium:	0.767	0.339	1.106
(16) Countrywide Indicated Relativity:	0.967	1.083	.
(17) Countrywide Credibility:	0.240	0.100	.
(18) Countrywide Lost-Time Claims:	5469.0	.	.
(19) Pure Premium Underlying Present Rate:	0.604	0.306	0.910
(20) Relativity to Underlying Present Rate:	0.927	1.052	.
(21) Credibility to Underlying Relativity:	0.230	0.100	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.903	0.988	.
(24) Balanced Formula Relativity:	0.894	0.983	0.919

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## Calculation of Class Relativities

Class(es): 8013 STORE: JEWELRY STORES		Effective: 7/1/2024							Goods and Services		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,373,562	2	17	257,426	14,827	468,515	60,192	800,960	0.198	0.385	0.583
2018	1,439,816	0	13	0	71,444	0	31,293	102,738	0.050	0.022	0.071
2019	1,414,218	0	12	0	2,111	0	11,545	13,656	0.001	0.008	0.010
2020	1,516,722	0	10	0	100,317	0	55,407	155,724	0.066	0.037	0.103
2021	1,487,681	0	12	0	121,233	0	20,956	142,189	0.081	0.014	0.096
<b>MA Total:</b>	<b>7,231,999</b>	<b>2</b>	<b>64</b>	<b>257,426</b>	<b>309,933</b>	<b>468,515</b>	<b>179,394</b>	<b>1,215,268</b>	<b>0.078</b>	<b>0.090</b>	<b>0.168</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.099	0.291	.
(14) Massachusetts Credibility:	0.230	0.400	.
(15) Countrywide Pure Premium:	0.147	0.063	0.209
(16) Countrywide Indicated Relativity:	0.185	0.200	.
(17) Countrywide Credibility:	0.390	0.300	.
(18) Countrywide Lost-Time Claims:	657.00	.	.
(19) Pure Premium Underlying Present Rate:	0.120	0.085	0.204
(20) Relativity to Underlying Present Rate:	0.184	0.290	.
(21) Credibility to Underlying Relativity:	0.380	0.300	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.165	0.263	.
(24) Balanced Formula Relativity:	0.163	0.262	0.191

Class(es): 8017 STORE: RETAIL NOC		Effective: 7/1/2024							Goods and Services		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	12,154,195	24	823	1,805,585	3,378,580	308,995	1,591,255	7,084,416	0.427	0.156	0.583
2018	14,667,595	38	1,090	3,642,271	6,333,188	759,081	3,167,639	13,902,179	0.680	0.268	0.948
2019	11,614,095	16	584	1,274,826	4,783,084	204,322	1,888,536	8,150,768	0.522	0.180	0.702
2020	8,923,767	16	275	1,333,033	2,170,063	590,279	950,290	5,043,665	0.393	0.173	0.565
2021	10,559,543	15	256	1,715,048	1,459,066	746,477	1,014,185	4,934,776	0.301	0.167	0.467
<b>MA Total:</b>	<b>57,919,196</b>	<b>109</b>	<b>3,028</b>	<b>9,770,764</b>	<b>18,123,980</b>	<b>2,609,154</b>	<b>8,611,905</b>	<b>39,115,803</b>	<b>0.482</b>	<b>0.194</b>	<b>0.675</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.606	0.629	.
(14) Massachusetts Credibility:	0.890	1.000	.
(15) Countrywide Pure Premium:	0.608	0.264	0.871
(16) Countrywide Indicated Relativity:	0.767	0.842	.
(17) Countrywide Credibility:	0.060	0.000	.
(18) Countrywide Lost-Time Claims:	23618	.	.
(19) Pure Premium Underlying Present Rate:	0.428	0.200	0.628
(20) Relativity to Underlying Present Rate:	0.658	0.687	.
(21) Credibility to Underlying Relativity:	0.050	0.000	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.618	0.629	.
(24) Balanced Formula Relativity:	0.612	0.626	0.616

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
8018 STORE: WHOLESALE NOC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	4,443,797	42	871	3,281,421	6,626,052	718,508	2,338,479	12,964,460	2,230	0,688	2,917
2018	4,688,707	53	695	3,737,068	5,414,653	727,604	1,920,536	11,799,861	1,952	0,565	2,517
2019	4,923,061	28	812	2,591,871	7,718,816	628,815	2,805,246	13,744,747	2,094	0,698	2,792
2020	6,805,807	57	942	6,543,624	7,893,896	1,700,973	2,883,298	19,021,792	2,121	0,674	2,795
2021	6,876,755	42	804	4,873,175	8,175,133	1,060,520	3,544,166	17,652,993	1,897	0,670	2,567
<b>MA Total:</b>	<b>27,738,126</b>	<b>222</b>	<b>4,124</b>	<b>21,027,159</b>	<b>35,828,550</b>	<b>4,836,420</b>	<b>13,491,724</b>	<b>75,183,854</b>	<b>2,050</b>	<b>0,661</b>	<b>2,710</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.579	2.145	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	1.533	0.519	2.052
(16) Countrywide Indicated Relativity:	1.933	1.659	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	35699	.	.
(19) Pure Premium Underlying Present Rate:	1.730	0.641	2.371
(20) Relativity to Underlying Present Rate:	2.656	2.199	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.579	2.145	.
(24) Balanced Formula Relativity:	2.552	2.134	2.436

Class(es):		Effective: 7/1/2024							Goods and Services		
8021 STORE: MEAT, FISH OR POULTRY DEALER- WHOLESALE											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,084,462	9	131	687,945	1,264,920	244,087	406,318	2,603,271	1,801	0,600	2,401
2018	1,183,346	7	149	424,900	1,300,713	126,135	573,687	2,425,435	1,458	0,591	2,050
2019	1,287,172	10	161	1,576,688	1,458,860	367,397	709,323	4,112,268	2,358	0,837	3,195
2020	1,423,056	7	150	892,262	1,852,958	216,865	808,076	3,770,160	1,929	0,720	2,649
2021	1,481,675	6	134	797,064	1,629,189	273,082	633,166	3,332,502	1,638	0,612	2,249
<b>MA Total:</b>	<b>6,459,712</b>	<b>39</b>	<b>725</b>	<b>4,378,859</b>	<b>7,506,640</b>	<b>1,227,567</b>	<b>3,130,570</b>	<b>16,243,636</b>	<b>1,840</b>	<b>0,675</b>	<b>2,515</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.315	2.190	.
(14) Massachusetts Credibility:	0.620	0.860	.
(15) Countrywide Pure Premium:	1.258	0.533	1.791
(16) Countrywide Indicated Relativity:	1.586	1.703	.
(17) Countrywide Credibility:	0.190	0.070	.
(18) Countrywide Lost-Time Claims:	2790.0	.	.
(19) Pure Premium Underlying Present Rate:	1.530	0.644	2.174
(20) Relativity to Underlying Present Rate:	2.348	2.210	.
(21) Credibility to Underlying Relativity:	0.190	0.070	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.183	2.158	.
(24) Balanced Formula Relativity:	2.160	2.147	2.157

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
8031 STORE: MEAT, FISH OR POULTRY - RETAIL											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	218,153	0	18	0	5,214	0	12,276	17,490	0.024	0.056	0.080
2018	247,316	0	19	0	300,037	0	147,679	447,716	1.213	0.597	1.810
2019	237,076	1	14	78,567	2,461	207,631	6,304	294,964	0.342	0.902	1.244
2020	310,772	1	9	2	249,154	0	81,631	330,787	0.802	0.263	1.064
2021	347,026	1	15	41,194	391,377	11,643	100,757	544,971	1.247	0.324	1.570
<b>MA Total:</b>	<b>1,360,343</b>	<b>3</b>	<b>75</b>	<b>119,763</b>	<b>948,243</b>	<b>219,274</b>	<b>348,648</b>	<b>1,635,928</b>	<b>0.785</b>	<b>0.417</b>	<b>1.203</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.988	1.355	.
(14) Massachusetts Credibility:	0.230	0.360	.
(15) Countrywide Pure Premium:	0.947	0.425	1.372
(16) Countrywide Indicated Relativity:	1.194	1.359	.
(17) Countrywide Credibility:	0.390	0.320	.
(18) Countrywide Lost-Time Claims:	532.00	.	.
(19) Pure Premium Underlying Present Rate:	0.640	0.350	0.990
(20) Relativity to Underlying Present Rate:	0.982	1.202	.
(21) Credibility to Underlying Relativity:	0.380	0.320	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.066	1.307	.
(24) Balanced Formula Relativity:	1.055	1.301	1.124

Class(es):		Effective: 7/1/2024							Goods and Services		
8032 STORE: CLOTHING, WEARING APPAREL OR DRY GOODS - WHOLESALE											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	283,334	1	15	74,568	17,189	6,854	51,170	149,781	0.324	0.205	0.529
2018	308,687	1	28	65,994	2,310	11,586	13,850	93,741	0.221	0.082	0.304
2019	314,386	2	14	225,960	6,843	21,885	24,461	279,149	0.741	0.147	0.888
2020	308,371	0	7	0	209,190	0	51,470	260,660	0.678	0.167	0.845
2021	341,167	0	9	0	1,782	0	9,383	11,165	0.005	0.028	0.033
<b>MA Total:</b>	<b>1,555,945</b>	<b>4</b>	<b>73</b>	<b>366,523</b>	<b>237,313</b>	<b>40,326</b>	<b>150,334</b>	<b>794,496</b>	<b>0.388</b>	<b>0.123</b>	<b>0.511</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.488	0.398	.
(14) Massachusetts Credibility:	0.230	0.340	.
(15) Countrywide Pure Premium:	0.815	0.346	1.162
(16) Countrywide Indicated Relativity:	1.028	1.107	.
(17) Countrywide Credibility:	0.390	0.330	.
(18) Countrywide Lost-Time Claims:	1523.0	.	.
(19) Pure Premium Underlying Present Rate:	0.557	0.251	0.808
(20) Relativity to Underlying Present Rate:	0.855	0.861	.
(21) Credibility to Underlying Relativity:	0.380	0.330	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.838	0.784	.
(24) Balanced Formula Relativity:	0.830	0.780	0.816

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services			
8033 STORE: MEAT, GROCERY & PROVISION COMBINED RETAIL-NOC												
Converted Unlimited Losses												
Amount												
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	792,894	1	58	32,323	283,722	10,608	124,557	451,209	0.399	0.170	0.569	
2018	844,210	2	63	75,371	342,571	26,074	173,504	617,520	0.495	0.236	0.731	
2019	2,911,324	6	421	476,674	1,521,231	80,467	939,407	3,017,780	0.686	0.350	1.037	
2020	3,561,558	6	409	403,705	2,591,894	373,004	1,266,651	4,635,253	0.841	0.460	1.301	
2021	3,170,405	13	335	895,458	2,121,206	512,763	1,469,730	4,999,157	0.952	0.625	1.577	
<b>MA Total:</b>	<b>11,280,391</b>	<b>28</b>	<b>1,286</b>	<b>1,883,532</b>	<b>6,860,624</b>	<b>1,002,915</b>	<b>3,973,849</b>	<b>13,720,920</b>	<b>0.775</b>	<b>0.441</b>	<b>1.216</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.975	1.432	.
(14) Massachusetts Credibility:	0.520	0.810	.
(15) Countrywide Pure Premium:	0.815	0.354	1.168
(16) Countrywide Indicated Relativity:	1.027	1.130	.
(17) Countrywide Credibility:	0.240	0.100	.
(18) Countrywide Lost-Time Claims:	21287	.	.
(19) Pure Premium Underlying Present Rate:	0.584	0.313	0.897
(20) Relativity to Underlying Present Rate:	0.897	1.074	.
(21) Credibility to Underlying Relativity:	0.240	0.090	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.969	1.370	.
(24) Balanced Formula Relativity:	0.959	1.363	1.072

Class(es):		Effective: 7/1/2024							Goods and Services			
8034 STORE: GROCERY STORES - WHOLESALE												
Converted Unlimited Losses												
Amount												
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	443,606	0	70	0	838,475	0	179,315	1,017,790	1.890	0.404	2.294	
2018	368,301	0	33	0	605,073	0	75,622	680,695	1.643	0.205	1.848	
2019	353,543	1	31	194,345	366,799	17,912	111,422	690,478	1.587	0.366	1.953	
2020	358,042	3	36	373,868	346,422	73,853	94,398	888,540	2.012	0.470	2.482	
2021	426,112	7	81	2,369,952	1,352,248	333,207	304,888	4,360,295	8.735	1.497	10.233	
<b>MA Total:</b>	<b>1,949,604</b>	<b>11</b>	<b>251</b>	<b>2,938,165</b>	<b>3,509,017</b>	<b>424,972</b>	<b>765,645</b>	<b>7,637,799</b>	<b>3.307</b>	<b>0.611</b>	<b>3.918</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.161	1.983	.
(14) Massachusetts Credibility:	0.360	0.450	.
(15) Countrywide Pure Premium:	1.497	0.499	1.995
(16) Countrywide Indicated Relativity:	1.888	1.594	.
(17) Countrywide Credibility:	0.320	0.280	.
(18) Countrywide Lost-Time Claims:	290.00	.	.
(19) Pure Premium Underlying Present Rate:	1.322	0.419	1.741
(20) Relativity to Underlying Present Rate:	2.030	1.439	.
(21) Credibility to Underlying Relativity:	0.320	0.270	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.751	1.727	.
(24) Balanced Formula Relativity:	2.723	1.718	2.442

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
8039 STORE: DEPARTMENT - RETAIL											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	3,343,672	11	419	869,863	1,759,760	110,176	868,494	3,608,292	0.786	0.293	1.079
2018	190,376	2	16	283,366	16,202	40,563	22,034	362,164	1.574	0.329	1.902
2019	3,321,237	15	379	1,149,634	2,463,103	271,531	1,190,873	5,075,142	1.088	0.440	1.528
2020	3,246,734	15	437	2,196,368	3,185,409	443,651	1,503,432	7,328,861	1.658	0.600	2.257
2021	1,560,043	5	211	245,126	489,092	128,031	378,995	1,241,244	0.471	0.325	0.796
<b>MA Total:</b>	<b>11,662,063</b>	<b>48</b>	<b>1,462</b>	<b>4,744,357</b>	<b>7,913,566</b>	<b>993,953</b>	<b>3,963,827</b>	<b>17,615,703</b>	<b>1.085</b>	<b>0.425</b>	<b>1.511</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.366	1.380	.
(14) Massachusetts Credibility:	0.570	0.900	.
(15) Countrywide Pure Premium:	0.705	0.366	1.071
(16) Countrywide Indicated Relativity:	0.889	1.169	.
(17) Countrywide Credibility:	0.220	0.050	.
(18) Countrywide Lost-Time Claims:	4844.0	.	.
(19) Pure Premium Underlying Present Rate:	0.697	0.395	1.092
(20) Relativity to Underlying Present Rate:	1.070	1.356	.
(21) Credibility to Underlying Relativity:	0.210	0.050	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.199	1.368	.
(24) Balanced Formula Relativity:	1.186	1.361	1.235

Class(es):		Effective: 7/1/2024							Goods and Services		
8044 STORE: FURNITURE & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,221,836	7	121	842,408	949,960	287,551	440,166	2,520,085	1.467	0.596	2.063
2018	1,434,966	5	164	505,868	1,304,292	169,324	493,519	2,473,003	1.261	0.462	1.723
2019	1,293,784	3	131	614,025	1,832,460	144,853	685,391	3,276,730	1.891	0.642	2.533
2020	1,260,978	5	118	1,187,268	1,584,846	374,116	588,528	3,734,759	2.198	0.763	2.962
2021	1,786,791	4	150	283,117	1,405,593	116,763	824,591	2,630,064	0.945	0.527	1.472
<b>MA Total:</b>	<b>6,998,354</b>	<b>24</b>	<b>684</b>	<b>3,432,686</b>	<b>7,077,152</b>	<b>1,092,607</b>	<b>3,032,195</b>	<b>14,634,640</b>	<b>1.502</b>	<b>0.589</b>	<b>2.091</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.890	1.913	.
(14) Massachusetts Credibility:	0.570	0.830	.
(15) Countrywide Pure Premium:	1.246	0.447	1.694
(16) Countrywide Indicated Relativity:	1.571	1.430	.
(17) Countrywide Credibility:	0.220	0.090	.
(18) Countrywide Lost-Time Claims:	6640.0	.	.
(19) Pure Premium Underlying Present Rate:	1.145	0.545	1.690
(20) Relativity to Underlying Present Rate:	1.757	1.870	.
(21) Credibility to Underlying Relativity:	0.210	0.080	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.792	1.866	.
(24) Balanced Formula Relativity:	1.773	1.857	1.797

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services			
8046 STORE: AUTOMOBILE ACCESSORIES-RETAIL-NOC & DR												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	293.065	1	27	70.668	114.542	66.131	109.443	360.785	0.632	0.599	1.231	
2018	355.155	3	30	152.240	183.122	66.521	187.704	589.587	0.944	0.716	1.660	
2019	360.888	2	33	258.993	287.190	36.986	231.175	814.344	1.513	0.743	2.257	
2020	622.917	4	75	564.233	338.274	211.394	300.431	1,414.333	1.449	0.822	2.270	
2021	676.103	5	67	190.947	213.689	210.489	135.546	750.671	0.598	0.512	1.110	
<b>MA Total:</b>	<b>2,308,128</b>	<b>15</b>	<b>232</b>	<b>1,237,082</b>	<b>1,136,817</b>	<b>591,521</b>	<b>964,299</b>	<b>3,929,720</b>	<b>1.028</b>	<b>0.674</b>	<b>1.703</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.294	2.188	.
(14) Massachusetts Credibility:	0.330	0.560	.
(15) Countrywide Pure Premium:	1.077	0.497	1.574
(16) Countrywide Indicated Relativity:	1.359	1.588	.
(17) Countrywide Credibility:	0.340	0.220	.
(18) Countrywide Lost-Time Claims:	6083.0	.	.
(19) Pure Premium Underlying Present Rate:	0.921	0.611	1.532
(20) Relativity to Underlying Present Rate:	1.413	2.097	.
(21) Credibility to Underlying Relativity:	0.330	0.220	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.355	2.036	.
(24) Balanced Formula Relativity:	1.341	2.026	1.533

Class(es):		Effective: 7/1/2024							Goods and Services			
8048 STORE: FRUIT OR VEGETABLE -WHOLESALE												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	525.899	3	73	205.001	576.242	29.159	259.459	1,069.860	1.486	0.549	2.034	
2018	540.838	1	71	102.946	600.862	6.285	269.725	979.818	1.301	0.510	1.812	
2019	561.538	1	78	207.736	965.484	86.360	306.234	1,565.815	2.089	0.699	2.788	
2020	485.760	0	17	0	158.762	0	110.894	269.656	0.327	0.228	0.555	
2021	536.181	0	30	0	437.195	0	145.932	583.127	0.815	0.272	1.088	
<b>MA Total:</b>	<b>2,650,216</b>	<b>5</b>	<b>269</b>	<b>515,683</b>	<b>2,738,544</b>	<b>121,804</b>	<b>1,092,244</b>	<b>4,468,275</b>	<b>1.228</b>	<b>0.458</b>	<b>1.686</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.545	1.487	.
(14) Massachusetts Credibility:	0.370	0.520	.
(15) Countrywide Pure Premium:	1.433	0.438	1.872
(16) Countrywide Indicated Relativity:	1.808	1.401	.
(17) Countrywide Credibility:	0.260	0.240	.
(18) Countrywide Lost-Time Claims:	41.000	.	.
(19) Pure Premium Underlying Present Rate:	1.030	0.443	1.473
(20) Relativity to Underlying Present Rate:	1.582	1.520	.
(21) Credibility to Underlying Relativity:	0.370	0.240	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.627	1.474	.
(24) Balanced Formula Relativity:	1.610	1.467	1.570

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services			
8058 BUILDING MATERIAL DEALER-NEW MATERIALS ONLY-STORE EMP												
Converted Unlimited Losses												
Amount												
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	330,077	1	46	218,503	244,409	44,988	177,431	685,330	1,402	0,674	2,076	
2018	374,175	1	31	425,570	171,754	81,979	112,610	791,912	1,596	0,520	2,116	
2019	377,894	0	37	0	239,123	0	128,046	367,168	0,633	0,339	0,972	
2020	447,592	1	51	273,632	572,074	32,393	242,570	1,120,669	1,889	0,614	2,504	
2021	527,651	2	52	77,972	448,569	34,362	417,406	978,309	0,998	0,856	1,854	
<b>MA Total:</b>	<b>2,057,389</b>	<b>5</b>	<b>217</b>	<b>995,676</b>	<b>1,675,929</b>	<b>193,722</b>	<b>1,078,063</b>	<b>3,943,390</b>	<b>1,299</b>	<b>0,618</b>	<b>1,917</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.634	2.007	.
(14) Massachusetts Credibility:	0.320	0.510	.
(15) Countrywide Pure Premium:	1.007	0.518	1.524
(16) Countrywide Indicated Relativity:	1.270	1.655	.
(17) Countrywide Credibility:	0.340	0.250	.
(18) Countrywide Lost-Time Claims:	5262.0	.	.
(19) Pure Premium Underlying Present Rate:	0.933	0.539	1.472
(20) Relativity to Underlying Present Rate:	1.432	1.849	.
(21) Credibility to Underlying Relativity:	0.340	0.240	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.441	1.881	.
(24) Balanced Formula Relativity:	1.427	1.871	1.551

Class(es):		Effective: 7/1/2024							Goods and Services			
8103 WOOL MERCHANT												
Converted Unlimited Losses												
Amount												
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	1,660	0	0	0	0	0	0	0	0.000	0.000	0.000	
2018	2,268	0	0	0	0	0	0	0	0.000	0.000	0.000	
2019	2,077	0	0	0	0	0	0	0	0.000	0.000	0.000	
2020	1,351	0	0	0	0	0	0	0	0.000	0.000	0.000	
2021	0	0	0	0	0	0	0	0	0.000	0.000	0.000	
<b>MA Total:</b>	<b>7,355</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.040	0.050	.
(15) Countrywide Pure Premium:	1.407	0.348	1.755
(16) Countrywide Indicated Relativity:	1.774	1.113	.
(17) Countrywide Credibility:	0.220	0.230	.
(18) Countrywide Lost-Time Claims:	25.000	.	.
(19) Pure Premium Underlying Present Rate:	1.253	0.532	1.785
(20) Relativity to Underlying Present Rate:	1.923	1.826	.
(21) Credibility to Underlying Relativity:	0.740	0.720	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.814	1.571	.
(24) Balanced Formula Relativity:	1.795	1.563	1.730

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services			
8105 STORE: HIDE OR LEATHER DEALERS OR STORES												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	10,092	1	1	292,781	73,532	84,770	7,101	458,184	36,298	9,104	45,402	
2018	8,931	0	1	0	347	0	117	464	0,039	0,013	0,052	
2019	10,840	0	1	0	0	0	694	694	0,000	0,064	0,064	
2020	8,574	0	0	0	0	0	0	0	0,000	0,000	0,000	
2021	7,905	1	0	534,176	0	95,334	0	629,510	67,571	12,059	79,630	
<b>MA Total:</b>	<b>46,342</b>	<b>2</b>	<b>3</b>	<b>826,957</b>	<b>73,878</b>	<b>180,103</b>	<b>7,912</b>	<b>1,088,851</b>	<b>19,439</b>	<b>4,057</b>	<b>23,496</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	24.458	13.171	.
(14) Massachusetts Credibility:	0.170	0.200	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	13.642	8.095	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	8.986	2.385	11.371
(20) Relativity to Underlying Present Rate:	13.794	8.185	.
(21) Credibility to Underlying Relativity:	0.830	0.800	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	15.607	9.182	.
(24) Balanced Formula Relativity:	15.446	9.136	13.684

Class(es):		Effective: 7/1/2024							Goods and Services			
8106 IRON OR STEEL MERCHANT & DRIVERS												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	152,996	1	35	419,207	174,048	65,570	156,636	815,460	3,878	1,452	5,330	
2018	170,213	1	32	1,272	82,315	640	70,104	154,332	0,491	0,416	0,907	
2019	169,029	1	19	221,113	77,584	76,339	45,247	420,283	1,767	0,719	2,486	
2020	176,619	0	30	0	377,665	0	368,861	746,526	2,138	2,088	4,227	
2021	256,167	2	23	136,887	37,608	60,346	33,943	268,786	0,681	0,368	1,049	
<b>MA Total:</b>	<b>925,024</b>	<b>5</b>	<b>139</b>	<b>778,480</b>	<b>749,220</b>	<b>202,895</b>	<b>674,791</b>	<b>2,405,386</b>	<b>1,652</b>	<b>0,949</b>	<b>2,600</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.078	3.080	.
(14) Massachusetts Credibility:	0.300	0.470	.
(15) Countrywide Pure Premium:	1.996	0.810	2.806
(16) Countrywide Indicated Relativity:	2.517	2.589	.
(17) Countrywide Credibility:	0.350	0.270	.
(18) Countrywide Lost-Time Claims:	2255.0	.	.
(19) Pure Premium Underlying Present Rate:	1.825	0.976	2.801
(20) Relativity to Underlying Present Rate:	2.802	3.348	.
(21) Credibility to Underlying Relativity:	0.350	0.260	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.485	3.017	.
(24) Balanced Formula Relativity:	2.459	3.002	2.611

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
8107 MACHINERY DEALER- NOC- STORE OR YARD & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	954,665	2	74	287,820	421,495	41,591	281,171	1,032,077	0.743	0.338	1.081
2018	1,013,426	6	91	1,441,535	843,477	260,554	351,485	2,897,051	2.255	0.604	2.859
2019	1,016,092	3	70	368,937	470,762	146,989	301,354	1,288,042	0.826	0.441	1.268
2020	1,036,940	0	68	0	823,524	0	454,926	1,278,450	0.794	0.439	1.233
2021	1,118,380	3	72	294,696	488,853	116,337	361,599	1,261,486	0.701	0.427	1.128
<b>MA Total:</b>	<b>5,139,503</b>	<b>14</b>	<b>375</b>	<b>2,392,988</b>	<b>3,048,111</b>	<b>565,471</b>	<b>1,750,535</b>	<b>7,757,105</b>	<b>1.059</b>	<b>0.451</b>	<b>1.509</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.332	1.463	.
(14) Massachusetts Credibility:	0.480	0.690	.
(15) Countrywide Pure Premium:	1.292	0.479	1.771
(16) Countrywide Indicated Relativity:	1.629	1.531	.
(17) Countrywide Credibility:	0.260	0.160	.
(18) Countrywide Lost-Time Claims:	5215.0	.	.
(19) Pure Premium Underlying Present Rate:	1.050	0.466	1.517
(20) Relativity to Underlying Present Rate:	1.612	1.601	.
(21) Credibility to Underlying Relativity:	0.260	0.150	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.482	1.495	.
(24) Balanced Formula Relativity:	1.467	1.487	1.472

Class(es):		Effective: 7/1/2024							Goods and Services		
8111 PLUMBERS SUPPLIES DEALERS & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,003,914	3	126	453,334	1,491,175	100,814	458,370	2,503,693	1.937	0.557	2.494
2018	1,001,355	6	130	587,968	404,634	71,964	372,890	1,437,456	0.991	0.444	1.436
2019	958,925	9	117	1,401,608	1,310,668	392,269	431,930	3,536,474	2.828	0.860	3.688
2020	1,000,076	3	96	586,396	364,042	132,146	272,520	1,355,104	0.950	0.405	1.355
2021	1,073,506	5	61	759,958	517,261	165,190	271,486	1,713,895	1.190	0.407	1.597
<b>MA Total:</b>	<b>5,037,775</b>	<b>26</b>	<b>530</b>	<b>3,789,263</b>	<b>4,087,780</b>	<b>862,382</b>	<b>1,807,196</b>	<b>10,546,622</b>	<b>1.564</b>	<b>0.530</b>	<b>2.094</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.967	1.720	.
(14) Massachusetts Credibility:	0.490	0.750	.
(15) Countrywide Pure Premium:	1.035	0.395	1.430
(16) Countrywide Indicated Relativity:	1.306	1.262	.
(17) Countrywide Credibility:	0.260	0.130	.
(18) Countrywide Lost-Time Claims:	1432.0	.	.
(19) Pure Premium Underlying Present Rate:	1.121	0.579	1.701
(20) Relativity to Underlying Present Rate:	1.721	1.989	.
(21) Credibility to Underlying Relativity:	0.250	0.120	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.734	1.693	.
(24) Balanced Formula Relativity:	1.716	1.684	1.707

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## Calculation of Class Relativities

Class(es): 8203 ICE DEALER & DRIVERS		Effective: 7/1/2024							Goods and Services		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	44,402	0	14	0	133,865	0	29,470	163,336	3.015	0.664	3.679
2018	45,955	1	6	5,037	10,744	5,855	11,608	33,244	0.343	0.380	0.723
2019	41,037	0	6	0	709	0	4,193	4,902	0.017	0.102	0.119
2020	38,696	0	5	0	19,412	0	53,079	72,491	0.502	1.372	1.873
2021	36,928	0	4	0	5,220	0	3,105	8,325	0.141	0.084	0.225
<b>MA Total:</b>	<b>207,018</b>	<b>1</b>	<b>35</b>	<b>5,037</b>	<b>169,950</b>	<b>5,855</b>	<b>101,456</b>	<b>282,297</b>	<b>0.845</b>	<b>0.518</b>	<b>1.364</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.064	1.683	.
(14) Massachusetts Credibility:	0.180	0.250	.
(15) Countrywide Pure Premium:	3.239	1.116	4.355
(16) Countrywide Indicated Relativity:	4.084	3.568	.
(17) Countrywide Credibility:	0.410	0.380	.
(18) Countrywide Lost-Time Claims:	336.00	.	.
(19) Pure Premium Underlying Present Rate:	2.246	0.886	3.131
(20) Relativity to Underlying Present Rate:	3.447	3.039	.
(21) Credibility to Underlying Relativity:	0.410	0.370	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	3.279	2.901	.
(24) Balanced Formula Relativity:	3.246	2.886	3.145

Class(es): 8204 BUILDING MATERIAL YARD & LOCAL MANAGERS, DRIVERS		Effective: 7/1/2024							Goods and Services		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	63,555	1	7	19,503	12,730	10,316	6,114	48,664	0.507	0.259	0.766
2018	66,861	1	4	165,605	433	32,675	1,599	200,312	2.483	0.513	2.996
2019	66,055	0	4	0	3,247	0	6,419	9,666	0.049	0.097	0.146
2020	53,543	1	5	2,624	13,178	8,540	14,903	39,245	0.295	0.438	0.733
2021	50,547	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>300,561</b>	<b>3</b>	<b>20</b>	<b>187,732</b>	<b>29,588</b>	<b>51,531</b>	<b>29,035</b>	<b>297,887</b>	<b>0.723</b>	<b>0.268</b>	<b>0.991</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.910	0.870	.
(14) Massachusetts Credibility:	0.200	0.280	.
(15) Countrywide Pure Premium:	1.926	0.922	2.848
(16) Countrywide Indicated Relativity:	2.428	2.947	.
(17) Countrywide Credibility:	0.400	0.360	.
(18) Countrywide Lost-Time Claims:	184.00	.	.
(19) Pure Premium Underlying Present Rate:	1.927	0.855	2.782
(20) Relativity to Underlying Present Rate:	2.958	2.933	.
(21) Credibility to Underlying Relativity:	0.400	0.360	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.337	2.360	.
(24) Balanced Formula Relativity:	2.313	2.348	2.323

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services			
8215 HAY, GRAIN OR FEED DEALER & LOCAL MANAGERS, DR												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	75,007	0	5	0	46,939	0	32,526	79,465	0.626	0.434	1.059	
2018	68,328	0	10	0	102,273	0	34,818	137,091	1.497	0.510	2.006	
2019	80,561	0	2	0	0	0	701	701	0.000	0.009	0.009	
2020	93,387	0	6	0	35,796	0	40,133	75,929	0.383	0.430	0.813	
2021	53,325	0	5	0	305,213	0	256,351	561,564	5.724	4.807	10.531	
<b>MA Total:</b>	<b>370,608</b>	<b>0</b>	<b>28</b>	<b>0</b>	<b>490,222</b>	<b>0</b>	<b>364,529</b>	<b>854,751</b>	<b>1.323</b>	<b>0.984</b>	<b>2.306</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.664	3.193	.
(14) Massachusetts Credibility:	0.180	0.270	.
(15) Countrywide Pure Premium:	1.656	0.685	2.341
(16) Countrywide Indicated Relativity:	2.088	2.190	.
(17) Countrywide Credibility:	0.410	0.370	.
(18) Countrywide Lost-Time Claims:	1599.0	.	.
(19) Pure Premium Underlying Present Rate:	1.253	0.598	1.851
(20) Relativity to Underlying Present Rate:	1.924	2.051	.
(21) Credibility to Underlying Relativity:	0.410	0.360	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.944	2.411	.
(24) Balanced Formula Relativity:	1.924	2.398	2.057

Class(es):		Effective: 7/1/2024							Construction			
8227 CONTRACTORS PERMANENT YARD												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	1,319,605	7	91	2,098,609	3,821,402	758,028	1,605,665	8,283,703	4.486	1.791	6.277	
2018	1,364,927	4	96	2,327,621	1,710,521	681,586	986,393	5,706,120	2,959	1,222	4,181	
2019	1,330,813	3	94	766,610	2,296,894	378,266	1,267,362	4,709,132	2,302	1,237	3,539	
2020	1,404,314	2	72	51,345	3,526,635	24,581	1,220,451	4,823,012	2,548	0,887	3,434	
2021	1,450,196	3	71	281,374	1,805,406	97,746	1,279,938	3,464,463	1,439	0,950	2,389	
<b>MA Total:</b>	<b>6,869,855</b>	<b>19</b>	<b>424</b>	<b>5,525,559</b>	<b>13,160,857</b>	<b>1,940,206</b>	<b>6,359,808</b>	<b>26,986,431</b>	<b>2,720</b>	<b>1,208</b>	<b>3,928</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.150	1.404	.
(14) Massachusetts Credibility:	0.760	1.000	.
(15) Countrywide Pure Premium:	1.847	0.703	2.550
(16) Countrywide Indicated Relativity:	0.784	0.816	.
(17) Countrywide Credibility:	0.120	0.000	.
(18) Countrywide Lost-Time Claims:	2961.0	.	.
(19) Pure Premium Underlying Present Rate:	2.427	1.235	3.662
(20) Relativity to Underlying Present Rate:	1.199	1.530	.
(21) Credibility to Underlying Relativity:	0.120	0.000	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.112	1.404	.
(24) Balanced Formula Relativity:	1.124	1.409	1.200

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
8232 LUMBER YARD-NEW MATERIALS ONLY: A/O EMP INCL YRD & WHSE & DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums		
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,526,712	7	239	703,717	1,655,577	438,091	993,413	3,790,799	1,545	0,938	2,483
2018	1,701,887	7	233	2,460,270	2,496,078	480,606	1,117,202	6,554,157	2,912	0,939	3,851
2019	1,575,768	8	174	1,121,929	2,173,756	356,719	989,694	4,642,098	2,091	0,854	2,946
2020	1,662,305	7	157	1,392,418	2,242,323	295,516	1,194,371	5,124,628	2,187	0,896	3,083
2021	1,779,577	8	190	1,589,158	3,412,288	1,031,450	1,618,580	7,651,476	2,810	1,489	4,300
<b>MA Total:</b>	<b>8,246,250</b>	<b>37</b>	<b>993</b>	<b>7,267,492</b>	<b>11,980,022</b>	<b>2,602,384</b>	<b>5,913,260</b>	<b>27,763,157</b>	<b>2,334</b>	<b>1,033</b>	<b>3,367</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.937	3.352	.
(14) Massachusetts Credibility:	0.760	1.000	.
(15) Countrywide Pure Premium:	2.363	0.851	3.214
(16) Countrywide Indicated Relativity:	2.980	2.719	.
(17) Countrywide Credibility:	0.120	0.000	.
(18) Countrywide Lost-Time Claims:	11115	.	.
(19) Pure Premium Underlying Present Rate:	2.034	0.896	2.931
(20) Relativity to Underlying Present Rate:	3.123	3.076	.
(21) Credibility to Underlying Relativity:	0.120	0.000	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.964	3.352	.
(24) Balanced Formula Relativity:	2.934	3.335	3.046

Class(es):		Effective: 7/1/2024							Goods and Services		
8233 COAL MERCHANT & LOCAL MANAGERS & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums		
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	316,862	3	29	426,323	640,600	158,876	262,000	1,487,800	3,367	1,328	4,695
2018	363,388	0	29	0	740,985	0	318,529	1,059,514	2,039	0,877	2,916
2019	257,874	2	26	864,060	855,589	245,695	168,640	2,133,983	6,669	1,607	8,275
2020	265,420	1	28	72,958	710,527	18,893	209,475	1,011,853	2,952	0,860	3,812
2021	292,345	1	13	512,076	844,800	116,373	737,802	2,211,050	4,641	2,922	7,563
<b>MA Total:</b>	<b>1,495,889</b>	<b>7</b>	<b>125</b>	<b>1,875,417</b>	<b>3,792,501</b>	<b>539,837</b>	<b>1,696,445</b>	<b>7,904,201</b>	<b>3,789</b>	<b>1,495</b>	<b>5,284</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.767	4.853	.
(14) Massachusetts Credibility:	0.400	0.600	.
(15) Countrywide Pure Premium:	2.370	0.897	3.267
(16) Countrywide Indicated Relativity:	2.988	2.867	.
(17) Countrywide Credibility:	0.300	0.200	.
(18) Countrywide Lost-Time Claims:	1718.0	.	.
(19) Pure Premium Underlying Present Rate:	2.309	1.120	3.428
(20) Relativity to Underlying Present Rate:	3.544	3.842	.
(21) Credibility to Underlying Relativity:	0.300	0.200	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	3.867	4.254	.
(24) Balanced Formula Relativity:	3.827	4.232	3.940

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
8235 SASH, DOOR OR ASSEMBLED MILLWORK DEALER & DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		Total	MA Indicated Pure Premiums		
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	130,561	1	13	192,374	356,278	29,232	163,081	740,964	4,202	1,473	5,675
2018	138,451	1	15	9,749	141,552	28,598	71,472	251,371	1,093	0,723	1,816
2019	140,886	2	18	69,122	20,784	23,360	47,399	160,664	0,638	0,502	1,140
2020	161,207	1	25	325,590	104,295	38,620	62,403	530,908	2,667	0,627	3,293
2021	148,433	2	17	339,175	73,950	112,609	57,161	582,895	2,783	1,144	3,927
<b>MA Total:</b>	<b>719,537</b>	<b>7</b>	<b>88</b>	<b>936,010</b>	<b>696,859</b>	<b>232,419</b>	<b>401,515</b>	<b>2,266,802</b>	<b>2,269</b>	<b>0,881</b>	<b>3,150</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.855	2.860	.
(14) Massachusetts Credibility:	0.270	0.400	.
(15) Countrywide Pure Premium:	2.063	0.769	2.832
(16) Countrywide Indicated Relativity:	2.601	2.458	.
(17) Countrywide Credibility:	0.370	0.300	.
(18) Countrywide Lost-Time Claims:	742.00	.	.
(19) Pure Premium Underlying Present Rate:	1.746	0.847	2.592
(20) Relativity to Underlying Present Rate:	2.680	2.905	.
(21) Credibility to Underlying Relativity:	0.360	0.300	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.698	2.753	.
(24) Balanced Formula Relativity:	2.670	2.739	2.690

Class(es):		Effective: 7/1/2024							Goods and Services		
8263 JUNK DEALERS & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		Total	MA Indicated Pure Premiums		
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	88,879	1	14	16,179	99,525	1,443	90,824	207,971	1,302	1,038	2,340
2018	92,324	1	16	10,074	144,071	6,241	68,238	228,623	1,670	0,807	2,476
2019	80,019	0	9	0	15,656	0	12,129	27,784	0,196	0,152	0,347
2020	75,286	0	9	0	42,588	0	25,206	67,794	0,566	0,335	0,900
2021	94,187	0	15	0	307,414	0	81,857	389,271	3,264	0,869	4,133
<b>MA Total:</b>	<b>430,696</b>	<b>2</b>	<b>63</b>	<b>26,253</b>	<b>609,254</b>	<b>7,684</b>	<b>278,253</b>	<b>921,444</b>	<b>1,476</b>	<b>0,664</b>	<b>2,139</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.857	2.155	.
(14) Massachusetts Credibility:	0.230	0.340	.
(15) Countrywide Pure Premium:	2.482	1.142	3.623
(16) Countrywide Indicated Relativity:	3.129	3.648	.
(17) Countrywide Credibility:	0.390	0.330	.
(18) Countrywide Lost-Time Claims:	206.00	.	.
(19) Pure Premium Underlying Present Rate:	2.029	0.949	2.979
(20) Relativity to Underlying Present Rate:	3.115	3.258	.
(21) Credibility to Underlying Relativity:	0.380	0.330	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.831	3.012	.
(24) Balanced Formula Relativity:	2.802	2.997	2.856

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## Calculation of Class Relativities

Class(es): 8264 BOTTLE DEALER-USED & DRIVERS		Effective: 7/1/2024							Goods and Services		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	406,197	3	53	424,599	118,680	197,607	69,450	810,336	1,337	0,657	1,995
2018	417,139	2	66	517,920	1,148,298	153,622	454,954	2,274,795	3,994	1,459	5,453
2019	346,872	2	49	203,249	107,121	65,862	77,634	453,866	0,895	0,414	1,308
2020	347,457	2	28	342,682	492,869	88,006	140,501	1,064,058	2,405	0,658	3,062
2021	407,181	2	44	109,591	762,892	41,845	309,361	1,223,690	2,143	0,863	3,005
<b>MA Total:</b>	<b>1,924,846</b>	<b>11</b>	<b>240</b>	<b>1,598,042</b>	<b>2,629,862</b>	<b>546,942</b>	<b>1,051,900</b>	<b>5,826,746</b>	<b>2,196</b>	<b>0,831</b>	<b>3,027</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.764	2.696	.
(14) Massachusetts Credibility:	0.420	0.600	.
(15) Countrywide Pure Premium:	2.367	0.928	3.294
(16) Countrywide Indicated Relativity:	2.984	2.965	.
(17) Countrywide Credibility:	0.290	0.200	.
(18) Countrywide Lost-Time Claims:	1215.0	.	.
(19) Pure Premium Underlying Present Rate:	1.985	0.875	2.860
(20) Relativity to Underlying Present Rate:	3.047	3.003	.
(21) Credibility to Underlying Relativity:	0.290	0.200	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.910	2.811	.
(24) Balanced Formula Relativity:	2.880	2.797	2.857

Class(es): 8279 STABLE OR BREEDING FARM & DRIVERS		Effective: 7/1/2024							Goods and Services		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	191,411	1	25	1,020	36,793	7,281	130,640	175,733	0,198	0,721	0,918
2018	198,446	0	25	0	249,162	0	110,419	359,581	1,256	0,556	1,812
2019	203,536	1	24	2,149	34,227	14,430	106,658	157,464	0,179	0,595	0,774
2020	204,507	1	12	13,964	137,116	37,881	144,699	333,660	0,739	0,893	1,632
2021	211,233	0	22	0	470,058	0	493,334	963,392	2,225	2,335	4,561
<b>MA Total:</b>	<b>1,009,134</b>	<b>3</b>	<b>108</b>	<b>17,133</b>	<b>927,355</b>	<b>59,592</b>	<b>985,748</b>	<b>1,989,828</b>	<b>0,936</b>	<b>1,036</b>	<b>1,972</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.178	3.363	.
(14) Massachusetts Credibility:	0.280	0.470	.
(15) Countrywide Pure Premium:	3.010	1.603	4.614
(16) Countrywide Indicated Relativity:	3.796	5.125	.
(17) Countrywide Credibility:	0.360	0.270	.
(18) Countrywide Lost-Time Claims:	1015.0	.	.
(19) Pure Premium Underlying Present Rate:	1.375	0.914	2.289
(20) Relativity to Underlying Present Rate:	2.111	3.138	.
(21) Credibility to Underlying Relativity:	0.360	0.260	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.456	3.780	.
(24) Balanced Formula Relativity:	2.431	3.761	2.802

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## Calculation of Class Relativities

Class(es): 8291 STORAGE WAREHOUSE-COLD		Effective: 7/1/2024							Goods and Services		
Converted Unlimited Losses											
Amount											
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	187,322	2	31	226,019	123,643	170,250	161,657	681,569	1,867	1,772	3,638
2018	204,486	1	21	7,633	55,094	3,918	49,634	116,279	0,307	0,262	0,569
2019	225,418	2	27	695,261	214,343	447,329	48,175	1,405,108	4,035	2,198	6,233
2020	162,641	1	19	639,298	256,100	55,355	236,781	1,187,533	5,505	1,796	7,302
2021	193,358	1	22	18,034	188,246	5,630	73,676	285,586	1,067	0,410	1,477
<b>MA Total:</b>	<b>973,225</b>	<b>7</b>	<b>120</b>	<b>1,586,245</b>	<b>837,426</b>	<b>682,481</b>	<b>569,922</b>	<b>3,676,074</b>	<b>2,490</b>	<b>1,287</b>	<b>3,777</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.133	4.178	.
(14) Massachusetts Credibility:	0.290	0.480	.
(15) Countrywide Pure Premium:	1.613	0.647	2.260
(16) Countrywide Indicated Relativity:	2.034	2.066	.
(17) Countrywide Credibility:	0.360	0.260	.
(18) Countrywide Lost-Time Claims:	1026.0	.	.
(19) Pure Premium Underlying Present Rate:	1.592	0.998	2.590
(20) Relativity to Underlying Present Rate:	2.444	3.425	.
(21) Credibility to Underlying Relativity:	0.350	0.260	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.496	3.433	.
(24) Balanced Formula Relativity:	2.471	3.416	2.735

Class(es): 8292 STORAGE WAREHOUSE NOC		Effective: 7/1/2024							Goods and Services		
Converted Unlimited Losses											
Amount											
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	766,336	7	155	502,066	733,566	132,967	321,401	1,690,000	1,612	0,593	2,205
2018	871,993	4	110	291,726	1,054,891	265,168	431,704	2,043,488	1,544	0,799	2,343
2019	844,156	4	106	425,439	1,284,375	66,669	552,108	2,328,591	2,025	0,733	2,758
2020	977,317	7	95	454,986	1,182,882	145,612	664,175	2,447,654	1,676	0,829	2,504
2021	975,836	7	89	1,112,829	1,658,784	838,904	758,347	4,368,864	2,840	1,637	4,477
<b>MA Total:</b>	<b>4,435,637</b>	<b>29</b>	<b>555</b>	<b>2,787,045</b>	<b>5,914,497</b>	<b>1,449,320</b>	<b>2,727,735</b>	<b>12,878,597</b>	<b>1,962</b>	<b>0,942</b>	<b>2,903</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.468	3.057	.
(14) Massachusetts Credibility:	0.520	0.760	.
(15) Countrywide Pure Premium:	1.657	0.612	2.269
(16) Countrywide Indicated Relativity:	2.089	1.956	.
(17) Countrywide Credibility:	0.240	0.120	.
(18) Countrywide Lost-Time Claims:	7887.0	.	.
(19) Pure Premium Underlying Present Rate:	1.478	0.672	2.150
(20) Relativity to Underlying Present Rate:	2.269	2.305	.
(21) Credibility to Underlying Relativity:	0.240	0.120	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.330	2.835	.
(24) Balanced Formula Relativity:	2.306	2.820	2.449

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
8293 STORAGE WAREHOUSE-FURNITURE & DRIVERS											
Converted Unlimited Losses											
Amount											
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	761.315	12	144	1,202.142	922.351	480.526	682.899	3,287.918	2.791	1.528	4.319
2018	773.372	4	180	962.659	1,671.231	453.870	660.085	3,747.845	3.406	1.440	4.846
2019	751.885	6	143	388.989	1,356.121	178.016	920.104	2,843.230	2.321	1.460	3.781
2020	771.552	8	134	1,127.731	1,935.168	288.965	984.216	4,336.080	3.970	1.650	5.620
2021	1,015.054	7	111	1,345.614	2,392.586	400.483	1,006.721	5,145.403	3.683	1.386	5.069
<b>MA Total:</b>	<b>4,073.178</b>	<b>37</b>	<b>712</b>	<b>5,027.134</b>	<b>8,277.458</b>	<b>1,801,861</b>	<b>4,254,024</b>	<b>19,360,476</b>	<b>3.266</b>	<b>1.487</b>	<b>4.753</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.110	4.827	.
(14) Massachusetts Credibility:	0.650	0.970	.
(15) Countrywide Pure Premium:	3.501	1.111	4.613
(16) Countrywide Indicated Relativity:	4.415	3.552	.
(17) Countrywide Credibility:	0.180	0.020	.
(18) Countrywide Lost-Time Claims:	3621.0	.	.
(19) Pure Premium Underlying Present Rate:	2.757	1.364	4.121
(20) Relativity to Underlying Present Rate:	4.232	4.680	.
(21) Credibility to Underlying Relativity:	0.170	0.010	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	4.186	4.800	.
(24) Balanced Formula Relativity:	4.142	4.775	4.319

Class(es):		Effective: 7/1/2024							Goods and Services		
8350 GASOLINE OR OIL DEALER & DRIVERS											
Converted Unlimited Losses											
Amount											
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,601.793	11	226	1,230.603	4,095.302	353.768	1,418.134	7,097.806	3.325	1.106	4.431
2018	1,518.983	12	177	1,977.183	4,049.875	362.713	1,593.299	7,983.070	3.968	1.288	5.256
2019	1,595.846	5	179	990.097	4,667.101	589.728	1,694.389	7,941.316	3.545	1.431	4.976
2020	1,660.416	13	168	3,030.479	5,071.718	813.228	1,711.561	10,626.986	4.880	1.521	6.400
2021	1,556.780	4	174	2,009.801	4,779.681	516.173	1,795.646	9,101.301	4.361	1.485	5.846
<b>MA Total:</b>	<b>7,933.817</b>	<b>45</b>	<b>924</b>	<b>9,238.163</b>	<b>22,663.677</b>	<b>2,635.610</b>	<b>8,213.029</b>	<b>42,750,479</b>	<b>4.021</b>	<b>1.367</b>	<b>5.388</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	5.059	4.439	.
(14) Massachusetts Credibility:	0.900	1.000	.
(15) Countrywide Pure Premium:	3.185	0.893	4.079
(16) Countrywide Indicated Relativity:	4.017	2.855	.
(17) Countrywide Credibility:	0.050	0.000	.
(18) Countrywide Lost-Time Claims:	3623.0	.	.
(19) Pure Premium Underlying Present Rate:	3.172	1.186	4.358
(20) Relativity to Underlying Present Rate:	4.869	4.070	.
(21) Credibility to Underlying Relativity:	0.050	0.000	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	4.998	4.439	.
(24) Balanced Formula Relativity:	4.946	4.416	4.798

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
8380 AUTOMOBILE SERVICE OR REPAIR CENTER & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	8,851,556	30	911	2,799,031	8,195,962	935,518	3,132,404	15,062,915	1,242	0,460	1,702
2018	9,295,362	35	897	3,425,715	9,958,399	967,283	4,184,132	18,535,528	1,440	0,554	1,994
2019	9,143,085	31	749	4,200,643	8,736,881	740,533	4,217,882	17,895,939	1,415	0,542	1,957
2020	9,453,342	24	614	4,397,703	6,716,536	977,973	3,200,913	15,293,126	1,176	0,442	1,618
2021	9,907,460	24	601	3,698,555	11,199,399	1,034,249	4,798,235	20,730,437	1,504	0,589	2,092
<b>MA Total:</b>	<b>46,650,805</b>	<b>144</b>	<b>3,772</b>	<b>18,521,646</b>	<b>44,807,177</b>	<b>4,655,556</b>	<b>19,533,566</b>	<b>87,517,946</b>	<b>1,358</b>	<b>0,519</b>	<b>1,876</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.708	1.683	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	1.172	0.408	1.579
(16) Countrywide Indicated Relativity:	1.477	1.303	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	25286	.	.
(19) Pure Premium Underlying Present Rate:	1.070	0.466	1.536
(20) Relativity to Underlying Present Rate:	1.642	1.599	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.708	1.683	.
(24) Balanced Formula Relativity:	1.690	1.675	1.686

Class(es):		Effective: 7/1/2024							Goods and Services		
8381 GASOLINE STATION-RETAIL-SELF SERVICE											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	169,424	1	8	42,769	95,155	14,482	43,429	195,835	0,814	0,342	1,156
2018	205,325	2	8	131,071	312,106	48,767	49,007	540,952	2,158	0,476	2,635
2019	600,845	1	11	69,772	1,828	7,428	10,830	89,858	0,119	0,030	0,150
2020	705,357	0	7	0	8,155	0	10,018	18,173	0,012	0,014	0,026
2021	287,114	0	5	0	5,645	0	4,339	9,985	0,020	0,015	0,035
<b>MA Total:</b>	<b>1,968,066</b>	<b>4</b>	<b>39</b>	<b>243,612</b>	<b>422,890</b>	<b>70,677</b>	<b>117,624</b>	<b>854,803</b>	<b>0,339</b>	<b>0,096</b>	<b>0,434</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.426	0.311	.
(14) Massachusetts Credibility:	0.250	0.360	.
(15) Countrywide Pure Premium:	0.620	0.263	0.884
(16) Countrywide Indicated Relativity:	0.782	0.841	.
(17) Countrywide Credibility:	0.380	0.320	.
(18) Countrywide Lost-Time Claims:	384.00	.	.
(19) Pure Premium Underlying Present Rate:	0.543	0.232	0.775
(20) Relativity to Underlying Present Rate:	0.834	0.797	.
(21) Credibility to Underlying Relativity:	0.370	0.320	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.712	0.636	.
(24) Balanced Formula Relativity:	0.705	0.633	0.685

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
8385 BUS CO: GARAGE EMPLOYEES											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	515,950	6	102	485,206	1,257,483	195,515	392,271	2,330,475	3,378	1,139	4,517
2018	554,695	3	100	233,159	1,510,489	32,526	547,295	2,323,468	3,143	1,045	4,189
2019	465,353	1	66	262,260	200,292	20,042	198,259	680,852	0,994	0,469	1,463
2020	490,289	3	58	118,951	1,131,950	38,252	309,062	1,598,215	2,551	0,708	3,260
2021	519,461	4	41	568,516	625,459	170,122	168,999	1,533,096	2,298	0,653	2,951
<b>MA Total:</b>	<b>2,545,749</b>	<b>17</b>	<b>367</b>	<b>1,668,092</b>	<b>4,725,672</b>	<b>456,456</b>	<b>1,615,886</b>	<b>8,466,107</b>	<b>2,512</b>	<b>0,814</b>	<b>3,326</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.160	2.643	.
(14) Massachusetts Credibility:	0.430	0.620	.
(15) Countrywide Pure Premium:	1.208	0.417	1.625
(16) Countrywide Indicated Relativity:	1.523	1.334	.
(17) Countrywide Credibility:	0.290	0.190	.
(18) Countrywide Lost-Time Claims:	1428.0	.	.
(19) Pure Premium Underlying Present Rate:	1.617	0.710	2.327
(20) Relativity to Underlying Present Rate:	2.482	2.437	.
(21) Credibility to Underlying Relativity:	0.280	0.190	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.495	2.355	.
(24) Balanced Formula Relativity:	2.470	2.343	2.434

Class(es):		Effective: 7/1/2024							Goods and Services		
8392 AUTOMOBILE STORAGE GARAGE OR PARKING STATION & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	452,618	1	46	11,661	257,598	8,389	137,007	414,655	0,595	0,321	0,916
2018	446,693	2	33	495,866	477,645	65,090	117,919	1,156,520	2,179	0,410	2,589
2019	440,399	2	30	77,595	40,994	17,182	77,293	213,063	0,269	0,215	0,484
2020	360,296	0	8	0	235	0	5,095	5,330	0,001	0,014	0,015
2021	448,899	0	15	0	463,071	0	215,460	678,531	1,032	0,480	1,512
<b>MA Total:</b>	<b>2,148,906</b>	<b>5</b>	<b>132</b>	<b>585,122</b>	<b>1,239,542</b>	<b>90,662</b>	<b>552,774</b>	<b>2,468,100</b>	<b>0,849</b>	<b>0,299</b>	<b>1,149</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.068	0.972	.
(14) Massachusetts Credibility:	0.280	0.420	.
(15) Countrywide Pure Premium:	0.942	0.377	1.319
(16) Countrywide Indicated Relativity:	1.187	1.205	.
(17) Countrywide Credibility:	0.360	0.290	.
(18) Countrywide Lost-Time Claims:	1213.0	.	.
(19) Pure Premium Underlying Present Rate:	0.632	0.325	0.957
(20) Relativity to Underlying Present Rate:	0.970	1.114	.
(21) Credibility to Underlying Relativity:	0.360	0.290	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.076	1.081	.
(24) Balanced Formula Relativity:	1.065	1.075	1.068

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## Calculation of Class Relativities

Class(es): 8393 AUTOMOBILE BODY REPAIR		Effective: 7/1/2024							Goods and Services		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,181,063	3	104	106,458	682,193	45,185	252,556	1,086,392	0.362	0.137	0.498
2018	2,249,686	5	101	725,509	1,721,354	65,299	501,008	3,013,169	1.088	0.252	1.339
2019	2,228,988	2	90	139,368	530,680	26,816	238,111	934,975	0.301	0.119	0.419
2020	2,172,043	1	69	577,107	2,248,344	47,006	896,746	3,769,203	1.301	0.434	1.735
2021	2,335,325	2	60	584,443	1,188,275	149,498	448,860	2,371,077	0.759	0.256	1.015
<b>MA Total:</b>	<b>11,167,105</b>	<b>13</b>	<b>424</b>	<b>2,132,885</b>	<b>6,370,847</b>	<b>333,803</b>	<b>2,337,281</b>	<b>11,174,816</b>	<b>0.761</b>	<b>0.239</b>	<b>1.001</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.958	0.776	.
(14) Massachusetts Credibility:	0.520	0.700	.
(15) Countrywide Pure Premium:	0.891	0.275	1.166
(16) Countrywide Indicated Relativity:	1.124	0.879	.
(17) Countrywide Credibility:	0.240	0.150	.
(18) Countrywide Lost-Time Claims:	2864.0	.	.
(19) Pure Premium Underlying Present Rate:	0.593	0.224	0.817
(20) Relativity to Underlying Present Rate:	0.910	0.769	.
(21) Credibility to Underlying Relativity:	0.240	0.150	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.986	0.791	.
(24) Balanced Formula Relativity:	0.976	0.787	0.923

Class(es): 8601 ARCHITECT OR ENGINEER-CONSULTING		Effective: 7/1/2024							Office and Clerical		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	15,730,284	5	175	302,400	324,712	98,938	286,961	1,013,011	0.040	0.025	0.064
2018	16,649,195	5	131	354,964	613,059	46,367	417,302	1,431,692	0.058	0.028	0.086
2019	17,677,672	5	112	1,292,548	1,504,397	315,814	818,315	3,931,073	0.158	0.064	0.222
2020	20,084,143	6	80	1,216,152	756,528	227,043	423,906	2,623,629	0.098	0.032	0.131
2021	19,704,220	2	80	58,139	439,666	54,884	341,407	894,096	0.025	0.020	0.045
<b>MA Total:</b>	<b>89,845,514</b>	<b>23</b>	<b>578</b>	<b>3,224,202</b>	<b>3,638,360</b>	<b>743,046</b>	<b>2,287,892</b>	<b>9,893,500</b>	<b>0.076</b>	<b>0.034</b>	<b>0.110</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.143	1.279	.
(14) Massachusetts Credibility:	0.570	0.820	.
(15) Countrywide Pure Premium:	0.096	0.038	0.134
(16) Countrywide Indicated Relativity:	1.859	1.673	.
(17) Countrywide Credibility:	0.220	0.090	.
(18) Countrywide Lost-Time Claims:	1796.0	.	.
(19) Pure Premium Underlying Present Rate:	0.090	0.040	0.130
(20) Relativity to Underlying Present Rate:	1.647	1.631	.
(21) Credibility to Underlying Relativity:	0.210	0.090	.
(22) Industry Group Converted Pure Premium:	0.067	0.026	0.093
(23) Formula Relativity:	1.406	1.346	.
(24) Balanced Formula Relativity:	1.400	1.347	1.385

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
8710 FIELD BONDED WAREHOUSING - ALL EMP & CLERICAL											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,453	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	3,181	0	1	0	0	0	750	750	0.000	0.236	0.236
2019	4,146	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	2,896	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	1,337	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>13,013</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>750</b>	<b>750</b>	<b>0.000</b>	<b>0.058</b>	<b>0.058</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.187	.
(14) Massachusetts Credibility:	0.040	0.060	.
(15) Countrywide Pure Premium:	0.541	0.215	0.756
(16) Countrywide Indicated Relativity:	0.682	0.686	.
(17) Countrywide Credibility:	0.150	0.160	.
(18) Countrywide Lost-Time Claims:	10.000	.	.
(19) Pure Premium Underlying Present Rate:	1.090	0.392	1.482
(20) Relativity to Underlying Present Rate:	1.673	1.347	.
(21) Credibility to Underlying Relativity:	0.810	0.780	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.458	1.172	.
(24) Balanced Formula Relativity:	1.443	1.166	1.365

Class(es):		Effective: 7/1/2024							Goods and Services		
8720 INSPECTION OF RISKS FOR INSURANCE OR VALUATION PURPOSES NOC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,063,618	1	52	82,201	797,828	11,414	276,159	1,167,601	0.426	0.139	0.566
2018	2,068,228	2	53	413,334	559,383	37,139	352,784	1,362,640	0.470	0.189	0.659
2019	2,201,462	1	49	232,138	236,169	377,192	196,751	1,042,250	0.213	0.261	0.473
2020	2,209,118	5	35	748,324	226,665	190,992	184,409	1,350,390	0.441	0.170	0.611
2021	2,339,702	3	39	292,238	110,749	73,198	125,763	601,948	0.172	0.085	0.257
<b>MA Total:</b>	<b>10,882,128</b>	<b>12</b>	<b>228</b>	<b>1,768,234</b>	<b>1,930,795</b>	<b>689,934</b>	<b>1,135,866</b>	<b>5,524,828</b>	<b>0.340</b>	<b>0.168</b>	<b>0.508</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.428	0.545	.
(14) Massachusetts Credibility:	0.420	0.610	.
(15) Countrywide Pure Premium:	0.532	0.196	0.727
(16) Countrywide Indicated Relativity:	0.671	0.625	.
(17) Countrywide Credibility:	0.290	0.200	.
(18) Countrywide Lost-Time Claims:	1349.0	.	.
(19) Pure Premium Underlying Present Rate:	0.353	0.158	0.511
(20) Relativity to Underlying Present Rate:	0.541	0.543	.
(21) Credibility to Underlying Relativity:	0.290	0.190	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.531	0.560	.
(24) Balanced Formula Relativity:	0.526	0.558	0.535

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Office and Clerical		
8721 REAL ESTATE APPRAISAL CO - OUTSIDE EMPLOYEES											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	325,926	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	335,638	0	1	0	0	0	76	76	0.000	0.000	0.000
2019	363,304	0	1	0	171	0	28,678	28,849	0.000	0.079	0.079
2020	349,020	0	2	0	0	0	5,306	5,306	0.000	0.015	0.015
2021	439,804	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>1,813,692</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>171</b>	<b>0</b>	<b>34,059</b>	<b>34,230</b>	<b>0.000</b>	<b>0.019</b>	<b>0.019</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.001	0.712	.
(14) Massachusetts Credibility:	0.110	0.160	.
(15) Countrywide Pure Premium:	0.083	0.036	0.119
(16) Countrywide Indicated Relativity:	1.592	1.597	.
(17) Countrywide Credibility:	0.380	0.400	.
(18) Countrywide Lost-Time Claims:	101.00	.	.
(19) Pure Premium Underlying Present Rate:	0.076	0.035	0.110
(20) Relativity to Underlying Present Rate:	1.386	1.399	.
(21) Credibility to Underlying Relativity:	0.510	0.440	.
(22) Industry Group Converted Pure Premium:	0.067	0.026	0.093
(23) Formula Relativity:	1.312	1.368	.
(24) Balanced Formula Relativity:	1.306	1.369	1.323

Class(es):		Effective: 7/1/2024							Office and Clerical		
8742 SALESPERSONS, COLLECTORS OR MESSENGERS-OUTSIDE											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	115,931,381	20	533	1,713,957	1,566,272	641,491	1,569,211	5,490,931	0.028	0.019	0.047
2018	121,925,441	32	521	3,354,543	4,082,014	614,614	2,195,163	10,246,334	0.061	0.023	0.084
2019	132,023,765	15	434	2,849,369	5,105,714	966,603	2,623,311	11,544,997	0.060	0.027	0.087
2020	124,352,310	18	276	2,263,643	3,012,516	870,362	2,058,176	8,204,698	0.042	0.024	0.066
2021	139,528,953	14	358	1,831,609	4,456,338	342,495	2,587,503	9,217,945	0.045	0.021	0.066
<b>MA Total:</b>	<b>633,761,850</b>	<b>99</b>	<b>2,122</b>	<b>12,013,122</b>	<b>18,222,854</b>	<b>3,435,565</b>	<b>11,033,364</b>	<b>44,704,905</b>	<b>0.048</b>	<b>0.023</b>	<b>0.071</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.714	0.866	.
(14) Massachusetts Credibility:	0.910	1.000	.
(15) Countrywide Pure Premium:	0.082	0.032	0.114
(16) Countrywide Indicated Relativity:	1.582	1.415	.
(17) Countrywide Credibility:	0.050	0.000	.
(18) Countrywide Lost-Time Claims:	13244	.	.
(19) Pure Premium Underlying Present Rate:	0.041	0.022	0.064
(20) Relativity to Underlying Present Rate:	0.758	0.901	.
(21) Credibility to Underlying Relativity:	0.040	0.000	.
(22) Industry Group Converted Pure Premium:	0.067	0.026	0.093
(23) Formula Relativity:	0.759	0.866	.
(24) Balanced Formula Relativity:	0.755	0.866	0.787

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services			
8745 NEWS AGENT OR DISTRIB OF MAGAZINE-NOT RETAIL & SALES,DR												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	81.736	0	12	0	447.335	0	95.066	542.401	5.473	1.163	6.636	
2018	61.447	1	14	225.895	97.667	38.204	161.010	522.776	5.266	3.242	8.508	
2019	91.007	0	7	0	386.456	0	98.361	484.817	4.246	1.081	5.327	
2020	49.791	0	2	0	2.156	0	4.984	7.141	0.043	0.100	0.143	
2021	47.871	0	4	0	0	0	2.566	2.566	0.000	0.054	0.054	
<b>MA Total:</b>	<b>331,852</b>	<b>1</b>	<b>39</b>	<b>225,895</b>	<b>933,614</b>	<b>38,204</b>	<b>361,988</b>	<b>1,559,701</b>	<b>3.494</b>	<b>1.206</b>	<b>4.700</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.396	3.915	.
(14) Massachusetts Credibility:	0.220	0.320	.
(15) Countrywide Pure Premium:	1.905	0.806	2.712
(16) Countrywide Indicated Relativity:	2.402	2.578	.
(17) Countrywide Credibility:	0.390	0.340	.
(18) Countrywide Lost-Time Claims:	246.00	.	.
(19) Pure Premium Underlying Present Rate:	2.177	1.057	3.235
(20) Relativity to Underlying Present Rate:	3.342	3.628	.
(21) Credibility to Underlying Relativity:	0.390	0.340	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	3.208	3.363	.
(24) Balanced Formula Relativity:	3.175	3.346	3.222

Class(es):		Effective: 7/1/2024							Goods and Services			
8747 DISPLAY SHOWROOMS - ALL TYPES												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	178.727	0	1	0	0	0	84	84	0.000	0.000	0.000	
2018	192.211	0	5	0	251.154	0	58.051	309.205	1.307	0.302	1.609	
2019	215.012	0	6	0	149.315	0	14.402	163.717	0.694	0.067	0.761	
2020	160.819	0	2	0	14.049	0	11.371	25.420	0.087	0.071	0.158	
2021	167.697	0	1	0	0	0	171	171	0.000	0.001	0.001	
<b>MA Total:</b>	<b>914,466</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>414,517</b>	<b>0</b>	<b>84,080</b>	<b>498,597</b>	<b>0.453</b>	<b>0.092</b>	<b>0.545</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.570	0.298	.
(14) Massachusetts Credibility:	0.160	0.190	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	0.545	0.360	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.359	0.106	0.465
(20) Relativity to Underlying Present Rate:	0.551	0.365	.
(21) Credibility to Underlying Relativity:	0.840	0.810	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.554	0.352	.
(24) Balanced Formula Relativity:	0.548	0.350	0.493

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## Calculation of Class Relativities

Class(es): 8748 AUTOMOBILE SALESPERSONS		Effective: 7/1/2024							Office and Clerical		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	3,209,251	6	89	365,609	850,744	40,035	390,755	1,647,142	0.379	0.134	0.513
2018	3,312,694	7	63	1,198,805	323,751	322,943	131,215	1,976,715	0.460	0.137	0.597
2019	3,047,789	1	36	465,934	752,840	91,153	274,803	1,584,730	0.400	0.120	0.520
2020	3,873,606	1	31	12,147	801,130	8,412	164,480	986,169	0.210	0.045	0.255
2021	4,143,131	2	31	25,372	434,296	20,899	99,960	580,527	0.111	0.029	0.140
<b>MA Total:</b>	<b>17,586,471</b>	<b>17</b>	<b>250</b>	<b>2,067,867</b>	<b>3,162,761</b>	<b>483,442</b>	<b>1,061,213</b>	<b>6,775,283</b>	<b>0.297</b>	<b>0.088</b>	<b>0.385</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.451	3.331	.
(14) Massachusetts Credibility:	0.440	0.590	.
(15) Countrywide Pure Premium:	0.152	0.059	0.210
(16) Countrywide Indicated Relativity:	2.924	2.590	.
(17) Countrywide Credibility:	0.280	0.210	.
(18) Countrywide Lost-Time Claims:	1727.0	.	.
(19) Pure Premium Underlying Present Rate:	0.247	0.093	0.340
(20) Relativity to Underlying Present Rate:	4.534	3.735	.
(21) Credibility to Underlying Relativity:	0.280	0.200	.
(22) Industry Group Converted Pure Premium:	0.067	0.026	0.093
(23) Formula Relativity:	4.047	3.256	.
(24) Balanced Formula Relativity:	4.027	3.257	3.809

Class(es): 8800 MAILING OR ADDRESSING CO & CLERICAL		Effective: 7/1/2024							Office and Clerical		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	344,130	0	14	0	311,507	0	68,799	380,306	0.905	0.200	1.105
2018	447,535	0	10	0	249,638	0	56,174	305,812	0.558	0.126	0.683
2019	278,181	0	6	0	133,634	0	51,131	184,766	0.480	0.184	0.664
2020	271,583	0	6	0	46,180	0	40,128	86,309	0.170	0.148	0.318
2021	315,674	1	14	40,887	416,314	6,437	71,144	534,781	1.448	0.246	1.694
<b>MA Total:</b>	<b>1,657,104</b>	<b>1</b>	<b>50</b>	<b>40,887</b>	<b>1,157,273</b>	<b>6,437</b>	<b>287,377</b>	<b>1,491,974</b>	<b>0.723</b>	<b>0.177</b>	<b>0.900</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	10.821	6.724	.
(14) Massachusetts Credibility:	0.210	0.300	.
(15) Countrywide Pure Premium:	0.437	0.198	0.635
(16) Countrywide Indicated Relativity:	8.426	8.746	.
(17) Countrywide Credibility:	0.400	0.350	.
(18) Countrywide Lost-Time Claims:	661.00	.	.
(19) Pure Premium Underlying Present Rate:	0.415	0.175	0.590
(20) Relativity to Underlying Present Rate:	7.613	7.038	.
(21) Credibility to Underlying Relativity:	0.390	0.350	.
(22) Industry Group Converted Pure Premium:	0.067	0.026	0.093
(23) Formula Relativity:	8.612	7.541	.
(24) Balanced Formula Relativity:	8.570	7.543	8.279

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Office and Clerical		
8803 AUDITORS, ACCOUNTANT OR FACTORY COST OR OFF SYSTEMZR-TRAV											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	31,504,986	2	34	390,117	20,315	68,343	119,804	598,579	0.013	0.006	0.019
2018	36,525,648	6	60	1,859,922	229,189	396,135	224,218	2,709,465	0.057	0.017	0.074
2019	39,219,828	3	32	931,709	888,049	133,766	209,286	2,162,810	0.046	0.009	0.055
2020	39,501,464	1	11	3,007	146,332	230	27,714	177,282	0.004	0.001	0.004
2021	38,641,360	0	25	0	633,361	0	281,851	915,212	0.016	0.007	0.024
<b>MA Total:</b>	<b>185,393,286</b>	<b>12</b>	<b>162</b>	<b>3,184,755</b>	<b>1,917,246</b>	<b>598,474</b>	<b>862,872</b>	<b>6,563,347</b>	<b>0.028</b>	<b>0.008</b>	<b>0.035</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.412	0.299	.
(14) Massachusetts Credibility:	0.400	0.560	.
(15) Countrywide Pure Premium:	0.013	0.006	0.019
(16) Countrywide Indicated Relativity:	0.253	0.264	.
(17) Countrywide Credibility:	0.300	0.220	.
(18) Countrywide Lost-Time Claims:	633.00	.	.
(19) Pure Premium Underlying Present Rate:	0.019	0.008	0.026
(20) Relativity to Underlying Present Rate:	0.342	0.309	.
(21) Credibility to Underlying Relativity:	0.300	0.220	.
(22) Industry Group Converted Pure Premium:	0.067	0.026	0.093
(23) Formula Relativity:	0.343	0.293	.
(24) Balanced Formula Relativity:	0.341	0.294	0.328

Class(es):		Effective: 7/1/2024							Office and Clerical		
8810 CLERICAL OFFICE EMPLOYEES NOC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	581,562,940	74	1,826	7,645,622	11,655,534	1,657,680	6,485,752	27,444,568	0.033	0.014	0.047
2018	605,523,572	80	1,679	7,162,182	8,070,643	2,055,502	5,380,348	22,668,675	0.025	0.012	0.037
2019	655,468,786	63	1,471	7,558,863	9,756,566	1,772,476	5,845,102	24,933,007	0.026	0.012	0.038
2020	698,587,871	60	1,041	6,191,036	10,608,780	2,144,253	5,386,198	24,330,267	0.024	0.011	0.035
2021	737,972,715	45	1,109	5,172,454	11,693,579	2,113,958	6,517,128	25,497,119	0.023	0.012	0.035
<b>MA Total:</b>	<b>3,279,115,883</b>	<b>322</b>	<b>7,126</b>	<b>33,730,158</b>	<b>51,785,101</b>	<b>9,743,849</b>	<b>29,614,528</b>	<b>124,873,637</b>	<b>0.026</b>	<b>0.012</b>	<b>0.038</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.390	0.455	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	0.035	0.016	0.051
(16) Countrywide Indicated Relativity:	0.684	0.704	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	34602	.	.
(19) Pure Premium Underlying Present Rate:	0.023	0.011	0.034
(20) Relativity to Underlying Present Rate:	0.414	0.453	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.067	0.026	0.093
(23) Formula Relativity:	0.390	0.455	.
(24) Balanced Formula Relativity:	0.388	0.455	0.407

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Office and Clerical			
8820 ATTORNEY-ALL EMP & CLERICAL, MESSENGERS, DR												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	27,645,958	5	55	23,456	456,611	27,142	144,213	651,422	0.017	0.006	0.024	
2018	29,138,061	2	39	63,599	97,376	30,195	112,793	303,963	0.006	0.005	0.010	
2019	31,164,065	3	38	692,201	386,450	202,961	573,850	1,855,462	0.035	0.025	0.060	
2020	32,226,120	2	24	135,844	514,663	30,832	199,619	880,959	0.020	0.007	0.027	
2021	35,429,022	2	28	403,933	117,658	71,104	120,732	713,426	0.015	0.005	0.020	
<b>MA Total:</b>	<b>155,603,225</b>	<b>14</b>	<b>184</b>	<b>1,319,032</b>	<b>1,572,758</b>	<b>362,233</b>	<b>1,151,207</b>	<b>4,405,231</b>	<b>0.019</b>	<b>0.010</b>	<b>0.028</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.278	0.369	. .
(14) Massachusetts Credibility:	0.420	0.610	. .
(15) Countrywide Pure Premium:	0.030	0.013	0.043
(16) Countrywide Indicated Relativity:	0.583	0.560	. .
(17) Countrywide Credibility:	0.290	0.200	. .
(18) Countrywide Lost-Time Claims:	1136.0	. .	. .
(19) Pure Premium Underlying Present Rate:	0.024	0.011	0.035
(20) Relativity to Underlying Present Rate:	0.440	0.444	. .
(21) Credibility to Underlying Relativity:	0.290	0.190	. .
(22) Industry Group Converted Pure Premium:	0.067	0.026	0.093
(23) Formula Relativity:	0.413	0.421	. .
(24) Balanced Formula Relativity:	0.411	0.422	0.414

Class(es):		Effective: 7/1/2024							Goods and Services			
8824 ASSISTED LIVING RESIDENCES: PERSONAL CARE EMPLOYEES												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	1,313,347	6	280	450,936	699,804	228,353	436,323	1,815,416	0.876	0.506	1.382	
2018	1,434,509	7	282	566,573	1,187,139	116,363	426,735	2,296,810	1.223	0.379	1.601	
2019	2,197,996	11	331	796,883	935,788	255,511	596,237	2,584,419	0.788	0.388	1.176	
2020	2,328,965	7	249	554,623	2,515,691	78,587	737,270	3,886,171	1.318	0.350	1.669	
2021	1,759,283	9	186	1,124,918	2,741,910	299,772	696,133	4,862,733	2.198	0.566	2.764	
<b>MA Total:</b>	<b>9,034,100</b>	<b>40</b>	<b>1,328</b>	<b>3,493,933</b>	<b>8,080,332</b>	<b>978,586</b>	<b>2,892,698</b>	<b>15,445,549</b>	<b>1.281</b>	<b>0.429</b>	<b>1.710</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.612	1.391	. .
(14) Massachusetts Credibility:	0.580	0.810	. .
(15) Countrywide Pure Premium:	1.149	0.459	1.608
(16) Countrywide Indicated Relativity:	1.449	1.469	. .
(17) Countrywide Credibility:	0.210	0.100	. .
(18) Countrywide Lost-Time Claims:	12381	. .	. .
(19) Pure Premium Underlying Present Rate:	0.936	0.387	1.323
(20) Relativity to Underlying Present Rate:	1.437	1.327	. .
(21) Credibility to Underlying Relativity:	0.210	0.090	. .
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.541	1.393	. .
(24) Balanced Formula Relativity:	1.525	1.386	1.486

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services			
8826 ASSISTED LIVING RESIDENCES: ALL OTHER EMPLOYEES, SALESPERSONS &												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	1,092,034	4	167	61,234	161,045	14,529	139,394	376,202	0.204	0.141	0.344	
2018	1,190,679	2	195	216,586	703,193	43,678	374,066	1,337,522	0.772	0.351	1.123	
2019	1,253,531	3	182	499,602	1,259,247	115,526	417,919	2,292,293	1.403	0.426	1.829	
2020	1,333,323	5	141	603,200	513,754	123,503	302,581	1,543,037	0.838	0.320	1.157	
2021	2,509,624	8	214	1,090,351	2,366,966	275,631	657,469	4,390,417	1.378	0.372	1.749	
<b>MA Total:</b>	<b>7,379,191</b>	<b>22</b>	<b>899</b>	<b>2,470,973</b>	<b>5,004,205</b>	<b>572,866</b>	<b>1,891,428</b>	<b>9,939,472</b>	<b>1.013</b>	<b>0.334</b>	<b>1.347</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.275	1.084	.
(14) Massachusetts Credibility:	0.460	0.680	.
(15) Countrywide Pure Premium:	0.748	0.373	1.121
(16) Countrywide Indicated Relativity:	0.943	1.193	.
(17) Countrywide Credibility:	0.270	0.160	.
(18) Countrywide Lost-Time Claims:	5086.0	.	.
(19) Pure Premium Underlying Present Rate:	0.659	0.312	0.972
(20) Relativity to Underlying Present Rate:	1.012	1.072	.
(21) Credibility to Underlying Relativity:	0.270	0.160	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.114	1.100	.
(24) Balanced Formula Relativity:	1.103	1.094	1.100

Class(es):		Effective: 7/1/2024							Goods and Services			
8829 CONVALESCENT OR NURSING HOME-ALL EMPLOYEES												
		Converted Unlimited Losses										
		Amount										
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums				
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	10,406,799	36	1,523	5,235,382	7,310,471	1,597,557	3,271,735	17,415,145	1.206	0.468	1.673	
2018	9,884,033	44	1,467	5,927,707	9,364,792	1,060,155	3,225,083	19,577,737	1.547	0.434	1.981	
2019	9,875,696	46	1,181	4,652,241	9,690,090	866,953	3,154,151	18,363,435	1.452	0.407	1.859	
2020	8,531,656	37	807	5,616,171	8,834,193	1,010,098	2,759,269	18,219,731	1.694	0.442	2.136	
2021	10,293,489	26	781	5,631,545	11,037,657	1,088,406	3,124,216	20,881,824	1.619	0.409	2.029	
<b>MA Total:</b>	<b>48,991,673</b>	<b>189</b>	<b>5,759</b>	<b>27,063,046</b>	<b>46,237,202</b>	<b>5,623,169</b>	<b>15,534,454</b>	<b>94,457,872</b>	<b>1.496</b>	<b>0.432</b>	<b>1.928</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.882	1.402	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	0.896	0.348	1.244
(16) Countrywide Indicated Relativity:	1.130	1.113	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	16463	.	.
(19) Pure Premium Underlying Present Rate:	1.211	0.411	1.622
(20) Relativity to Underlying Present Rate:	1.858	1.412	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.882	1.402	.
(24) Balanced Formula Relativity:	1.863	1.395	1.732

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## Calculation of Class Relativities

Class(es): 8831 PET GROOMING & DRIVERS		Effective: 7/1/2024							Goods and Services		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	3,717,012	9	712	198,062	831,461	99,619	923,613	2,052,756	0.277	0.275	0.552
2018	3,946,235	9	718	700,509	1,371,501	259,135	1,016,776	3,347,921	0.525	0.323	0.848
2019	4,156,902	5	613	349,052	673,850	142,402	981,097	2,146,401	0.246	0.270	0.516
2020	4,286,051	4	630	323,334	570,834	56,424	1,390,101	2,340,693	0.209	0.337	0.546
2021	5,154,057	4	774	192,933	1,218,675	81,399	1,689,357	3,182,365	0.274	0.344	0.617
<b>MA Total:</b>	<b>21,260,257</b>	<b>31</b>	<b>3,447</b>	<b>1,763,890</b>	<b>4,666,321</b>	<b>638,980</b>	<b>6,000,945</b>	<b>13,070,136</b>	<b>0.302</b>	<b>0.312</b>	<b>0.615</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.381	1.014	.
(14) Massachusetts Credibility:	0.500	1.000	.
(15) Countrywide Pure Premium:	0.347	0.269	0.616
(16) Countrywide Indicated Relativity:	0.437	0.861	.
(17) Countrywide Credibility:	0.250	0.000	.
(18) Countrywide Lost-Time Claims:	5274.0	.	.
(19) Pure Premium Underlying Present Rate:	0.276	0.318	0.595
(20) Relativity to Underlying Present Rate:	0.424	1.092	.
(21) Credibility to Underlying Relativity:	0.250	0.000	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.406	1.014	.
(24) Balanced Formula Relativity:	0.401	1.009	0.571

Class(es): 8832 PHYSICIAN & CLERICAL		Effective: 7/1/2024							Office and Clerical		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	58,142,612	33	1,329	4,971,136	3,930,930	846,658	2,030,366	11,779,090	0.153	0.049	0.203
2018	60,799,633	30	1,235	3,753,807	4,635,040	693,057	2,281,702	11,363,607	0.138	0.049	0.187
2019	61,536,426	35	1,191	4,015,999	5,569,740	890,029	2,406,010	12,881,779	0.156	0.054	0.209
2020	65,029,757	30	980	5,051,259	4,435,287	890,394	1,995,639	12,372,579	0.146	0.044	0.190
2021	68,953,465	24	949	3,337,467	7,648,785	803,021	3,246,204	15,035,476	0.159	0.059	0.218
<b>MA Total:</b>	<b>314,461,893</b>	<b>152</b>	<b>5,684</b>	<b>21,129,668</b>	<b>26,219,782</b>	<b>4,123,159</b>	<b>11,959,921</b>	<b>63,432,530</b>	<b>0.151</b>	<b>0.051</b>	<b>0.202</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.254	1.940	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	0.090	0.035	0.124
(16) Countrywide Indicated Relativity:	1.727	1.536	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	14028	.	.
(19) Pure Premium Underlying Present Rate:	0.120	0.048	0.167
(20) Relativity to Underlying Present Rate:	2.194	1.921	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.067	0.026	0.093
(23) Formula Relativity:	2.254	1.940	.
(24) Balanced Formula Relativity:	2.243	1.940	2.157

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Office and Clerical		
8833 HOSPITAL: PROFESSIONAL EMPLOYEES											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	10,814,357	20	864	1,866,142	2,918,287	336,507	1,145,826	6,266,762	0.442	0.137	0.579
2018	11,425,650	21	948	2,104,453	4,461,676	376,832	1,888,158	8,831,119	0.575	0.198	0.773
2019	11,497,704	25	834	3,468,681	6,052,848	741,061	2,038,593	12,301,182	0.828	0.242	1.070
2020	11,432,620	20	608	1,886,022	3,228,972	387,143	1,420,846	6,922,985	0.447	0.158	0.606
2021	13,795,493	29	716	5,197,907	5,846,942	836,160	1,825,469	13,706,478	0.801	0.193	0.994
<b>MA Total:</b>	<b>58,965,823</b>	<b>115</b>	<b>3,970</b>	<b>14,523,205</b>	<b>22,508,725</b>	<b>2,677,703</b>	<b>8,318,892</b>	<b>48,028,525</b>	<b>0.628</b>	<b>0.186</b>	<b>0.815</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	9.399	7.072	.
(14) Massachusetts Credibility:	0.980	1.000	.
(15) Countrywide Pure Premium:	0.280	0.112	0.391
(16) Countrywide Indicated Relativity:	5.389	4.934	.
(17) Countrywide Credibility:	0.010	0.000	.
(18) Countrywide Lost-Time Claims:	18607	.	.
(19) Pure Premium Underlying Present Rate:	0.533	0.181	0.714
(20) Relativity to Underlying Present Rate:	9.775	7.280	.
(21) Credibility to Underlying Relativity:	0.010	0.000	.
(22) Industry Group Converted Pure Premium:	0.067	0.026	0.093
(23) Formula Relativity:	9.363	7.072	.
(24) Balanced Formula Relativity:	9.317	7.074	8.682

Class(es):		Effective: 7/1/2024							Goods and Services		
8835 NURSING-HOME HEALTH, PUBLIC & TRAVELING-ALL EMPLOYEES											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	10,401,818	50	845	3,927,779	5,522,840	742,732	1,816,569	12,009,920	0.909	0.246	1.155
2018	10,681,478	54	799	4,200,778	5,181,636	1,044,107	1,978,265	12,404,786	0.878	0.283	1.161
2019	10,998,674	42	741	4,207,568	6,443,371	910,865	2,073,662	13,635,466	0.968	0.271	1.240
2020	11,334,832	43	655	4,720,352	5,420,876	954,964	2,199,917	13,296,109	0.895	0.278	1.173
2021	12,427,779	44	625	7,093,619	8,755,241	2,053,036	2,940,184	20,842,080	1.275	0.402	1.677
<b>MA Total:</b>	<b>55,844,580</b>	<b>233</b>	<b>3,665</b>	<b>24,150,096</b>	<b>31,323,963</b>	<b>5,705,705</b>	<b>11,008,596</b>	<b>72,188,361</b>	<b>0.993</b>	<b>0.299</b>	<b>1.293</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.250	0.972	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	0.945	0.315	1.260
(16) Countrywide Indicated Relativity:	1.192	1.007	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	17988	.	.
(19) Pure Premium Underlying Present Rate:	0.775	0.268	1.043
(20) Relativity to Underlying Present Rate:	1.190	0.920	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.250	0.972	.
(24) Balanced Formula Relativity:	1.237	0.967	1.161

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Office and Clerical		
8868 COLLEGE: PROFESSIONAL EMPLOYEES & CLERICAL											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	44,900.041	87	3,542	7,276,592	11,012,052	1,768,648	5,938,334	25,995,627	0.407	0.172	0.579
2018	46,122,651	100	4,026	7,499,041	11,036,053	1,804,683	6,344,023	26,683,798	0.402	0.177	0.579
2019	46,882,775	66	3,090	6,769,887	9,309,159	2,084,022	5,100,187	23,263,256	0.343	0.153	0.496
2020	46,884,805	66	2,114	7,322,596	12,454,714	1,467,753	5,260,305	26,505,367	0.422	0.144	0.565
2021	51,328,294	71	2,539	8,282,959	20,880,511	1,841,888	7,960,874	38,966,232	0.568	0.191	0.759
<b>MA Total:</b>	<b>236,118,565</b>	<b>390</b>	<b>15,311</b>	<b>37,151,076</b>	<b>64,692,488</b>	<b>8,966,994</b>	<b>30,603,722</b>	<b>141,414,280</b>	<b>0.431</b>	<b>0.168</b>	<b>0.599</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	6.455	6.355	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	0.092	0.055	0.147
(16) Countrywide Indicated Relativity:	1.765	2.448	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	17458	.	.
(19) Pure Premium Underlying Present Rate:	0.322	0.152	0.474
(20) Relativity to Underlying Present Rate:	5.903	6.134	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.067	0.026	0.093
(23) Formula Relativity:	6.455	6.355	.
(24) Balanced Formula Relativity:	6.424	6.357	6.405

Class(es):		Effective: 7/1/2024							Goods and Services		
9014 BUILDINGS - OPERATION BY CONTRACTORS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	7,251,497	40	575	3,910,877	5,678,971	1,302,191	2,875,332	13,767,371	1.322	0.576	1.899
2018	7,632,869	32	566	2,625,331	5,002,440	799,303	2,176,937	10,604,010	0.999	0.390	1.389
2019	7,774,478	22	443	2,999,491	4,682,593	1,011,903	1,964,075	10,658,063	0.988	0.383	1.371
2020	7,970,767	30	354	3,299,186	6,002,881	816,789	2,517,774	12,636,629	1.167	0.418	1.585
2021	8,844,908	28	454	3,183,306	8,623,058	858,583	3,316,315	15,981,262	1.335	0.472	1.807
<b>MA Total:</b>	<b>39,474,520</b>	<b>152</b>	<b>2,392</b>	<b>16,018,191</b>	<b>29,989,943</b>	<b>4,788,769</b>	<b>12,850,433</b>	<b>63,647,336</b>	<b>1.166</b>	<b>0.447</b>	<b>1.612</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.466	1.451	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	1.267	0.485	1.751
(16) Countrywide Indicated Relativity:	1.597	1.549	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	17713	.	.
(19) Pure Premium Underlying Present Rate:	0.867	0.402	1.269
(20) Relativity to Underlying Present Rate:	1.331	1.378	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.466	1.451	.
(24) Balanced Formula Relativity:	1.451	1.443	1.449

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
9015 BUILDINGS-OPERATION BY OWNER OR LESSEE											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	6,570,350	37	724	4,749,245	6,243,536	1,361,206	2,475,477	14,829,463	1,673	0,584	2,257
2018	6,621,732	32	721	4,139,220	6,105,030	1,089,998	2,378,588	13,712,836	1,547	0,524	2,071
2019	6,895,624	28	676	3,850,997	6,305,247	896,818	2,987,617	14,040,679	1,473	0,563	2,036
2020	6,860,440	29	437	5,259,239	6,868,825	1,100,013	2,680,389	15,908,466	1,768	0,551	2,319
2021	7,410,330	22	601	1,810,554	5,913,007	696,304	3,204,821	11,624,686	1,042	0,526	1,569
<b>MA Total:</b>	<b>34,358,477</b>	<b>148</b>	<b>3,159</b>	<b>19,809,255</b>	<b>31,435,645</b>	<b>5,144,338</b>	<b>13,726,892</b>	<b>70,116,130</b>	<b>1,491</b>	<b>0,549</b>	<b>2,041</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.877	1.783	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	1.369	0.512	1.881
(16) Countrywide Indicated Relativity:	1.726	1.637	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	14414	.	.
(19) Pure Premium Underlying Present Rate:	1.285	0.524	1.809
(20) Relativity to Underlying Present Rate:	1.973	1.798	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.877	1.783	.
(24) Balanced Formula Relativity:	1.857	1.774	1.834

Class(es):		Effective: 7/1/2024							Goods and Services		
9016 AMUSEMENT PARK OR EXHIBITION OPERATION & DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	769,621	1	94	63,200	233,172	6,522	192,377	495,271	0,385	0,258	0,644
2018	795,567	2	89	54,782	312,093	61,545	352,825	781,245	0,461	0,521	0,982
2019	712,400	2	77	196,391	455,412	30,157	219,015	900,975	0,915	0,350	1,265
2020	600,335	0	36	0	38,720	0	97,338	136,058	0,064	0,162	0,227
2021	1,010,852	2	71	209,244	1,004,160	94,482	972,133	2,280,020	1,200	1,055	2,256
<b>MA Total:</b>	<b>3,888,774</b>	<b>7</b>	<b>367</b>	<b>523,616</b>	<b>2,043,558</b>	<b>192,706</b>	<b>1,833,689</b>	<b>4,593,568</b>	<b>0,660</b>	<b>0,521</b>	<b>1,181</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.831	1.692	.
(14) Massachusetts Credibility:	0.330	0.560	.
(15) Countrywide Pure Premium:	0.846	0.456	1.302
(16) Countrywide Indicated Relativity:	1.066	1.457	.
(17) Countrywide Credibility:	0.340	0.220	.
(18) Countrywide Lost-Time Claims:	1733.0	.	.
(19) Pure Premium Underlying Present Rate:	0.546	0.362	0.909
(20) Relativity to Underlying Present Rate:	0.839	1.243	.
(21) Credibility to Underlying Relativity:	0.330	0.220	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.913	1.541	.
(24) Balanced Formula Relativity:	0.904	1.534	1.080

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 Exhibit 174

## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Miscellaneous		
9019 BRIDGE OR VEHICULAR TUNNEL OPERATION & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	31,783	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	31,703	0	1	0	21,677	0	4,418	26,096	0.684	0.139	0.823
2019	29,646	0	1	0	2,894	0	2,199	5,093	0.098	0.074	0.172
2020	24,116	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	28,425	1	0	207,098	0	80,784	0	287,882	7.286	2.842	10.128
<b>MA Total:</b>	<b>145,672</b>	<b>1</b>	<b>2</b>	<b>207,098</b>	<b>24,571</b>	<b>80,784</b>	<b>6,617</b>	<b>319,071</b>	<b>1.590</b>	<b>0.600</b>	<b>2.190</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.578	0.605	.
(14) Massachusetts Credibility:	0.130	0.180	.
(15) Countrywide Pure Premium:	1.815	0.859	2.674
(16) Countrywide Indicated Relativity:	0.685	0.910	.
(17) Countrywide Credibility:	0.270	0.280	.
(18) Countrywide Lost-Time Claims:	43.000	.	.
(19) Pure Premium Underlying Present Rate:	1.263	0.584	1.848
(20) Relativity to Underlying Present Rate:	0.559	0.620	.
(21) Credibility to Underlying Relativity:	0.600	0.540	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.595	0.698	.
(24) Balanced Formula Relativity:	0.591	0.700	0.620

Class(es):		Effective: 7/1/2024							Goods and Services		
9033 HOUSING AUTHORITY & CLERICAL, SALES, DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	225,817	2	18	351,513	241,342	54,714	100,040	747,609	2.625	0.685	3.311
2018	229,189	1	29	15,282	213,474	1,873	90,671	321,300	0.998	0.404	1.402
2019	247,136	0	15	0	67,630	0	33,927	101,557	0.274	0.137	0.411
2020	256,934	4	21	919,316	513,165	263,982	145,845	1,842,309	5.575	1.595	7.170
2021	275,678	1	27	33,708	304,251	11,529	94,527	444,015	1.226	0.385	1.611
<b>MA Total:</b>	<b>1,234,754</b>	<b>8</b>	<b>110</b>	<b>1,319,820</b>	<b>1,339,862</b>	<b>332,098</b>	<b>465,010</b>	<b>3,456,790</b>	<b>2.154</b>	<b>0.646</b>	<b>2.800</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.710	2.096	.
(14) Massachusetts Credibility:	0.280	0.380	.
(15) Countrywide Pure Premium:	1.031	0.367	1.398
(16) Countrywide Indicated Relativity:	1.300	1.173	.
(17) Countrywide Credibility:	0.360	0.310	.
(18) Countrywide Lost-Time Claims:	733.00	.	.
(19) Pure Premium Underlying Present Rate:	1.162	0.444	1.606
(20) Relativity to Underlying Present Rate:	1.784	1.524	.
(21) Credibility to Underlying Relativity:	0.360	0.310	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.869	1.632	.
(24) Balanced Formula Relativity:	1.850	1.624	1.787

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
9040 HOSPITAL: ALL OTHER EMPLOYEES											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	788,233	5	148	405,587	605,323	213,378	262,254	1,486,541	1,282	0,603	1,886
2018	843,714	7	166	733,724	1,330,006	104,639	405,312	2,573,680	2,446	0,604	3,050
2019	945,452	3	143	529,607	754,328	106,071	397,077	1,787,083	1,358	0,532	1,890
2020	904,950	3	147	138,833	930,527	13,094	398,769	1,481,223	1,182	0,455	1,637
2021	884,757	4	91	204,424	1,244,595	119,207	284,091	1,852,317	1,638	0,456	2,094
<b>MA Total:</b>	<b>4,367,107</b>	<b>22</b>	<b>695</b>	<b>2,012,174</b>	<b>4,864,778</b>	<b>556,389</b>	<b>1,747,504</b>	<b>9,180,845</b>	<b>1,575</b>	<b>0,528</b>	<b>2,102</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.981	1.713	.
(14) Massachusetts Credibility:	0.490	0.690	.
(15) Countrywide Pure Premium:	1.386	0.586	1.973
(16) Countrywide Indicated Relativity:	1.748	1.874	.
(17) Countrywide Credibility:	0.260	0.160	.
(18) Countrywide Lost-Time Claims:	5749.0	.	.
(19) Pure Premium Underlying Present Rate:	1.267	0.537	1.803
(20) Relativity to Underlying Present Rate:	1.945	1.842	.
(21) Credibility to Underlying Relativity:	0.250	0.150	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.912	1.758	.
(24) Balanced Formula Relativity:	1.892	1.749	1.852

Class(es):		Effective: 7/1/2024							Goods and Services		
9044 CASINO GAMBLING HOTEL-ALL EMPLOYEES & CLERICAL, SALESPERSONS, D											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	44,760	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	42,908	0	2	0	170,243	0	93,449	263,692	3,968	2,178	6,146
2019	127	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	0	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>87,795</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>170,243</b>	<b>0</b>	<b>93,449</b>	<b>263,692</b>	<b>1,939</b>	<b>1,064</b>	<b>3,003</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.440	3.455	.
(14) Massachusetts Credibility:	0.080	0.110	.
(15) Countrywide Pure Premium:	0.575	0.244	0.819
(16) Countrywide Indicated Relativity:	0.725	0.779	.
(17) Countrywide Credibility:	0.460	0.450	.
(18) Countrywide Lost-Time Claims:	794.00	.	.
(19) Pure Premium Underlying Present Rate:	0.598	0.260	0.859
(20) Relativity to Underlying Present Rate:	0.918	0.894	.
(21) Credibility to Underlying Relativity:	0.460	0.440	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.951	1.124	.
(24) Balanced Formula Relativity:	0.941	1.118	0.991

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
9052 HOTEL: ALL OTHER EMPLOYEES & SALES, DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	7,343,544	26	638	1,699,038	3,934,515	368,802	1,717,411	7,719,766	0.767	0.284	1.051
2018	7,448,188	30	686	3,041,667	3,523,983	579,216	1,776,988	8,921,853	0.882	0.316	1.198
2019	6,360,785	25	497	3,593,025	3,695,829	923,246	1,566,593	9,778,693	1.146	0.391	1.537
2020	4,140,724	7	241	545,498	1,841,575	153,970	858,832	3,399,876	0.576	0.245	0.821
2021	5,489,233	8	291	730,393	4,417,673	149,005	1,578,093	6,875,164	0.938	0.315	1.252
<b>MA Total:</b>	<b>30,782,475</b>	<b>96</b>	<b>2,353</b>	<b>9,609,621</b>	<b>17,413,574</b>	<b>2,174,240</b>	<b>7,497,916</b>	<b>36,695,351</b>	<b>0.878</b>	<b>0.314</b>	<b>1.192</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.105	1.020	.
(14) Massachusetts Credibility:	0.820	1.000	.
(15) Countrywide Pure Premium:	0.857	0.348	1.206
(16) Countrywide Indicated Relativity:	1.081	1.114	.
(17) Countrywide Credibility:	0.090	0.000	.
(18) Countrywide Lost-Time Claims:	16065	.	.
(19) Pure Premium Underlying Present Rate:	0.665	0.289	0.954
(20) Relativity to Underlying Present Rate:	1.020	0.993	.
(21) Credibility to Underlying Relativity:	0.090	0.000	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.095	1.020	.
(24) Balanced Formula Relativity:	1.084	1.015	1.064

Class(es):		Effective: 7/1/2024							Goods and Services		
9058 HOTEL: RESTAURANT EMPLOYEES											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	2,289,020	14	349	1,111,797	1,935,191	173,847	777,732	3,998,567	1.331	0.416	1.747
2018	1,973,222	7	272	927,411	1,640,414	257,806	508,528	3,334,159	1.301	0.388	1.690
2019	1,830,306	7	195	918,134	447,885	240,284	248,392	1,854,696	0.746	0.267	1.013
2020	909,273	1	63	171,249	310,208	78,657	260,860	820,974	0.529	0.373	0.903
2021	1,655,574	2	121	419,431	958,959	48,627	294,510	1,721,527	0.833	0.207	1.040
<b>MA Total:</b>	<b>8,657,394</b>	<b>31</b>	<b>1,000</b>	<b>3,548,021</b>	<b>5,292,659</b>	<b>799,221</b>	<b>2,090,021</b>	<b>11,729,922</b>	<b>1.021</b>	<b>0.334</b>	<b>1.355</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.285	1.083	.
(14) Massachusetts Credibility:	0.490	0.710	.
(15) Countrywide Pure Premium:	0.559	0.240	0.799
(16) Countrywide Indicated Relativity:	0.705	0.766	.
(17) Countrywide Credibility:	0.260	0.150	.
(18) Countrywide Lost-Time Claims:	5497.0	.	.
(19) Pure Premium Underlying Present Rate:	0.645	0.296	0.941
(20) Relativity to Underlying Present Rate:	0.990	1.014	.
(21) Credibility to Underlying Relativity:	0.250	0.140	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.060	1.026	.
(24) Balanced Formula Relativity:	1.050	1.021	1.042

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
9060 CLUB-COUNTRY, GOLF, FISHING OR YACHT & CLERICAL											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	3,622,771	4	295	201,118	1,599,618	152,661	870,384	2,823,781	0.497	0.282	0.779
2018	3,641,520	7	267	319,974	1,004,562	154,329	606,776	2,085,641	0.364	0.209	0.573
2019	3,579,055	7	241	1,190,797	1,132,894	271,845	720,503	3,316,038	0.649	0.277	0.927
2020	3,582,839	6	165	842,229	460,252	122,582	426,322	1,851,385	0.364	0.153	0.517
2021	4,215,673	5	211	452,379	692,469	169,448	526,121	1,840,417	0.272	0.165	0.437
<b>MA Total:</b>	<b>18,641,858</b>	<b>29</b>	<b>1,179</b>	<b>3,006,496</b>	<b>4,889,796</b>	<b>870,865</b>	<b>3,150,106</b>	<b>11,917,262</b>	<b>0.424</b>	<b>0.216</b>	<b>0.639</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.533	0.700	.
(14) Massachusetts Credibility:	0.540	0.880	.
(15) Countrywide Pure Premium:	0.583	0.286	0.869
(16) Countrywide Indicated Relativity:	0.736	0.913	.
(17) Countrywide Credibility:	0.230	0.060	.
(18) Countrywide Lost-Time Claims:	4564.0	.	.
(19) Pure Premium Underlying Present Rate:	0.389	0.233	0.622
(20) Relativity to Underlying Present Rate:	0.597	0.800	.
(21) Credibility to Underlying Relativity:	0.230	0.060	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.594	0.719	.
(24) Balanced Formula Relativity:	0.588	0.715	0.624

Class(es):		Effective: 7/1/2024							Goods and Services		
9061 CLUB NOC & CLERICAL											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	720,655	1	29	142	16,502	36	47,333	64,012	0.023	0.066	0.089
2018	724,486	3	23	506,878	293,181	125,723	103,175	1,028,956	1.104	0.316	1.420
2019	647,784	1	14	96,695	249,343	14,376	46,989	407,403	0.534	0.095	0.629
2020	473,945	0	6	0	26,203	0	21,052	47,255	0.055	0.044	0.100
2021	692,347	1	30	64,251	316,108	13,448	105,841	499,648	0.549	0.172	0.722
<b>MA Total:</b>	<b>3,259,218</b>	<b>6</b>	<b>102</b>	<b>667,966</b>	<b>901,336</b>	<b>153,583</b>	<b>324,389</b>	<b>2,047,274</b>	<b>0.481</b>	<b>0.147</b>	<b>0.628</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.606	0.476	.
(14) Massachusetts Credibility:	0.280	0.390	.
(15) Countrywide Pure Premium:	0.525	0.217	0.741
(16) Countrywide Indicated Relativity:	0.662	0.693	.
(17) Countrywide Credibility:	0.360	0.310	.
(18) Countrywide Lost-Time Claims:	488.00	.	.
(19) Pure Premium Underlying Present Rate:	0.412	0.173	0.584
(20) Relativity to Underlying Present Rate:	0.632	0.593	.
(21) Credibility to Underlying Relativity:	0.360	0.300	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.635	0.578	.
(24) Balanced Formula Relativity:	0.629	0.575	0.614

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services			
9062 CASINO GAMBLING-ALL EMPLOYEES & CLERICAL, SALESPERSONS, DRIVERS												
Converted Unlimited Losses												
Amount												
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	300	0	0	0	0	0	0	0	0.000	0.000	0.000	
2018	3,784	0	0	0	0	0	0	0	0.000	0.000	0.000	
2019	2,353	0	0	0	0	0	0	0	0.000	0.000	0.000	
2020	671	0	0	0	0	0	0	0	0.000	0.000	0.000	
2021	996,860	0	0	0	0	0	0	0	0.000	0.000	0.000	
<b>MA Total:</b>	<b>1,003,967</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.170	0.240	.
(15) Countrywide Pure Premium:	0.553	0.244	0.798
(16) Countrywide Indicated Relativity:	0.698	0.780	.
(17) Countrywide Credibility:	0.420	0.380	.
(18) Countrywide Lost-Time Claims:	310.00	.	.
(19) Pure Premium Underlying Present Rate:	0.412	0.173	0.584
(20) Relativity to Underlying Present Rate:	0.632	0.593	.
(21) Credibility to Underlying Relativity:	0.410	0.380	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.552	0.522	.
(24) Balanced Formula Relativity:	0.546	0.519	0.539

Class(es):		Effective: 7/1/2024							Goods and Services			
9063 YMCA, YWCA, YMHA OR YWHA, INSTITUTION-ALL EMPLOYEES & CLERICAL												
Converted Unlimited Losses												
Amount												
		Claim Count		Indemnity		Medical			MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)	
2017	6,953,931	7	362	432,653	1,115,031	212,043	924,821	2,684,549	0.223	0.163	0.386	
2018	7,420,910	8	355	497,350	1,875,051	104,441	1,045,001	3,521,842	0.320	0.155	0.475	
2019	7,031,871	4	271	382,336	1,125,943	72,179	898,681	2,479,138	0.214	0.138	0.353	
2020	6,082,114	2	162	102,998	1,010,424	33,963	676,536	1,823,920	0.183	0.117	0.300	
2021	7,330,010	6	261	691,840	1,018,687	216,307	878,391	2,805,226	0.233	0.149	0.383	
<b>MA Total:</b>	<b>34,818,837</b>	<b>27</b>	<b>1,411</b>	<b>2,107,178</b>	<b>6,145,135</b>	<b>638,933</b>	<b>4,423,429</b>	<b>13,314,676</b>	<b>0.237</b>	<b>0.145</b>	<b>0.382</b>	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.298	0.472	.
(14) Massachusetts Credibility:	0.550	0.940	.
(15) Countrywide Pure Premium:	0.299	0.171	0.469
(16) Countrywide Indicated Relativity:	0.376	0.545	.
(17) Countrywide Credibility:	0.230	0.030	.
(18) Countrywide Lost-Time Claims:	3388.0	.	.
(19) Pure Premium Underlying Present Rate:	0.216	0.149	0.365
(20) Relativity to Underlying Present Rate:	0.331	0.513	.
(21) Credibility to Underlying Relativity:	0.220	0.030	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.323	0.475	.
(24) Balanced Formula Relativity:	0.320	0.473	0.363

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## Calculation of Class Relativities

Class(es): 9079 RESTAURANT NOC		Effective: 7/1/2024							Goods and Services		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	31,188,659	65	2,837	3,483,579	10,611,183	1,075,397	5,518,823	20,688,982	0.452	0.211	0.663
2018	33,666,411	60	2,745	3,544,966	11,471,762	1,125,138	5,531,261	21,673,126	0.446	0.198	0.644
2019	32,717,918	48	2,198	3,508,700	12,765,965	946,889	5,842,468	23,064,022	0.497	0.208	0.705
2020	29,058,724	41	1,411	4,222,991	10,165,864	854,766	4,878,685	20,122,306	0.495	0.197	0.692
2021	34,877,952	43	1,727	4,010,960	11,499,178	957,175	5,309,323	21,776,636	0.445	0.180	0.624
<b>MA Total:</b>	<b>161,509,663</b>	<b>257</b>	<b>10,918</b>	<b>18,771,196</b>	<b>56,513,951</b>	<b>4,959,365</b>	<b>27,080,560</b>	<b>107,325,072</b>	<b>0.466</b>	<b>0.198</b>	<b>0.665</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.586	0.644	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	0.481	0.244	0.725
(16) Countrywide Indicated Relativity:	0.607	0.779	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	3579.0	.	.
(19) Pure Premium Underlying Present Rate:	0.380	0.199	0.579
(20) Relativity to Underlying Present Rate:	0.583	0.683	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.586	0.644	.
(24) Balanced Formula Relativity:	0.580	0.641	0.597

Class(es): 9089 BILLIARD HALL		Effective: 7/1/2024							Goods and Services		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	6,717	0	1	0	149	0	279	429	0.022	0.042	0.064
2018	8,984	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	7,485	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	6,222	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	7,440	0	0	0	0	0	0	0	0.000	0.000	0.000
<b>MA Total:</b>	<b>36,848</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>149</b>	<b>0</b>	<b>279</b>	<b>429</b>	<b>0.004</b>	<b>0.008</b>	<b>0.012</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.005	0.025	.
(14) Massachusetts Credibility:	0.040	0.060	.
(15) Countrywide Pure Premium:	0.475	0.159	0.633
(16) Countrywide Indicated Relativity:	0.598	0.507	.
(17) Countrywide Credibility:	0.160	0.170	.
(18) Countrywide Lost-Time Claims:	12.000	.	.
(19) Pure Premium Underlying Present Rate:	0.258	0.133	0.391
(20) Relativity to Underlying Present Rate:	0.395	0.456	.
(21) Credibility to Underlying Relativity:	0.800	0.770	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.412	0.439	.
(24) Balanced Formula Relativity:	0.408	0.437	0.416

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## Calculation of Class Relativities

Class(es): 9093 BOWLING LANE		Effective: 7/1/2024							Goods and Services		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	262,917	3	29	68,203	8,556	50,136	26,381	153,276	0.292	0.291	0.583
2018	288,546	1	22	64,560	137,911	5,120	44,973	252,563	0.702	0.174	0.875
2019	238,901	0	12	0	4,567	0	8,567	13,134	0.019	0.036	0.055
2020	147,645	0	6	0	2,282	0	9,722	12,005	0.015	0.066	0.081
2021	258,638	0	10	0	4,236	0	8,834	13,070	0.016	0.034	0.051
<b>MA Total:</b>	<b>1,196,647</b>	<b>4</b>	<b>79</b>	<b>132,763</b>	<b>157,552</b>	<b>55,256</b>	<b>98,477</b>	<b>444,048</b>	<b>0.243</b>	<b>0.128</b>	<b>0.371</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.305	0.417	.
(14) Massachusetts Credibility:	0.170	0.290	.
(15) Countrywide Pure Premium:	0.569	0.261	0.830
(16) Countrywide Indicated Relativity:	0.718	0.834	.
(17) Countrywide Credibility:	0.420	0.360	.
(18) Countrywide Lost-Time Claims:	364.00	.	.
(19) Pure Premium Underlying Present Rate:	0.354	0.221	0.575
(20) Relativity to Underlying Present Rate:	0.543	0.758	.
(21) Credibility to Underlying Relativity:	0.410	0.350	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.576	0.686	.
(24) Balanced Formula Relativity:	0.570	0.683	0.602

Class(es): 9101 COLLEGE: ALL OTHER EMPLOYEES		Effective: 7/1/2024							Goods and Services		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,733,152	23	785	1,869,449	2,326,538	519,095	1,118,089	5,833,171	2.421	0.945	3.366
2018	1,766,677	13	434	1,359,140	1,237,825	226,355	758,569	3,581,889	1.470	0.558	2.027
2019	1,718,159	11	365	669,561	2,382,549	159,452	875,278	4,086,840	1.776	0.602	2.379
2020	1,591,915	8	313	1,403,153	2,148,916	231,626	826,153	4,609,848	2.231	0.664	2.896
2021	1,774,661	5	273	1,123,235	3,274,173	172,130	1,302,567	5,872,106	2.478	0.831	3.309
<b>MA Total:</b>	<b>8,584,563</b>	<b>60</b>	<b>2,170</b>	<b>6,424,538</b>	<b>11,370,001</b>	<b>1,308,659</b>	<b>4,880,657</b>	<b>23,983,855</b>	<b>2.073</b>	<b>0.721</b>	<b>2.794</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.608	2.341	.
(14) Massachusetts Credibility:	0.710	1.000	.
(15) Countrywide Pure Premium:	1.370	0.658	2.028
(16) Countrywide Indicated Relativity:	1.728	2.103	.
(17) Countrywide Credibility:	0.150	0.000	.
(18) Countrywide Lost-Time Claims:	12101	.	.
(19) Pure Premium Underlying Present Rate:	1.663	0.740	2.403
(20) Relativity to Underlying Present Rate:	2.553	2.540	.
(21) Credibility to Underlying Relativity:	0.140	0.000	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.468	2.341	.
(24) Balanced Formula Relativity:	2.443	2.329	2.411

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Miscellaneous		
9102 PARK NOC- ALL EMPLOYEES & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	349,426	0	51	0	57,830	0	57,302	115,132	0.166	0.164	0.329
2018	368,243	1	87	107,098	236,882	12,686	261,024	617,690	0.934	0.743	1.677
2019	389,902	0	48	0	402,042	0	141,892	543,935	1.031	0.364	1.395
2020	383,858	0	56	0	1,353,091	0	522,689	1,875,780	3.525	1.362	4.887
2021	449,029	1	61	135,088	274,986	30,280	361,957	802,311	0.913	0.874	1.787
<b>MA Total:</b>	<b>1,940,458</b>	<b>2</b>	<b>303</b>	<b>242,187</b>	<b>2,324,832</b>	<b>42,966</b>	<b>1,344,864</b>	<b>3,954,848</b>	<b>1.323</b>	<b>0.715</b>	<b>2.038</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.481	0.721	.
(14) Massachusetts Credibility:	0.330	0.500	.
(15) Countrywide Pure Premium:	1.460	0.692	2.152
(16) Countrywide Indicated Relativity:	0.551	0.732	.
(17) Countrywide Credibility:	0.340	0.250	.
(18) Countrywide Lost-Time Claims:	8121.0	.	.
(19) Pure Premium Underlying Present Rate:	1.041	0.539	1.580
(20) Relativity to Underlying Present Rate:	0.460	0.572	.
(21) Credibility to Underlying Relativity:	0.330	0.250	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.498	0.687	.
(24) Balanced Formula Relativity:	0.494	0.688	0.545

Class(es):		Effective: 7/1/2024							Miscellaneous		
9154 THEATER NOC: ALL OTHER EMPLOYEES											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	846,248	1	104	295	235,982	187	200,210	436,674	0.279	0.237	0.516
2018	969,921	4	112	1,037,745	1,259,505	91,270	546,090	2,934,610	2.368	0.657	3.026
2019	777,107	4	72	1,088,414	499,315	117,936	354,632	2,060,298	2.043	0.608	2.651
2020	448,647	0	30	0	128,255	0	162,732	290,987	0.286	0.363	0.649
2021	780,512	2	87	94,336	800,063	23,941	606,142	1,524,482	1.146	0.807	1.953
<b>MA Total:</b>	<b>3,822,435</b>	<b>11</b>	<b>405</b>	<b>2,220,791</b>	<b>2,923,120</b>	<b>233,335</b>	<b>1,869,806</b>	<b>7,247,052</b>	<b>1.346</b>	<b>0.550</b>	<b>1.896</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.489	0.555	.
(14) Massachusetts Credibility:	0.380	0.570	.
(15) Countrywide Pure Premium:	0.656	0.361	1.017
(16) Countrywide Indicated Relativity:	0.248	0.382	.
(17) Countrywide Credibility:	0.310	0.220	.
(18) Countrywide Lost-Time Claims:	1508.0	.	.
(19) Pure Premium Underlying Present Rate:	0.787	0.383	1.170
(20) Relativity to Underlying Present Rate:	0.348	0.407	.
(21) Credibility to Underlying Relativity:	0.310	0.210	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.370	0.486	.
(24) Balanced Formula Relativity:	0.368	0.487	0.399

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Office and Clerical		
9156 THEATER NOC: PLAYERS, ENTERTAINERS OR MUSICIANS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	361.353	2	84	155,206	540,122	21,422	292,352	1,009,102	1,924	0.868	2,793
2018	422,956	1	51	958	220,533	972	172,651	395,113	0.524	0.410	0.934
2019	334,413	0	33	0	506,752	0	184,707	691,459	1,515	0.552	2,068
2020	146,194	0	22	0	97,139	0	125,125	222,264	0.664	0.856	1,520
2021	314,474	1	42	210,295	285,351	50,029	190,863	736,537	1,576	0.766	2,342
<b>MA Total:</b>	<b>1,579,390</b>	<b>4</b>	<b>232</b>	<b>366,459</b>	<b>1,649,897</b>	<b>72,423</b>	<b>965,697</b>	<b>3,054,476</b>	<b>1,277</b>	<b>0.657</b>	<b>1,934</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	19.107	24.926	.
(14) Massachusetts Credibility:	0.260	0.420	.
(15) Countrywide Pure Premium:	0.649	0.271	0.920
(16) Countrywide Indicated Relativity:	12.514	11.978	.
(17) Countrywide Credibility:	0.370	0.290	.
(18) Countrywide Lost-Time Claims:	680.00	.	.
(19) Pure Premium Underlying Present Rate:	0.707	0.427	1.134
(20) Relativity to Underlying Present Rate:	12.953	17.229	.
(21) Credibility to Underlying Relativity:	0.370	0.290	.
(22) Industry Group Converted Pure Premium:	0.067	0.026	0.093
(23) Formula Relativity:	14.390	18.939	.
(24) Balanced Formula Relativity:	14.320	18.944	15.628

Class(es):		Effective: 7/1/2024							Miscellaneous		
9178 ATHLETIC TEAM OR PARK: NON-CONTACT SPORTS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	16,735	0	83	0	54,146	0	204,969	259,115	3,236	12,248	15,484
2018	34,655	0	62	0	483,228	0	137,347	620,576	13,944	3,963	17,907
2019	37,662	1	67	38,308	149,723	1,472	227,703	417,206	4,993	6,085	11,078
2020	44,164	0	45	0	30,760	0	106,747	137,507	0,696	2,417	3,114
2021	53,390	0	95	0	90,993	0	485,006	575,999	1,704	9,084	10,788
<b>MA Total:</b>	<b>186,605</b>	<b>1</b>	<b>352</b>	<b>38,308</b>	<b>808,851</b>	<b>1,472</b>	<b>1,161,771</b>	<b>2,010,402</b>	<b>4,540</b>	<b>6,234</b>	<b>10,774</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.650	6.287	.
(14) Massachusetts Credibility:	0.190	0.480	.
(15) Countrywide Pure Premium:	1.284	1.360	2.644
(16) Countrywide Indicated Relativity:	0.485	1.439	.
(17) Countrywide Credibility:	0.410	0.260	.
(18) Countrywide Lost-Time Claims:	567.00	.	.
(19) Pure Premium Underlying Present Rate:	2.698	5.189	7.887
(20) Relativity to Underlying Present Rate:	1.193	5.506	.
(21) Credibility to Underlying Relativity:	0.400	0.260	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.989	4.824	.
(24) Balanced Formula Relativity:	0.982	4.834	2.002

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Miscellaneous		
9179 ATHLETIC TEAM OR PARK: CONTACT SPORTS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	21,062	0	89	0	659,554	0	442,257	1,101,810	31,314	20,997	52,311
2018	25,157	2	87	347,595	1,413,322	86,454	391,797	2,239,168	69,997	19,011	89,008
2019	34,601	1	100	52,180	648,678	2,233	523,604	1,226,695	20,255	15,197	35,452
2020	46,189	0	145	0	846,218	0	871,078	1,717,296	18,321	18,859	37,180
2021	57,634	2	208	312,971	221,221	125,807	1,042,924	1,702,922	9,269	20,279	29,547
<b>MA Total:</b>	<b>184,643</b>	<b>5</b>	<b>629</b>	<b>712,746</b>	<b>3,788,992</b>	<b>214,494</b>	<b>3,271,659</b>	<b>7,987,891</b>	<b>24,381</b>	<b>18,880</b>	<b>43,261</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	8.860	19.042	.
(14) Massachusetts Credibility:	0.360	0.740	.
(15) Countrywide Pure Premium:	3.084	1.648	4.733
(16) Countrywide Indicated Relativity:	1.164	1.744	.
(17) Countrywide Credibility:	0.320	0.130	.
(18) Countrywide Lost-Time Claims:	1544.0	.	.
(19) Pure Premium Underlying Present Rate:	13.643	15.248	28.891
(20) Relativity to Underlying Present Rate:	6.032	16.180	.
(21) Credibility to Underlying Relativity:	0.320	0.130	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	5.492	16.421	.
(24) Balanced Formula Relativity:	5.450	16.455	8.365

Class(es):		Effective: 7/1/2024							Miscellaneous		
9180 AMUSEMENT DEVICE OPERATION NOC-NOT TRAV & DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	217,602	3	54	17,128	112,267	38,356	172,176	339,927	0.595	0.968	1.562
2018	245,881	1	72	52,402	251,052	75,262	178,741	557,456	1.234	1.033	2.267
2019	202,559	1	42	20,031	168,932	14,362	160,684	364,010	0.933	0.864	1.797
2020	183,008	0	27	0	99,306	0	132,419	231,725	0.543	0.724	1.266
2021	224,449	1	20	23,610	60,907	330,646	186,673	601,836	0.377	2.305	2.681
<b>MA Total:</b>	<b>1,073,500</b>	<b>6</b>	<b>215</b>	<b>113,171</b>	<b>692,465</b>	<b>458,626</b>	<b>830,692</b>	<b>2,094,954</b>	<b>0.750</b>	<b>1.201</b>	<b>1.952</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.273	1.211	.
(14) Massachusetts Credibility:	0.300	0.530	.
(15) Countrywide Pure Premium:	2.061	1.460	3.521
(16) Countrywide Indicated Relativity:	0.778	1.546	.
(17) Countrywide Credibility:	0.350	0.240	.
(18) Countrywide Lost-Time Claims:	1894.0	.	.
(19) Pure Premium Underlying Present Rate:	1.557	1.118	2.675
(20) Relativity to Underlying Present Rate:	0.689	1.186	.
(21) Credibility to Underlying Relativity:	0.350	0.230	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.595	1.286	.
(24) Balanced Formula Relativity:	0.591	1.288	0.775

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Miscellaneous		
9182 ATHLETIC TEAM OR PARK: OPERATIONS & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	247,447	1	42	499,094	1,246,609	130,439	337,365	2,213,507	7,055	1,891	8,945
2018	364,336	1	44	9,275	105,624	2,779	151,076	268,754	0,315	0,422	0,738
2019	316,564	0	33	0	51,382	0	110,815	162,197	0,162	0,350	0,512
2020	232,581	0	29	0	35,353	0	124,803	160,156	0,152	0,537	0,689
2021	227,562	1	35	3,904	154,983	52,790	107,993	319,670	0,698	0,707	1,405
<b>MA Total:</b>	<b>1,388,490</b>	<b>3</b>	<b>183</b>	<b>512,273</b>	<b>1,593,951</b>	<b>186,009</b>	<b>832,051</b>	<b>3,124,284</b>	<b>1,517</b>	<b>0,733</b>	<b>2,250</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.551	0.739	.
(14) Massachusetts Credibility:	0.280	0.490	.
(15) Countrywide Pure Premium:	0.785	0.562	1.347
(16) Countrywide Indicated Relativity:	0.296	0.595	.
(17) Countrywide Credibility:	0.360	0.260	.
(18) Countrywide Lost-Time Claims:	462.00	.	.
(19) Pure Premium Underlying Present Rate:	0.992	0.717	1.710
(20) Relativity to Underlying Present Rate:	0.439	0.761	.
(21) Credibility to Underlying Relativity:	0.360	0.250	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.419	0.707	.
(24) Balanced Formula Relativity:	0.416	0.709	0.493

Class(es):		Effective: 7/1/2024							Goods and Services		
9220 CEMETERY OPERATION & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	198,501	0	31	0	752,571	0	222,827	975,398	3,791	1,123	4,914
2018	186,621	0	26	0	79,053	0	101,684	180,737	0,424	0,545	0,968
2019	200,785	0	18	0	143,295	0	59,392	202,687	0,714	0,296	1,009
2020	211,405	0	16	0	28,757	0	46,168	74,925	0,136	0,218	0,354
2021	206,022	0	28	0	124,560	0	75,127	199,687	0,605	0,365	0,969
<b>MA Total:</b>	<b>1,003,334</b>	<b>0</b>	<b>119</b>	<b>0</b>	<b>1,128,236</b>	<b>0</b>	<b>505,197</b>	<b>1,633,434</b>	<b>1,124</b>	<b>0,504</b>	<b>1,628</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.415	1.635	.
(14) Massachusetts Credibility:	0.300	0.410	.
(15) Countrywide Pure Premium:	2.359	0.906	3.265
(16) Countrywide Indicated Relativity:	2.974	2.896	.
(17) Countrywide Credibility:	0.350	0.300	.
(18) Countrywide Lost-Time Claims:	606.00	.	.
(19) Pure Premium Underlying Present Rate:	1.625	0.662	2.287
(20) Relativity to Underlying Present Rate:	2.495	2.270	.
(21) Credibility to Underlying Relativity:	0.350	0.290	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.339	2.197	.
(24) Balanced Formula Relativity:	2.315	2.186	2.279

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Miscellaneous		
9402 STREET CLEANING & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,107,218	6	91	868,332	1,789,307	243,854	569,152	3,470,645	2,400	0,734	3,135
2018	1,089,296	11	84	1,802,639	2,210,626	483,958	694,820	5,192,043	3,684	1,082	4,766
2019	1,070,923	4	61	721,738	1,193,642	421,143	452,178	2,788,701	1,789	0,815	2,604
2020	1,066,912	3	54	81,399	1,347,067	19,406	865,253	2,313,125	1,339	0,829	2,168
2021	1,146,359	3	55	608,316	1,288,379	123,394	541,244	2,561,333	1,655	0,580	2,234
<b>MA Total:</b>	<b>5,480,708</b>	<b>27</b>	<b>345</b>	<b>4,082,425</b>	<b>7,829,020</b>	<b>1,291,755</b>	<b>3,122,647</b>	<b>16,325,847</b>	<b>2,173</b>	<b>0,805</b>	<b>2,979</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.790	0.812	.
(14) Massachusetts Credibility:	0.630	0.870	.
(15) Countrywide Pure Premium:	2.467	0.895	3.362
(16) Countrywide Indicated Relativity:	0.931	0.948	.
(17) Countrywide Credibility:	0.190	0.070	.
(18) Countrywide Lost-Time Claims:	2094.0	.	.
(19) Pure Premium Underlying Present Rate:	1.887	0.774	2.661
(20) Relativity to Underlying Present Rate:	0.834	0.821	.
(21) Credibility to Underlying Relativity:	0.180	0.060	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	0.825	0.822	.
(24) Balanced Formula Relativity:	0.818	0.824	0.820

Class(es):		Effective: 7/1/2024							Miscellaneous		
9403 GARBAGE, ASHES OR REFUSE COLLECTION & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	1,250,084	21	275	3,234,482	4,421,176	781,307	1,561,814	9,998,779	6,124	1,874	7,998
2018	1,100,681	11	259	2,365,795	6,192,529	733,187	1,711,563	11,003,074	7,775	2,221	9,997
2019	1,112,785	10	162	2,426,079	4,228,308	708,545	1,869,537	9,232,469	5,980	2,317	8,297
2020	1,070,282	14	171	2,194,852	6,034,559	657,736	2,485,472	11,372,618	7,689	2,937	10,626
2021	1,072,372	7	134	2,480,370	4,476,880	571,964	2,430,087	9,959,300	6,488	2,799	9,287
<b>MA Total:</b>	<b>5,606,204</b>	<b>63</b>	<b>1,001</b>	<b>12,701,578</b>	<b>25,353,451</b>	<b>3,452,740</b>	<b>10,058,472</b>	<b>51,566,241</b>	<b>6,788</b>	<b>2,410</b>	<b>9,198</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.467	2.431	.
(14) Massachusetts Credibility:	0.980	1.000	.
(15) Countrywide Pure Premium:	4.259	1.536	5.795
(16) Countrywide Indicated Relativity:	1.608	1.626	.
(17) Countrywide Credibility:	0.010	0.000	.
(18) Countrywide Lost-Time Claims:	8160.0	.	.
(19) Pure Premium Underlying Present Rate:	5.682	2.235	7.917
(20) Relativity to Underlying Present Rate:	2.512	2.371	.
(21) Credibility to Underlying Relativity:	0.010	0.000	.
(22) Industry Group Converted Pure Premium:	2.752	0.992	3.743
(23) Formula Relativity:	2.459	2.431	.
(24) Balanced Formula Relativity:	2.440	2.436	2.439

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
9410 MUNICIPAL, TOWN, COUNTY OR STATE EMP NOC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	51,803	0	21	0	56,377	0	57,751	114,128	1,088	1,115	2,203
2018	45,226	0	23	0	75,402	0	83,660	159,062	1,667	1,850	3,517
2019	52,675	0	13	0	142,920	0	43,100	186,020	2,713	0,818	3,531
2020	39,330	0	4	0	0	0	12,060	12,060	0,000	0,307	0,307
2021	73,712	1	8	6,810	269,384	8,439	40,465	325,098	3,747	0,663	4,410
<b>MA Total:</b>	<b>262,747</b>	<b>1</b>	<b>69</b>	<b>6,810</b>	<b>544,083</b>	<b>8,439</b>	<b>237,037</b>	<b>796,369</b>	<b>2,097</b>	<b>0,934</b>	<b>3,031</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.638	3.033	.
(14) Massachusetts Credibility:	0.170	0.250	.
(15) Countrywide Pure Premium:	1.167	0.441	1.607
(16) Countrywide Indicated Relativity:	1.471	1.408	.
(17) Countrywide Credibility:	0.420	0.380	.
(18) Countrywide Lost-Time Claims:	1390.0	.	.
(19) Pure Premium Underlying Present Rate:	1.505	0.749	2.255
(20) Relativity to Underlying Present Rate:	2.311	2.572	.
(21) Credibility to Underlying Relativity:	0.410	0.370	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	2.014	2.245	.
(24) Balanced Formula Relativity:	1.993	2.234	2.060

Class(es):		Effective: 7/1/2024							Manufacturing		
9501 SIGN PAINTING OR LETTERING-INSIDE & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	400,587	1	31	191,831	464,936	89,742	96,821	843,331	1,640	0,466	2,105
2018	402,800	1	21	188,282	17,155	19,164	27,486	252,087	0,510	0,116	0,626
2019	387,128	0	27	0	65,668	0	56,015	121,683	0,170	0,145	0,314
2020	426,361	1	26	201,979	260,193	67,482	116,725	646,379	1,084	0,432	1,516
2021	423,691	0	28	0	119,312	0	74,411	193,723	0,282	0,176	0,457
<b>MA Total:</b>	<b>2,040,567</b>	<b>3</b>	<b>133</b>	<b>582,092</b>	<b>927,264</b>	<b>176,388</b>	<b>371,458</b>	<b>2,057,202</b>	<b>0,740</b>	<b>0,268</b>	<b>1,008</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.777	0.761	.
(14) Massachusetts Credibility:	0.320	0.440	.
(15) Countrywide Pure Premium:	1.196	0.477	1.673
(16) Countrywide Indicated Relativity:	1.343	1.474	.
(17) Countrywide Credibility:	0.340	0.280	.
(18) Countrywide Lost-Time Claims:	1182.0	.	.
(19) Pure Premium Underlying Present Rate:	0.908	0.379	1.287
(20) Relativity to Underlying Present Rate:	1.167	1.121	.
(21) Credibility to Underlying Relativity:	0.340	0.280	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.102	1.061	.
(24) Balanced Formula Relativity:	1.101	1.053	1.088

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
9519 HOUSEHOLD APPLIANCES-ELECTRICAL-INSTALL, SERV OR REPAIR & DR											
Converted Unlimited Losses											
Amount											
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	876,495	2	66	191,834	733,362	99,005	421,535	1,445,736	1,056	0,594	1,649
2018	936,316	3	63	270,150	759,075	168,992	230,418	1,428,635	1,099	0,427	1,526
2019	1,015,925	2	59	690,891	223,581	69,620	158,234	1,142,325	0,900	0,224	1,124
2020	942,890	4	54	190,728	561,959	79,822	265,780	1,098,288	0,798	0,367	1,165
2021	946,424	4	61	336,806	1,448,837	91,174	641,449	2,518,267	1,887	0,774	2,661
<b>MA Total:</b>	<b>4,718,050</b>	<b>15</b>	<b>303</b>	<b>1,680,409</b>	<b>3,726,815</b>	<b>508,613</b>	<b>1,717,416</b>	<b>7,633,252</b>	<b>1,146</b>	<b>0,472</b>	<b>1,618</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.442	1.532	.
(14) Massachusetts Credibility:	0.480	0.610	.
(15) Countrywide Pure Premium:	2.104	0.634	2.738
(16) Countrywide Indicated Relativity:	2.653	2.028	.
(17) Countrywide Credibility:	0.260	0.200	.
(18) Countrywide Lost-Time Claims:	2025.0	.	.
(19) Pure Premium Underlying Present Rate:	1.136	0.375	1.511
(20) Relativity to Underlying Present Rate:	1.744	1.285	.
(21) Credibility to Underlying Relativity:	0.260	0.190	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	1.835	1.584	.
(24) Balanced Formula Relativity:	1.816	1.576	1.749

Class(es):		Effective: 7/1/2024							Manufacturing		
9521 HOUSE FURNISHINGS INSTALLATION-NOC											
Converted Unlimited Losses											
Amount											
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	311,607	2	34	81,676	305,528	29,028	85,813	502,046	1,243	0,369	1,611
2018	284,395	0	17	0	22,959	0	23,464	46,423	0,081	0,083	0,163
2019	298,547	3	30	880,823	574,607	219,425	277,491	1,952,346	4,875	1,664	6,539
2020	307,362	0	24	0	1,101,375	0	441,955	1,543,331	3,583	1,438	5,021
2021	332,654	0	17	0	253,882	0	208,138	462,020	0,763	0,626	1,389
<b>MA Total:</b>	<b>1,534,565</b>	<b>5</b>	<b>122</b>	<b>962,499</b>	<b>2,258,352</b>	<b>248,453</b>	<b>1,036,862</b>	<b>4,506,166</b>	<b>2,099</b>	<b>0,838</b>	<b>2,936</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.205	2.374	.
(14) Massachusetts Credibility:	0.350	0.510	.
(15) Countrywide Pure Premium:	1.550	0.547	2.097
(16) Countrywide Indicated Relativity:	1.740	1.691	.
(17) Countrywide Credibility:	0.330	0.250	.
(18) Countrywide Lost-Time Claims:	732.00	.	.
(19) Pure Premium Underlying Present Rate:	1.521	0.722	2.243
(20) Relativity to Underlying Present Rate:	1.955	2.135	.
(21) Credibility to Underlying Relativity:	0.320	0.240	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.972	2.146	.
(24) Balanced Formula Relativity:	1.969	2.129	2.012

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## Calculation of Class Relativities

Class(es): 9522 UPHOLSTERING		Effective: 7/1/2024							Manufacturing		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	122,488	0	6	0	245,830	0	43,437	289,267	2,007	0,355	2,362
2018	120,893	0	4	0	11,054	0	4,024	15,078	0,091	0,033	0,125
2019	93,300	0	0	0	0	0	0	0	0,000	0,000	0,000
2020	94,616	0	3	0	0	0	2,399	2,399	0,000	0,025	0,025
2021	115,867	0	4	0	91,292	0	28,608	119,900	0,788	0,247	1,035
<b>MA Total:</b>	<b>547,164</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>348,176</b>	<b>0</b>	<b>78,468</b>	<b>426,644</b>	<b>0,636</b>	<b>0,143</b>	<b>0,780</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.668	0.406	.
(14) Massachusetts Credibility:	0.180	0.230	.
(15) Countrywide Pure Premium:	1.254	0.384	1.638
(16) Countrywide Indicated Relativity:	1.408	1.187	.
(17) Countrywide Credibility:	0.410	0.390	.
(18) Countrywide Lost-Time Claims:	1926.0	.	.
(19) Pure Premium Underlying Present Rate:	0.829	0.285	1.114
(20) Relativity to Underlying Present Rate:	1.066	0.843	.
(21) Credibility to Underlying Relativity:	0.410	0.380	.
(22) Industry Group Converted Pure Premium:	0.952	0.353	1.305
(23) Formula Relativity:	1.134	0.877	.
(24) Balanced Formula Relativity:	1.133	0.870	1.062

Class(es): 9533 SCAFFOLDING: SCAFFOLD INST, RPR OR REMOVAL- BUILT UP FROM GROUN		Effective: 7/1/2024							Construction		
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	65,778	1	11	19,791	1,339,833	3,148	262,537	1,625,309	20,670	4,039	24,709
2018	69,127	3	12	794,647	241,897	184,668	163,717	1,384,929	14,995	5,040	20,035
2019	59,426	2	5	445,266	117,117	100,884	53,735	717,002	9,464	2,602	12,066
2020	75,646	0	1	0	677,964	0	147,048	825,011	8,962	1,944	10,906
2021	50,514	0	7	0	88,005	0	62,207	150,212	1,742	1,231	2,974
<b>MA Total:</b>	<b>320,491</b>	<b>6</b>	<b>36</b>	<b>1,259,704</b>	<b>2,464,816</b>	<b>288,699</b>	<b>689,244</b>	<b>4,702,463</b>	<b>11,621</b>	<b>3,051</b>	<b>14,673</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.914	3.546	.
(14) Massachusetts Credibility:	0.370	0.470	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	4.147	3.239	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	8.820	2.785	11.605
(20) Relativity to Underlying Present Rate:	4.357	3.450	.
(21) Credibility to Underlying Relativity:	0.630	0.530	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	4.563	3.495	.
(24) Balanced Formula Relativity:	4.611	3.508	4.317

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Section IX - Classification Pricing  
 Subsection G - Class Relativities  
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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
9534 MOBILE CRANE & HOIST SERV CONTR-NOC-ALL OP -INCL YRD EMP &DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	437,387	0	22	0	1,805,125	0	476,840	2,281,964	4,127	1,090	5,217
2018	504,501	1	24	110,151	209,520	14,839	121,071	455,581	0,634	0,269	0,903
2019	433,116	1	22	41,158	1,640,615	13,216	413,745	2,108,734	3,883	0,986	4,869
2020	477,955	2	24	541,015	2,516,787	75,414	943,220	4,076,436	6,398	2,131	8,529
2021	405,212	1	14	168,807	396,956	42,147	353,948	961,858	1,396	0,978	2,374
<b>MA Total:</b>	<b>2,258,171</b>	<b>5</b>	<b>106</b>	<b>861,130</b>	<b>6,569,003</b>	<b>145,617</b>	<b>2,308,824</b>	<b>9,884,573</b>	<b>3,290</b>	<b>1,087</b>	<b>4,377</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.391	1.263	.
(14) Massachusetts Credibility:	0.500	0.660	.
(15) Countrywide Pure Premium:	2.104	0.701	2.805
(16) Countrywide Indicated Relativity:	0.894	0.814	.
(17) Countrywide Credibility:	0.250	0.170	.
(18) Countrywide Lost-Time Claims:	478.00	.	.
(19) Pure Premium Underlying Present Rate:	2.598	0.946	3.543
(20) Relativity to Underlying Present Rate:	1.283	1.171	.
(21) Credibility to Underlying Relativity:	0.250	0.170	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.240	1.171	.
(24) Balanced Formula Relativity:	1.253	1.175	1.232

Class(es):		Effective: 7/1/2024							Construction		
9549 ADVERTISING CO & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	6,455	0	1	0	0	0	367	367	0.000	0.057	0.057
2018	2,835	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	12,900	1	2	127,974	0	37,003	1,061	166,037	9,920	2,951	12,871
2020	14,800	0	0	0	0	0	0	0	0.000	0.000	0.000
2021	28,853	0	1	0	0	0	3,897	3,897	0.000	0.135	0.135
<b>MA Total:</b>	<b>65,843</b>	<b>1</b>	<b>4</b>	<b>127,974</b>	<b>0</b>	<b>37,003</b>	<b>5,325</b>	<b>170,302</b>	<b>1,944</b>	<b>0,643</b>	<b>2,586</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.822	0.747	.
(14) Massachusetts Credibility:	0.110	0.130	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	0.847	0.633	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	1.801	0.544	2.345
(20) Relativity to Underlying Present Rate:	0.890	0.674	.
(21) Credibility to Underlying Relativity:	0.890	0.870	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	0.882	0.684	.
(24) Balanced Formula Relativity:	0.892	0.686	0.837

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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Construction		
9552 SIGN MFG-ERECTION, REPAIR OR MAINT & SHOP, DR											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	175,578	1	17	364,118	314,647	241,723	69,701	990,189	3,866	1,774	5,640
2018	185,821	0	20	0	37,831	0	24,890	62,720	0,204	0,134	0,338
2019	192,255	1	25	461,133	168,477	53,248	184,506	867,363	3,275	1,237	4,512
2020	213,957	1	16	112,533	63,580	23,255	60,829	260,197	0,823	0,393	1,216
2021	262,253	0	16	0	822,097	0	243,144	1,065,241	3,135	0,927	4,062
<b>MA Total:</b>	<b>1,029,865</b>	<b>3</b>	<b>94</b>	<b>937,784</b>	<b>1,406,631</b>	<b>318,226</b>	<b>583,070</b>	<b>3,245,711</b>	<b>2,276</b>	<b>0,875</b>	<b>3,152</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.963	1.017	.
(14) Massachusetts Credibility:	0.350	0.510	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	1.116	1.249	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	2.374	1.074	3.448
(20) Relativity to Underlying Present Rate:	1.173	1.331	.
(21) Credibility to Underlying Relativity:	0.650	0.490	.
(22) Industry Group Converted Pure Premium:	2.365	0.861	3.226
(23) Formula Relativity:	1.099	1.171	.
(24) Balanced Formula Relativity:	1.111	1.175	1.128

Class(es):		Effective: 7/1/2024							Goods and Services		
9586 BARBER SHOP, BEAUTY PARLOR, HAIR STYLING SALON											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	5,328,952	1	80	165,812	732,306	56,793	218,271	1,173,182	0,169	0,052	0,220
2018	5,709,216	3	75	85,245	520,075	9,709	213,448	828,478	0,106	0,039	0,145
2019	5,366,898	3	45	281,293	608,238	190,415	126,729	1,206,674	0,166	0,059	0,225
2020	4,981,788	1	49	105,232	255,621	170,219	242,146	773,218	0,072	0,083	0,155
2021	5,941,314	4	35	243,322	383,469	74,781	224,508	926,081	0,105	0,050	0,156
<b>MA Total:</b>	<b>27,328,169</b>	<b>12</b>	<b>284</b>	<b>880,904</b>	<b>2,499,708</b>	<b>501,917</b>	<b>1,025,102</b>	<b>4,907,632</b>	<b>0,124</b>	<b>0,056</b>	<b>0,180</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.156	0.181	.
(14) Massachusetts Credibility:	0.420	0.580	.
(15) Countrywide Pure Premium:	0.235	0.081	0.316
(16) Countrywide Indicated Relativity:	0.297	0.259	.
(17) Countrywide Credibility:	0.290	0.210	.
(18) Countrywide Lost-Time Claims:	1349.0	.	.
(19) Pure Premium Underlying Present Rate:	0.139	0.056	0.194
(20) Relativity to Underlying Present Rate:	0.213	0.192	.
(21) Credibility to Underlying Relativity:	0.290	0.210	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.213	0.200	.
(24) Balanced Formula Relativity:	0.211	0.199	0.208

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 Subsection G - Class Relativities  
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## Calculation of Class Relativities

Class(es):		Effective: 7/1/2024							Goods and Services		
9620 FUNERAL DIRECTOR & DRIVERS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period (1)	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2017	711,317	2	13	32,472	13,019	10,915	61,601	118,006	0.064	0.102	0.166
2018	729,817	0	6	0	255,792	0	129,356	385,148	0.350	0.177	0.528
2019	760,479	0	12	0	94,653	0	44,623	139,276	0.124	0.059	0.183
2020	787,628	2	15	269,753	415,482	93,227	74,231	852,694	0.870	0.213	1.083
2021	815,612	2	11	317,496	157,476	158,021	185,386	818,379	0.582	0.421	1.003
<b>MA Total:</b>	<b>3,804,854</b>	<b>6</b>	<b>57</b>	<b>619,722</b>	<b>936,422</b>	<b>262,164</b>	<b>495,196</b>	<b>2,313,503</b>	<b>0.409</b>	<b>0.199</b>	<b>0.608</b>

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.515	0.646	.
(14) Massachusetts Credibility:	0.260	0.400	.
(15) Countrywide Pure Premium:	0.600	0.277	0.877
(16) Countrywide Indicated Relativity:	0.756	0.887	.
(17) Countrywide Credibility:	0.370	0.300	.
(18) Countrywide Lost-Time Claims:	628.00	.	.
(19) Pure Premium Underlying Present Rate:	0.314	0.161	0.474
(20) Relativity to Underlying Present Rate:	0.481	0.552	.
(21) Credibility to Underlying Relativity:	0.370	0.300	.
(22) Industry Group Converted Pure Premium:	0.795	0.308	1.103
(23) Formula Relativity:	0.592	0.690	.
(24) Balanced Formula Relativity:	0.586	0.687	0.614

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Section IX - Classification Pricing  
Subsection H - Industry Group Rate Change and Rate Level Factors  
7/1/2024

Section IX - H  
Exhibit 1

## Calculation of Industry Group Rate Change and Limits

	Industry Group				
	Manufacturing	Construction	Office & Clerical	Goods & Services	Miscellaneous
(1) Industry Group Differential	1.007	0.983	1.013	1.009	1.007
(2) Experience and Benefit Level Change - Overall	-8.3%	-8.3%	-8.3%	-8.3%	-8.3%
(3) Target Rate Change = (1) x [1.000 + (2)] - 1.000	-7.6%	-9.9%	-7.1%	-7.4%	-7.6%
(4) Maximum Rate Change = (3) + 20.0%	12.4%	10.1%	12.9%	12.6%	12.4%
(5) Minimum Rate Change = (3) - 20.0%	-27.6%	-29.9%	-27.1%	-27.4%	-27.6%
(6) Present Average Rate	1.473	3.738	0.105	1.241	4.192
(7) Uncapped Rate Level Factor = [1.000 + (3)] x (6)	1.361	3.369	0.097	1.149	3.872
(8) Capped Rate Level Factor	1.366	3.366	0.097	1.149	3.873

In addition, the WCRIBMA is limiting the increase in average rates for any class to \$15.00 and no average rate shall exceed \$90.00 per \$100.00 of payroll.

### Notes:

- (1): Exhibit 2.
- (2): Section I-A, Exhibit 1.
- (6): Rates by class consistent with the 7/1/2023 Stipulation, weighted by five years of exposure.
- (8): Proposed average uncapped rates are capped by an iterative process using rate levels to determine if the required change is achieved.

Calculation of Massachusetts Industry Group Differentials  
 Excluding Large Deductibles

Industry Group (1)	Expected Losses (2)	Converted Unlimited Losses (3)	Industry Group Differential = (3) / (2) (4)	Lost-Time Cases (5)	Full Standard for Credibility Lost-Time Cases (6)	Credibility (7)	Credibility Weighted (8)	Balanced Industry Group Differential = (8) / 1.159 (9)
Manufacturing	396,244,680	463,140,117	1.169	8,800	12,000	0.856	1.167	1.007
Construction	1,269,458,825	1,446,045,254	1.139	13,482	12,000	1.000	1.139	0.983
Office & Clerical	396,847,733	466,062,814	1.174	10,674	12,000	0.943	1.174	1.013
Goods & Services	1,060,491,468	1,240,493,620	1.170	28,145	12,000	1.000	1.170	1.009
Miscellaneous	518,209,496	605,403,601	1.168	9,725	12,000	0.900	1.167	1.007
All	3,641,252,202	4,221,145,406	1.159			1.000	1.159	1.000

Notes:

(2): Five Years of Exposure x Pure Premium Underlying Present Rate from Section IX - F.

(3): Section IX - C. Goods and Services includes Per Capita classes.

(7) =  $\text{Min} ( 1.0 , [ (5) / (6) ] ^{0.5} )$

(8) =  $[ (7) \times (4) ] + [ ( 1.0 - (7) ) \times (4) \text{ Total} ]$

(8) Total =  $\text{sum} [ (2) \times (8) ] / (2) \text{ Total}$

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Section IX - Classification Pricing  
 Subsection I - Average Uncapped Rates  
 7/1/2024

Section IX - I  
 Exhibit 1

## Calculation of Average Uncapped Rates All Industry Groups

Class (1)	Balanced Formula Relativity			Uncapped Rate Level Factor (5)	Proposed Average Uncapped Rate (6)
	Indemnity (2)	Medical (3)	Total (4)		
0005	1.415	2.384	1.686	1.149	1.94
0008	1.377	1.536	1.421	1.149	1.63
0016	2.440	2.764	2.530	1.149	2.91
0034	1.711	1.815	1.740	1.149	2.00
0035	1.027	1.161	1.064	1.149	1.22
0036	1.711	1.815	1.740	1.149	2.00
0042	2.117	2.552	2.238	1.149	2.57
0046	1.594	2.160	1.752	1.149	2.01
0050	1.021	1.270	1.088	3.369	3.66
0079	1.610	1.575	1.601	1.149	1.84
0083	2.162	2.221	2.178	1.149	2.50
0106	1.385	2.128	1.582	3.872	6.13
0113	1.711	1.815	1.740	1.149	2.00
0170	1.711	1.815	1.740	1.149	2.00
0908	137.089	123.084	133.177	1.149	76.49
0909	372.630	534.097	417.731	1.149	239.93
0912	372.630	534.097	417.731	1.149	479.85
0913	137.089	123.084	133.177	1.149	152.98
0917	1.642	1.427	1.582	1.149	1.82
0918	0.312	0.182	0.276	1.149	0.32
1430	1.853	1.710	1.814	1.361	2.47
1438	1.839	1.853	1.843	1.361	2.51
1463	5.222	6.746	5.635	1.361	7.67
1624	0.773	0.924	0.813	3.872	3.15
1655	0.626	0.484	0.589	3.872	2.28
1701	3.822	2.592	3.489	1.361	4.75
1710	0.773	0.924	0.813	3.872	3.15
1747	1.463	1.185	1.388	1.361	1.89
1748	1.707	1.981	1.781	1.361	2.42
1853	0.814	1.268	0.937	1.361	1.27
1924	1.915	1.901	1.911	1.361	2.60
1925	1.484	3.882	2.133	1.361	2.90
2003	1.773	1.609	1.728	1.361	2.35
2014	2.085	2.129	2.097	1.361	2.85
2021	1.504	1.649	1.543	1.361	2.10
2039	2.379	2.643	2.451	1.361	3.34
2041	1.337	1.081	1.268	1.361	1.73
2070	2.058	1.677	1.955	1.361	2.66
2081	1.707	2.482	1.917	1.361	2.61
2089	1.449	1.297	1.408	1.361	1.92
2095	1.822	1.652	1.776	1.361	2.42
2101	1.449	1.297	1.408	1.361	1.92

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 Exhibit 1

## Calculation of Average Uncapped Rates All Industry Groups

Class (1)	Balanced Formula Relativity			Uncapped Rate Level Factor (5)	Proposed Average Uncapped Rate (6)
	Indemnity (2)	Medical (3)	Total (4)		
2111	1.158	1.183	1.165	1.361	1.59
2114	1.449	1.297	1.408	1.361	1.92
2115	3.018	3.154	3.055	1.361	4.16
2121	0.655	0.659	0.656	1.361	0.89
2130	0.830	0.834	0.831	1.361	1.13
2131	1.778	2.202	1.893	1.361	2.58
2143	1.257	1.039	1.198	1.361	1.63
2150	1.951	2.581	2.121	1.361	2.89
2156	1.635	1.710	1.655	1.361	2.25
2157	2.618	1.942	2.435	1.361	3.31
2172	1.069	0.991	1.048	1.361	1.43
2211	3.102	3.149	3.115	1.361	4.24
2220	1.859	1.994	1.896	1.361	2.58
2260	2.850	2.249	2.687	1.361	3.66
2288	2.030	2.127	2.056	1.361	2.80
2305	1.229	1.363	1.265	1.361	1.72
2362	1.267	1.466	1.321	1.361	1.80
2380	0.954	1.184	1.016	1.361	1.38
2402	1.105	1.234	1.140	1.361	1.55
2413	1.301	1.448	1.341	1.361	1.83
2416	2.098	2.150	2.112	1.361	2.87
2417	0.784	0.644	0.746	1.361	1.02
2501	1.044	1.099	1.059	1.361	1.44
2503	0.524	0.672	0.564	1.361	0.77
2570	2.512	1.789	2.317	1.361	3.15
2576	1.112	1.088	1.105	1.361	1.50
2585	1.734	1.611	1.701	1.361	2.31
2586	1.099	1.129	1.107	1.361	1.51
2587	1.539	1.228	1.452	1.149	1.67
2623	1.930	2.309	2.032	1.361	2.77
2651	0.717	0.657	0.701	1.361	0.95
2660	0.907	0.915	0.909	1.361	1.24
2683	1.014	1.109	1.040	1.361	1.42
2688	1.000	1.188	1.051	1.361	1.43
2702	3.191	4.570	3.556	3.872	13.77
2710	3.587	4.514	3.837	1.361	5.22
2731	1.717	1.869	1.758	1.361	2.39
2747	2.958	2.687	2.885	1.361	3.93
2790	1.108	1.030	1.087	1.361	1.48
2802	1.851	1.975	1.884	1.361	2.56
2835	1.105	1.001	1.077	1.361	1.47
2836	1.364	1.141	1.303	1.361	1.77

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Section IX - I  
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## Calculation of Average Uncapped Rates All Industry Groups

Class (1)	Balanced Formula Relativity			Uncapped Rate Level Factor (5)	Proposed Average Uncapped Rate (6)
	Indemnity (2)	Medical (3)	Total (4)		
2841	1.465	1.975	1.603	1.361	2.18
2883	1.556	1.542	1.553	1.361	2.11
2923	0.632	0.693	0.648	1.361	0.88
2942	0.820	0.844	0.826	1.361	1.12
3018	1.277	1.295	1.282	1.361	1.74
3022	1.752	2.159	1.862	1.361	2.53
3027	1.173	1.113	1.157	1.361	1.57
3028	1.857	1.899	1.868	1.361	2.54
3030	2.725	3.201	2.854	1.361	3.88
3040	3.284	3.075	3.227	1.361	4.39
3041	1.450	1.255	1.397	1.361	1.90
3042	1.498	1.234	1.426	1.361	1.94
3066	1.236	1.417	1.285	1.361	1.75
3076	1.608	1.426	1.559	1.361	2.12
3081	2.067	2.208	2.105	1.361	2.86
3082	2.067	2.208	2.105	1.361	2.86
3085	1.949	2.281	2.039	1.361	2.77
3110	3.181	2.593	3.022	1.361	4.11
3111	1.262	1.287	1.269	1.361	1.73
3113	0.945	0.897	0.932	1.361	1.27
3114	1.189	1.481	1.268	1.361	1.73
3118	0.755	0.926	0.801	1.361	1.09
3119	0.479	0.509	0.487	1.361	0.66
3120	0.697	0.531	0.652	1.361	0.89
3122	1.143	0.986	1.100	1.361	1.50
3127	1.159	1.029	1.124	1.361	1.53
3131	0.740	0.893	0.781	1.361	1.06
3132	1.071	1.225	1.113	1.361	1.51
3145	0.748	0.664	0.725	1.361	0.99
3146	1.257	1.497	1.322	1.361	1.80
3169	1.253	1.427	1.300	1.361	1.77
3179	0.655	0.661	0.657	1.361	0.89
3180	1.262	1.362	1.289	1.361	1.75
3188	1.036	1.056	1.041	1.361	1.42
3200	1.320	1.219	1.292	1.361	1.76
3220	1.136	1.002	1.100	1.361	1.50
3255	0.937	1.019	0.959	1.361	1.30
3257	1.335	1.693	1.432	1.361	1.95
3270	0.840	1.006	0.885	1.361	1.20
3300	1.796	2.309	1.935	1.361	2.63
3315	1.651	1.555	1.625	1.361	2.21
3336	1.347	1.203	1.308	1.361	1.78

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## Calculation of Average Uncapped Rates All Industry Groups

Class (1)	Balanced Formula Relativity			Uncapped Rate Level Factor (5)	Proposed Average Uncapped Rate (6)
	Indemnity (2)	Medical (3)	Total (4)		
3365	0.887	1.143	0.955	3.369	3.22
3372	1.185	1.133	1.171	1.361	1.59
3373	2.111	1.916	2.058	1.361	2.80
3381	0.914	0.800	0.883	1.361	1.20
3383	0.677	0.774	0.704	1.361	0.96
3385	0.438	0.619	0.487	1.361	0.66
3400	1.253	1.427	1.300	1.361	1.77
3507	1.626	1.579	1.613	1.361	2.20
3515	1.205	1.178	1.198	1.361	1.63
3558	0.322	0.495	0.369	1.361	0.50
3571	0.327	0.281	0.315	1.361	0.43
3574	0.868	0.887	0.873	1.361	1.19
3612	0.844	0.873	0.852	1.361	1.16
3620	1.605	1.486	1.573	1.361	2.14
3629	0.868	0.887	0.873	1.361	1.19
3632	0.868	0.887	0.873	1.361	1.19
3634	0.972	0.858	0.941	1.361	1.28
3635	0.695	0.865	0.741	1.361	1.01
3638	0.868	0.887	0.873	1.361	1.19
3642	0.755	0.681	0.735	1.361	1.00
3643	1.159	0.983	1.112	1.361	1.51
3647	1.185	1.092	1.160	1.361	1.58
3648	0.531	0.551	0.536	1.361	0.73
3681	0.319	0.272	0.306	1.361	0.42
3685	0.301	0.300	0.301	1.361	0.41
3724	0.890	1.000	0.919	3.369	3.10
3726	0.800	0.770	0.792	3.369	2.67
3807	1.253	1.427	1.300	1.361	1.77
3808	1.625	1.593	1.616	1.361	2.20
3821	2.844	3.010	2.890	1.149	3.32
3826	1.927	2.277	2.022	1.361	2.75
3830	0.868	0.887	0.873	1.361	1.19
3841	1.103	1.033	1.084	1.361	1.47
4000	1.127	1.189	1.144	3.872	4.43
4021	1.649	1.686	1.659	1.361	2.26
4024	1.797	1.562	1.733	1.361	2.36
4034	4.037	4.790	4.240	1.361	5.77
4036	1.078	1.064	1.074	1.361	1.46
4038	1.228	1.045	1.178	1.361	1.60
4053	2.059	1.123	1.806	1.361	2.46
4062	1.233	1.100	1.197	1.361	1.63
4112	0.157	0.159	0.157	1.361	0.21

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## Calculation of Average Uncapped Rates All Industry Groups

Class (1)	Balanced Formula Relativity			Uncapped Rate Level Factor (5)	Proposed Average Uncapped Rate (6)
	Indemnity (2)	Medical (3)	Total (4)		
4113	2.059	1.123	1.806	1.361	2.46
4114	1.983	1.711	1.909	1.361	2.60
4130	3.066	2.697	2.966	1.361	4.04
4133	1.054	1.264	1.111	1.361	1.51
4150	0.359	0.315	0.347	1.361	0.47
4239	1.732	1.823	1.757	1.361	2.39
4243	1.315	1.145	1.269	1.361	1.73
4244	1.620	2.015	1.727	1.361	2.35
4250	1.437	1.356	1.415	1.361	1.93
4251	1.836	1.376	1.712	1.361	2.33
4273	1.445	1.322	1.412	1.361	1.92
4279	1.307	1.308	1.307	1.361	1.78
4283	1.569	1.209	1.472	1.361	2.00
4299	0.932	0.866	0.914	1.361	1.24
4304	3.651	4.836	3.972	1.361	5.41
4307	0.657	0.721	0.674	1.361	0.92
4308	1.460	0.370	1.165	1.361	1.59
4351	0.500	0.472	0.493	1.361	0.67
4352	0.482	0.480	0.481	1.361	0.66
4360	0.506	0.452	0.492	1.361	0.67
4361	4.665	4.724	4.682	0.097	0.46
4362	0.300	0.266	0.290	1.149	0.33
4410	1.273	1.443	1.319	1.361	1.80
4432	0.616	0.535	0.594	1.361	0.81
4439	2.680	3.430	2.882	1.361	3.92
4452	1.704	1.681	1.698	1.361	2.31
4459	1.350	1.324	1.343	1.361	1.83
4470	1.026	0.970	1.011	1.361	1.38
4484	1.286	1.303	1.291	1.361	1.76
4493	1.129	1.129	1.129	1.361	1.54
4511	0.174	0.172	0.174	1.149	0.20
4512	0.050	0.046	0.049	1.149	0.06
4557	1.182	0.894	1.104	1.361	1.50
4558	1.173	1.303	1.208	1.361	1.64
4583	1.795	1.902	1.824	1.361	2.48
4611	0.377	0.378	0.377	1.361	0.51
4635	2.154	3.332	2.473	1.361	3.37
4653	1.247	1.261	1.251	1.361	1.70
4665	5.637	8.144	6.315	1.361	8.59
4692	0.279	0.252	0.272	1.361	0.37
4693	0.406	0.417	0.409	1.361	0.56
4720	1.217	1.225	1.219	1.361	1.66

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## Calculation of Average Uncapped Rates All Industry Groups

Class (1)	Balanced Formula Relativity			Uncapped Rate Level Factor (5)	Proposed Average Uncapped Rate (6)
	Indemnity (2)	Medical (3)	Total (4)		
4740	0.429	0.373	0.414	1.361	0.56
4741	2.302	1.679	2.134	1.361	2.90
4771	1.322	1.103	1.263	1.361	1.72
4777	1.795	1.902	1.824	1.361	2.48
4825	0.252	0.222	0.244	1.361	0.33
4828	0.600	0.652	0.614	1.361	0.84
4829	0.600	0.652	0.614	1.361	0.84
4902	0.820	0.844	0.826	1.361	1.12
4923	0.506	0.452	0.492	1.361	0.67
5020	1.240	0.933	1.158	3.369	3.90
5022	1.836	1.753	1.814	3.369	6.11
5037	2.601	2.284	2.516	3.369	8.48
5040	4.984	4.403	4.829	3.369	16.27
5057	2.543	3.736	2.861	3.369	9.64
5059	4.463	5.940	4.857	3.369	16.36
5102	1.509	1.411	1.483	3.369	5.00
5146	1.436	1.282	1.395	3.369	4.70
5160	0.884	0.755	0.850	3.369	2.86
5183	0.734	0.679	0.719	3.369	2.42
5188	0.859	0.656	0.805	3.369	2.71
5190	0.465	0.514	0.478	3.369	1.61
5191	0.466	0.449	0.461	1.149	0.53
5192	2.251	1.870	2.145	1.149	2.46
5213	2.030	1.844	1.980	3.369	6.67
5215	1.278	1.069	1.222	3.369	4.12
5221	1.539	1.379	1.496	3.369	5.04
5222	2.011	1.439	1.858	3.369	6.26
5223	0.800	0.769	0.792	3.369	2.67
5348	0.989	0.733	0.921	3.369	3.10
5402	1.387	1.132	1.319	3.369	4.44
5403	1.567	1.575	1.569	3.369	5.29
5437	0.834	0.754	0.813	3.369	2.74
5443	0.643	0.611	0.634	3.369	2.14
5445	1.384	1.018	1.287	3.369	4.34
5462	1.506	1.338	1.461	3.369	4.92
5472	1.716	1.557	1.674	3.369	5.64
5473	2.577	2.729	2.618	3.369	8.82
5474	1.033	1.062	1.041	3.369	3.51
5478	1.043	0.717	0.956	3.369	3.22
5479	1.155	1.231	1.175	3.369	3.96
5480	1.115	1.059	1.100	3.369	3.71
5506	1.069	1.064	1.068	3.369	3.60

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## Calculation of Average Uncapped Rates All Industry Groups

Class (1)	Balanced Formula Relativity			Uncapped Rate Level Factor (5)	Proposed Average Uncapped Rate (6)
	Indemnity (2)	Medical (3)	Total (4)		
5507	0.979	0.908	0.960	3.369	3.23
5508	1.021	1.270	1.088	3.369	3.66
5509	1.043	1.924	1.278	3.369	4.31
5538	0.896	0.890	0.894	3.369	3.01
5545	9.302	12.407	10.130	3.369	34.13
5547	2.057	2.387	2.145	3.369	7.23
5606	0.262	0.260	0.261	3.369	0.88
5610	1.509	1.012	1.376	3.369	4.64
5645	1.394	1.755	1.490	3.369	5.02
5701	2.672	2.455	2.614	3.369	8.81
5703	1.480	1.584	1.508	3.369	5.08
5705	2.437	2.289	2.397	3.369	8.08
6003	1.274	1.054	1.215	3.369	4.09
6005	1.021	1.270	1.088	3.369	3.66
6204	1.441	1.170	1.368	3.369	4.61
6217	1.005	0.872	0.969	3.369	3.27
6229	0.985	0.920	0.967	3.369	3.26
6233	0.435	0.313	0.402	3.369	1.35
6251	0.866	0.644	0.806	3.369	2.72
6252	0.969	0.921	0.956	3.369	3.22
6306	1.885	1.637	1.819	3.369	6.13
6319	0.559	0.562	0.560	3.369	1.89
6325	0.605	0.638	0.613	3.369	2.07
6400	0.924	0.951	0.931	3.369	3.14
6504	1.449	1.297	1.408	1.361	1.92
6834	0.426	0.527	0.453	3.872	1.75
6836	0.507	0.762	0.575	3.872	2.23
7219	1.457	1.425	1.449	3.872	5.61
7230	1.884	1.920	1.894	3.872	7.33
7231	2.322	2.037	2.246	3.872	8.70
7360	0.862	0.805	0.847	3.872	3.28
7370	0.846	0.898	0.859	3.872	3.33
7380	1.478	1.336	1.441	3.872	5.58
7382	0.742	0.732	0.739	3.872	2.86
7403	0.657	0.761	0.685	3.872	2.65
7405	0.315	0.267	0.302	3.872	1.17
7420	3.726	5.194	4.115	3.872	15.93
7421	0.216	0.112	0.189	3.872	0.73
7422	0.216	0.112	0.189	3.872	0.73
7425	0.610	0.544	0.593	3.872	2.30
7431	0.216	0.112	0.189	3.872	0.73
7502	0.409	0.343	0.392	3.872	1.52

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## Calculation of Average Uncapped Rates All Industry Groups

Class (1)	Balanced Formula Relativity			Uncapped Rate Level Factor (5)	Proposed Average Uncapped Rate (6)
	Indemnity (2)	Medical (3)	Total (4)		
7515	0.263	0.460	0.315	3.872	1.22
7520	0.537	0.635	0.563	3.872	2.18
7538	0.534	0.575	0.545	3.369	1.84
7539	0.264	0.253	0.261	3.872	1.01
7580	0.536	0.523	0.532	3.872	2.06
7590	0.987	1.298	1.069	3.872	4.14
7600	0.919	0.691	0.859	3.872	3.32
7601	0.861	0.845	0.857	3.369	2.89
7610	4.467	3.311	4.140	0.097	0.40
7704	0.745	1.021	0.818	3.872	3.17
7720	0.329	0.324	0.327	3.872	1.27
7855	1.008	0.982	1.001	3.369	3.37
8001	1.102	1.329	1.166	1.149	1.34
8002	1.002	1.608	1.171	1.149	1.35
8006	0.749	0.844	0.775	1.149	0.89
8008	0.453	0.491	0.463	1.149	0.53
8010	0.894	0.983	0.919	1.149	1.06
8013	0.163	0.262	0.191	1.149	0.22
8017	0.612	0.626	0.616	1.149	0.71
8018	2.552	2.134	2.436	1.149	2.80
8021	2.160	2.147	2.157	1.149	2.48
8031	1.055	1.301	1.124	1.149	1.29
8032	0.830	0.780	0.816	1.149	0.94
8033	0.959	1.363	1.072	1.149	1.23
8034	2.723	1.718	2.442	1.149	2.81
8039	1.186	1.361	1.235	1.149	1.42
8044	1.773	1.857	1.797	1.149	2.06
8046	1.341	2.026	1.533	1.149	1.76
8048	1.610	1.467	1.570	1.149	1.80
8058	1.427	1.871	1.551	1.149	1.78
8103	1.795	1.563	1.730	1.149	1.99
8105	15.446	9.136	13.684	1.149	15.72
8106	2.459	3.002	2.611	1.149	3.00
8107	1.467	1.487	1.472	1.149	1.69
8111	1.716	1.684	1.707	1.149	1.96
8203	3.246	2.886	3.145	1.149	3.61
8204	2.313	2.348	2.323	1.149	2.67
8215	1.924	2.398	2.057	1.149	2.36
8227	1.124	1.409	1.200	3.369	4.04
8232	2.934	3.335	3.046	1.149	3.50
8233	3.827	4.232	3.940	1.149	4.53
8235	2.670	2.739	2.690	1.149	3.09

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## Calculation of Average Uncapped Rates All Industry Groups

Class (1)	Balanced Formula Relativity			Uncapped Rate Level Factor (5)	Proposed Average Uncapped Rate (6)
	Indemnity (2)	Medical (3)	Total (4)		
8263	2.802	2.997	2.856	1.149	3.28
8264	2.880	2.797	2.857	1.149	3.28
8265	3.827	4.232	3.940	1.149	4.53
8279	2.431	3.761	2.802	1.149	3.22
8291	2.471	3.416	2.735	1.149	3.14
8292	2.306	2.820	2.449	1.149	2.81
8293	4.142	4.775	4.319	1.149	4.96
8350	4.946	4.416	4.798	1.149	5.51
8380	1.690	1.675	1.686	1.149	1.94
8381	0.705	0.633	0.685	1.149	0.79
8385	2.470	2.343	2.434	1.149	2.80
8392	1.065	1.075	1.068	1.149	1.23
8393	0.976	0.787	0.923	1.149	1.06
8500	3.827	4.232	3.940	1.149	4.53
8601	1.400	1.347	1.385	0.097	0.13
8710	1.443	1.166	1.365	1.149	1.57
8719	1.443	1.166	1.365	1.149	1.57
8720	0.526	0.558	0.535	1.149	0.61
8721	1.306	1.369	1.323	0.097	0.13
8742	0.755	0.866	0.787	0.097	0.08
8745	3.175	3.346	3.222	1.149	3.70
8747	0.548	0.350	0.493	1.149	0.57
8748	4.027	3.257	3.809	0.097	0.37
8800	8.570	7.543	8.279	0.097	0.80
8803	0.341	0.294	0.328	0.097	0.03
8810	0.388	0.455	0.407	0.097	0.04
8820	0.411	0.422	0.414	0.097	0.04
8824	1.525	1.386	1.486	1.149	1.71
8826	1.103	1.094	1.100	1.149	1.26
8829	1.863	1.395	1.732	1.149	1.99
8831	0.401	1.009	0.571	1.149	0.66
8832	2.243	1.940	2.157	0.097	0.21
8833	9.317	7.074	8.682	0.097	0.84
8835	1.237	0.967	1.161	1.149	1.33
8868	6.424	6.357	6.405	0.097	0.62
8901	0.388	0.455	0.407	0.097	0.04
9014	1.451	1.443	1.449	1.149	1.66
9015	1.857	1.774	1.834	1.149	2.11
9016	0.904	1.534	1.080	1.149	1.24
9019	0.591	0.700	0.620	3.872	2.40
9033	1.850	1.624	1.787	1.149	2.05
9040	1.892	1.749	1.852	1.149	2.13

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## Calculation of Average Uncapped Rates All Industry Groups

Class (1)	Balanced Formula Relativity			Uncapped Rate Level Factor (5)	Proposed Average Uncapped Rate (6)
	Indemnity (2)	Medical (3)	Total (4)		
9044	0.941	1.118	0.991	1.149	1.14
9052	1.084	1.015	1.064	1.149	1.22
9058	1.050	1.021	1.042	1.149	1.20
9060	0.588	0.715	0.624	1.149	0.72
9061	0.629	0.575	0.614	1.149	0.71
9062	0.546	0.519	0.539	1.149	0.62
9063	0.320	0.473	0.363	1.149	0.42
9079	0.580	0.641	0.597	1.149	0.69
9089	0.408	0.437	0.416	1.149	0.48
9093	0.570	0.683	0.602	1.149	0.69
9101	2.443	2.329	2.411	1.149	2.77
9102	0.494	0.688	0.545	3.872	2.11
9154	0.368	0.487	0.399	3.872	1.55
9156	14.320	18.944	15.628	0.097	1.52
9178	0.982	4.834	2.002	3.872	7.75
9179	5.450	16.455	8.365	3.872	32.39
9180	0.591	1.288	0.775	3.872	3.00
9182	0.416	0.709	0.493	3.872	1.91
9186	0.591	1.288	0.775	3.872	3.00
9220	2.315	2.186	2.279	1.149	2.62
9402	0.818	0.824	0.820	3.872	3.17
9403	2.440	2.436	2.439	3.872	9.44
9410	1.993	2.234	2.060	1.149	2.37
9501	1.101	1.053	1.088	1.361	1.48
9505	1.101	1.053	1.088	1.361	1.48
9519	1.816	1.576	1.749	1.149	2.01
9521	1.969	2.129	2.012	1.361	2.74
9522	1.133	0.870	1.062	1.361	1.45
9533	4.611	3.508	4.317	3.369	14.54
9534	1.253	1.175	1.232	3.369	4.15
9549	0.892	0.686	0.837	3.369	2.82
9620	0.586	0.687	0.614	1.149	0.71

### Notes:

(2), (3), (4): Section IX - G.

(5): Section IX - H, Exhibit 1.

(6) = (4) x (5)

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Section IX - Classification Pricing  
Subsection J - Average Rates and Proposed Premium Change  
7/1/2024

Section IX - J  
Exhibit 1

## Comparison of Average Rates All Industry Groups

Class (1)	Present Average Capped Rate (2)	Proposed Average Uncapped Rate (3)	Proposed Average Capped Rate (4)
0005	2.12	1.94	1.94
0008	1.93	1.63	1.63
0016	2.79	2.91	2.91
0034	2.15	2.00	2.00
0035	1.31	1.22	1.22
0036	2.15	2.00	2.00
0042	2.83	2.57	2.57
0046	2.33	2.01	2.01
0050	3.87	3.66	3.66
0079	2.18	1.84	1.84
0083	2.72	2.50	2.50
0106	7.44	6.13	6.13
0113	2.15	2.00	2.00
0170	2.15	2.00	2.00
0908	75.24	76.49	76.54
0909	186.03	239.93	209.39
0912	372.05	479.85	418.78
0913	150.48	152.98	153.08
0917	1.87	1.82	1.82
0918	0.35	0.32	0.32
1430	3.15	2.47	2.48
1438	2.85	2.51	2.52
1463	9.83	7.67	7.70
1624	3.68	3.15	3.15
1655	2.30	2.28	2.28
1701	2.22	4.75	2.50
1710	3.68	3.15	3.15
1747	1.83	1.89	1.90
1748	2.99	2.42	2.43
1853	1.02	1.27	1.15
1924	2.20	2.60	2.47
1925	4.84	2.90	3.50
2003	2.80	2.35	2.36
2014	3.15	2.85	2.87
2021	2.35	2.10	2.11
2039	3.53	3.34	3.35
2041	1.95	1.73	1.73
2070	2.84	2.66	2.67
2081	2.61	2.61	2.62
2089	2.16	1.92	1.92
2095	2.43	2.42	2.43
2101	2.16	1.92	1.92
2111	1.81	1.59	1.59
2114	2.16	1.92	1.92
2115	4.68	4.16	4.17
2121	1.14	0.89	0.90
2130	1.28	1.13	1.14
2131	2.53	2.58	2.59

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## Comparison of Average Rates All Industry Groups

Class (1)	Present Average Capped Rate (2)	Proposed Average Uncapped Rate (3)	Proposed Average Capped Rate (4)
2143	1.66	1.63	1.64
2150	3.00	2.89	2.90
2156	2.64	2.25	2.26
2157	3.39	3.31	3.33
2172	1.39	1.43	1.43
2211	4.46	4.24	4.26
2220	2.44	2.58	2.59
2260	4.05	3.66	3.67
2288	3.16	2.80	2.81
2305	1.98	1.72	1.73
2362	1.76	1.80	1.80
2380	1.36	1.38	1.39
2402	1.75	1.55	1.56
2413	2.28	1.83	1.83
2416	2.25	2.87	2.52
2417	1.30	1.02	1.02
2501	1.81	1.44	1.45
2503	0.85	0.77	0.77
2570	2.66	3.15	2.99
2576	1.67	1.50	1.51
2585	2.45	2.31	2.32
2586	1.82	1.51	1.51
2587	1.72	1.67	1.67
2623	3.48	2.77	2.78
2651	1.07	0.95	0.96
2660	1.56	1.24	1.24
2683	1.68	1.42	1.42
2688	1.66	1.43	1.44
2702	13.01	13.77	13.77
2710	4.93	5.22	5.24
2731	2.39	2.39	2.40
2747	4.42	3.93	3.94
2790	1.79	1.48	1.49
2802	2.92	2.56	2.57
2835	1.61	1.47	1.47
2836	2.08	1.77	1.78
2841	2.56	2.18	2.19
2883	2.43	2.11	2.12
2923	0.98	0.88	0.89
2942	1.27	1.12	1.13
3018	1.98	1.74	1.75
3022	2.77	2.53	2.54
3027	2.44	1.57	1.76
3028	2.46	2.54	2.55
3030	4.10	3.88	3.90
3040	4.76	4.39	4.41
3041	2.17	1.90	1.91
3042	2.70	1.94	1.96

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## Comparison of Average Rates All Industry Groups

Class (1)	Present Average Capped Rate (2)	Proposed Average Uncapped Rate (3)	Proposed Average Capped Rate (4)
3066	1.92	1.75	1.76
3076	2.16	2.12	2.13
3081	3.33	2.86	2.88
3082	3.33	2.86	2.88
3085	3.39	2.77	2.79
3110	5.77	4.11	4.18
3111	1.90	1.73	1.73
3113	1.39	1.27	1.27
3114	2.10	1.73	1.73
3118	1.11	1.09	1.09
3119	0.79	0.66	0.67
3120	0.98	0.89	0.89
3122	1.72	1.50	1.50
3127	1.30	1.53	1.46
3131	1.12	1.06	1.07
3132	1.68	1.51	1.52
3145	1.14	0.99	0.99
3146	1.61	1.80	1.81
3169	1.80	1.77	1.78
3179	0.89	0.89	0.90
3180	1.92	1.75	1.76
3188	1.67	1.42	1.42
3200	1.87	1.76	1.77
3220	1.81	1.50	1.50
3255	1.63	1.30	1.31
3257	2.00	1.95	1.96
3270	1.46	1.20	1.21
3300	2.83	2.63	2.64
3315	2.42	2.21	2.22
3336	1.93	1.78	1.79
3365	3.59	3.22	3.22
3372	1.82	1.59	1.60
3373	3.04	2.80	2.81
3381	1.40	1.20	1.21
3383	1.09	0.96	0.96
3385	0.73	0.66	0.67
3400	1.80	1.77	1.78
3507	2.20	2.20	2.20
3515	1.98	1.63	1.64
3558	0.58	0.50	0.50
3571	0.49	0.43	0.43
3574	1.31	1.19	1.19
3612	1.11	1.16	1.16
3620	2.59	2.14	2.15
3629	1.31	1.19	1.19
3632	1.31	1.19	1.19
3634	1.43	1.28	1.29
3635	1.68	1.01	1.21

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## Comparison of Average Rates All Industry Groups

Class (1)	Present Average Capped Rate (2)	Proposed Average Uncapped Rate (3)	Proposed Average Capped Rate (4)
3638	1.31	1.19	1.19
3642	1.00	1.00	1.00
3643	1.47	1.51	1.52
3647	1.79	1.58	1.59
3648	0.86	0.73	0.73
3681	0.48	0.42	0.42
3685	0.40	0.41	0.41
3724	3.46	3.10	3.10
3726	3.75	2.67	2.67
3807	1.80	1.77	1.78
3808	2.59	2.20	2.21
3821	4.06	3.32	3.32
3826	2.88	2.75	2.76
3830	1.31	1.19	1.19
3841	1.50	1.47	1.48
4000	4.96	4.43	4.43
4021	2.53	2.26	2.27
4024	2.94	2.36	2.37
4034	5.77	5.77	5.79
4036	1.47	1.46	1.47
4038	1.92	1.60	1.61
4053	2.38	2.46	2.47
4062	1.79	1.63	1.64
4112	0.26	0.21	0.22
4113	2.38	2.46	2.47
4114	2.68	2.60	2.61
4130	3.18	4.04	3.57
4133	1.54	1.51	1.52
4150	0.58	0.47	0.47
4239	2.25	2.39	2.40
4243	2.12	1.73	1.73
4244	2.57	2.35	2.36
4250	1.87	1.93	1.93
4251	2.15	2.33	2.34
4273	2.36	1.92	1.93
4279	2.05	1.78	1.79
4283	1.55	2.00	1.74
4299	1.41	1.24	1.25
4304	4.43	5.41	4.98
4307	1.13	0.92	0.92
4308	1.72	1.59	1.59
4351	0.78	0.67	0.67
4352	0.84	0.66	0.66
4360	0.49	0.67	0.56
4361	0.45	0.46	0.46
4362	0.38	0.33	0.33
4410	2.25	1.80	1.80
4432	0.66	0.81	0.74

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## Comparison of Average Rates All Industry Groups

Class (1)	Present Average Capped Rate (2)	Proposed Average Uncapped Rate (3)	Proposed Average Capped Rate (4)
4439	4.37	3.92	3.94
4452	2.48	2.31	2.32
4459	2.08	1.83	1.84
4470	1.49	1.38	1.38
4484	1.80	1.76	1.76
4493	1.70	1.54	1.54
4511	0.24	0.20	0.20
4512	0.06	0.06	0.06
4557	1.58	1.50	1.51
4558	1.53	1.64	1.65
4583	2.22	2.48	2.49
4611	0.65	0.51	0.52
4635	3.92	3.37	3.38
4653	1.71	1.70	1.71
4665	8.34	8.59	8.63
4692	0.42	0.37	0.37
4693	0.64	0.56	0.56
4720	1.45	1.66	1.63
4740	0.61	0.56	0.57
4741	2.28	2.90	2.56
4771	3.12	1.72	2.26
4777	2.22	2.48	2.49
4825	0.30	0.33	0.33
4828	0.82	0.84	0.84
4829	0.82	0.84	0.84
4902	1.27	1.12	1.13
4923	0.49	0.67	0.56
5020	3.62	3.90	3.90
5022	7.17	6.11	6.11
5037	9.75	8.48	8.47
5040	18.38	16.27	16.26
5057	14.72	9.64	10.32
5059	20.77	16.36	16.35
5102	5.21	5.00	4.99
5146	5.27	4.70	4.70
5160	2.70	2.86	2.86
5183	2.71	2.42	2.42
5188	3.00	2.71	2.71
5190	1.86	1.61	1.61
5191	0.58	0.53	0.53
5192	2.27	2.46	2.47
5213	7.05	6.67	6.67
5215	4.17	4.12	4.11
5221	5.43	5.04	5.04
5222	6.88	6.26	6.26
5223	2.95	2.67	2.67
5348	3.50	3.10	3.10
5402	4.58	4.44	4.44

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## Comparison of Average Rates All Industry Groups

Class (1)	Present Average Capped Rate (2)	Proposed Average Uncapped Rate (3)	Proposed Average Capped Rate (4)
5403	6.83	5.29	5.28
5437	2.83	2.74	2.74
5443	2.39	2.14	2.14
5445	4.77	4.34	4.33
5462	4.84	4.92	4.92
5472	6.72	5.64	5.63
5473	8.74	8.82	8.81
5474	3.71	3.51	3.50
5478	3.46	3.22	3.22
5479	4.28	3.96	3.96
5480	3.55	3.71	3.70
5506	4.25	3.60	3.59
5507	3.86	3.23	3.23
5508	3.87	3.66	3.66
5509	4.90	4.31	4.30
5538	3.14	3.01	3.01
5545	38.86	34.13	34.10
5547	8.67	7.23	7.22
5606	0.99	0.88	0.88
5610	4.53	4.64	4.63
5645	5.43	5.02	5.02
5701	12.80	8.81	8.98
5703	7.15	5.08	5.08
5705	8.36	8.08	8.07
6003	5.05	4.09	4.09
6005	3.87	3.66	3.66
6204	4.75	4.61	4.61
6217	3.56	3.27	3.26
6229	3.60	3.26	3.26
6233	1.61	1.35	1.35
6251	3.44	2.72	2.71
6252	3.69	3.22	3.22
6306	7.57	6.13	6.12
6319	2.02	1.89	1.89
6325	2.23	2.07	2.06
6400	3.76	3.14	3.13
6504	2.16	1.92	1.92
6834	1.98	1.75	1.75
6836	2.41	2.23	2.23
7219	6.24	5.61	5.61
7230	7.78	7.33	7.33
7231	9.52	8.70	8.70
7360	3.87	3.28	3.28
7370	3.85	3.33	3.33
7380	5.59	5.58	5.58
7382	3.06	2.86	2.86
7403	2.71	2.65	2.65
7405	1.15	1.17	1.17

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## Comparison of Average Rates All Industry Groups

Class (1)	Present Average Capped Rate (2)	Proposed Average Uncapped Rate (3)	Proposed Average Capped Rate (4)
7420	8.75	15.93	9.84
7421	0.89	0.73	0.73
7422	0.89	0.73	0.73
7425	2.45	2.30	2.30
7431	0.89	0.73	0.73
7502	1.69	1.52	1.52
7515	2.43	1.22	1.76
7520	2.68	2.18	2.18
7538	3.51	1.84	2.46
7539	1.18	1.01	1.01
7580	2.62	2.06	2.06
7590	4.81	4.14	4.14
7600	3.74	3.32	3.33
7601	3.24	2.89	2.88
7610	0.32	0.40	0.36
7704	3.33	3.17	3.17
7720	1.34	1.27	1.27
7855	3.19	3.37	3.37
8001	1.46	1.34	1.34
8002	1.54	1.35	1.35
8006	0.84	0.89	0.89
8008	0.61	0.53	0.53
8010	1.20	1.06	1.06
8013	0.27	0.22	0.22
8017	0.83	0.71	0.71
8018	3.12	2.80	2.80
8021	2.86	2.48	2.48
8031	1.31	1.29	1.29
8032	1.07	0.94	0.94
8033	1.18	1.23	1.23
8034	2.29	2.81	2.58
8039	1.33	1.42	1.42
8044	2.23	2.06	2.07
8046	2.03	1.76	1.76
8048	1.94	1.80	1.80
8058	1.94	1.78	1.78
8103	2.35	1.99	1.99
8105	7.55	15.72	8.50
8106	3.70	3.00	3.00
8107	2.00	1.69	1.69
8111	2.24	1.96	1.96
8203	4.13	3.61	3.62
8204	3.91	2.67	2.83
8215	2.44	2.36	2.36
8227	4.83	4.04	4.04
8232	3.86	3.50	3.50
8233	4.52	4.53	4.53
8235	3.42	3.09	3.09

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## Comparison of Average Rates All Industry Groups

Class (1)	Present Average Capped Rate (2)	Proposed Average Uncapped Rate (3)	Proposed Average Capped Rate (4)
8263	3.93	3.28	3.28
8264	3.77	3.28	3.28
8265	4.52	4.53	4.53
8279	3.03	3.22	3.22
8291	3.41	3.14	3.14
8292	2.83	2.81	2.82
8293	5.44	4.96	4.96
8350	5.74	5.51	5.52
8380	2.02	1.94	1.94
8381	1.06	0.79	0.79
8385	3.07	2.80	2.80
8392	1.26	1.23	1.23
8393	1.08	1.06	1.06
8500	4.52	4.53	4.53
8601	0.17	0.13	0.13
8710	1.95	1.57	1.57
8719	1.95	1.57	1.57
8720	0.67	0.61	0.61
8721	0.15	0.13	0.13
8742	0.08	0.08	0.08
8745	4.27	3.70	3.70
8747	0.61	0.57	0.57
8748	0.45	0.37	0.37
8800	0.78	0.80	0.81
8803	0.03	0.03	0.03
8810	0.04	0.04	0.04
8820	0.05	0.04	0.04
8824	1.74	1.71	1.71
8826	1.28	1.26	1.26
8829	2.13	1.99	1.99
8831	0.79	0.66	0.66
8832	0.22	0.21	0.21
8833	0.94	0.84	0.85
8835	1.37	1.33	1.34
8868	0.63	0.62	0.62
8901	0.04	0.04	0.04
9014	1.67	1.66	1.67
9015	2.38	2.11	2.11
9016	1.20	1.24	1.24
9019	2.44	2.40	2.40
9033	2.12	2.05	2.05
9040	2.38	2.13	2.13
9044	1.13	1.14	1.14
9052	1.26	1.22	1.22
9058	1.24	1.20	1.20
9060	0.82	0.72	0.72
9061	0.77	0.71	0.71
9062	0.77	0.62	0.62

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## Comparison of Average Rates All Industry Groups

Class (1)	Present Average Capped Rate (2)	Proposed Average Uncapped Rate (3)	Proposed Average Capped Rate (4)
9063	0.48	0.42	0.42
9079	0.76	0.69	0.69
9089	0.52	0.48	0.48
9093	0.76	0.69	0.69
9101	3.17	2.77	2.77
9102	2.06	2.11	2.11
9154	1.54	1.55	1.55
9156	1.51	1.52	1.52
9178	10.50	7.75	7.75
9179	38.33	32.39	32.39
9180	3.54	3.00	3.00
9182	2.27	1.91	1.91
9186	3.54	3.00	3.00
9220	3.01	2.62	2.62
9402	3.51	3.17	3.17
9403	9.87	9.44	9.44
9410	2.97	2.37	2.37
9501	1.71	1.48	1.49
9505	1.71	1.48	1.49
9519	1.99	2.01	2.01
9521	2.98	2.74	2.75
9522	1.48	1.45	1.45
9533	14.92	14.54	14.53
9534	4.67	4.15	4.15
9549	3.09	2.82	2.82
9620	0.63	0.71	0.70

Notes:

(2) = (4) from Section IX - J, Exhibit 1 of the 7/1/2023 Stipulation.

(3): Section IX - I, Exhibit 1.

(4): Total Balanced Formula Relativity (from Section IX - I, Exhibit 1) x Capped Rate Level Factors and subject to maximum and minimum caps (from Section IX - H, Exhibit 1.)

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Section IX - Classification Pricing  
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Section IX - J  
Exhibit 2

## Summary of Proposed Premium Change All Industry Groups

Industry Group (1)	Present Premium (2)	Proposed Premium (3)	Proposed Change (4)	Target Change (5)	Capped Rate Level Factor (6)
Manufacturing	522,935,951	483,084,427	-7.6%	-7.6%	1.366
Construction	1,675,648,040	1,510,366,889	-9.9%	-9.9%	3.366
Office & Clerical	523,586,021	486,212,242	-7.1%	-7.1%	0.097
Goods & Services	1,395,962,379	1,292,103,366	-7.4%	-7.4%	1.149
Miscellaneous	677,950,358	626,239,009	-7.6%	-7.6%	3.873
All Groups	4,796,082,749	4,398,005,933	-8.3%		

### Notes:

(2) = Exposure x Present Average Rates from Exhibit 1.

(3) = Exposure x Proposed Average Capped Rates from Exhibit 1.

(4) = [(3) - (2)] / (2)

(5): Section IX - H, Exhibit 1.

(6): Section IX - H, Exhibit 1. Proposed average uncapped rates are capped by an iterative process using rate levels to determine if the required change is achieved.

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Section IX - Classification Pricing  
Subsection K - Adjustments to Derive Final Manual Rates  
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Section IX - K  
Exhibit 1

## Calculation of Proposed Manual Rates

The proposed manual rates in Section IX - A, Exhibit 1 are derived from the proposed average capped rates in Section IX - J, Exhibit 1 as follows:

$$\text{Proposed Manual Rate} = [\text{Proposed Average Rate} / (\text{Factor 1} \times \text{Factor 2} \times \text{Factor 3})] \times [1.000 / (1.000 - \text{Factor 4})]$$

(1)	Factor 1 =	0.997	The offset for Merit Rating and Average Experience Modification
(2)	Factor 2 =	1.054	The offset for ARAP
(3)	Factor 3 =	0.963	For eligible classes, the offset for the Construction Classification Premium Adjustment Program
(4)	Factor 4 =	0.0000	The loading from the filing of recoupment of amounts paid to the Insolvency Fund

### Notes:

- (1): Exhibit 2.
- (2): Exhibit 3.
- (3): Exhibit 4.
- (4): Exhibit 5, Page 1.

Offset for Experience & Merit Rating

Policy Year (1)	Age (2)	Rating Category (3)	Number of Policies (4)	% of Policies = (4) / Total (4) (5)	Manual Premium (6)	% of Manual = (6) / Total (6) (7)	Standard Premium (8)	Historical Average Mod = (8) / (6) (9)	Selected Average Mod (10)
2017	66	Non Rated	99,082	43%	23,304,359	2%	23,297,459	1.000	
		Merit Rated	79,689	35%	157,838,255	12%	154,304,616	0.978	
		Intrastate Rated	24,389	11%	560,813,884	44%	559,718,122	0.998	
		Interstate Rated	24,995	11%	537,742,789	42%	494,094,544	0.919	
		Total	228,155	100%	1,279,699,287	100%	1,231,414,741	0.962	
2018	54	Non Rated	102,512	44%	23,889,574	2%	23,882,879	1.000	
		Merit Rated	80,200	35%	158,008,341	13%	154,602,691	0.978	
		Intrastate Rated	24,328	10%	554,103,874	44%	553,286,117	0.999	
		Interstate Rated	24,967	11%	519,657,730	41%	481,523,104	0.927	
		Total	232,007	100%	1,255,659,519	100%	1,213,294,791	0.966	
2019	42	Non Rated	114,733	47%	25,104,211	2%	25,100,393	1.000	
		Merit Rated	80,603	33%	156,695,711	13%	153,419,561	0.979	
		Intrastate Rated	23,109	9%	521,346,321	43%	525,555,518	1.008	
		Interstate Rated	25,370	10%	503,701,027	42%	466,304,183	0.926	
		Total	243,815	100%	1,206,847,270	100%	1,170,379,655	0.970	
2020	30	Non Rated	119,441	48%	26,000,168	2%	25,993,886	1.000	
		Merit Rated	77,849	32%	151,572,532	13%	148,389,307	0.979	
		Intrastate Rated	22,498	9%	524,553,319	44%	526,595,440	1.004	
		Interstate Rated	27,196	11%	488,410,372	41%	458,161,520	0.938	
		Total	246,984	100%	1,190,536,391	100%	1,159,140,153	0.974	
2021	18	Non Rated	126,895	49%	27,484,373	2%	27,477,593	1.000	
		Merit Rated	81,134	31%	160,100,354	13%	156,772,498	0.979	
		Intrastate Rated	24,318	9%	548,902,002	44%	551,955,032	1.006	
		Interstate Rated	28,778	11%	503,240,049	41%	473,382,369	0.941	
		Total	261,125	100%	1,239,726,778	100%	1,209,587,492	0.976	
Total		Non Rated	562,663	46%	125,782,685	2%	125,752,210	1.000	1.000
		Merit Rated	399,475	33%	784,215,193	13%	767,488,673	0.979	0.979
		Intrastate Rated	118,642	10%	2,709,719,400	44%	2,717,110,229	1.003	1.000
		Interstate Rated	131,306	11%	2,552,751,967	41%	2,373,465,720	0.930	1.000
		Total	1,212,086	100%	6,172,469,245	100%	5,983,816,832	0.969	0.997

Notes:

Unit Statistical Data, excluding Large Deductibles.

Non Rated, Merit Rated and Intrastate Rated categories are estimated based on manual premium.

(10): Set to 1.000 for Non Rated, Interstate Rated and Intrastate Rated.

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Section IX - Classification Pricing  
 Subsection K - Adjustments to Derive Final Manual Rates  
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Section IX - K  
 Exhibit 3

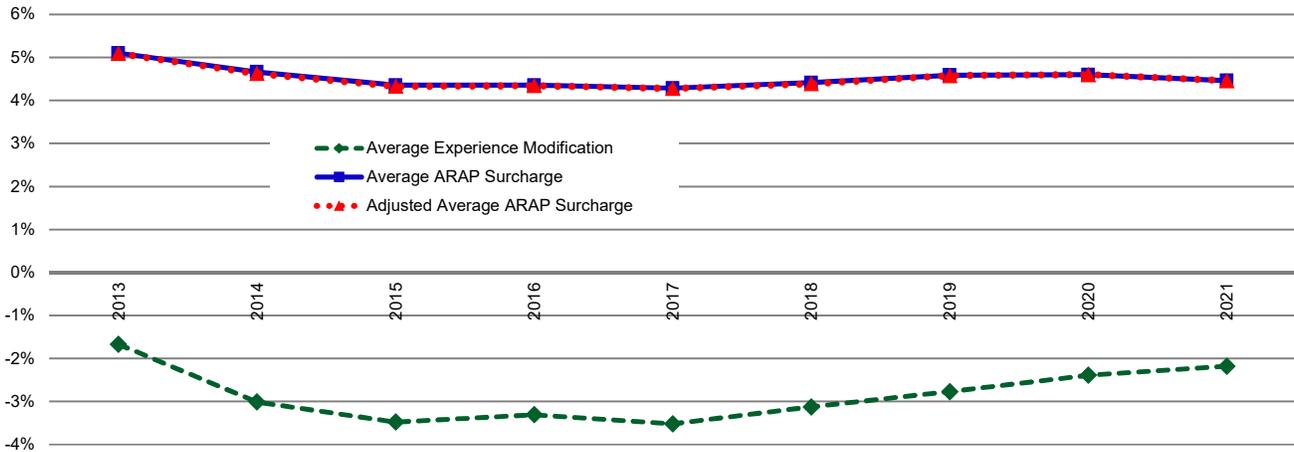
## Offset for ARAP Estimate of Average ARAP Surcharge for Prospective Effective Period

### Historical Average Experience Modification and ARAP Surcharge

Policy Year (1)	Manual Premium (2)	Standard Premium (3)	ARAP Premium (4)	Adjusted ARAP Premium (5)	Average ARAP Surcharge =(4) / (3) (6)	Average Experience Modification =(3) / (2) - 1.000 (7)	Adjusted Average ARAP Surcharge =(5) / [ (3)+(4)-(5) ] (8)
2013	1,001,353,295	984,629,103	50,227,113	50,122,088	5.1%	-1.7%	5.1%
2014	1,075,892,294	1,043,514,754	48,662,356	48,284,820	4.7%	-3.0%	4.6%
2015	1,150,542,044	1,110,553,694	48,380,605	48,111,915	4.4%	-3.5%	4.3%
2016	1,198,041,869	1,158,422,462	50,457,516	50,328,387	4.4%	-3.3%	4.3%
2017	1,276,323,224	1,231,414,741	52,760,827	52,685,869	4.3%	-3.5%	4.3%
2018	1,252,406,157	1,213,294,791	53,578,659	53,258,192	4.4%	-3.1%	4.4%
2019	1,203,714,501	1,170,379,655	53,680,151	53,588,254	4.6%	-2.8%	4.6%
2020	1,187,500,211	1,159,140,153	53,321,004	53,313,264	4.6%	-2.4%	4.6%
2021	1,236,521,912	1,209,587,492	53,997,278	53,927,144	4.5%	-2.2%	4.5%

### Regression of Average ARAP Surcharge on Average Experience Modification

(9) R-Squared	0.672
(10) Slope	0.321
(11) Intercept	0.054
(12) Projected Average ARAP Surcharge = (11)	0.054



**Notes:**

- (2) - (4): Unit Statistical Data, excluding Large Deductibles. ARAP adjusted from company level to DSR level.
- (5): (4) adjusted to maximum ARAP surcharge factor of 1.25.

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Section IX - Classification Pricing  
Subsection K - Adjustments to Derive Final Manual Rates  
7/1/2024

Section IX - K  
Exhibit 4

## Construction Class Premium Adjustment Program

Policy Year (1)	Manual Premium for Eligible Class Codes (2)	Construction Credit (3)	Percent (4)
2020	436,076,600	16,574,216	3.8%
2021	449,260,572	16,573,421	3.7%
(5) Selected Average Credit for Eligible Class Codes in Prospective Effective Period			3.7%

Note:

(2), (3): Unit Statistical Data, excluding Large Deductibles.

(4) = (3) / (2)

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Section IX - Classification Pricing  
Subsection K - Adjustments to Derive Final Manual Rates  
7/1/2024

Section IX - K  
Exhibit 5  
Page 1

## Loading for Recoupment of Insolvency Fund Assessments

### Unanticipated Insolvency Assessment Recoupments

(1)	Estimated Written Premium for the Policy Period beginning 7/1/23 and ending 6/30/24, absent insolvency loads	1,460,940,656
(2)	Unanticipated Insolvency Assessment Recoupment Rate (As a % of premium absent insolvency loads)	0.00%
(3)	Unanticipated Insolvency Assessment Recoupments	0
(4)	Interest Adjustment Factor	1.047
(5)	Adjusted Unanticipated Insolvency Assessment Recoupments	0

### Net Assessments

(6)	Amount Sufficient to Recoup Assessment	0
(7)	Net Assessments	0

### Loading for Recoupment

(8)	Estimated Written Premium in the Prospective Effective Period, absent insolvency loads	1,343,058,548
(9)	Indicated Loading for Recoupment of Insolvency Fund Assessments	<b>0.00%</b>

### Notes:

(1): Page 2.

(2): When insolvency fund loading in 7/1/2023 rates was calculated, it was anticipated that rates would be in effect for 1 year. Therefore, no unanticipated insolvency assessment recoupment rate. There would be an unanticipated insolvency assessment recoupment rate if 7/1/2023 rates were in effect beyond 6/30/2024.

(3) = (1) x (2)

(4): 4.7% is the risk-free rate of interest, shown in Section VII-J, Exhibit 1, Page 1 compounded from the expected collection date of the unanticipated insolvency assessment recoupments to the average date the assessment will be recouped or returned.

(5) = (3) x (4)

(6): No assessment or refund of assessment in 2023.

(7) = (6) - (5)

(8): Page 2.

(9) = (7) / [ (7) + (8) ]

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Section IX - Classification Pricing  
Subsection K - Adjustments to Derive Final Manual Rates  
7/1/2024

Section IX - K  
Exhibit 5  
Page 2

## Expected Workers' Compensation Written Premium in Prospective Effective Period

(1)	2022 Calendar Year Written Premium, absent insolvency loads	1,648,119,944
(2)	Estimated Exposure Growth Factor from Calendar Year 2022 to Policy Period ending 6/30/24	1.006
(3)	Rate Change from Calendar Year 2022 Written to the Policy Period ending 6/30/24	-11.91%
(4)	Estimated Written Premium for the Policy Period ending 6/30/24, absent Insolvency Loads = (1) x (2) x [ 1.0 + (3) ]	1,460,940,656
(5)	Estimated Exposure Growth Factor from the Policy Period ending 6/30/24 to the Prospective Effective Period	1.003
(6)	Average Indicated Rate Change	-8.3%
(7)	Estimated Written Premium in Prospective Effective Period, absent insolvency loads = (4) x (5) x [ 1.0 + (6) ]	1,343,058,548

### Notes:

(1): Adjusted to remove any loading for recoupment of insolvency fund assessments.

(2): Assumes a 0.3% annual change (Section V-H, Exhibit 3) compounded for 2.5 years.

(3): Section I-A of 7/1/2023 Stipulation.

(5): Assumes a 0.3% annual change (from Section V-H, Exhibit 3) compounded for 1 year.

(6): Section I-A, Exhibit 1.

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## Pricing Example for Class 2660 Boot Or Shoe Mfg Noc

Calculation of MA Indicated Relativity:

		(A). Limited Losses (Unit Statistical Data, excluding Large Deductibles)							
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2017	0	0	0	0	0	0	1,058	0
	2018	0	0	0	0	0	0	25,832	0
	2019	0	0	0	0	0	0	0	0
	2020	0	0	0	0	58,134	0	0	0
	2021	0	0	0	0	0	0	643	0
Medical	2017	0	0	0	0	0	0	2,419	369
	2018	0	0	0	0	0	0	8,682	312
	2019	0	0	0	0	0	0	0	1,239
	2020	0	0	0	0	3,521	0	0	420
	2021	0	0	0	0	0	0	5,558	0

		(B). Primary Conversion Factors (Section IX - B, Exhibit 1, Page 2)							
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2017	0.853	0.828	0.865	0.903	0.876	0.845	0.820	0.000
	2018	0.873	0.847	0.884	0.919	0.891	0.866	0.840	0.000
	2019	0.979	0.950	0.989	1.024	0.995	0.972	0.944	0.000
	2020	1.268	1.205	1.279	1.318	1.253	1.260	1.198	0.000
	2021	1.995	1.671	2.004	2.037	1.707	1.988	1.665	0.000
Medical	2017	0.505	0.562	0.505	0.505	0.562	0.505	0.562	0.468
	2018	0.516	0.579	0.516	0.516	0.579	0.516	0.579	0.483
	2019	0.586	0.656	0.586	0.586	0.656	0.586	0.656	0.586
	2020	0.675	0.731	0.675	0.675	0.731	0.675	0.731	0.757
	2021	0.807	0.828	0.807	0.807	0.828	0.807	0.828	0.776

		(C). Converted Limited Losses [ (A) x (B) ]							
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2017	0	0	0	0	0	0	867	0
	2018	0	0	0	0	0	0	21,690	0
	2019	0	0	0	0	0	0	0	0
	2020	0	0	0	0	72,867	0	0	0
	2021	0	0	0	0	0	0	1,071	0
Medical	2017	0	0	0	0	0	0	1,360	173
	2018	0	0	0	0	0	0	5,026	151
	2019	0	0	0	0	0	0	0	726
	2020	0	0	0	0	2,574	0	0	318
	2021	0	0	0	0	0	0	4,600	0

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Section IX - Classification Pricing  
 Subsection L - Pricing Examples  
 7/1/2024

Section IX - L  
 Exhibit 1  
 Page 2

## Pricing Example for Class 2660 Boot Or Shoe Mfg Noc

Calculation of MA Indicated Relativity:

		(D). Unadjusted Excess Losses [ (Excess Factor -1.0) x (C) ]							
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2017	0	0	0	0	0	0	138	0
	2018	0	0	0	0	0	0	3,443	0
	2019	0	0	0	0	0	0	0	0
	2020	0	0	0	0	11,568	0	0	0
	2021	0	0	0	0	0	0	170	0
Medical	2017	0	0	0	0	0	0	216	27
	2018	0	0	0	0	0	0	798	24
	2019	0	0	0	0	0	0	0	115
	2020	0	0	0	0	409	0	0	50
	2021	0	0	0	0	0	0	730	0

		(E). Adjusted Excess Losses							
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2017	0	0	0	0	0	0	96	0
	2018	0	0	0	0	0	0	2,410	0
	2019	0	0	0	0	0	0	0	0
	2020	0	0	0	0	8,097	0	0	0
	2021	0	0	0	0	0	0	119	0
Medical	2017	0	0	0	0	0	0	257	27
	2018	0	0	0	0	0	0	1,831	24
	2019	0	0	0	0	0	0	0	115
	2020	0	0	0	0	3,879	0	0	50
	2021	0	0	0	0	0	0	781	0

		(F). Secondary Conversion Factors				
		Fatal	Permanent Total	Permanent Partial	Temporary Total	Medical Only
Indemnity		0.734	0.612	1.310	1.341	0.000
Medical		1.195	0.611	1.308	1.339	1.195

		(G). Converted Unlimited Losses							
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2017	0	0	0	0	0	0	1,293	0
	2018	0	0	0	0	0	0	32,326	0
	2019	0	0	0	0	0	0	0	0
	2020	0	0	0	0	106,079	0	0	0
	2021	0	0	0	0	0	0	1,596	0
Medical	2017	0	0	0	0	0	0	2,166	239
	2018	0	0	0	0	0	0	9,182	209
	2019	0	0	0	0	0	0	0	1,005
	2020	0	0	0	0	8,441	0	0	440
	2021	0	0	0	0	0	0	7,206	0

		(H). Total					
Policy Year	Exposure	Indemnity			Medical		
		LD	NLD	LD	NLD	LD	NLD
2017	52,045	0	1,293	0	0	2,405	
2018	53,397	0	32,326	0	0	9,391	
2019	48,778	0	0	0	0	1,005	
2020	39,161	0	106,079	0	0	8,881	
2021	49,626	0	1,596	0	0	7,206	
Total	243,007	0	141,294	0	0	28,888	

	Indemnity	Medical
(I). Indicated Pure Premium	0.581	0.119
(J). Manufacturing Industry Group Pure Premium	0.952	0.353
(K). MA Indicated Relativity	0.611	0.337

Notes:

(E): Indemnity Adjusted Excess Losses = Indemnity Unadjusted Excess Losses x 0.7

Medical Adjusted Excess Losses = Medical Unadjusted Excess Losses + 0.3 x Indemnity Unadjusted Excess Losses

(F): Section IX-B, Exhibit 1, Page 3.

(G) = [ (C) + (E) ] x (F)

(I) = Total Losses / Total Exposure

(J): Industry Group Pure Premium from Section IX - C, Exhibit 1, Page 2.

(K) = (I) / (J)

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## Pricing Example for Class 2660 Boot Or Shoe Mfg Noc

Calculation of Countrywide Relativity

State (1)	State Code (2)	Losses				Lost-Time Claims		Payroll (9)
		Indemnity		Medical		Likely (7)	Not-Likely (8)	
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)			
Alabama	1	0	0	0	0	0	0	0
Arizona	2	14,104	18,832	7,855	20,161	1	2	11,019,654
Arkansas	3	6,258	28,297	44,584	98,152	4	11	62,257,770
Colorado	5	0	0	0	1,886	0	0	5,883,471
Connecticut	6	0	0	0	0	0	0	66,055
D.C.	8	0	0	0	0	0	0	0
Florida	9	0	0	0	4,007	0	0	4,563,898
Georgia	10	0	6,074	0	2,096	0	1	4,050,372
Idaho	11	0	0	0	0	0	0	1,200,025
Illinois	12	0	88,092	0	174,513	0	7	20,820,308
Indiana	13	0	31,656	0	37,011	0	2	789,953
Iowa	14	0	0	0	0	0	0	823,449
Kansas	15	0	0	0	0	0	0	0
Kentucky	16	0	0	0	0	0	0	256,307
Louisiana	17	0	1,687	0	1,520	0	1	129,253
Maine	18	416,819	767,860	312,220	1,167,707	5	48	120,238,590
Maryland	19	0	0	0	0	0	0	437,043
Michigan	21	21,644	4,573	14,246	76,698	1	1	35,196,368
Minnesota	22	0	2,601	0	39,766	0	3	7,530,456
Mississippi	23	0	0	0	4,302	0	0	2,191,500
Missouri	24	250,329	235,919	194,985	470,703	7	22	86,643,563
Montana	25	0	22,798	0	13,657	0	1	897,822
Nebraska	26	0	0	0	0	0	0	795,169
Nevada	27	0	0	0	0	0	0	278,478
New Hampshire	28	0	0	0	267	0	0	1,362,695
New Mexico	30	0	0	0	0	0	0	0
North Carolina	32	28,090	59,391	98,109	109,397	1	7	19,882,552
Oklahoma	35	0	0	0	0	0	0	31,403
Oregon	36	39,332	194,296	24,216	287,733	1	33	127,139,116
Rhode Island	38	0	0	0	428	0	0	134,366
South Carolina	39	0	0	0	0	0	0	210,933
South Dakota	40	0	0	0	0	0	0	0
Tennessee	41	0	1,092	0	10,355	0	1	25,247,070
Utah	43	0	2,644	0	26,307	0	1	6,466,625
Vermont	44	0	0	0	0	0	0	0
Virginia	45	0	808	0	18,618	0	1	6,651,910
West Virginia	47	0	0	0	0	0	0	34,348
Wisconsin	48	4,772	93,803	6,685	504,751	1	18	50,974,470
Hawaii	52	0	0	0	0	0	0	3,150,541
Alaska	54	0	0	0	0	0	0	0
<b>Total</b>		<b>781,348</b>	<b>1,560,423</b>	<b>702,900</b>	<b>3,070,035</b>	<b>21</b>	<b>160</b>	<b>607,355,533</b>

Note:  
 (3) - (9): Data are total for latest three policy years. See Section IX-D, Exhibit 3.

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## Pricing Example for Class 2660 Boot Or Shoe Mfg Noc

Calculation of Countrywide Relativity

State (1)	State Code (2)	Manufacturing Pitch Factors		Pure Premiums, on MA Level		Total (7)
		Indemnity (3)	Medical (4)	Indemnity (5)	Medical (6)	
Alabama	1	2.875	0.540	0.000	0.000	
Arizona	2	5.265	0.652	1.574	0.166	
Arkansas	3	5.766	1.146	0.320	0.263	
Colorado	5	2.158	0.578	0.000	0.019	
Connecticut	6	1.207	0.471	0.000	0.000	
D.C.	8	0.451	0.315	0.000	0.000	
Florida	9	2.412	0.431	0.000	0.038	
Georgia	10	2.144	0.764	0.321	0.040	
Idaho	11	1.447	0.421	0.000	0.000	
Illinois	12	1.250	0.402	0.529	0.337	
Indiana	13	4.533	0.629	18.163	2.946	
Iowa	14	1.697	0.372	0.000	0.000	
Kansas	15	2.854	0.518	0.000	0.000	
Kentucky	16	2.383	0.925	0.000	0.000	
Louisiana	17	2.141	0.539	2.795	0.634	
Maine	18	1.655	0.454	1.631	0.559	
Maryland	19	2.320	0.928	0.000	0.000	
Michigan	21	3.472	0.873	0.259	0.226	
Minnesota	22	1.515	0.584	0.052	0.309	
Mississippi	23	1.839	0.461	0.000	0.091	
Missouri	24	1.784	0.439	1.001	0.338	
Montana	25	1.361	0.381	3.455	0.580	
Nebraska	26	1.878	0.467	0.000	0.000	
Nevada	27	1.258	0.589	0.000	0.000	
New Hampshire	28	2.253	0.504	0.000	0.010	
New Mexico	30	1.658	0.417	0.000	0.000	
North Carolina	32	2.128	0.966	0.936	1.008	
Oklahoma	35	1.955	0.618	0.000	0.000	
Oregon	36	2.466	0.808	0.453	0.198	
Rhode Island	38	0.801	0.746	0.000	0.238	
South Carolina	39	1.379	0.690	0.000	0.000	
South Dakota	40	2.909	0.346	0.000	0.000	
Tennessee	41	3.258	0.759	0.014	0.031	
Utah	43	6.629	0.865	0.271	0.352	
Vermont	44	1.466	0.500	0.000	0.000	
Virginia	45	4.022	0.800	0.049	0.224	
West Virginia	47	4.607	0.931	0.000	0.000	
Wisconsin	48	2.518	0.375	0.487	0.376	
Hawaii	52	0.898	0.285	0.000	0.000	
Alaska	54	2.154	0.473	0.000	0.000	
(8)	Average of (5), (6) weighted by Payroll from Page 1, respectively			0.763	0.337	1.099
(9)	CW Manufacturing Pure Premium			0.881	0.320	1.200
(10)	CW Relativity = (8) / (9)			0.866	1.054	0.916
(11)	CW Relativity, balanced to unity			0.857	1.041	

Notes:

- (3), (4) = (MA Total Unlimited Losses) / [(State Pure Premium) x (MA Total Exposure)] for Industry Code 1. See Section IX - D, Exhibit 2.
- (5) = 100 x [ State Indemnity Losses / State Payroll ] x (3), where State Indemnity Losses and State Payroll from page 3.
- (6) = 100 x [ State Medical Losses / State Payroll ] x (4), where State Medical Losses and State Payroll from page 3.
- (9) = (8) weighted by MA five year Manufacturing Exposure
- (11): Relativities balanced to unity (weighted by MA exposure) over Manufacturing Industry Group.

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## Pricing Example for Class 2660 Boot Or Shoe Mfg Noc

Calculation of Credibility and Balanced Formula Relativity:

- (1) MA Indicated Relativity
- (2) Countrywide Indicated Relativity
- (3) Relativity to Underlying Present Rate

Injury Type	
Indemnity	Medical
0.611	0.337
0.857	1.041
1.051	1.060

Calculation of MA Credibility:

The MA Credibilities are calculated using the formula  $Z=(E / F)^{0.4}$  where E are expected losses for that injury type.

- (4) Adopted Relativity
- (5) Industry Group Pure Premium Underlying Present Rate Factor
- (6) Pure Premium Underlying Present Rate  
= (4) x (5)
- (7) Expected Losses  
= (6) x [(Total Exposure from Exhibit 1, Page 2)]
- (8) Full Credibility Standards
- (9) MA Credibility  
= Minimum of {100%, [(7) / (8)]<sup>0.4</sup>}

Injury Type	
Indemnity	Medical
1.048	1.054
0.780	0.340
0.818	0.359
198,659	87,122
33,150,000	6,000,000
13%	18%

Calculation of Countrywide Credibility

The Countrywide Credibilities are calculated using the formula  $Z=(E / F)^{0.4}$  where E are the countrywide claim counts for that injury type. The countrywide credibility is limited to no more than half of the complement of the credibility assigned to the Massachusetts data.

- (10) Countrywide Lost-Time Claims
- (11) Countrywide Claim Count Standard
- (12) Countrywide Credibility  
= Minimum of {[(10) / (11)]<sup>0.4</sup>, 0.5 x [100% - (9)]}
- (13) Credibility to Underlying Present Rate  
= 100% - (9) - (12)
- (14) Formula Relativity  
= [(1) x (9)] + [(2) x (12)] + [(3) x (13)]
- (15) Off Balance Factor

Injury Type	
Indemnity	Medical
181	181
1,150	1,000
44%	41%
43%	41%
0.908	0.922
1.001	1.008

- (16) Balanced Formula Relativity

Injury Type		
Indemnity	Medical	Total
0.907	0.915	0.909

Notes:

- (1): Exhibit 1, Page 2.
- (2): Exhibit 1, Page 4.
- (3): Relativity of (6) to Industry Group average, using 5 year Schedule Z exposure as weights.
- (4): Section IX-F, Exhibit 1.
- (5): Section IX-E, Exhibit 1.
- (8), (11): Section IX-D, Exhibit 1, Page 1.
- (10): Exhibit 1, Page 3.
- (15): Factor to balance Formula relativities across industry group to unity using 5 year Schedule Z exposure by injury type.
- (16) = (14) / (15), Total Balanced Formula Relativity is the weighted average of Partial Relativities using the MA Industry Group Pure Premium as weights.

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## Pricing Example for Class 2660 Boot Or Shoe Mfg Noc

Calculation of Proposed Average Rate and Proposed Manual Rate:

(1) Total Balanced Formula Relativity	0.909
(2) Capped Rate Level Factor	1.366
(3) Proposed Average Capped Rate = (1) x (2)	1.24
(4) Offset for Merit Rating	0.997
(5) Offset for ARAP	1.054
(6) Offset for Construction Classification Premium Adjustment Program	1.000
(7) Provision for Insolvency Fund Assessment Recoupment	0.0000
(8) Proposed Manual Rate = $\{(3) / [(4) \times (5) \times (6)]\} \times \{1.000 / [1.000 - (7)]\}$	1.18
(9) Minimum Premium	200
(10) Loss Constant	0
(11) Expected Loss Rate	0.61
(12) D-Ratio	0.17

### Notes:

(1): Exhibit 1, Page 5.

(2): Section IX-H, Exhibit 1. Proposed average uncapped rates are capped by an iterative process using rate levels to determine if the required change is achieved. Class 2660 is in the Manufacturing Industry Group.

(4), (5), (6), (7): Section IX-K, Exhibit 1. Class 2660 is not eligible for the Construction Credit program.

(9) =  $\{[(8) \times 35.0] + (10) + \text{Expense Constant}\}$  subject to a maximum of \$500

Where Expense Constant = 159 if  $(8) \times 35 + (10) < 200$

= 250 if  $(8) \times 35 + (10) \geq 200$  and  $< 1000$ .

= 338 if  $(8) \times 35 + (10) \geq 1000$ .

(10): No loss constant for Manufacturing classes, \$50 for Construction classes, \$20 for all other classes.

(11) = (3) x Ratio of Experience Rating ELR to Average Rate, from Section X - A, Exhibit 1. Class 2660 is in Hazard Group B.

(12): See text of Section X for an explanation of the calculation of D-Ratios.

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## Pricing Example for Class 9033 Housing Authority & Clerical, Sales, Drivers

Calculation of MA Indicated Relativity:

		(A). Limited Losses (Unit Statistical Data, excluding Large Deductibles)							
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2017	0	0	409,730	0	0	80,012	192,138	0
	2018	0	0	0	0	0	11,512	165,925	0
	2019	0	0	0	0	0	0	46,770	0
	2020	0	0	0	0	0	476,052	279,507	0
	2021	0	0	0	0	0	11,068	119,248	0
Medical	2017	0	0	90,270	0	0	3,005	93,196	4,049
	2018	0	0	0	0	0	1,273	76,150	11,878
	2019	0	0	0	0	0	0	22,703	7,489
	2020	0	0	0	0	0	197,544	87,947	13,669
	2021	0	0	0	0	0	7,483	48,005	12,799

		(B). Primary Conversion Factors (Section IX - B, Exhibit 1, Page 2)							
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2017	0.853	0.828	0.865	0.903	0.876	0.845	0.820	0.000
	2018	0.873	0.847	0.884	0.919	0.891	0.866	0.840	0.000
	2019	0.979	0.950	0.989	1.024	0.995	0.972	0.944	0.000
	2020	1.268	1.205	1.279	1.318	1.253	1.260	1.198	0.000
	2021	1.995	1.671	2.004	2.037	1.707	1.988	1.665	0.000
Medical	2017	0.505	0.562	0.505	0.505	0.562	0.505	0.562	0.468
	2018	0.516	0.579	0.516	0.516	0.579	0.516	0.579	0.483
	2019	0.586	0.656	0.586	0.586	0.656	0.586	0.656	0.586
	2020	0.675	0.731	0.675	0.675	0.731	0.675	0.731	0.757
	2021	0.807	0.828	0.807	0.807	0.828	0.807	0.828	0.776

		(C). Converted Limited Losses [ (A) x (B) ]							
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2017	0	0	354,360	0	0	67,619	157,511	0
	2018	0	0	0	0	0	9,974	139,323	0
	2019	0	0	0	0	0	0	44,139	0
	2020	0	0	0	0	0	599,989	334,916	0
	2021	0	0	0	0	0	22,000	198,569	0
Medical	2017	0	0	45,567	0	0	1,517	52,405	1,894
	2018	0	0	0	0	0	657	44,084	5,736
	2019	0	0	0	0	0	0	14,900	4,388
	2020	0	0	0	0	0	133,397	64,287	10,352
	2021	0	0	0	0	0	6,039	39,729	9,931

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Pricing Example for Class 9033  
 Housing Authority & Clerical, Sales, Drivers

Calculation of MA Indicated Relativity:

(D). Unadjusted Excess Losses [ (Excess Factor -1.0) x (C) ]									
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
		Indemnity	2017	0	0	72,066	0	0	
2018	0		0	0	0	0	2,028	28,334	0
2019	0		0	0	0	0	0	8,976	0
2020	0		0	0	0	0	122,019	68,112	0
2021	0		0	0	0	0	4,474	40,383	0
Medical	2017	0	0	9,267	0	0	308	10,657	385
	2018	0	0	0	0	0	134	8,965	1,166
	2019	0	0	0	0	0	0	3,030	892
	2020	0	0	0	0	0	27,129	13,074	2,105
	2021	0	0	0	0	0	1,228	8,080	2,020

(E). Adjusted Excess Losses									
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
		Indemnity	2017	0	0	50,446	0	0	
2018	0		0	0	0	0	1,420	19,834	0
2019	0		0	0	0	0	0	6,284	0
2020	0		0	0	0	0	85,414	47,678	0
2021	0		0	0	0	0	3,132	28,268	0
Medical	2017	0	0	30,887	0	0	4,434	20,267	385
	2018	0	0	0	0	0	742	17,466	1,166
	2019	0	0	0	0	0	0	5,723	892
	2020	0	0	0	0	0	63,735	33,508	2,105
	2021	0	0	0	0	0	2,570	20,195	2,020

(F). Secondary Conversion Factors					
	Fatal	Permanent Total	Permanent Partial	Temporary Total	Medical Only
Indemnity	0.734	0.612	1.310	1.341	0.000
Medical	1.195	0.611	1.308	1.339	1.195

(G). Converted Unlimited Losses									
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
		Indemnity	2017	0	0	247,906	0	0	
2018	0		0	0	0	0	15,282	213,474	0
2019	0		0	0	0	0	0	67,630	0
2020	0		0	0	0	0	919,316	513,165	0
2021	0		0	0	0	0	33,708	304,251	0
Medical	2017	0	0	46,745	0	0	7,969	97,316	2,724
	2018	0	0	0	0	0	1,873	82,423	8,248
	2019	0	0	0	0	0	0	27,617	6,310
	2020	0	0	0	0	0	263,982	130,958	14,887
	2021	0	0	0	0	0	11,529	80,245	14,281

(H). Total					
Policy Year	Exposure	Indemnity		Medical	
		LD	NLD	LD	NLD
2017	225,817	351,513	241,342	54,714	100,040
2018	229,189	15,282	213,474	1,873	90,671
2019	247,136	0	67,630	0	33,927
2020	256,934	919,316	513,165	263,982	145,845
2021	275,678	33,708	304,251	11,529	94,527
<b>Total</b>	<b>1,234,754</b>	<b>1,319,820</b>	<b>1,339,862</b>	<b>332,098</b>	<b>465,010</b>

	Indemnity	Medical
(I). Indicated Pure Premium	2.154	0.646
(J). Goods & Services Industry Group Pure Premium	0.795	0.308
(K). MA Indicated Relativity	2.709	2.096

Notes:

(E): Indemnity Adjusted Excess Losses = Indemnity Unadjusted Excess Losses x 0.7

Medical Adjusted Excess Losses = Medical Unadjusted Excess Losses + 0.3 x Indemnity Unadjusted Excess Losses

(F): Section IX-B, Exhibit 1, Page 3.

(G) = [ (C) + (E) ] x (F)

(I) = Total Losses / Total Exposure

(J): Industry Group Pure Premium from Section IX - C, Exhibit 1, Page 2.

(K) = (I) / (J)

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 Exhibit 2  
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Pricing Example for Class 9033  
 Housing Authority & Clerical, Sales, Drivers

Calculation of Countrywide Relativity

State (1)	State Code (2)	Losses				Lost-Time Claims		Payroll (9)
		Indemnity		Medical		Likely (7)	Not-Likely (8)	
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)			
Alabama	1	308,002	754,448	490,341	1,918,041	4	60	258,020,295
Arizona	2	13,840	43,373	105,406	61,406	2	3	23,627,751
Arkansas	3	0	4,821	0	13,784	0	1	17,150,618
Colorado	5	106,571	558,573	152,731	750,589	1	37	216,098,491
Connecticut	6	564,650	410,359	396,404	511,275	8	37	59,044,787
D.C.	8	0	0	0	0	0	0	675,160
Florida	9	728,370	763,244	1,474,818	1,700,831	23	66	304,271,049
Georgia	10	101,775	333,201	110,102	262,737	3	13	101,168,868
Idaho	11	50,081	49,378	18,459	159,196	1	10	20,965,687
Illinois	12	33,617	214,068	54,711	273,964	4	13	37,456,987
Indiana	13	22,644	52,750	50,123	322,232	1	11	100,026,730
Iowa	14	0	734	0	27,167	0	1	12,797,176
Kansas	15	15,931	178,207	39,285	267,745	2	14	55,669,965
Kentucky	16	48,691	44,688	11,323	116,349	1	10	52,366,311
Louisiana	17	169,444	465,913	159,643	618,634	3	19	106,095,966
Maine	18	989,117	268,723	306,366	227,897	3	8	27,248,432
Maryland	19	584,830	775,101	335,454	501,800	21	69	162,594,498
Michigan	21	0	0	0	0	0	0	0
Minnesota	22	146,778	205,830	142,900	181,338	2	8	38,954,304
Mississippi	23	450,544	60,626	233,950	214,961	5	13	89,592,626
Missouri	24	47,921	469,831	45,230	725,628	1	21	94,108,829
Montana	25	9,136	14,862	51,469	90,972	2	5	28,117,393
Nebraska	26	87,342	80,441	246,954	230,668	4	9	45,865,624
Nevada	27	0	28,200	0	78,579	0	7	36,523,161
New Hampshire	28	0	0	0	0	0	0	0
New Mexico	30	0	33,210	0	85,733	0	4	26,346,335
North Carolina	32	10,332	23,656	28,438	49,515	1	5	53,075,986
Oklahoma	35	1,130,461	600,335	830,848	391,050	15	38	118,828,514
Oregon	36	0	0	0	0	0	0	0
Rhode Island	38	292,280	740,559	113,053	307,563	5	41	41,013,144
South Carolina	39	0	17,937	0	3,746	0	2	3,712,310
South Dakota	40	0	1,017	0	27,625	0	1	14,739,453
Tennessee	41	52,817	164,593	589,053	414,598	2	15	69,321,137
Utah	43	0	208	0	4,874	0	1	8,168,641
Vermont	44	1,853	72,965	746	91,722	2	6	51,677,531
Virginia	45	0	58,316	0	123,883	0	4	39,719,398
West Virginia	47	190,419	115,897	199,626	118,824	2	11	49,522,064
Wisconsin	48	0	746,635	0	1,097,728	0	28	105,571,987
Hawaii	52	0	397	0	0	0	1	1,401,053
Alaska	54	0	100,883	0	218,043	0	23	155,234,462
<b>Total</b>		<b>6,157,446</b>	<b>8,453,979</b>	<b>6,187,433</b>	<b>12,190,697</b>	<b>118</b>	<b>615</b>	<b>2,626,772,723</b>

Note:  
 (3) - (9): Data are total for latest three policy years. See Section IX-D, Exhibit 3.

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Pricing Example for Class 9033  
 Housing Authority & Clerical, Sales, Drivers

Calculation of Countrywide Relativity

State (1)	State Code (2)	Goods & Services Pitch Factors		Pure Premiums, on MA Level		Total (7)
		Indemnity (3)	Medical (4)	Indemnity (5)	Medical (6)	
Alabama	1	2.753	0.452	1.134	0.422	
Arizona	2	3.818	0.590	0.924	0.417	
Arkansas	3	4.343	1.115	0.122	0.090	
Colorado	5	2.114	0.574	0.651	0.240	
Connecticut	6	1.012	0.444	1.671	0.683	
D.C.	8	2.192	1.244	0.000	0.000	
Florida	9	2.104	0.400	1.031	0.418	
Georgia	10	1.623	0.673	0.698	0.248	
Idaho	11	1.510	0.394	0.716	0.334	
Illinois	12	1.386	0.456	0.916	0.400	
Indiana	13	4.029	0.647	0.304	0.241	
Iowa	14	2.011	0.455	0.012	0.096	
Kansas	15	2.552	0.514	0.890	0.283	
Kentucky	16	2.586	0.958	0.461	0.234	
Louisiana	17	2.122	0.507	1.271	0.372	
Maine	18	1.341	0.429	6.188	0.842	
Maryland	19	1.959	0.876	1.639	0.451	
Michigan	21	3.075	0.871	0.000	0.000	
Minnesota	22	1.757	0.613	1.591	0.510	
Mississippi	23	2.133	0.638	1.217	0.320	
Missouri	24	1.708	0.399	0.940	0.327	
Montana	25	1.740	0.429	0.149	0.217	
Nebraska	26	2.166	0.520	0.792	0.541	
Nevada	27	1.535	0.619	0.119	0.133	
New Hampshire	28	1.676	0.388	0.000	0.000	
New Mexico	30	1.707	0.506	0.215	0.165	
North Carolina	32	1.843	0.827	0.118	0.121	
Oklahoma	35	1.450	0.516	2.112	0.531	
Oregon	36	1.953	0.707	0.000	0.000	
Rhode Island	38	0.835	0.701	2.103	0.719	
South Carolina	39	1.338	0.706	0.647	0.071	
South Dakota	40	3.428	0.532	0.024	0.100	
Tennessee	41	3.613	0.782	1.133	1.133	
Utah	43	5.301	0.749	0.013	0.045	
Vermont	44	0.988	0.419	0.143	0.075	
Virginia	45	3.514	0.689	0.516	0.215	
West Virginia	47	3.433	0.951	2.123	0.612	
Wisconsin	48	2.002	0.352	1.416	0.366	
Hawaii	52	0.735	0.278	0.021	0.000	
Alaska	54	2.673	0.376	0.174	0.053	
(8)	Average of (5), (6) weighted by Payroll from Page 1, respectively			1.031	0.367	1.398
(9)	CW Goods & Services Pure Premium			0.784	0.309	1.094
(10)	CW Relativity = (8) / (9)			1.315	1.186	1.278
(11)	CW Relativity, balanced to unity			1.300	1.173	

Notes:

- (3), (4) = (MA Total Unlimited Losses) / [(State Pure Premium) x (MA Total Exposure)] for Industry Code 9. See Section IX - D, Exhibit 2.
- (5) = 100 x [ State Indemnity Losses / State Payroll ] x (3), where State Indemnity Losses and State Payroll from page 3.
- (6) = 100 x [ State Medical Losses / State Payroll ] x (4), where State Medical Losses and State Payroll from page 3.
- (9) = (8) weighted by MA five year Goods & Services Exposure
- (11): Relativities balanced to unity (weighted by MA exposure) over Goods & Services Industry Group.

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## Pricing Example for Class 9033 Housing Authority & Clerical, Sales, Drivers

Calculation of Credibility and Balanced Formula Relativity:

- (1) MA Indicated Relativity
- (2) Countrywide Indicated Relativity
- (3) Relativity to Underlying Present Rate

Injury Type	
Indemnity	Medical
2.709	2.096
1.300	1.173
1.784	1.524

Calculation of MA Credibility:

The MA Credibilities are calculated using the formula  $Z=(E / F)^{0.4}$  where E are expected losses for that injury type.

- (4) Adopted Relativity
- (5) Industry Group Pure Premium Underlying Present Rate Factor
- (6) Pure Premium Underlying Present Rate  
 = (4) x (5)
- (7) Expected Losses  
 = (6) x [(Total Exposure from Exhibit 1, Page 2)]
- (8) Full Credibility Standards
- (9) MA Credibility  
 = Minimum of {100%, [(7) / (8)]<sup>0.4</sup>}

Injury Type	
Indemnity	Medical
1.766	1.510
0.658	0.294
1.162	0.444
1,434,604	548,139
33,150,000	6,000,000
28%	38%

Calculation of Countrywide Credibility

The Countrywide Credibilities are calculated using the formula  $Z=(E / F)^{0.4}$  where E are the countrywide claim counts for that injury type. The countrywide credibility is limited to no more than half of the complement of the credibility assigned to the Massachusetts data.

- (10) Countrywide Lost-Time Claims
- (11) Countrywide Claim Count Standard
- (12) Countrywide Credibility  
 = Minimum of {[(10) / (11)]<sup>0.4</sup>, 0.5 x [100% - (9)]}
- (13) Credibility to Underlying Present Rate  
 = 100% - (9) - (12)
- (14) Formula Relativity  
 = [(1) x (9)] + [(2) x (12)] + [(3) x (13)]
- (15) Off Balance Factor

Injury Type	
Indemnity	Medical
733	733
1,150	1,000
36%	31%
36%	31%
1.869	1.633
1.010	1.005

- (16) Balanced Formula Relativity

Injury Type		
Indemnity	Medical	Total
1.850	1.624	1.787

Notes:

- (1): Exhibit 2, Page 2.
- (2): Exhibit 2, Page 4.
- (3): Relativity of (6) to Industry Group average, using 5 year Schedule Z exposure as weights.
- (4): Section IX-F, Exhibit 1.
- (5): Section IX-E, Exhibit 1.
- (8), (11): Section IX-D, Exhibit 1, Page 1.
- (10): Exhibit 2, Page 1.
- (15): Factor to balance Formula relativities across industry group to unity using 5 year Schedule Z exposure by injury type.
- (16) = (14) / (15) , Total Balanced Formula Relativity is the weighted average of Partial Relativities using the MA Industry Group Pure Premium as weights.

# IX 000299

Section IX - Classification Pricing  
Subsection L - Pricing Examples  
7/1/2024

Section IX - L  
Exhibit 2  
Page 6

## Pricing Example for Class 9033 Housing Authority & Clerical, Sales, Drivers

Calculation of Proposed Average Rate and Proposed Manual Rate:

(1) Total Balanced Formula Relativity	1.787
(2) Capped Rate Level Factor	1.149
(3) Proposed Average Capped Rate = (1) x (2)	2.05
(4) Offset for Merit Rating	0.997
(5) Offset for ARAP	1.054
(6) Offset for Construction Classification Premium Adjustment Program	1.000
(7) Provision for Insolvency Fund Assessment Recoupment	0.0000
(8) Proposed Manual Rate = $\{(3) / [(4) \times (5) \times (6)]\} \times \{1.000 / [1.000 - (7)]\}$	1.95
(9) Minimum Premium	247
(10) Loss Constant	20
(11) Expected Loss Rate	0.97
(12) D-Ratio	0.17

### Notes:

(1): Exhibit 2, Page 5.

(2): Section IX-H, Exhibit 1. Proposed average uncapped rates are capped by an iterative process using rate levels to determine if the required change is achieved. Class 9033 is in the Goods & Services Industry Group.

(4), (5), (6), (7): Section IX-K, Exhibit 1. Class 9033 is not eligible for the Construction Credit program.

(9) =  $\{[(8) \times 35.0] + (10) + \text{Expense Constant}\}$  subject to a maximum of \$500

Where Expense Constant = 159 if  $(8) \times 35 + (10) < 200$

= 250 if  $(8) \times 35 + (10) \geq 200$  and  $< 1000$ .

= 338 if  $(8) \times 35 + (10) \geq 1000$ .

(10): No loss constant for Manufacturing classes, \$50 for Construction classes, \$20 for all other classes.

(11) = (3) x Ratio of Experience Rating ELR to Average Rate, from Section X - A, Exhibit 1. Class 9033 is in Hazard Group C.

(12): See text of Section X for an explanation of the calculation of D-Ratios.

# IX 000300

## Alternative Pricing Examples for Class 9033 NAHRO 3yr Experience

Calculation of Relativity using 3 Years of NAHRO Experience

		(A). Limited Losses (Unit Statistical Data for NAHRO)							
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2019	0	0	0	205,004	0	317,413	645,722	0
	2020	0	0	0	136,001	0	530,363	799,020	0
	2021	0	0	0	0	0	443,097	869,063	0
Medical	2019	0	0	0	22,570	0	193,958	251,634	85,404
	2020	0	0	0	89,000	0	239,185	402,550	69,574
	2021	0	0	0	0	0	223,703	538,763	68,461

		(B). Primary Conversion Factors (Section IX - B, Exhibit 1, Page 2)							
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2019	0.979	0.950	0.989	1.024	0.995	0.972	0.944	0.000
	2020	1.268	1.205	1.279	1.318	1.253	1.260	1.198	0.000
	2021	1.995	1.671	2.004	2.037	1.707	1.988	1.665	0.000
Medical	2019	0.586	0.656	0.586	0.586	0.656	0.586	0.656	0.586
	2020	0.675	0.731	0.675	0.675	0.731	0.675	0.731	0.757
	2021	0.807	0.828	0.807	0.807	0.828	0.807	0.828	0.776

		(C). Converted Limited Losses [ (A) x (B) ]							
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2019	0	0	0	209,990	0	308,472	609,395	0
	2020	0	0	0	179,303	0	668,440	957,416	0
	2021	0	0	0	0	0	880,731	1,447,141	0
Medical	2019	0	0	0	13,221	0	113,618	165,147	50,042
	2020	0	0	0	60,100	0	161,516	294,254	52,691
	2021	0	0	0	0	0	180,531	445,886	53,122

# IX 000301

## Alternative Pricing Examples for Class 9033 NAHRO 3yr Experience

Calculation of Relativity using 3 Years of NAHRO Experience

(D). Unadjusted Excess Losses [ (Excess Factor -1.0) x (C) ]									
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
		Indemnity	2019	0	0	0	42,706	0	
2020	0		0	0	36,465	0	135,940	194,709	0
2021	0		0	0	0	0	179,114	294,304	0
Medical	2019	0	0	0	2,689	0	23,106	33,586	10,177
	2020	0	0	0	12,222	0	32,847	59,842	10,716
	2021	0	0	0	0	0	36,715	90,680	10,803

(E). Adjusted Excess Losses									
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
		Indemnity	2019	0	0	0	29,894	0	
2020	0		0	0	25,525	0	95,158	136,296	0
2021	0		0	0	0	0	125,380	206,013	0
Medical	2019	0	0	0	15,500	0	41,927	70,766	10,177
	2020	0	0	0	23,162	0	73,630	118,255	10,716
	2021	0	0	0	0	0	90,449	178,971	10,803

(F). Secondary Conversion Factors					
	Fatal	Permanent Total	Permanent Partial	Temporary Total	Medical Only
Indemnity	0.734	0.612	1.310	1.341	0.000
Medical	1.195	0.611	1.308	1.339	1.195

(G). Converted Unlimited Losses									
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
		Indemnity	2019	0	0	0	314,297	0	
2020	0		0	0	268,367	0	1,024,198	1,466,973	0
2021	0		0	0	0	0	1,349,475	2,217,340	0
Medical	2019	0	0	0	37,571	0	208,292	315,915	71,962
	2020	0	0	0	108,914	0	314,888	552,398	75,772
	2021	0	0	0	0	0	362,874	836,757	76,391

(H). Total					
Policy Year	Exposure	Indemnity		Medical	
		LD	NLD	LD	NLD
2019	1,610,152	786,944	933,728	245,863	387,877
2020	1,681,886	1,292,565	1,466,973	423,801	628,170
2021	1,567,655	1,349,475	2,217,340	362,874	913,148
<b>Total</b>	<b>4,859,694</b>	<b>3,428,984</b>	<b>4,618,041</b>	<b>1,032,538</b>	<b>1,929,194</b>

	Indemnity	Medical
(I). Indicated Pure Premium	1.656	0.609
(J). Goods & Services Industry Group Pure Premium	0.795	0.308
(K). NAHRO Indicated Relativity	2.083	1.979

**Notes:**

- (E): Indemnity Adjusted Excess Losses = Indemnity Unadjusted Excess Losses x 0.7
- Medical Adjusted Excess Losses = Medical Unadjusted Excess Losses + 0.3 x Indemnity Unadjusted Excess Losses
- (F): Section IX-B, Exhibit 1, Page 3.
- (G) = [ (C) + (E) ] x (F)
- (I) = Total Losses / Total Exposure
- (J): Industry Group Pure Premium from Section IX - C, Exhibit 1, Page 2.
- (K) = (I) / (J)

# IX 000302

## Alternative Pricing Examples for Class 9033 NAHRO 3yr as another state in CW Complement

Calculation of Countrywide Relativity

State (1)	State Code (2)	Losses				Lost-Time Claims		Payroll (9)
		Indemnity		Medical		Likely (7)	Not-Likely (8)	
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)			
Alabama	1	308,002	754,448	490,341	1,918,041	4	60	258,020,295
Arizona	2	13,840	43,373	105,406	61,406	2	3	23,627,751
Arkansas	3	0	4,821	0	13,784	0	1	17,150,618
Colorado	5	106,571	558,573	152,731	750,589	1	37	216,098,491
Connecticut	6	564,650	410,359	396,404	511,275	8	37	59,044,787
D.C.	8	0	0	0	0	0	0	675,160
Florida	9	728,370	763,244	1,474,818	1,700,831	23	66	304,271,049
Georgia	10	101,775	333,201	110,102	262,737	3	13	101,168,868
Idaho	11	50,081	49,378	18,459	159,196	1	10	20,965,687
Illinois	12	33,617	214,068	54,711	273,964	4	13	37,456,987
Indiana	13	22,644	52,750	50,123	322,232	1	11	100,026,730
Iowa	14	0	734	0	27,167	0	1	12,797,176
Kansas	15	15,931	178,207	39,285	267,745	2	14	55,669,965
Kentucky	16	48,691	44,688	11,323	116,349	1	10	52,366,311
Louisiana	17	169,444	465,913	159,643	618,634	3	19	106,095,966
Maine	18	989,117	268,723	306,366	227,897	3	8	27,248,432
Maryland	19	584,830	775,101	335,454	501,800	21	69	162,594,498
Michigan	21	0	0	0	0	0	0	0
Minnesota	22	146,778	205,830	142,900	181,338	2	8	38,954,304
Mississippi	23	450,544	60,626	233,950	214,961	5	13	89,592,626
Missouri	24	47,921	469,831	45,230	725,628	1	21	94,108,829
Montana	25	9,136	14,862	51,469	90,972	2	5	28,117,393
Nebraska	26	87,342	80,441	246,954	230,668	4	9	45,865,624
Nevada	27	0	28,200	0	78,579	0	7	36,523,161
New Hampshire	28	0	0	0	0	0	0	0
New Mexico	30	0	33,210	0	85,733	0	4	26,346,335
North Carolina	32	10,332	23,656	28,438	49,515	1	5	53,075,986
Oklahoma	35	1,130,461	600,335	830,848	391,050	15	38	118,828,514
Oregon	36	0	0	0	0	0	0	0
Rhode Island	38	292,280	740,559	113,053	307,563	5	41	41,013,144
South Carolina	39	0	17,937	0	3,746	0	2	3,712,310
South Dakota	40	0	1,017	0	27,625	0	1	14,739,453
Tennessee	41	52,817	164,593	589,053	414,598	2	15	69,321,137
Utah	43	0	208	0	4,874	0	1	8,168,641
Vermont	44	1,853	72,965	746	91,722	2	6	51,677,531
Virginia	45	0	58,316	0	123,883	0	4	39,719,398
West Virginia	47	190,419	115,897	199,626	118,824	2	11	49,522,064
Wisconsin	48	0	746,635	0	1,097,728	0	28	105,571,987
Hawaii	52	0	397	0	0	0	1	1,401,053
Alaska	54	0	100,883	0	218,043	0	23	155,234,462
MA NAHRO		3,428,984	4,618,041	1,032,538	1,929,194	30	170	485,969,354
<b>Total</b>		<b>9,586,430</b>	<b>13,072,020</b>	<b>7,219,971</b>	<b>14,119,891</b>	<b>148</b>	<b>785</b>	<b>3,112,742,077</b>

Note:  
 (3) - (9): Data are total for latest three policy years. See Section IX-D, Exhibit 3.

# IX 000303

Alternative Pricing Examples for Class 9033  
 NAHRO 3yr as another state in CW Complement

Calculation of Countrywide Relativity

State (1)	State Code (2)	Goods & Services Pitch Factors		Pure Premiums, on MA Level		Total (7)
		Indemnity (3)	Medical (4)	Indemnity (5)	Medical (6)	
Alabama	1	2.753	0.452	1.134	0.422	
Arizona	2	3.818	0.590	0.924	0.417	
Arkansas	3	4.343	1.115	0.122	0.090	
Colorado	5	2.114	0.574	0.651	0.240	
Connecticut	6	1.012	0.444	1.671	0.683	
D.C.	8	2.192	1.244	0.000	0.000	
Florida	9	2.104	0.400	1.031	0.418	
Georgia	10	1.623	0.673	0.698	0.248	
Idaho	11	1.510	0.394	0.716	0.334	
Illinois	12	1.386	0.456	0.916	0.400	
Indiana	13	4.029	0.647	0.304	0.241	
Iowa	14	2.011	0.455	0.012	0.096	
Kansas	15	2.552	0.514	0.890	0.283	
Kentucky	16	2.586	0.958	0.461	0.234	
Louisiana	17	2.122	0.507	1.271	0.372	
Maine	18	1.341	0.429	6.188	0.842	
Maryland	19	1.959	0.876	1.639	0.451	
Michigan	21	3.075	0.871	0.000	0.000	
Minnesota	22	1.757	0.613	1.591	0.510	
Mississippi	23	2.133	0.638	1.217	0.320	
Missouri	24	1.708	0.399	0.940	0.327	
Montana	25	1.740	0.429	0.149	0.217	
Nebraska	26	2.166	0.520	0.792	0.541	
Nevada	27	1.535	0.619	0.119	0.133	
New Hampshire	28	1.676	0.388	0.000	0.000	
New Mexico	30	1.707	0.506	0.215	0.165	
North Carolina	32	1.843	0.827	0.118	0.121	
Oklahoma	35	1.450	0.516	2.112	0.531	
Oregon	36	1.953	0.707	0.000	0.000	
Rhode Island	38	0.835	0.701	2.103	0.719	
South Carolina	39	1.338	0.706	0.647	0.071	
South Dakota	40	3.428	0.532	0.024	0.100	
Tennessee	41	3.613	0.782	1.133	1.133	
Utah	43	5.301	0.749	0.013	0.045	
Vermont	44	0.988	0.419	0.143	0.075	
Virginia	45	3.514	0.689	0.516	0.215	
West Virginia	47	3.433	0.951	2.123	0.612	
Wisconsin	48	2.002	0.352	1.416	0.366	
Hawaii	52	0.735	0.278	0.021	0.000	
Alaska	54	2.673	0.376	0.174	0.053	
MA NAHRO		1.301	1.059	2.154	0.646	
(8)	Average of (5), (6) weighted by Payroll from Page 1, respectively			1.206	0.411	1.617
(9)	CW Goods & Services Pure Premium			0.784	0.309	1.094
(10)	CW Relativity = (8) / (9)			1.538	1.327	1.478
(11)	CW Relativity, balanced to unity			1.521	1.312	

Notes:

- (3), (4) = (MA Total Unlimited Losses) / [(State Pure Premium) x (MA Total Exposure)] for Industry Code 9. See Section IX - D, Exhibit 2.
- (5) = 100 x [ State Indemnity Losses / State Payroll ] x (3), where State Indemnity Losses and State Payroll from page 1.
- (6) = 100 x [ State Medical Losses / State Payroll ] x (4), where State Medical Losses and State Payroll from page 1.
- (9) = (8) weighted by MA five year Goods & Services Exposure
- (11): Relativities balanced to unity (weighted by MA exposure) over Goods & Services Industry Group.

# IX 000304

## Alternative Pricing Examples for Class 9033 NAHRO 3yr as another state in CW Complement

Calculation of Credibility and Balanced Formula Relativity:

- (1) MA Indicated Relativity
- (2) Countrywide (including NAHRO) Indicated Relativity
- (3) Relativity to Underlying Present Rate

Injury Type	
Indemnity	Medical
2.709	2.096
1.521	1.312
1.784	1.524

Calculation of MA Credibility:

The MA Credibilities are calculated using the formula  $Z=(E / F)^{0.4}$  where E are expected losses for that injury type.

- (4) Adopted Relativity
- (5) Industry Group Pure Premium Underlying Present Rate Factor
- (6) Pure Premium Underlying Present Rate  
= (4) x (5)
- (7) Expected Losses  
= (6) x [(Total Exposure from Exhibit 1, Page 2)]
- (8) Full Credibility Standards
- (9) MA Credibility  
= Minimum of {100%, [(7) / (8)]<sup>0.4</sup>}

Injury Type	
Indemnity	Medical
1.766	1.510
0.658	0.294
1.162	0.444
1,434,604	548,139
33,150,000	6,000,000
28%	38%

Calculation of Countrywide Credibility

The Countrywide Credibilities are calculated using the formula  $Z=(E / F)^{0.4}$  where E are the countrywide claim counts for that injury type. The countrywide credibility is limited to no more than half of the complement of the credibility assigned to the Massachusetts data.

- (10) Countrywide Lost-Time Claims
- (11) Countrywide Claim Count Standard
- (12) Countrywide Credibility  
= Minimum of {[(10) / (11)]<sup>0.4</sup>, 0.5 x [100% - (9)]}
- (13) Credibility to Underlying Present Rate  
= 100% - (9) - (12)
- (14) Formula Relativity  
= [(1) x (9)] + [(2) x (12)] + [(3) x (13)]
- (15) Off Balance Factor

Injury Type	
Indemnity	Medical
933	933
1,150	1,000
36%	31%
36%	31%
1.948	1.676
1.010	1.005

- (16) Balanced Formula Relativity

Injury Type		
Indemnity	Medical	Total
1.928	1.667	1.855

Notes:

- (1): Exhibit 2, Page 2.
- (2): Exhibit 4, Page 2.
- (3): Relativity of (6) to Industry Group average, using 5 year Schedule Z exposure as weights.
- (4): Section IX-F, Exhibit 1.
- (5): Section IX-E, Exhibit 1.
- (8), (11): Section IX-D, Exhibit 1, Page 1.
- (10): Exhibit 4, Page 1.
- (15): Factor to balance Formula relativities across industry group to unity using 5 year Schedule Z exposure by injury type.
- (16) = (14) / (15) , Total Balanced Formula Relativity is the weighted average of Partial Relativities using the MA Industry Group Pure Premium as weights.

# IX 000305

Section IX - Classification Pricing  
Subsection L - Pricing Examples  
7/1/2024

Section IX - L  
Exhibit 4  
Page 4

## Alternative Pricing Examples for Class 9033 NAHRO 3yr as another state in CW Complement

Calculation of Alternative Scenario Average Rate and Manual Rate:

(1) Total Balanced Formula Relativity	1.855
(2) Capped Rate Level Factor	1.149
(3) Alternative Scenario Average Capped Rate = (1) x (2)	2.13
(4) Offset for Merit Rating	0.997
(5) Offset for ARAP	1.054
(6) Offset for Construction Classification Premium Adjustment Program	1.000
(7) Provision for Insolvency Fund Assessment Recoupment	0.0000
(8) Alternative Scenario Manual Rate = $\{(3) / [(4) \times (5) \times (6)]\} \times \{1.000 / [1.000 - (7)]\}$	2.03
(9) Minimum Premium	250
(10) Loss Constant	20
(11) Expected Loss Rate	1.01
(12) D-Ratio	0.17

### Notes:

(1): Exhibit 4, Page 3.

(2): Section IX-H, Exhibit 1. Average uncapped rates are capped by an iterative process using rate levels to determine if the required change is achieved. Class 9033 is in the Goods & Services Industry Group.

(4), (5), (6), (7): Section IX-K, Exhibit 1. Class 9033 is not eligible for the Construction Credit program.

(9) =  $\{[(8) \times 35.0] + (10) + \text{Expense Constant}\}$  subject to a maximum of \$500

Where Expense Constant = 159 if  $(8) \times 35 + (10) < 200$

= 250 if  $(8) \times 35 + (10) \geq 200$  and  $< 1000$ .

= 338 if  $(8) \times 35 + (10) \geq 1000$ .

(10): No loss constant for Manufacturing classes, \$50 for Construction classes, \$20 for all other classes.

(11) = (3) x Ratio of Experience Rating ELR to Average Rate, from Section X - A, Exhibit 1. Class 9033 is in Hazard Group C.

(12): See text of Section X for an explanation of the calculation of D-Ratios.

# IX 000306

## Alternative Pricing Examples for Class 9033 NAHRO 3yr as Complement

Calculation of Credibility and Balanced Formula Relativity:

- (1) MA Indicated Relativity
- (2) MA NAHRO 3yr Indicated Relativity
- (3) Relativity to Underlying Present Rate

Injury Type	
Indemnity	Medical
2.709	2.096
2.083	1.979
1.784	1.524

Calculation of MA Credibility:

The MA Credibilities are calculated using the formula  $Z=(E / F)^{0.4}$  where E are expected losses for that injury type.

- (4) Adopted Relativity
- (5) Industry Group Pure Premium Underlying Present Rate Factor
- (6) Pure Premium Underlying Present Rate  
 = (4) x (5)
- (7) Expected Losses  
 = (6) x [(Total Exposure from Exhibit 1, Page 2)]
- (8) Full Credibility Standards
- (9) MA Credibility  
 = Minimum of {100%, [(7) / (8)]<sup>0.4</sup>}

Injury Type	
Indemnity	Medical
1.766	1.510
0.658	0.294
1.162	0.444
1,434,604	548,139
33,150,000	6,000,000
28%	38%

Calculation of Countrywide Credibility

The Countrywide Credibilities are calculated using the formula  $Z=(E / F)^{0.4}$  where E are the countrywide claim counts for that injury type. The countrywide credibility is limited to no more than half of the complement of the credibility assigned to the Massachusetts data.

- (10) MA NAHRO 3yr Lost-Time Claims
- (11) Countrywide Claim Count Standard
- (12) Countrywide Credibility  
 = Minimum of {[(10) / (11)]<sup>0.4</sup>, 0.5 x [100% - (9)]}
- (13) Credibility to Underlying Present Rate  
 = 100% - (9) - (12)
- (14) Formula Relativity  
 = [(1) x (9)] + [(2) x (12)] + [(3) x (13)]
- (15) Off Balance Factor

Injury Type	
Indemnity	Medical
200	200
1,150	1,000
36%	31%
36%	31%
2.151	1.882
1.011	1.006

- (16) Balanced Formula Relativity

Injury Type		
Indemnity	Medical	Total
2.128	1.872	2.056

Notes:

- (1): Exhibit 2, Page 2.
- (2): Exhibit 3, Page 2.
- (3): Relativity of (6) to Industry Group average, using 5 year Schedule Z exposure as weights.
- (4): Section IX-F, Exhibit 1.
- (5): Section IX-E, Exhibit 1.
- (8), (11): Section IX-D, Exhibit 1, Page 1.
- (10): Exhibit 4, Page 1
- (15): Factor to balance Formula relativities across industry group to unity using 5 year Schedule Z exposure by injury type.
- (16) = (14) / (15) , Total Balanced Formula Relativity is the weighted average of Partial Relativities using the MA Industry Group Pure Premium as weights.

# IX 000307

Section IX - Classification Pricing  
Subsection L - Pricing Examples  
7/1/2024

Section IX - L  
Exhibit 5  
Page 2

## Alternative Pricing Examples for Class 9033 NAHRO 3yr as Complement

Calculation of Alternative Scenario Average Rate and Manual Rate:

(1) Total Balanced Formula Relativity	2.056
(2) Capped Rate Level Factor	1.149
(3) Alternative Scenario Average Capped Rate = (1) x (2)	2.36
(4) Offset for Merit Rating	0.997
(5) Offset for ARAP	1.054
(6) Offset for Construction Classification Premium Adjustment Program	1.000
(7) Provision for Insolvency Fund Assessment Recoupment	0.0000
(8) Alternative Scenario Manual Rate = $\{(3) / [(4) \times (5) \times (6)]\} \times \{1.000 / [1.000 - (7)]\}$	2.25
(9) Minimum Premium	258
(10) Loss Constant	20
(11) Expected Loss Rate	1.12
(12) D-Ratio	0.17

### Notes:

(1): Exhibit 5, Page 1.

(2): Section IX-H, Exhibit 1. Average uncapped rates are capped by an iterative process using rate levels to determine if the required change is achieved. Class 9033 is in the Goods & Services Industry Group.

(4), (5), (6), (7): Section IX-K, Exhibit 1. Class 9033 is not eligible for the Construction Credit program.

(9) =  $\{[(8) \times 35.0] + (10) + \text{Expense Constant}\}$  subject to a maximum of \$500

Where Expense Constant = 159 if  $(8) \times 35 + (10) < 200$

= 250 if  $(8) \times 35 + (10) \geq 200$  and  $< 1000$ .

= 338 if  $(8) \times 35 + (10) \geq 1000$ .

(10): No loss constant for Manufacturing classes, \$50 for Construction classes, \$20 for all other classes.

(11) = (3) x Ratio of Experience Rating ELR to Average Rate, from Section X - A, Exhibit 1. Class 9033 is in Hazard Group C.

(12): See text of Section X for an explanation of the calculation of D-Ratios.

## EXPERIENCE RATING

Experience rating is a procedure that uses past insurance experience for individual policyholders to predict their future losses. In this procedure, the manual rate for the risk is adjusted by an experience rating modification that serves to increase or decrease the rate for individual policyholders depending on whether that policyholder's past experience has been worse or better than expected.

The experience rating modification for an insured is determined by comparing actual past losses to expected losses. This section of the filing develops elements used to derive Expected Loss Rates (ELRs) and D-Ratios, which are needed for the calculation of experience rating modifications.

### **Section X-A - Expected Loss Rates**

Generally, an insured's experience rating modification is based on its exposure and loss experience for the last three completed policies for which the WCRIBMA has received data. For the purpose of experience rating, we must derive expected losses on a comparable basis for each of those three policy periods. These calculations are detailed in Section X-A and Section X-C.

Expected Losses for each insured are derived by multiplying the ELR for each applicable class by the reported exposure (typically payroll in hundreds) for each class. The proposed ELRs are displayed in Section X-C. The ELR for each class is the product of the proposed average capped rate for that class (as shown in Section IX-J) and the Ratio of Experience Rating ELR to Average Rate (as calculated in this section) for the hazard group containing the classification. The WCRIBMA uses the Ratio of Experience Rating ELR to

Average Rate to remove the allowances for underwriting profit and expenses (including loss adjustment expenses) from the capped rate, and then adjust the remaining pure premiums to a level comparable to that of the losses entering the experience rating calculation itself. The Ratio of Experience Rating ELR to Average Rate is a composite factor that incorporates elements relating to expenses (Exhibit 1), trend (Exhibit 1), loss limitations (Exhibit 2 & 3), benefit level differences (Exhibit 1), loss development (Exhibits 4 & 5) and investment income (Exhibit 6).

## **Section X-B - Calculation of D-Ratios**

The second task of Section X is to determine the portion of the expected loss that is considered primary. Primary losses are defined as the first \$7,500 of loss per claim. The experience rating formula splits losses into primary losses and excess losses (the loss amount above the primary loss subject to a maximum). Primary losses are given more weight than excess losses because primary losses are more predictive than excess losses for purposes of estimating an insured's prospective loss experience.

The D-Ratio is defined as the portion of expected losses that is expected to be primary. In experience rating, multiplying a risk's expected losses by the appropriate D-Ratio gives the expected primary losses to which the risk's actual primary losses are compared. The proposed D-Ratios are displayed in Section X-C.

The procedure used here to calculate D-Ratios is the same general methodology used in all of the WCRIBMA's filings since 2001. The general methodology is as follows.

First, the WCRIBMA calculates partial D-Ratios for indemnity and medical losses from detailed loss data. The loss data is taken from Unit Statistical Plan Data for three policy years, consistent with the data used elsewhere in this filing, and adjusted for law amendment changes and severity trend to the level corresponding with the losses that will be used in experience rating. Indemnity and medical partial D-Ratios are calculated separately.

Finally, the WCRIBMA calculates final D-Ratios by class as weighted averages of the partial D-Ratios using the formula:

$$\text{"D" Ratio} = \frac{[(P_i)(D_i) + (P_m)(D_m)]}{[P_i + P_m]}$$

where  $P_i$  and  $P_m$  are the proposed partial pure premiums for indemnity and medical and  $D_i$  and  $D_m$  represent the associated partial D-Ratios. The resulting D-Ratios by classification are shown in Section X-C.

### **Section X-C – Manual Pages**

Section X-C displays the proposed Expected Loss Rates and Discount Ratios. The WCRIBMA is seeking no change to the G-Value, State Accident Limitations, Table of Weighting Values, Table of Ballast Values, or USL&HW Act-Expected Loss Factor.

Calculation of ELR Factors

Unit Report / Policy Effective Dates (1)	Hazard Group (2)	Permissible Loss Ratio (3)	Exp Rating LER by Hazard Group (4)	Law Factor (5)	Loss Trend / Payroll Trend (6)	Loss Development to 10th Report (7)	Loss Development from 10th Report to Ult (8)	Investment Income Offset (9)	Ratio of Exp Rating ELR to Average Rate (10)
1st Report 7/1/2022 to 6/30/2023	A	0.650	0.024	1.009	0.932	1.581	1.044	1.034	0.395
	B	0.650	0.033	1.009	0.932	1.606	1.056	1.025	0.385
	C	0.650	0.056	1.009	0.932	1.612	1.059	1.019	0.375
	D	0.650	0.076	1.009	0.932	1.615	1.059	1.021	0.366
	E	0.650	0.088	1.009	0.932	1.624	1.059	0.999	0.367
	F	0.650	0.127	1.009	0.932	1.606	1.048	0.963	0.372
	G	0.650	0.143	1.009	0.932	1.626	1.037	0.938	0.375
2nd Report 7/1/2021 to 6/30/2022	A	0.650	0.036	1.014	0.900	1.198	1.044	1.034	0.530
	B	0.650	0.048	1.014	0.900	1.217	1.056	1.025	0.514
	C	0.650	0.083	1.014	0.900	1.222	1.059	1.019	0.495
	D	0.650	0.112	1.014	0.900	1.225	1.059	1.021	0.477
	E	0.650	0.130	1.014	0.900	1.231	1.059	0.999	0.475
	F	0.650	0.188	1.014	0.900	1.218	1.048	0.963	0.470
	G	0.650	0.211	1.014	0.900	1.232	1.037	0.938	0.468
3rd Report 7/1/2020 to 6/30/2021	A	0.650	0.044	1.034	0.869	1.070	1.044	1.034	0.598
	B	0.650	0.059	1.034	0.869	1.087	1.056	1.025	0.578
	C	0.650	0.101	1.034	0.869	1.092	1.059	1.019	0.552
	D	0.650	0.137	1.034	0.869	1.094	1.059	1.021	0.528
	E	0.650	0.159	1.034	0.869	1.099	1.059	0.999	0.523
	F	0.650	0.229	1.034	0.869	1.087	1.048	0.963	0.508
	G	0.650	0.258	1.034	0.869	1.101	1.037	0.938	0.501

1st - 3rd Report Average	A	0.508
	B	0.492
	C	0.474
	D	0.457
	E	0.455
	F	0.450
	G	0.448

Notes:

- (1): Unit Statistical Data used to experience rate a policy taking effect during the prospective effective period.
- (3): Section VI-J, Exhibit 1, (10).
- (4): Exhibit 2, (10) - (12).
- (5): Section IV-A, Exhibit 1.
- (6): Section V-A, Exhibit 1, Page 1. Net Trend applied from USR policy effective period to prospective effective period.
- (7): Exhibit 4, Page 1, (6).
- (8): Exhibit 5, Page 1, (7).
- (9): Exhibit 6, (8).
- (10) = { (3) x [ 1.0 - (4) ] } / [ (5) x (6) x (7) x (8) x (9) ]

X 000004

Loss Elimination Ratios for Losses in Excess of Experience Rating Caps  
 By Hazard Group

Hazard Group	Adjusted Total Losses	Adjusted Excess Losses	Implied Loss Elimination Ratio = (3) / (2)	Expected Losses	Expected Losses Wgtd LER	Balanced LER Differential	Selected LER Differential
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A	52,706,490	2,062,647	0.039	70,321,471	0.039	0.32	0.30
B	215,808,108	7,188,560	0.033	286,058,830	0.033	0.27	0.40
C	424,226,033	35,680,997	0.084	545,110,656	0.084	0.69	0.69
D	210,956,083	14,838,110	0.070	291,968,540	0.070	0.58	0.93
E	295,119,189	38,949,826	0.132	416,645,197	0.132	1.08	1.08
F	397,990,975	75,582,813	0.190	548,903,849	0.190	1.55	1.55
G	75,736,980	27,413,429	0.362	108,389,285	0.362	2.96	1.75
Total	1,672,543,857	201,716,382	0.121	2,267,397,828	0.122	1.00	1.00

Loss Elimination Ratio by Hazard Group

Hazard Group	First Report	Second Report	Third Report
(9)	(10)	(11)	(12)
A	0.024	0.036	0.044
B	0.033	0.048	0.059
C	0.056	0.083	0.101
D	0.076	0.112	0.137
E	0.088	0.130	0.159
F	0.127	0.188	0.229
G	0.143	0.211	0.258
Total	0.081	0.121	0.147

Notes:

- (2): Unit Statistical Data, PYs 2019 - 2021. Adjusted by factors from Section X - B, Exhibit 1, Page 2.
- (3): Adjusted losses above per claim limit of \$350,000
- (5): PYs 2019 - 2021, exposure times pure premium underlying present rates.
- (6): Total = (6) Weighted by (5)
- (7) = (6) / [ Total for (6) ]
- (10) - (12) = [ Exhibit 3, (5) ] x (8)

X 000005

Loss Elimination Ratio  
 Factor to Reflect the State Accident Limitation of \$350,000

Report (1)	Injury Type (2)	Adjusted Total Losses (3)	Adjusted Excess Losses (4)	Loss Elimination Ratio = (4) / (3) (5)
1st	Fatal	5,966,478	2,396,221	0.402
1st	Permanent Total	19,600,675	14,180,274	0.723
1st	Permanent Partial	133,872,953	15,026,523	0.112
1st	Temporary Total	272,486,473	5,302,303	0.019
1st	Medical Only	21,227,669	0	0.000
1st	Total	453,154,248	36,905,320	0.081
2nd	Fatal	14,211,957	9,326,417	0.656
2nd	Permanent Total	40,759,389	27,522,050	0.675
2nd	Permanent Partial	234,128,548	22,791,716	0.097
2nd	Temporary Total	252,058,473	7,931,828	0.031
2nd	Medical Only	18,503,540	0	0.000
2nd	Total	559,661,906	67,572,011	0.121
3rd	Fatal	12,846,722	6,455,398	0.502
3rd	Permanent Total	88,788,489	53,232,281	0.600
3rd	Permanent Partial	264,648,654	25,225,046	0.095
3rd	Temporary Total	269,121,074	12,326,325	0.046
3rd	Medical Only	24,322,762	0	0.000
3rd	Total	659,727,702	97,239,051	0.147

Notes:

Unit Statistical Data, losses have been adjusted by multiplying by law amendment changes and severity trend factors from Section X - B, Exhibit 1, Page 2.

(4): Adjusted losses above per claim limit of \$350,000

900000 X

# X 000007

Section X - Experience Rating  
 Subsection A - Expected Loss Rates  
 7/1/2024

Section X - A  
 Exhibit 4  
 Page 1

## Hazard Group Development Factors to Tenth Report

Development to 10th Report (1)	Hazard Group (2)	Losses at Latest Report (3)	Selected Relativity (4)	Balanced Relativity = (4) / TT(4) (5)	Selected Dev. Factor to 10th Report (6)
1st to 10th	A	13,862,032	0.981	0.981	1.581
1st to 10th	B	59,760,836	0.997	0.996	1.606
1st to 10th	C	119,430,025	1.001	1.000	1.612
1st to 10th	D	52,669,161	1.003	1.002	1.615
1st to 10th	E	73,405,399	1.008	1.008	1.624
1st to 10th	F	100,950,348	0.997	0.997	1.606
1st to 10th	G	12,205,367	1.009	1.009	1.626
1st to 10th	Total	432,283,168	1.000	1.000	1.612
2nd to 10th	A	15,137,782	0.981	0.980	1.198
2nd to 10th	B	65,319,280	0.997	0.996	1.217
2nd to 10th	C	131,762,015	1.001	1.000	1.222
2nd to 10th	D	76,279,701	1.003	1.002	1.225
2nd to 10th	E	91,510,172	1.008	1.007	1.231
2nd to 10th	F	120,417,314	0.997	0.996	1.218
2nd to 10th	G	39,608,844	1.009	1.008	1.232
2nd to 10th	Total	540,035,108	1.001	1.000	1.222
3rd to 10th	A	22,974,834	0.981	0.981	1.070
3rd to 10th	B	86,836,963	0.997	0.996	1.087
3rd to 10th	C	165,085,167	1.001	1.000	1.092
3rd to 10th	D	78,185,555	1.003	1.002	1.094
3rd to 10th	E	124,733,899	1.008	1.007	1.099
3rd to 10th	F	171,242,903	0.997	0.997	1.087
3rd to 10th	G	24,267,139	1.009	1.009	1.101
3rd to 10th	Total	673,326,460	1.001	1.000	1.091

**Notes:**

(3): See Exhibit 4 Pages 3-5.

(4): See Page 2 for State Classifications for selection. The entry in the "Total" row is the weighted average using incurred losses at latest report in column (3) as the weights.

(6) = (5) x (Total LDF from page (3) - (5))

Hazard Group Reported Loss Development Relativities to Tenth Report

Hazard Group (1)	Relativities for State Classification Rates Development			Average Relativity (5)	Selected (6)
	3rd Report to 10th Report (2)	2nd Report to 10th Report (3)	1st Report to 10th Report (4)		
	A	0.993	0.980		
B	0.998	0.996	0.996	0.997	0.997
C	1.001	1.002	1.000	1.001	1.001
D	1.001	1.002	1.006	1.003	1.003
E	1.002	1.006	1.016	1.008	1.008
F	0.998	1.007	0.986	0.997	0.997
G	1.009	0.968	1.050	1.009	1.009

Notes:

(2) - (4): Pages 3 through 5. = [(12) for Hazard Group] / [(12) for Hazard Groups A-G Total]

(5): Average of (2) - (4)

800000 X

Loss Development of Schedule Z to Tenth Report by Hazard Group

Policy Year 2021 at 18 Months  
 First Report to Tenth Report

Hazard Group	Indemnity Losses Likely To Develop		Indemnity Losses Not Likely To Develop		Medical Losses Likely To Develop		Medical Losses Not Likely To Develop		Total Losses		
	Reported Losses	Losses Developed to 10th Report	Reported Losses	Losses Developed to 10th Report	Reported Losses	Losses Developed to 10th Report	Reported Losses	Losses Developed to 10th Report	Total Reported Losses =(2)+(4)+(6)+(8)	Total Developed Losses =(3)+(5)+(7)+(9)	Develop. Factor = (11) / (10)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A	1,675,945	3,700,403	6,278,543	11,501,120	768,879	1,093,013	5,138,665	5,396,002	13,862,032	21,690,539	1.565
B	9,329,222	20,598,457	26,388,470	48,338,757	4,774,148	6,786,772	19,268,996	20,233,961	59,760,836	95,957,948	1.606
C	21,550,744	47,582,968	44,343,949	81,229,847	19,829,394	28,188,816	33,705,938	35,393,886	119,430,025	192,395,517	1.611
D	9,147,832	20,197,957	22,527,318	41,265,847	5,038,952	7,163,209	15,955,059	16,754,067	52,669,161	85,381,079	1.621
E	14,328,797	31,637,269	29,799,383	54,586,914	8,600,225	12,225,798	20,676,994	21,712,470	73,405,399	120,162,451	1.637
F	14,699,342	32,455,414	40,155,033	73,556,534	16,250,178	23,100,720	29,845,795	31,340,432	100,950,348	160,453,100	1.589
G	2,780,538	6,139,289	4,961,872	9,089,224	2,000,276	2,843,527	2,462,681	2,586,009	12,205,367	20,658,049	1.693
A, B, C, D, E, F, G	73,512,420	162,311,758	174,454,568	319,568,243	57,262,052	81,401,854	127,054,128	133,416,828	432,283,168	696,698,684	1.612

Notes:

(2), (4), (6), (8): Unit Statistical Data.

(3), (5), (7), (9): Unit Statistical Data x Loss Development Factors to 10th report from Exhibit 5, Page 5.

60000 X

Loss Development of Schedule Z to Tenth Report by Hazard Group

Policy Year 2020 at 30 Months  
 Second Report to Tenth Report

Hazard Group	Indemnity Losses Likely To Develop		Indemnity Losses Not Likely To Develop		Medical Losses Likely To Develop		Medical Losses Not Likely To Develop		Total Losses		
	Reported Losses	Losses Developed to 10th Report	Reported Losses	Losses Developed to 10th Report	Reported Losses	Losses Developed to 10th Report	Reported Losses	Losses Developed to 10th Report	Total Reported Losses =(2)+(4)+(6)+(8)	Total Developed Losses =(3)+(5)+(7)+(9)	Develop. Factor = (11) / (10)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A	2,417,909	3,321,155	6,672,220	8,608,072	914,992	1,018,825	5,132,661	5,190,422	15,137,782	18,138,474	1.198
B	14,910,000	20,479,854	26,241,596	33,855,230	7,545,282	8,401,517	16,622,402	16,809,466	65,319,280	79,546,066	1.218
C	33,951,527	46,634,628	52,871,681	68,211,664	10,810,329	12,037,080	34,128,478	34,512,550	131,762,015	161,395,921	1.225
D	19,039,663	26,152,214	29,686,930	38,300,180	10,822,728	12,050,886	16,730,380	16,918,659	76,279,701	93,421,938	1.225
E	21,408,568	29,406,059	41,473,080	53,505,917	6,969,546	7,760,447	21,658,978	21,902,722	91,510,172	112,575,144	1.230
F	27,267,386	37,453,526	54,668,331	70,529,587	13,081,235	14,565,687	25,400,362	25,686,210	120,417,314	148,235,010	1.231
G	5,552,931	7,627,311	10,531,580	13,587,171	18,308,379	20,386,005	5,215,954	5,274,653	39,608,844	46,875,140	1.183
A, B, C, D, E, F, G	124,547,984	171,074,747	222,145,418	286,597,821	68,452,491	76,220,446	124,889,215	126,294,681	540,035,108	660,187,695	1.222

Notes:

(2), (4), (6), (8): Unit Statistical Data.

(3), (5), (7), (9): Unit Statistical Data x Loss Development Factors to 10th report from Exhibit 5, Page 5.

X 000010

Loss Development of Schedule Z to Tenth Report by Hazard Group

Policy Year 2019 at 42 Months  
 Third Report to Tenth Report

Hazard Group	Indemnity Losses Likely To Develop		Indemnity Losses Not Likely To Develop		Medical Losses Likely To Develop		Medical Losses Not Likely To Develop		Total Losses		
	Reported Losses	Losses Developed to 10th Report	Reported Losses	Losses Developed to 10th Report	Reported Losses	Losses Developed to 10th Report	Reported Losses	Losses Developed to 10th Report	Total Reported Losses =(2)+(4)+(6)+(8)	Total Developed Losses =(3)+(5)+(7)+(9)	Develop. Factor = (11) / (10)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A	3,411,450	3,925,326	11,508,448	12,842,365	1,414,689	1,475,352	6,640,247	6,647,070	22,974,834	24,890,113	1.083
B	20,974,594	24,134,057	36,560,236	40,797,847	6,667,581	6,953,493	22,634,552	22,657,808	86,836,963	94,543,205	1.089
C	45,474,853	52,324,860	65,567,335	73,167,090	18,388,785	19,177,314	35,654,194	35,690,827	165,085,167	180,360,092	1.093
D	19,730,384	22,702,428	33,884,889	37,812,407	6,503,249	6,782,115	18,067,033	18,085,596	78,185,555	85,382,546	1.092
E	30,321,236	34,888,611	54,527,223	60,847,345	17,700,111	18,459,109	22,185,329	22,208,123	124,733,899	136,403,188	1.094
F	40,919,863	47,083,739	63,609,315	70,982,121	39,352,386	41,039,854	27,361,339	27,389,452	171,242,903	186,495,166	1.089
G	7,990,963	9,194,665	9,742,447	10,871,671	2,786,565	2,906,056	3,747,164	3,751,014	24,267,139	26,723,405	1.101
A, B, C, D, E, F, G	168,823,343	194,253,686	275,399,893	307,320,845	92,813,366	96,793,293	136,289,858	136,429,890	673,326,460	734,797,715	1.091

Notes:

(2), (4), (6), (8): Unit Statistical Data.

(3), (5), (7), (9): Unit Statistical Data x Loss Development Factors to 10th report from Exhibit 5, Page 5.

X 000011

Loss Development Factors From 10th to Ultimate

Hazard Group	Losses Developed to 10th Report				Indicated Development Factor to Ultimate	Balanced Selected Factor
	Indemnity		Medical			
	Likely to Develop	Not Likely to Develop	Likely to Develop	Not Likely to Develop		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A	10,946,885	32,951,557	3,587,190	17,233,494	1.044	1.044
B	65,212,368	122,991,834	22,141,782	59,701,235	1.056	1.056
C	146,542,457	222,608,601	59,403,209	105,597,263	1.059	1.059
D	69,052,599	117,378,433	25,996,209	51,758,322	1.059	1.059
E	95,931,939	168,940,176	38,445,353	65,823,315	1.059	1.059
F	116,992,680	215,068,242	78,706,261	84,416,094	1.048	1.048
G	22,961,265	33,548,067	26,135,587	11,611,676	1.037	1.037
TOTAL	527,640,192	913,486,910	254,415,593	396,141,399	1.054	1.054

Notes:

(2) - (5): Exhibit 4, Pages 3-5.

(6): Weighted Average of Development Factors from Page 2.

(Likely to Dev. Ind. 1.216, Not Likely to Dev. Ind. 1.031, Likely to Dev. Med. 0.909, Not Likely to Dev. Med. 0.985)

(7): Factors are balanced to the total development factor from Page 2.

X 000012

# X 000013

Section X - Experience Rating  
 Subsection A - Expected Loss Rates  
 7/1/2024

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 Exhibit 5  
 Page 2

## Calculation of Development Category Development Factors from 10th to Ultimate

Policy Year (1)	Unit Stat Plan Losses Developed to 10th Rept. (2)	Aggregate Financial Develop. Factor 10th to Ult. (3)	Differential in Loss Development (4)	Unit Stat Plan Losses Adjusted to Financial Agg. Ult. Loss Level = (2) x (3) x (4) (5)	Development Factor 10th to Ult. = (5) / (2) (6)
<b>Indemnity</b>					
2021	481,880,002	1.075	1.022	529,613,345	1.099
2020	457,672,568	1.075	1.022	503,008,008	1.099
2019	501,574,532	1.075	1.022	551,258,747	1.099
<b>Total</b>	<b>1,441,127,102</b>			<b>1,583,880,100</b>	<b>1.099</b>
<b>Medical</b>					
2021	214,818,682	0.956	1.000	205,308,564	0.956
2020	202,515,126	0.956	1.000	193,549,692	0.956
2019	233,223,183	0.956	1.000	222,898,289	0.956
<b>Total</b>	<b>650,556,991</b>			<b>621,756,545</b>	<b>0.956</b>
<b>Ind.+ Med.</b>					
2021	696,698,684			734,921,909	1.055
2020	660,187,695			696,557,700	1.055
2019	734,797,715			774,157,036	1.054
<b>Total</b>	<b>2,091,684,093</b>			<b>2,205,636,645</b>	<b>1.054</b>

(7)	Unit Stat Plan Indem. Losses Developed to 10th Report (8)	Development Factor 10th to Ult. (9)	(10)	Unit Stat Plan Med. Losses Developed to 10th Report (11)	Development Factor 10th to Ult. (12)
a. Likely to Develop	527,640,192	1.216	a. Likely to Develop	254,415,593	0.909
b. Not Likely to Develop	913,486,910	1.031	b. Not Likely to Develop	396,141,399	0.985
<b>c. Total</b>	<b>1,441,127,102</b>	<b>1.099</b>	<b>c. Total</b>	<b>650,556,991</b>	<b>0.956</b>

**Notes:**

(2): Page 4.

(3): Page 3.

(4): Page 8.

(8),(11): Page 4.

(9), (12): Likely to Develop Factor = 1 + (Total Losses/Likely to Develop Losses) x ("Appropriate Column 6 Factor" - 1) x 0.8

(9), (12): Not Likely to Develop Factor = 1 + (Total Losses/Not Likely to Develop Losses) x ("Appropriate Column 6 Factor" - 1) x (1 - 0.8)

# X 000014

Section X - Experience Rating  
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Exhibit 5  
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Calculation of Development Factor from USR at 10th report to Aggregate Financial Ultimate Level

	<u>Indemnity</u>	<u>Medical</u>
(1) Development Factor based on Paid + Case 132 Months to Ult.	1.026	0.942
(2) Est. Ultimate Losses (Prior to Escalation Adj.) based on Paid + Case Develop. Method		
(a) PY2020	452,616,311	184,522,565
(b) PY2021	473,947,833	186,424,763
(c) Average	463,282,072	185,473,664
(3) Est. Ultimate Losses (Prior to Escalation Adj.) based on Paid Develop. Method		
(a) PY2020	484,611,188	191,787,327
(b) PY2021	531,101,395	190,222,064
(c) Average	507,856,291	191,004,696
(4) Ratio of Est. Ultimate Losses based on average of Paid and Paid + Case indications to Est. Ultimate Losses based on Paid + Case = { [ (2c) + (3c) ] / 2.000 } / (2c)	1.048	1.015
(5) Development Factor to bring Unit Statistical Data 10th report to Aggregate Financial Ultimate Level = (1) x (4)	1.075	0.956

Notes:

(1): 132 Months to 252 Months LDF from Section II-B, Exhibit 1  
x 252 Months to Ult LDF from Section II-C, Exhibit 2, Page 1.

(2),(3): Section II-A, Exhibit 1.

Losses Developed to 10th Report

Policy Year	Loss Development Category	Paid + Case			
		Reported Schedule Z Losses		Losses Developed to 10th Report	
		Indemnity	Medical	Indemnity	Medical
(1)	(2)	(3)	(4)	(5)	(6)
2021	Likely	73,512,420	57,262,052	162,311,758	81,401,854
2021	Not Likely	174,454,568	127,054,128	319,568,243	133,416,828
2021	TOTALS	247,966,988	184,316,180	481,880,002	214,818,682
2020	Likely	124,547,984	68,452,491	171,074,747	76,220,446
2020	Not Likely	222,145,418	124,889,215	286,597,821	126,294,681
2020	TOTALS	346,693,402	193,341,706	457,672,568	202,515,126
2019	Likely	168,823,343	92,813,366	194,253,686	96,793,293
2019	Not Likely	275,399,893	136,289,858	307,320,845	136,429,890
2019	TOTALS	444,223,236	229,103,224	501,574,532	233,223,183

Notes:

(3),(4): Sum of Unit Statistical Data.

(5),(6): Unit Statistical Plan Data x Loss Development Factors to 10th report from Exhibit 5,  
 Page 5.

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# X 000016

Section X - Experience Rating  
 Subsection A - Expected Loss Rates  
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 Exhibit 5  
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## Summary of Development Factors Industry

		Likely to Develop								
		Development Factors From:								
		18-30	30-42	42-54	54-66	66-78	78-90	90-102	102-114	114-126
		<b>(1) Indemnity Paid + Case Losses</b>								
5yr Weighted Average		1.607	1.194	1.078	1.038	1.008	1.010	1.002	1.003	1.006
Cumulative		2.208	1.374	1.151	1.068	1.029	1.021	1.011	1.009	1.006
		<b>(2) Medical Paid + Case Losses</b>								
5yr Weighted Average		1.277	1.068	1.015	1.010	0.987	1.007	1.017	1.005	1.001
Cumulative		1.422	1.113	1.043	1.027	1.017	1.031	1.023	1.006	1.001
		Not-Likely to Develop								
		Development Factors From:								
		18-30	30-42	42-54	54-66	66-78	78-90	90-102	102-114	114-126
		<b>(3) Indemnity Paid + Case Losses</b>								
5yr Weighted Average		1.420	1.156	1.071	1.024	1.011	1.000	1.004	1.001	1.002
Cumulative		1.832	1.290	1.116	1.042	1.017	1.007	1.006	1.003	1.002
		<b>(4) Medical Paid + Case Losses</b>								
5yr Weighted Average		1.038	1.010	1.004	1.003	1.001	0.997	1.000	0.997	0.999
Cumulative		1.050	1.011	1.001	0.997	0.994	0.993	0.996	0.996	0.999

Notes:  
 (1),(2): Page 6.  
 (3),(4): Page 7.

# X 000017

Section X - Experience Rating  
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 Exhibit 5  
 Page 6

## Calculation of Likely to Develop Development Factors Industry

Likely to Develop						
Policy Year	Unlimited Indemnity Paid + Case Losses			Unlimited Medical Paid + Case Losses		
	Evaluated at month		Link Ratio	Evaluated at month		Link Ratio
	18	30		18	30	
2016	78,933,094	120,616,385	1.528	57,027,098	64,000,751	1.122
2017	77,420,982	122,283,140	1.579	58,399,712	76,777,668	1.315
2018	80,621,712	125,984,279	1.563	57,487,618	69,542,216	1.210
2019	69,919,814	115,206,456	1.648	59,972,048	84,297,459	1.406
2020	66,474,346	116,086,835	1.746	48,953,217	65,203,579	1.332
Weighted Average			1.607			1.277
	30	42		30	42	
2015	129,057,982	149,520,391	1.159	79,620,228	84,244,093	1.058
2016	130,021,583	149,017,899	1.146	71,485,087	78,219,934	1.094
2017	134,344,906	160,898,577	1.198	80,304,667	85,541,249	1.065
2018	133,748,280	164,415,039	1.229	71,977,464	78,419,514	1.090
2019	124,914,226	154,575,214	1.237	85,993,035	89,315,068	1.039
Weighted Average			1.194			1.068
	42	54		42	54	
2014	174,369,627	184,493,648	1.058	96,458,891	96,436,206	1.000
2015	157,950,289	167,169,306	1.058	87,100,261	86,361,897	0.992
2016	159,900,412	168,697,565	1.055	83,862,315	84,970,701	1.013
2017	170,254,954	186,691,387	1.097	89,525,906	94,269,782	1.053
2018	179,228,849	200,100,796	1.116	84,046,363	85,608,713	1.019
Weighted Average			1.078			1.015
	54	66		54	66	
2013	155,895,383	158,640,014	1.018	65,942,215	67,253,766	1.020
2014	193,589,419	197,265,010	1.019	98,726,393	99,938,190	1.012
2015	176,906,685	183,124,738	1.035	89,488,345	89,504,893	1.000
2016	180,315,937	193,009,385	1.070	88,272,540	88,552,268	1.003
2017	197,692,718	206,714,678	1.046	97,008,663	98,493,843	1.015
Weighted Average			1.038			1.010
	66	78		66	78	
2012	170,118,939	172,914,743	1.016	90,728,203	86,662,818	0.955
2013	161,829,518	161,888,897	1.000	68,630,637	68,682,303	1.001
2014	200,993,196	201,816,292	1.004	101,031,286	101,870,699	1.008
2015	188,360,539	188,737,079	1.002	93,378,560	90,633,080	0.971
2016	193,233,467	196,139,786	1.015	88,605,599	88,755,049	1.002
Weighted Average			1.008			0.987
	78	90		78	90	
2011	165,791,735	166,058,037	1.002	86,905,227	86,036,938	0.990
2012	174,188,590	175,776,913	1.009	86,960,272	88,955,181	1.023
2013	163,282,932	164,199,849	1.006	68,903,277	68,044,242	0.988
2014	203,300,304	207,727,921	1.022	102,435,916	103,043,475	1.006
2015	190,850,499	192,519,642	1.009	91,780,936	94,053,443	1.025
Weighted Average			1.010			1.007
	90	102		90	102	
2010	148,495,064	149,873,824	1.009	77,545,953	77,608,539	1.001
2011	167,719,733	167,836,031	1.001	86,607,112	85,760,987	0.990
2012	175,682,500	175,730,377	1.000	88,900,208	90,397,155	1.017
2013	164,838,621	164,912,385	1.000	68,829,341	69,342,116	1.007
2014	208,465,242	208,481,951	1.000	103,271,144	109,369,604	1.059
Weighted Average			1.002			1.017
	102	114		102	114	
2009	149,665,102	150,357,176	1.005	67,940,750	67,213,895	0.989
2010	150,087,823	150,925,089	1.006	77,943,008	76,577,876	0.982
2011	168,288,008	167,888,585	0.998	85,982,795	85,727,151	0.997
2012	175,730,377	177,543,305	1.010	90,397,155	89,468,810	0.990
2013	166,191,611	165,904,508	0.998	69,510,227	74,832,047	1.077
Weighted Average			1.003			1.005
	114	126		114	126	
2008	149,517,000	150,491,753	1.007	59,472,227	59,217,046	0.996
2009	150,662,820	150,475,520	0.999	67,489,412	65,841,599	0.976
2010	151,260,451	152,378,262	1.007	76,779,159	77,669,391	1.012
2011	168,447,562	169,653,637	1.007	85,859,777	86,513,721	1.008
2012	177,917,216	179,264,060	1.008	89,489,438	90,199,543	1.008
Weighted Average			1.006			1.001

Note:  
 Unit Statistical Data, Excluding Large Deductible Policies.

# X 000018

Section X - Experience Rating  
 Subsection A - Expected Loss Rates  
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Section X - A  
 Exhibit 5  
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## Calculation of Not-Likely to Develop Development Factors Industry

Not-Likely to Develop						
Policy Year	Unlimited Indemnity Paid + Case Losses			Unlimited Medical Paid + Case Losses		
	Evaluated at month		Link Ratio	Evaluated at month		Link Ratio
	18	30		18	30	
2016	160,973,720	223,543,633	1.389	141,175,455	148,898,347	1.055
2017	175,967,084	250,079,949	1.421	148,877,358	152,349,269	1.023
2018	178,232,345	249,863,387	1.402	153,561,029	159,649,656	1.040
2019	177,214,237	254,833,323	1.438	133,077,021	138,076,897	1.038
2020	159,053,069	230,606,567	1.450	123,537,633	128,138,127	1.037
Weighted Average			1.420			1.038
	30	42		30	42	
2015	217,486,259	243,518,428	1.120	142,404,292	142,870,257	1.003
2016	214,138,435	244,463,980	1.142	141,414,011	144,551,782	1.022
2017	238,018,183	272,856,643	1.146	148,822,270	148,615,527	0.999
2018	242,099,386	287,004,367	1.185	157,214,408	157,829,626	1.004
2019	245,125,553	289,648,022	1.182	136,381,321	139,788,156	1.025
Weighted Average			1.156			1.010
	42	54		42	54	
2014	220,231,415	232,831,929	1.057	137,265,851	138,420,190	1.008
2015	235,088,530	250,915,588	1.067	140,014,089	141,120,149	1.008
2016	233,581,467	250,116,332	1.071	138,909,401	139,438,509	1.004
2017	263,500,266	284,091,333	1.078	144,630,870	144,665,137	1.000
2018	272,190,557	293,746,787	1.079	152,202,777	152,397,077	1.001
Weighted Average			1.071			1.004
	54	66		54	66	
2013	211,119,777	217,711,688	1.031	133,843,844	135,221,664	1.010
2014	223,736,158	227,687,642	1.018	136,130,003	137,154,790	1.008
2015	241,178,209	244,950,017	1.016	137,993,701	138,536,262	1.004
2016	238,497,960	244,437,207	1.025	136,136,670	136,261,783	1.001
2017	273,090,002	281,223,679	1.030	141,926,256	140,971,594	0.993
Weighted Average			1.024			1.003
	66	78		66	78	
2012	198,637,629	202,283,217	1.018	124,630,486	124,610,775	1.000
2013	214,522,184	216,895,316	1.011	133,844,793	134,425,587	1.004
2014	223,959,456	227,239,571	1.015	136,061,694	136,946,792	1.007
2015	239,388,064	241,559,316	1.009	134,480,715	134,480,223	1.000
2016	244,213,125	244,857,889	1.003	136,208,452	135,213,722	0.993
Weighted Average			1.011			1.001
	78	90		78	90	
2011	207,842,605	208,435,941	1.003	127,288,574	127,287,951	1.000
2012	201,009,370	200,310,015	0.997	124,313,321	124,182,748	0.999
2013	215,501,281	215,544,819	1.000	134,204,613	133,569,787	0.995
2014	225,755,559	226,062,849	1.001	136,381,575	136,393,249	1.000
2015	239,445,896	239,463,027	1.000	133,332,367	132,391,857	0.993
Weighted Average			1.000			0.997
	90	102		90	102	
2010	197,223,331	198,160,537	1.005	125,739,589	125,670,248	0.999
2011	206,774,245	207,340,356	1.003	126,717,777	127,429,266	1.006
2012	200,404,428	200,022,361	0.998	124,237,721	125,277,386	1.008
2013	214,906,047	216,226,781	1.006	132,784,688	131,605,228	0.991
2014	225,325,528	226,595,084	1.006	136,165,580	135,484,740	0.995
Weighted Average			1.004			1.000
	102	114		102	114	
2009	180,026,067	179,809,922	0.999	119,545,721	119,514,576	1.000
2010	197,946,538	197,621,320	0.998	125,335,779	124,999,152	0.997
2011	206,888,379	207,924,957	1.005	127,207,458	126,696,804	0.996
2012	200,022,361	200,164,684	1.001	125,277,386	124,268,204	0.992
2013	214,947,555	215,492,518	1.003	131,437,117	131,280,516	0.999
Weighted Average			1.001			0.997
	114	126		114	126	
2008	186,985,197	187,091,798	1.001	116,503,878	116,471,507	1.000
2009	179,504,278	179,191,973	0.998	119,239,059	119,291,728	1.000
2010	197,285,958	197,618,314	1.002	124,797,869	124,303,628	0.996
2011	207,365,980	208,576,846	1.006	126,564,178	126,692,501	1.001
2012	199,790,773	200,015,265	1.001	124,247,576	124,084,693	0.999
Weighted Average			1.002			0.999

Note:  
 Unit Statistical Data, Excluding Large Deductible Policies.

Escalation Adjustment for Indemnity Losses Only

Loss Development Method (1)	Policy Year (2)	Differential in Loss Development (3)
Paid Plus Case	2021	1.000
	2020	1.000
	2021	1.000
Paid	2021	1.045
	2020	1.045
	2021	1.045
Average of Paid and Paid Plus Case	2021	1.022
	2020	1.022
	2021	1.022

Notes:

(3): Section II-D, Exhibit 1, Page 1 and Exhibit 2, Page 1.

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# X 000020

Section X - Experience Rating  
 Subsection A - Expected Loss Rates  
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Section X - A  
 Exhibit 6

## Investment Income Offset

Hazard Code (1)	Injury Type (2)	Indemnity		Medical		Total Investment Income Offset (7)	Selected Total Investment Income Offset (8)	Balanced Total Investment Income Offset (9)
		Developed Losses at Ultimate (3)	Investment Income Offset (4)	Developed Losses at Ultimate (5)	Investment Income Offset (6)			
A	Fatal	2,853,244	0.614	12,173	1.000			
A	Permanent Total	0	0.512	0	0.512			
A	Permanent Partial	13,540,410	1.096	4,307,516	1.095			
A	Temporary Total	30,890,813	1.122	11,811,446	1.121			
A	Medical Only	0		4,104,613	1.000			
A	TOTAL	47,284,467	1.084	20,235,748	1.091	1.086	1.086	1.034
B	Fatal	5,179,941	0.614	204,334	1.000			
B	Permanent Total	6,522,710	0.512	3,634,765	0.512			
B	Permanent Partial	79,337,566	1.096	16,311,037	1.095			
B	Temporary Total	115,062,603	1.122	45,021,494	1.121			
B	Medical Only	0		13,760,966	1.000			
B	TOTAL	206,102,820	1.080	78,932,597	1.066	1.076	1.076	1.025
C	Fatal	3,744,226	0.614	126,964	1.000			
C	Permanent Total	19,345,719	0.512	12,507,575	0.512			
C	Permanent Partial	171,367,495	1.096	47,246,463	1.095			
C	Temporary Total	213,247,655	1.122	76,720,811	1.121			
C	Medical Only	0		21,409,008	1.000			
C	TOTAL	407,705,095	1.078	158,010,821	1.048	1.070	1.070	1.019
D	Fatal	5,948,522	0.614	6,621,263	1.000			
D	Permanent Total	8,999,200	0.512	1,898,465	0.512			
D	Permanent Partial	84,475,336	1.096	20,621,071	1.095			
D	Temporary Total	105,562,067	1.122	38,546,161	1.121			
D	Medical Only	0		6,925,542	1.000			
D	TOTAL	204,985,125	1.070	74,612,501	1.076	1.072	1.072	1.021
E	Fatal	6,013,379	0.614	423,924	1.000			
E	Permanent Total	24,721,507	0.512	9,668,350	0.512			
E	Permanent Partial	106,651,747	1.096	31,448,902	1.095			
E	Temporary Total	153,443,926	1.122	49,911,416	1.121			
E	Medical Only	0		8,330,199	1.000			
E	TOTAL	290,830,559	1.051	99,782,791	1.043	1.049	1.049	0.999
F	Fatal	7,690,580	0.614	249,024	1.000			
F	Permanent Total	36,569,742	0.512	40,232,095	0.512			
F	Permanent Partial	166,963,805	1.096	51,353,597	1.095			
F	Temporary Total	152,774,328	1.122	56,195,480	1.121			
F	Medical Only	0		6,663,648	1.000			
F	TOTAL	363,998,455	1.038	154,693,844	0.948	1.012	1.012	0.963
G	Fatal	3,508,936	0.614	85,001	1.000			
G	Permanent Total	10,194,458	0.512	18,514,864	0.512			
G	Permanent Partial	29,790,985	1.096	8,611,083	1.095			
G	Temporary Total	19,014,576	1.122	7,250,730	1.121			
G	Medical Only	0		733,071	1.000			
G	TOTAL	62,508,956	0.982	35,194,749	0.791	0.913	0.985	0.938

**Notes:**

(3),(5): From Exhibit 4, Pages 3-5, Developed to Ultimate.

(4),(6): Section IX-B, Exhibit 4.

(7) = Average of (4) and (6) weighted by (3) and (5).

(9) = (8) / [Weighted average of (8) weighted by (3) + (5)].

Calculation of Statewide Partial "D" Ratios by Benefit Type

Benefit Type (1)	Adjusted Primary Losses (2)	Adjusted Total Losses (3)	Partial D-Ratio = (2) / (3) (4)
Indemnity	127,246,467	994,805,069	0.128
Medical	131,611,888	476,022,405	0.276

Notes:

Data at the individual claim level for PYs 2019 - 2021 have been adjusted by the factors shown on Page 2. The Adjusted Primary Losses are capped at \$7,500 per claim. The Adjusted Total Losses are capped at \$350,000 per claim. If losses are capped, the proportions for capped indemnity and capped medical losses are consistent with the proportions for unlimited indemnity and unlimited medical.

X 000021

Severity Trend and State Benefit Level Adjustment Factors

Policy Year	Indemnity By Injury Type				Medical by Injury Type				
	Fatal	Permanent Total	Permanent Partial	Temporary Total	Fatal	Permanent Total	Permanent Partial	Temporary Total	Medical Only
(1) Severity Trend Factors									
2019	0.976	0.976	0.976	0.976	0.932	0.932	0.932	0.932	1.061
2020	1.048	1.048	1.048	1.048	0.938	0.938	0.938	0.938	1.017
2021	1.057	1.057	1.057	1.057	1.010	1.010	1.010	1.010	1.036
(2) State Benefit Level Adjustment Factors									
2019	1.016	1.020	1.031	1.014	1.000	1.000	1.000	1.000	1.000
2020	1.025	1.032	1.053	1.022	1.000	1.000	1.000	1.000	1.000
2021	1.014	1.017	1.028	1.012	1.000	1.000	1.000	1.000	1.000
(3) Combined Severity Trend and State Benefit Level Adjustment Factors									
2019	0.992	0.996	1.006	0.990	0.932	0.932	0.932	0.932	1.061
2020	1.075	1.082	1.104	1.071	0.938	0.938	0.938	0.938	1.017
2021	1.071	1.075	1.086	1.069	1.010	1.010	1.010	1.010	1.036

Notes:

(1): Exhibit 2.

(2): Section IV-A, Exhibit 1. PY 2019 to CPY 2020\_07. PY 2020 to CPY 2021\_07. PY 2021 to CPY 2022\_07.

(3) = (1) x (2)

X 000022

Severity Trend Factors

(1)			(2) Historical Values		
Schedule Z Policy Year			Indemnity Severity	Lost Time Medical Severity	Medical Only Severity
01/01/2019	-	12/31/2019	38,883	12,331	978
01/01/2020	-	12/31/2020	37,406	11,876	1,034
01/01/2021	-	12/31/2021	38,502	11,106	1,039
(3) Selected Annual Trend			3.8%	0.6%	2.4%
(4) Trend Period Length [Years between (1) and (5)]				1.495	

(5)			(6) Trend Factors from Sched Z PYs to Pol Eff Periods		
Policy Effective Period			Indemnity Severity	Lost Time Medical Severity	Medical Only Severity
07/01/2020	-	06/30/2021	0.976	0.932	1.061
07/01/2021	-	06/30/2022	1.048	0.938	1.017
07/01/2022	-	06/30/2023	1.057	1.010	1.036

Notes:

(2): Section V-A Exhibit 2, Pages 1, 2, and 3.

(3): Section V-A Exhibit 1, Page 1.

(6): For 7/1/2020 effective period, average of 1/1/2020 and 1/1/2021 divided by 1/1/2019.

For 7/1/2021 effective period, 1/1/2021 divided by 1/1/2020, then applying (3) for .5 years.

X 000023

**EXPERIENCE RATING PLAN MANUAL**

**MASSACHUSETTS**

*Proposed Effective July 1, 2024*

**TABLE OF EXPECTED LOSS RATES AND DISCOUNT RATIOS**

CLASS CODE	EXP LOSS RATE	DISC RATIO	CLASS CODE	EXP LOSS RATE	DISC RATIO	CLASS CODE	EXP LOSS RATE	DISC RATIO	CLASS CODE	EXP LOSS RATE	DISC RATIO	CLASS CODE	EXP LOSS RATE	DISC RATIO
0005	0.92	.19	2115	1.90	.17	3041	0.90	.16	3634	0.63	.16	4439	1.79	.18
0008	0.75	.17	2121	0.43	.17	3042	0.89	.16	3635	0.57	.17	4452	1.10	.17
0016	1.32	.17	2130	0.54	.17	3066	0.83	.17	3638	0.59	.17	4459	0.87	.17
0034	0.95	.17	2131	1.23	.17	3076	1.05	.16	3642	0.48	.17	4470	0.65	.17
0035	0.60	.17	2143	0.81	.16	3081D	1.31	.17	3643	0.72	.16	4484	0.84	.17
0036	0.95	.17	2150	1.37	.18	3082D	1.31	.17	3647	0.72	.17	4493	0.73	.17
0042	1.18	.18	2156	1.07	.17	3085D	1.27	.17	3648	0.36	.17	4511	0.09	.17
0046	0.95	.18	2157	1.58	.16	3110	1.98	.16	3681	0.21	.16	4512	0.03	.17
0050	1.74	.17	2172	0.65	.17	3111	0.82	.17	3685	0.20	.17	4557	0.74	.16
0059D	.	.	2211	1.94	.17	3113	0.60	.17	3724	1.39	.17	4558	0.78	.17
0065D	.	.	2220	1.23	.17	3114	0.82	.17	3726	1.19	.17	4583	1.12	.17
0066D	.	.	2260	1.67	.16	3118	0.54	.17	3807	0.87	.17	4611	0.25	.17
0067D	.	.	2288	1.38	.17	3119	0.34	.17	3808	1.01	.17	4635	1.51	.18
0079	0.84	.17	2305	0.79	.17	3120	0.45	.16	3821	1.52	.17	4653	0.84	.17
0083	1.19	.17	2362	0.86	.17	3122	0.74	.16	3826	1.31	.17	4665	3.93	.18
0106	2.76	.18	2380	0.66	.17	3127	0.69	.16	3830	0.54	.17	4692	0.18	.17
0113	0.95	.17	2402	0.71	.17	3131	0.51	.17	3841	0.70	.17	4693	0.26	.17
0170	0.95	.17	2413	0.87	.17	3132	0.72	.17	4000	1.99	.17	4720	0.77	.17
0771	.	.	2416	1.20	.17	3145	0.47	.16	4021	1.03	.17	4740	0.26	.16
0908	36.28	.17	2417	0.48	.16	3146	0.86	.17	4024	1.08	.16	4741	1.21	.16
0909	103.02	.18	2501	0.69	.17	3169	0.84	.17	4034	2.64	.17	4771	1.01	.16
0912	206.04	.18	2503	0.38	.18	3179	0.44	.17	4036	0.67	.17	4777	1.12	.17
0913	72.56	.17	2570	1.47	.16	3180	0.87	.17	4038	0.82	.16	4825	0.15	.16
0917	0.89	.17	2576	0.74	.17	3188	0.70	.17	4053	1.17	.15	4828	0.38	.17
0918	0.15	.16	2585	1.14	.17	3200	0.84	.17	4062	0.78	.16	4829	0.38	.17
1430	1.13	.17	2586	0.72	.17	3220	0.71	.16	4112	0.10	.17	4902	0.56	.17
1438	1.13	.17	2587	0.82	.16	3223	(a)	(a)	4113	1.17	.15	4923	0.26	.16
1463	3.46	.18	2623	1.27	.17	3255	0.67	.17	4114	1.24	.16	5020	1.77	.16
1624D	1.42	.17	2651	0.47	.17	3257	0.93	.18	4130	1.69	.16	5022	2.75	.17
1655	1.04	.16	2660	0.61	.17	3270	0.57	.17	4133	0.75	.17	5037	3.80	.16
1701	1.14	.16	2683	0.70	.17	3300	1.25	.18	4150	0.24	.16	5040	7.28	.16
1710D	1.43	.17	2688	0.71	.17	3305	(a)	(a)	4239	1.09	.17	5057	4.62	.18
1747	0.86	.16	2702	6.17	.18	3315	1.09	.17	4243	0.82	.16	5059	7.33	.18
1748	1.11	.17	2710	2.36	.18	3336	0.81	.16	4244	1.12	.17	5102	2.25	.17
1853	0.52	.18	2731	1.09	.17	3365	1.46	.18	4250	0.92	.17	5146	2.14	.16
1924	1.22	.17	2747	2.00	.17	3372	0.73	.17	4251	1.11	.16	5160	1.29	.16
1925	1.60	.20	2790	0.73	.17	3373	1.33	.17	4273	0.91	.17	5183	1.10	.17
2003	1.12	.17	2802	1.18	.17	3381	0.57	.16	4279	0.85	.17	5188	1.23	.16
2014	1.30	.17	2835	0.75	.17	3383	0.47	.17	4283	0.82	.16	5190	0.73	.17
2021	0.96	.17	2836	0.90	.16	3385	0.33	.18	4299	0.61	.17	5191	0.25	.17
2039	1.65	.17	2841	1.08	.18	3400	0.81	.17	4304	2.28	.18	5192	1.17	.16
2041	0.85	.16	2883	1.01	.17	3507	1.04	.17	4307	0.47	.17	5213	3.00	.16
2070	1.27	.16	2923	0.44	.17	3515	0.78	.17	4308	0.78	.14	5215	1.88	.16
2081	1.24	.18	2942	0.57	.17	3558	0.24	.18	4351	0.32	.17	5221	2.29	.16
2089	0.91	.16	3018	0.80	.17	3571	0.21	.16	4352	0.32	.17	5222	2.82	.16
2095	1.15	.17	3022	1.25	.17	3574	0.59	.17	4360	0.27	.16	5223	1.21	.17
2101	0.95	.16	3027	0.80	.17	3612	0.53	.17	4361	0.22	.17	5348	1.41	.16
2105	(a)	(a)	3028	1.21	.17	3620	0.98	.17	4362	0.16	.17	5402	2.18	.16
2111	0.78	.17	3030	1.77	.17	3629	0.59	.17	4410	0.85	.17	5403	2.38	.17
2114	0.95	.16	3040	2.01	.17	3632	0.54	.17	4432	0.38	.16	5437	1.24	.16

(a) Expected Loss Rates and Discount Ratios for each individual risk must be obtained by Home Office from the WCRIBMA  
 D Supplement Disease Loading

*Proposed Effective July 1, 2024*

**TABLE OF EXPECTED LOSS RATES AND DISCOUNT RATIOS**

CLASS CODE	EXP LOSS RATE	DISC RATIO	CLASS CODE	EXP LOSS RATE	DISC RATIO	CLASS CODE	EXP LOSS RATE	DISC RATIO	CLASS CODE	EXP LOSS RATE	DISC RATIO	CLASS CODE	EXP LOSS RATE	DISC RATIO
5443	1.01	.17	7016M	1.12	.79	7704	1.43	.18	8719	0.70	.16	9179	15.94	.21
5445	1.95	.16	7024M	1.40	.79	7720	0.58	.17	8720	0.28	.17	9180	1.37	.19
5462	2.24	.16	7038M	2.12	.76	7855	1.53	.17	8721	0.06	.17	9182	0.91	.18
5472	2.52	.16	7046M	3.02	.58	8001	0.66	.18	8726F	1.81	.18	9186	1.35	.19
5473	3.95	.17	7047M	1.76	.69	8002	0.64	.18	8734M	0.21	.54	9220	1.20	.17
5474	1.58	.17	7050M	3.32	.67	8006	0.42	.17	8737M	0.17	.54	9402	1.44	.17
5478	1.46	.16	7090M	2.65	.76	8008	0.26	.17	8738M	0.26	.53	9403	4.25	.17
5479	1.81	.17	7098M	3.55	.58	8010	0.52	.17	8742	0.03	.17	9410	1.12	.17
5480	1.67	.17	7099M	4.45	.51	8013	0.10	.18	8745	1.69	.17	9501	0.68	.17
5506	1.61	.17	7133	(a)	(a)	8017	0.35	.17	8747	0.28	.16	9505	0.68	.17
5507	1.45	.17	7151M	3.96	.52	8018	1.38	.16	8748	0.17	.16	9519	0.91	.17
5508D	1.67	.17	7152M	6.22	.52	8021	1.17	.17	8800	0.41	.17	9521	1.25	.17
5509	1.94	.19	7153M	4.96	.52	8031	0.61	.18	8803	0.01	.17	9522	0.69	.16
5538	1.37	.17	7219	2.52	.17	8032	0.46	.17	8805M	0.09	.60	9533	6.54	.16
5545	15.28	.18	7230	3.35	.17	8033	0.58	.18	8810	0.02	.17	9534	1.87	.17
5547	3.23	.17	7231	3.98	.16	8034	1.22	.16	8814M	0.07	.60	9549	1.28	.16
5606	0.40	.17	7309F	4.77	.18	8039	0.70	.17	8815M	0.11	.59	9552	1.73	.17
5610	2.20	.16	7313F	6.57	.16	8044	0.94	.17	8820	0.02	.17	9586	0.12	.17
5645	2.26	.17	7317F	5.47	.17	8046	0.84	.18	8824	0.81	.17	9620	0.32	.17
5701	4.02	.17	7327F	8.07	.17	8048	0.89	.17	8826	0.62	.17			
5703	2.31	.17	7333M	4.51	.70	8058	0.84	.18	8829	0.94	.16			
5705	3.67	.17	7335M	5.30	.70	8103	0.91	.17	8831	0.31	.20			
6003	1.86	.16	7337M	6.65	.61	8105	4.18	.16	8832	0.10	.17			
6005	1.67	.17	7350F	6.69	.16	8106	1.37	.18	8833	0.40	.16			
6204	2.07	.16	7360	1.49	.17	8107	0.77	.17	8835	0.63	.16			
6217	1.47	.16	7370	1.58	.17	8111	0.93	.17	8837	(a)	(a)			
6229	1.47	.17	7380	2.55	.16	8203	1.71	.17	8868	0.31	.17			
6233	0.61	.16	7382	1.36	.17	8204	1.29	.17	8901	0.02	.17			
6251D	1.22	.16	7394M	5.80	.84	8215	1.08	.18	9014	0.79	.17			
6252D	1.44	.17	7395M	7.41	.84	8227	1.81	.17	9015	1.00	.17			
6306	2.76	.16	7398M	9.29	.74	8232	1.59	.17	9016	0.59	.19			
6319	0.85	.17	7403	1.21	.17	8233	2.06	.17	9019	1.09	.17			
6325	0.93	.17	7405	0.53	.16	8235	1.47	.17	9033	0.97	.17			
6400	1.43	.17	7420	4.41	.18	8263	1.50	.17	9040	1.05	.17			
6504	0.95	.16	7421	0.33	.15	8264	1.49	.17	9044	0.56	.17			
6702M	(a)	(a)	7422	0.33	.15	8265	2.04	.17	9052	0.60	.17			
6703M	(a)	(a)	7425	1.03	.16	8279	1.45	.18	9058	0.61	.17			
6704M	(a)	(a)	7431	0.33	.15	8291	1.44	.18	9060	0.35	.18			
6801F	2.24	.17	7445	.	.	8292	1.33	.18	9061	0.36	.17			
6811	2.01	.17	7453	.	.	8293	2.26	.17	9062	0.31	.17			
6824F	2.73	.19	7502	0.69	.16	8350	2.48	.17	9063	0.21	.18			
6826F	1.79	.17	7515	0.79	.19	8380	0.89	.17	9077F	3.05	.21			
6834	0.80	.17	7520	1.03	.17	8381	0.36	.17	9079	0.35	.17			
6836	1.01	.18	7538	1.10	.17	8385	1.27	.17	9089	0.24	.17			
6843F	5.18	.17	7539	0.45	.17	8392	0.58	.17	9093	0.34	.17			
6854	4.66	.17	7580	0.94	.17	8393	0.50	.16	9101	1.36	.17			
6872F	4.80	.19	7590	1.89	.18	8500	2.06	.17	9102	1.00	.18			
6874F	6.33	.17	7600	1.51	.16	8601	0.06	.17	9154	0.73	.18			
6882	4.32	.19	7601	1.30	.17	8709F	1.83	.18	9156	0.70	.18			
6884	5.69	.17	7610	0.16	.16	8710	0.71	.16	9178	3.94	.22			

(a) Expected Loss Rates and Discount Ratios for each individual risk must be obtained by Home Office from the WCRIBMA  
 D Supplement Disease Loading  
 F Expected Loss Rates and Discount Ratios for risks covered under the United States Longshore and Harbor Workers' Compensation Act.  
 M Expected Loss Rates and Discount Ratios for risks subject to Admiralty Law or Federal Employers Liability Act (FELA).

# XI 000001

## Miscellaneous Rating Values

In this section, we discuss recommended modifications to various miscellaneous rating values, including:

- Massachusetts Benefits Deductible Program Credits
- Massachusetts Benefits Claim and Aggregate Deductible Program Credits

## **Section XI-B – Massachusetts Benefits Deductible Program Credits**

The Massachusetts Benefits Deductible Program allows insureds to elect a per claim deductible applicable to combined medical and indemnity losses. Every employer is offered deductible levels of \$500, \$1,000, \$2,000, \$2,500 and \$5,000. Those insureds that elect a deductible receive a premium reduction reflecting the percentage of losses expected to be retained by the insured as a consequence of the deductible. Higher deductibles should be associated with larger premium credits because an insured's expected retained losses increase as the deductible level increases.

Section XI-B, Exhibit 1 displays Loss Elimination Ratios and Premium Credits for the available deductible levels. The Premium Credits have been calculated with the following considerations:

- The deductible will apply to the sum of indemnity and medical losses.
- The database used is Unit Statistical Data from policy years 2017, 2016, 2015, 2014, and 2013 at fifth report. Each loss is multiplied by appropriate trend, law amendment, and development factors. Claim costs are trended to 7/1/2025, the average accident date assuming the proposed small and medium deductible credits will be in effect for one year starting 7/1/2024. These factors, shown in Section XI-D, Exhibit 1, are taken directly from other sections of the filing.
- Each claim is then layered by size of loss to calculate loss elimination ratios (LER).
- The WCRIBMA used the same formula as in the last Massachusetts Benefits Deductible Program filing to calculate the premium credit. This is formula (8) in

# XI 000003

“Fundamentals of Individual Risk Rating”, 1992, Part III by William R. Gillam and Richard H. Snader:

$$\frac{\text{Premium Credit}}{1.0 - \text{VEL}} = \frac{\text{LER} \times \text{SF} \times \text{ELR}}{1.0 - \text{VEL}}$$

LER - Loss Elimination Ratio (Section XI-B, Exhibit 1)

ELR - Expected Loss Ratio (Section VI-A, Exhibit 1)

VEL - Variable Expense Load (sum of the variable expense ratio from Section VI-A, Exhibit 1 and the IRR Profit Provision from Section VII-A, Exhibit 1)

SF - Safety Factor (based on the 2007 Stipulation)

The safety factor is warranted for a number of reasons. First, adverse selection: insureds that elect a small or medium deductible are more likely to benefit from having the deductible than a random insured. This is exacerbated by the requirement in Massachusetts that all risks be offered a policy with a deductible. See 211 CMR 115.04. Second, unlike personal auto or health insurance where the insurance company pays claims net of any applicable deductible, workers' compensation insurers must pay the entire amount of the claim and then seek reimbursement of the deductible from the insured. This creates credit risk, and some insureds default on their obligation to reimburse their insurance carrier. Third, the loss exposure insured by the insurance carrier is riskier if the policyholder has opted for a deductible, because the policyholder retains the less risky portion of the total losses.

# XI 000004

Section XI - Miscellaneous Rating Values  
Subsection B - Massachusetts Benefits Deductible Program Credits  
7/1/2024

Section XI-B  
Exhibit 1

## Massachusetts Benefits Deductible Program Premium Credits

Deductible Level (1)	Loss Elimination Ratio (2)	Expected Loss Ratio (3)	Safety Factor (4)	Variable Expense Ratio (5)	Underwriting Profit Provision (6)	Premium Credit (7)
500	2.0%	0.650	0.90	0.190	-0.022	1.4%
1,000	3.4%	0.650	0.90	0.190	-0.022	2.4%
2,000	5.3%	0.650	0.90	0.190	-0.022	3.7%
2,500	6.1%	0.650	0.90	0.190	-0.022	4.3%
5,000	9.3%	0.650	0.90	0.190	-0.022	6.5%

Notes:

(2): Based on Unit Statistical Data.

(3): Section VI-J, Exhibit 1.

(4) = 0.9 from 9/1/2007 Stipulation.

(5): Section VI-A, Exhibit 1.

(6): Section VII-A, Exhibit 1.

(7) = [ (2) x (3) x (4) ] / [ 1.0 - (5) - (6) ]

# XI 000005

## **Section XI-C – Massachusetts Benefits Claim and Aggregate Deductible Program**

### **Credits**

The Massachusetts Benefits Claim and Aggregate Deductible Program allows insureds to elect a per claim deductible applicable to combined medical and indemnity losses. Unlike the Massachusetts Benefits Deductible Program, the losses retained by the insured are subject to a maximum, known as the aggregate limit. Only one deductible option is available with the Massachusetts Benefits Claim and Aggregate Deductible Program. Insureds may elect a \$2,500 per claim deductible with an aggregate limit equal to the greater of \$10,000 or 5% of the “Basis for the Aggregate Limit at Policy Inception,” defined in the Massachusetts Workers Compensation and Employers Liability Insurance Manual (“Massachusetts Manual”) as manual premium subject to any applicable merit or experience rating.

Section XI-C, Exhibit 1 shows the pricing of the \$2,500 per claim deductible subject to an aggregate limit. In the exhibit, the WCRIBMA estimates how much less of a credit is appropriate given the limitation on the insured’s retained losses. For the Massachusetts Benefits Deductible Program, a credit of 4.3% is estimated for a \$2,500 per claim deductible (not subject to an aggregate limit). The 4.3% serves as the basis for the calculation of the credit factors applicable to the Massachusetts Benefits Claim and Aggregate Deductible Program.

The impact of the aggregate limit on retained losses will vary with the premium size for an insured. Consistent with the law of large numbers, the loss experience for smaller policies is more volatile than for larger policies. Hence, proportionately “smaller insureds”

# XI 000006

have either very low or very high loss ratios when compared to “larger insureds.” Consequently, smaller insureds are less apt to benefit from an aggregate limit. In this section, factors are derived to modify the 4.3% credit estimated for a \$2,500 deductible without an applicable aggregate limit. These vary by premium size to reflect the differential benefits of the aggregate limit for different size insureds. As in the prior Massachusetts Benefits Claim and Aggregate Deductible Program filing, the selection of the adjustment factor is based on the results of a simulation model. That model is shown in Section XI-C, Exhibit 2.

The simulation model does the following for each simulated insured:

- Assumes the insured has an expected claim frequency of N.
- Simulates the number of claims for the insured by generating a random number from a Poisson distribution with mean N.
- For each simulated claim, selects at random an actual loss amount from those reported in policy years 2017, 2016, 2015, 2014, and 2013 at 5th report. Loss amounts are adjusted for trend, development and law changes.
- Applies the per claim deductible to each claim to estimate the retained losses prior to application of the aggregate limit.
- Summarizes the simulated retained losses.
- Applies the aggregate limit to the sum of the simulated retained losses.

# XI 000007

Section XI - Miscellaneous Rating Values  
Subsection C - Massachusetts Benefits Claim and Aggregate Deductible Program Credits  
7/1/2024

Section XI-C  
Exhibit 1

## Massachusetts Benefits Claim and Aggregate Deductible Program Premium Credit for \$2,500 Per Claim Deductible with Aggregate Limit

Estimated Annual Standard Premium (1)	Expected Number of Claims Per Year = Midpoint of (1) / \$30,411 (2)	Aggregate Limit (3)	Selected Adjustment Factor for Aggregate Limit (4)	Premium Credit = (4) x 4.3% (5)
0 - 75,000	1.2	\$10,000	0.98	4.2%
75,000 - 100,000	2.9	\$10,000	0.95	4.1%
100,000 - 125,000	3.7	\$10,000	0.93	4.0%
125,000 - 150,000	4.5	\$10,000	0.90	3.9%
150,000 - 200,000	5.8	\$10,000	0.86	3.7%
Over 200,000	7 or more	5% of the 'Basis for the Aggregate Limit at Policy Inception'	0.80	3.4%

Notes:

(2): Based on \$30,411 in standard premium (no ARAP) per expected claim.

(4): Selected based on the simulation results shown in Exhibit 2.

(5): The 4.3% is based on the \$2,500 per claim deductible without any aggregate limit, from Section XI-B, Exhibit 1.

# XI 000008

Section XI - Miscellaneous Rating Values  
 Subsection C - Massachusetts Benefits Claim and Aggregate Deductible Program Credits  
 7/1/2024

Section XI-C  
 Exhibit 2

## Results of Simulation Model

Expected Number of Claims Per Year (1)	Number of Simulated Risks (2)	LER with No Aggregate Limit (3)	LER with \$10,000 Aggregate Limit (4)	LER with 5% of the Basis for Aggregate Limit (5)	Ratio of LERs (\$10,000 limit) = (4) / (3) (6)	Ratio of LERs (5% limit) = (5) / (3) (7)
1	1,000,000	6.06%	6.06%	3.36%	1.00	0.55
2	1,000,000	6.13%	6.11%	4.45%	1.00	0.73
3	1,000,000	6.17%	6.09%	4.85%	0.99	0.79
4	1,000,000	6.15%	5.96%	5.08%	0.97	0.83
5	1,000,000	6.10%	5.75%	5.20%	0.94	0.85
6	1,000,000	6.11%	5.53%	5.32%	0.91	0.87
7	1,000,000	6.10%	5.26%	5.40%	0.86	0.89
8	1,000,000	6.10%	4.97%	5.47%	0.81	0.90
9	1,000,000	6.12%	4.69%	5.55%	0.77	0.91
10	1,000,000	6.13%	4.40%	5.61%	0.72	0.92
12	1,000,000	6.13%	3.85%	5.68%	0.63	0.93
14	1,000,000	6.11%	3.37%	5.72%	0.55	0.94
16	1,000,000	6.12%	2.98%	5.78%	0.49	0.94
18	1,000,000	6.11%	2.66%	5.81%	0.44	0.95
20	1,000,000	6.11%	2.40%	5.84%	0.39	0.96
25	1,000,000	6.12%	1.92%	5.90%	0.31	0.96
30	1,000,000	6.11%	1.60%	5.94%	0.26	0.97
40	1,000,000	6.12%	1.20%	6.00%	0.20	0.98
50	1,000,000	6.12%	0.96%	6.03%	0.16	0.99
75	1,000,000	6.12%	0.64%	6.07%	0.10	0.99
100	1,000,000	6.12%	0.48%	6.09%	0.08	1.00
150	1,000,000	6.12%	0.32%	6.11%	0.05	1.00
200	1,000,000	6.11%	0.24%	6.11%	0.04	1.00
300	1,000,000	6.11%	0.16%	6.11%	0.03	1.00
400	1,000,000	6.12%	0.12%	6.12%	0.02	1.00
500	1,000,000	6.11%	0.10%	6.11%	0.02	1.00

**Notes:**

(5): The Aggregate Limit is based on the average claim severity of the simulated losses, \$20,831 and the permissible loss ratio of 0.650. One claim is assumed to be expected for each \$30,411 of standard premium.

# XI 000009

Section XI - Miscellaneous Rating Values  
 Subsection C - Massachusetts Benefits Claim and Aggregate Deductible Program Credits  
 7/1/2024

Section XI-C  
 Exhibit 3

## Law Amendments, Loss Development Factors, and Severity Trend

(1) Law Amendment Factors to Prospective Effective Period

Policy Year	Indemnity Losses				Medical Losses
	Death	Permanent Total	Permanent Partial	Temporary Total	All Injury Types
PY 2013	1.093	1.103	1.169	1.068	1.000
PY 2014	1.087	1.099	1.161	1.066	1.000
PY 2015	1.075	1.093	1.149	1.062	1.000
PY 2016	1.069	1.085	1.138	1.058	1.000
PY 2017	1.063	1.077	1.125	1.053	1.000

(2) Loss Development Factors - Fifth Report to Ultimate

Loss Development Category	Indemnity	Medical
Likely to Develop	1.074	0.859
Not Likely to Develop	1.015	0.977

(3) Severity Trend Factors

We apply three distinct trend factors.

Trend to PY 2017 is based on empirical USR data at 5th report.

Trend from PY 2017 to PY 2021 is based on severities from Section V-A, Exhibit 2.

Trend from PY 2021 to the Prospective Effective Period is based on the projected severity trends from Section V-A, Exhibit 1.

Trend Period		Indemnity	Lost Time Medical	Medical Only
From	To			
PY 2013	PY 2017	1.186	1.135	1.085
PY 2014	PY 2017	1.081	0.986	1.080
PY 2015	PY 2017	1.085	1.022	1.061
PY 2016	PY 2017	1.055	1.016	1.048
PY 2017	PY 2021	1.137	0.951	1.093
PY 2021	Prosp. Eff. Period	1.138	1.023	1.087

Notes:

(1): Section IV-A, Exhibit 1.

(2): Section IV-E, Exhibit 1, Pages 1 and 2.

(3): Section V-A, Exhibits 1 and 2.

# XI 000010

<b>MASSACHUSETTS WORKERS COMPENSATION AND EMPLOYERS LIABILITY INSURANCE MANUAL</b>	<b>RATES</b>
<i>Proposed Effective July 1, 2024</i>	Page RA-5

### MISCELLANEOUS VALUES

<b>Basis of Premium</b> applicable in accordance with the footnote instructions for Code 7370 - "Taxicab Co.":	
Employee operated vehicles.....	\$140,100.00
Leased or rented vehicles.....	\$93,400.00
<b>Basis of Premium</b> for Sole Proprietors, Partners of Legal Partnerships, Members of Limited Liability Companies or Partners of Limited Liability Partnerships in accordance with Rule IX-B-3-a.....	
	\$65,400.00
<b>Payroll Limitations:</b>	
For Executive Officers - in accordance with Rule IX-A-3-a and b	
Minimum individual payroll for an executive officer per week.....	\$290.00
Maximum individual payroll for an executive officer per week.....	\$1,430.00
For Spouses of Individuals, Co-Partners or Corporate Officers - in accordance with Rule IX-A-4	
Minimum individual payroll for a spouse per week.....	\$290.00
For Elected or Appointed Officers of a City or Town - in accordance with Rule IX-A-5	
Minimum individual payroll for an elected or appointed officer per week.....	\$290.00
Maximum individual payroll for an elected or appointed officer per week.....	\$1,430.00
Applicable with footnote instructions detailing the maximum average weekly wage per employee for the following three classification codes:	
Code 9186 - Amusement Device Operator, Carnival or Circus Traveling - All Employees & Drivers.....	\$430.00
Code 9179 - Athletic Sports Or Park: Contact Sports.....	\$430.00
Code 9178 - Athletic Sports Or Park: Non-Contact Sports.....	\$430.00
<b>Terrorism Insurance Program</b> —Certified Loss:.....	0.03

#### BENEFITS DEDUCTIBLE COVERAGE PROGRAM

Medical and Indemnity Deductible Amount	Premium Reduction Percentage
\$500	1.4%
\$1,000	2.4%
\$2,000	3.7%
\$2,500	4.3%
\$5,000	6.5%

#### BENEFITS CLAIM AND AGGREGATE DEDUCTIBLE PROGRAM

Basis for the Aggregate Limit	Claim Deductible Amount	Aggregate Deductible Amount	Premium Reduction Percentage
\$ 0 to \$75,000	\$2,500	\$10,000	4.2%
\$75,001 to \$100,000	\$2,500	\$10,000	4.1%
\$100,001 to \$125,000	\$2,500	\$10,000	4.0%
\$125,001 to \$150,000	\$2,500	\$10,000	3.9%
\$150,001 to \$200,000	\$2,500	\$10,000	3.7%
over \$200,000	\$2,500	5% of Basis for the Aggregate Limit	3.4%

<b>Expense Constant</b> applicable in accordance with Basic Manual Rule VI-E-2:	
Policies which develop earned Standard Premium of less than \$200.....	\$159.00
Policies which develop earned Standard Premium of at least \$200 and less than \$1,000.....	\$250.00
Policies which develop earned Standard Premium of \$1,000 or more.....	\$338.00

The expense constant for private residence per capita classifications is \$64, up to a maximum of 4.

**Notes:**

- Benefit Deductible Coverage Program - Section XI-B, Exhibit 1.
- Benefit Claim and Aggregate Deductible Program - Section XI-C, Exhibit 1.
- Expense Constant - Section VI-D, Exhibit 1.
- Expense Constant for private residences - Section I-A, Exhibit 1.

# XI 000011

RATES		MASSACHUSETTS WORKERS COMPENSATION AND EMPLOYERS LIABILITY INSURANCE MANUAL	
Page RA-6		Proposed Effective July 1, 2024	
<b>Premium Discount Percentages</b> —(See Basic Manual Rule VII). The following premium discounts are applicable to Standard Premiums. Note: Premium Discount is not applicable to Assigned Risk policies.			
		<b>Type A Discount</b>	<b>Type B Discount</b>
First	\$ 10,000.....	0.0%	0.0%
Next	190,000.....	9.1%	5.1%
Next	1,550,000.....	11.3%	6.5%
Over	1,750,000.....	12.3%	7.5%
<b>United States Longshore and Harbor Workers' Compensation Coverage</b> Percentage applicable only in connection with Rule XII-D-3-b "U.S. Longshore and Harbor Workers' Compensation Act" of the MA Manual.....			16.0%
(Multiply an eligible Non-F classification rate by a factor of 1.16)			
<b>EXPERIENCE RATING ELIGIBILITY</b>			
A risk is eligible for intrastate experience rating when the payrolls or other exposures developed in the last year or last two years of the experience period produced a subject premium of at least \$11,000. If more than two years, an average annual premium of at least \$5,500 is required. The Experience Rating Plan Manual should be referenced for the latest eligibility amounts by state.			

**Notes:**

USL&H factor - Section VIII-J, Exhibit 1.

# XII 000001

## RETROSPECTIVE RATING PLANS

The NCCI's Retrospective Rating Plan has been adopted for use in Massachusetts since 1936. Retrospective rating plans adjust the premium of a policy to reflect an insured's loss experience during the effective period of the policy. At the simplest level, an insured's retrospective premium is determined by the formula

$R = [B + (c \times L)] \times t$ , where:

R = Retrospective Premium, subject to minimum and maximum amounts

B = Basic Premium

c = Loss Conversion Factor, generally reflecting loss adjustment expense

L = Actual Incurred Loss during the effective policy period

t = Tax Multiplier

The basic premium provides for the expenses of carriers. It also includes a net insurance charge, which is intended to compensate for the possibility that the otherwise-indicated retrospective premium will exceed the maximum permissible premium amount. Similarly, there is a savings resulting from the possibility that the otherwise-indicated retrospective premium will be less than the permissible minimum premium amount. The net insurance charge is the difference between the charge for the maximum and the savings from the minimum.

# XII 000002

The calculations in this section appear in Sections XII-A, XII-B and XII-C and are similar to those used by the Commissioner in the 2003 Rate Decision. This year, consistent with the previous filings, the WCRIBMA includes miscellaneous taxes in the Tax Multiplier.

Section XII-A displays the calculation of the parameters needed for retrospective rating. Insureds electing to purchase a retrospectively rated policy may choose one of two options that differ as to their treatment of allocated loss adjustment expenses (“ALAE”). Option one, the traditional approach, is designed so that expected ALAE is primarily recovered through the application of the loss conversion factor to losses (Exhibit 3). Option two uses the sum of losses and ALAE, as opposed to only losses, in its calculation of retrospective premium and therefore, the loss conversion factor is smaller (Exhibit 4).

Section XII-B calculates the revised provision for the residual market subsidy.

Section XII-C displays the tables of expense ratios corresponding to the parameters calculated in Section XII-A.

Section XII-D and E presents the calculation of hazard group differentials.

Section XII-F presents an update of the Excess Loss Factors.

# XII 000003

<b>RETROSPECTIVE RATING PLAN MANUAL</b>	<b>MASSACHUSETTS</b>
<b>STATE SPECIAL RATING VALUES</b>	<b>RR1</b>

*Proposed Effective July 1, 2024*

**1. Hazard Group Differentials**

A	B	C	D	E	F	G
1.71	1.43	1.23	1.05	0.85	0.68	0.53

**2. Tax Multipliers**

a. State (non-F Classes)	1.055*
b. Federal Classes, or non-F classes where rate is increased by the USL&HW Act Percentage	1.084

\* Includes 2.59% residual market subsidy provision and 0% insolvency fund assessment provision

**3. Expected Loss Ratio**

0.627

**Expected Loss and Allocated Loss Adjustment Expense Ratio (ALAE Option)**

0.684

**4. Loss Conversion Factor**

1.195

**Loss Conversion Factor for Allocated Loss Adjustment Expense Option (ALAE Option)**

1.096

**5. Table of Expense Ratios Excluding Taxes and Including Profit**

**Type A Company**

Massachusetts  
 Effective July 1, 2024

**Type B Company**

Massachusetts  
 Effective July 1, 2024

**Table of Expense Ratios Excluding Allocated Loss Adjustment Expense and Taxes and Including Profit (ALAE Option)**

**Type A Company**

Massachusetts  
 Effective July 1, 2024

**Type B Company**

Massachusetts  
 Effective July 1, 2024

**6. 2013—Table of Expected Loss Ranges**

April 1, 2014

**7a.**

**Excess Loss Factors**

(Applicable to New and Renewal Policies)

Per Accident Limitation	Hazard Groups						
	A	B	C	D	E	F	G
\$25,000	0.416	0.440	0.463	0.482	0.501	0.528	0.556
30,000	0.399	0.424	0.448	0.468	0.488	0.517	0.548
35,000	0.384	0.410	0.434	0.456	0.477	0.506	0.540
40,000	0.371	0.397	0.422	0.445	0.466	0.497	0.533
50,000	0.347	0.374	0.400	0.426	0.447	0.479	0.520
75,000	0.299	0.328	0.356	0.386	0.408	0.442	0.492
100,000	0.263	0.292	0.321	0.354	0.377	0.411	0.467
125,000	0.235	0.262	0.292	0.327	0.350	0.384	0.445
150,000	0.211	0.237	0.267	0.304	0.326	0.359	0.425
175,000	0.191	0.215	0.246	0.282	0.305	0.337	0.406
200,000	0.174	0.196	0.226	0.263	0.285	0.317	0.388
250,000	0.147	0.166	0.194	0.231	0.252	0.281	0.356
300,000	0.126	0.142	0.169	0.204	0.224	0.252	0.327
500,000	0.077	0.087	0.107	0.136	0.151	0.173	0.244
1,000,000	0.036	0.042	0.053	0.069	0.078	0.091	0.141
2,000,000	0.016	0.019	0.024	0.033	0.037	0.044	0.073
3,000,000	0.010	0.011	0.015	0.021	0.024	0.028	0.047
4,000,000	0.007	0.008	0.011	0.015	0.017	0.020	0.034
5,000,000	0.005	0.006	0.008	0.011	0.013	0.015	0.027

# XII 000004

**MASSACHUSETTS  
 RR2**

**RETROSPECTIVE RATING PLAN MANUAL  
 STATE SPECIAL RATING VALUES**

*Proposed Effective July 1, 2024*

**7b. ALAE Option Excess Loss and Allocated Loss Adjustment Expense Factors  
 (Applicable to New and Renewal Policies)**

<u>Per Accident Limitation</u>	<u>Hazard Groups</u>						
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>
\$25,000	0.462	0.488	0.512	0.532	0.553	0.582	0.611
30,000	0.444	0.471	0.496	0.518	0.539	0.570	0.602
35,000	0.428	0.456	0.482	0.506	0.527	0.559	0.595
40,000	0.414	0.442	0.469	0.494	0.516	0.549	0.587
50,000	0.389	0.418	0.446	0.473	0.496	0.531	0.573
75,000	0.338	0.369	0.400	0.431	0.455	0.492	0.544
100,000	0.299	0.330	0.363	0.398	0.422	0.459	0.518
125,000	0.268	0.299	0.332	0.369	0.394	0.431	0.495
150,000	0.243	0.272	0.305	0.344	0.369	0.405	0.474
175,000	0.221	0.248	0.281	0.321	0.346	0.382	0.455
200,000	0.202	0.228	0.260	0.301	0.325	0.360	0.436
250,000	0.172	0.194	0.225	0.266	0.289	0.322	0.402
300,000	0.148	0.167	0.197	0.237	0.259	0.290	0.372
500,000	0.091	0.104	0.127	0.160	0.178	0.203	0.282
1,000,000	0.044	0.050	0.063	0.083	0.093	0.109	0.167
2,000,000	0.020	0.023	0.029	0.040	0.045	0.053	0.087
3,000,000	0.012	0.014	0.018	0.025	0.028	0.034	0.057
4,000,000	0.009	0.010	0.013	0.018	0.020	0.024	0.041
5,000,000	0.006	0.007	0.010	0.013	0.015	0.018	0.032

**8. Retrospective Development Factors**

<u>With Loss Limit</u>				<u>Without Loss Limit</u>			
<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th &amp; Subsequent</u>	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th &amp; Subsequent</u>
<u>Adj.</u>	<u>Adj.</u>	<u>Adj.</u>	<u>Adj.</u>	<u>Adj.</u>	<u>Adj.</u>	<u>Adj.</u>	<u>Adj.</u>
0.11	0.07	0.05	0.00	0.14	0.09	0.06	0.00

**9. State Special Classifications by Hazard Group**

All Massachusetts Hazard Group assignments can be found in Appendix G of the 2008 Edition of the Massachusetts Workers' Compensation & Employers Liability Insurance Manual.

# XII 000005

Section XII - Retrospective Rating  
Subsection A - Expenses  
7/1/2024

Section XII - A  
Exhibit 3

## Expense Provisions Underlying the Proposed Retrospective Rating Plans

### Total Expenses:

(1) Commission and Other Acquisition Expenses	11.5%
(2) Fixed Expenses	5.2%
(3) Premium Discount	5.4%
(4) Underwriting Profit Provision	<u>-2.2%</u>
(5) Total Expenses Excluding Taxes and Assessments ( = (1) + (2) + (3) + (4) )	19.9%
(6) Current Premium Tax Rate	2.28%
(7) Miscellaneous Taxes	0.36%
(8) Retro Provision for the Residual Market Subsidy	2.59%
(9) Insolvency Fund Assessment	<u>0.00%</u>
(10) Tax Multiplier ( = $1.0 / \{ 1.0 - [(6) + (7) + (8) + (9)] \}$ )	1.055
(11) Expected Loss and LAE Ratio (adjusted for Residual Market Subsidy) ( = $[ 1.0 / (10) ] - (5)$ )	74.9%
(12) Loss Adjustment Expense (as percentage of losses)	19.5%
(13) Loss Conversion Factor ( = $1.0 + (12)$ )	1.195
(14) Expected Loss without LAE ( = $(11) / (13)$ )	62.7%
(15) Expenses excluding Premium Taxes but including LAE ( = $(5) + [(12) \times (14)]$ )	32.1%

### Notes:

- (1): Section VI-J, Exhibit 1, line (1).
- (2): Section VI-J, Exhibit 1, line (7), less the provision for miscellaneous taxes, see line (7) below.
- (3): Section VI-A, Exhibit 1, line (2).
- (4): Section VII-A, Exhibit 1, line (14).
- (6): Section VI-B, Exhibit 3, line (2).
- (7): Section VI-B, Exhibit 1, the average of the results of columns (13) x (15) / (17).
- (8): Section XII-B, Exhibit 1, line (3).
- (9): Section IX-K, Exhibit 5, page 1, line (9).
- (12): Section VI-J, Exhibit 1, line (9).

# XII 000006

Section XII - Retrospective Rating  
Subsection A - Expenses  
7/1/2024

Section XII - A  
Exhibit 4

## Expense Provisions Underlying the ALAE Option of the Recommended Retrospective Rating Plans

(1) Expected Loss without Defense and Cost Containment Expense (as percentage of Standard Premium plus ARAP)	62.7%
(2) Selected Three Year Average Defense and Cost Containment Expense Ratio (as percentage of losses)	9.0%
(3) Expected Loss plus ALAE Ratio ( = (1) x [ 1.0 + (2) ] )	68.4%
(4) Loss Adjustment Expense (as percentage of losses)	19.5%
(5) Loss Conversion Factor ( = [ 1.0 + (4) ] / [ 1.0 + (2) ] )	1.096
(6) Tax Multiplier	1.055
(7) Expenses excluding Premium Taxes but including LAE (as percentage of Standard Premium plus ARAP)	32.1%
(8) Expenses including all AO Expenses but excluding ALAE Expenses and Premium Taxes ( = (7) - [ (1) x (2) ] )	26.4%

### Notes:

(1): Exhibit 3, line (14)

(2): Section VI-H, Exhibit 1, Page 1, line (3), DCC assumed a proxy for ALAE.

(4): Exhibit 3, line (12)

# XII 000007

Section XII - Retrospective Rating  
Subsection B - Residual Market Subsidy  
7/1/2024

Section XII - B  
Exhibit 1

## Calculation of the Provision for the Residual Market Subsidy

(1) Voluntary Market Implied Rate Factor Equivalent	0.968
(2) Factor to Take into Account Basic Premium	0.800
(3) Retro Provision for the Residual Market Subsidy	2.59%

### Notes:

(1): Section I-E, Exhibit 1, page 1.

(2): From the filing for the provision for the Residual Market Subsidy effective 1/1/89.

(3) =  $[ 1.0 - (1) ] \times (2)$

**RETROSPECTIVE RATING PLAN MANUAL** **MASSACHUSETTS**  
**STATE SPECIAL RATING VALUES** **RR5**  
*Proposed Effective July 1, 2024*

**TABLE OF EXPENSE RATIOS—EXCLUDING TAXES AND INCLUDING PROFIT**  
**TYPE A COMPANY—MASSACHUSETTS**

Standard Premium		Expense Ratio	Standard Premium		Expense Ratio	Standard Premium		Expense Ratio
From	To		From	To		From	To	
0	- 10,058	0.321	18,449	- 18,851	0.281	127,676	- 149,856	0.241
10,059	- 10,177	0.320	18,852	- 19,273	0.280	149,857	- 181,365	0.240
10,178	- 10,298	0.319	19,274	- 19,713	0.279	181,366	- 204,526	0.239
10,299	- 10,423	0.318	19,714	- 20,174	0.278	204,527	- 213,189	0.238
10,424	- 10,550	0.317	20,175	- 20,657	0.277	213,190	- 222,618	0.237
10,551	- 10,681	0.316	20,658	- 21,164	0.276	222,619	- 232,920	0.236
10,682	- 10,815	0.315	21,165	- 21,696	0.275	232,921	- 244,222	0.235
10,816	- 10,952	0.314	21,697	- 22,256	0.274	244,223	- 256,677	0.234
10,953	- 11,093	0.313	22,257	- 22,846	0.273	256,678	- 270,470	0.233
11,094	- 11,238	0.312	22,847	- 23,467	0.272	270,471	- 285,830	0.232
11,239	- 11,386	0.311	23,468	- 24,124	0.271	285,831	- 303,039	0.231
11,387	- 11,538	0.310	24,125	- 24,818	0.270	303,040	- 322,453	0.230
11,539	- 11,695	0.309	24,819	- 25,553	0.269	322,454	- 344,526	0.229
11,696	- 11,856	0.308	25,554	- 26,333	0.268	344,527	- 369,842	0.228
11,857	- 12,021	0.307	26,334	- 27,162	0.267	369,843	- 399,173	0.227
12,022	- 12,191	0.306	27,163	- 28,045	0.266	399,174	- 433,558	0.226
12,192	- 12,365	0.305	28,046	- 28,988	0.265	433,559	- 474,425	0.225
12,366	- 12,545	0.304	28,989	- 29,996	0.264	474,426	- 523,798	0.224
12,546	- 12,730	0.303	29,997	- 31,077	0.263	523,799	- 584,641	0.223
12,731	- 12,921	0.302	31,078	- 32,238	0.262	584,642	- 661,476	0.222
12,922	- 13,118	0.301	32,239	- 33,490	0.261	661,477	- 761,563	0.221
13,119	- 13,320	0.300	33,491	- 34,843	0.260	761,564	- 897,338	0.220
13,321	- 13,529	0.299	34,844	- 36,309	0.259	897,339	- 1,092,031	0.219
13,530	- 13,745	0.298	36,310	- 37,905	0.258	1,092,032	- 1,394,616	0.218
13,746	- 13,967	0.297	37,906	- 39,647	0.257	1,394,617	- 1,788,669	0.217
13,968	- 14,197	0.296	39,648	- 41,557	0.256	1,788,670	- 1,949,989	0.216
14,198	- 14,435	0.295	41,558	- 43,661	0.255	1,949,990	- 2,143,293	0.215
14,436	- 14,680	0.294	43,662	- 45,989	0.254	2,143,294	- 2,379,140	0.214
14,681	- 14,935	0.293	45,990	- 48,579	0.253	2,379,141	- 2,673,308	0.213
14,936	- 15,198	0.292	48,580	- 51,478	0.252	2,673,309	- 3,050,485	0.212
15,199	- 15,470	0.291	51,479	- 54,745	0.251	3,050,486	- 3,551,576	0.211
15,471	- 15,753	0.290	54,746	- 58,455	0.250	3,551,577	- 4,249,651	0.210
15,754	- 16,046	0.289	58,456	- 62,705	0.249	4,249,652	- 5,289,275	0.209
16,047	- 16,350	0.288	62,706	- 67,620	0.248	5,289,276	- 7,002,302	0.208
16,351	- 16,666	0.287	67,621	- 73,372	0.247	7,002,303	- 10,356,413	0.207
16,667	- 16,994	0.286	73,373	- 80,194	0.246	10,356,414	- 19,877,996	0.206
16,995	- 17,336	0.285	80,195	- 88,414	0.245	19,877,997	- OVER	0.205
17,337	- 17,691	0.284	88,415	- 98,512	0.244			
17,692	- 18,062	0.283	98,513	- 111,213	0.243			
18,063	- 18,448	0.282	111,214	- 127,675	0.242			

Table based on the following discounts:

Standard Premium	Discount	
First	10,000	0.0%
Next	190,000	9.1%
Next	1,550,000	11.3%
Over	1,750,000	12.3%

Expected Loss Ratio  
0.627

Tax Multiplier  
1.055

**MASSACHUSETTS** **RETROSPECTIVE RATING PLAN MANUAL**  
**RR6** **STATE SPECIAL RATING VALUES**  
*Proposed Effective July 1, 2024*

**TABLE OF EXPENSE RATIOS—EXCLUDING TAXES AND INCLUDING PROFIT**

**TYPE B COMPANY—MASSACHUSETTS**

Standard Premium			Expense Ratio	Standard Premium			Expense Ratio	Standard Premium			Expense Ratio
From	To			From	To			From	To		
0	-	10,105	0.321	20,277	-	21,164	0.296	259,050	-	282,363	0.271
10,106	-	10,320	0.320	21,165	-	22,133	0.295	282,364	-	310,288	0.270
10,321	-	10,545	0.319	22,134	-	23,195	0.294	310,289	-	344,343	0.269
10,546	-	10,781	0.318	23,196	-	24,364	0.293	344,344	-	386,795	0.268
10,782	-	11,026	0.317	24,365	-	25,657	0.292	386,796	-	441,186	0.267
11,027	-	11,284	0.316	25,658	-	27,095	0.291	441,187	-	513,377	0.266
11,285	-	11,553	0.315	27,096	-	28,704	0.290	513,378	-	613,815	0.265
11,554	-	11,836	0.314	28,705	-	30,516	0.289	613,816	-	763,112	0.264
11,837	-	12,133	0.313	30,517	-	32,572	0.288	763,113	-	1,008,378	0.263
12,134	-	12,446	0.312	32,573	-	34,926	0.287	1,008,379	-	1,485,971	0.262
12,447	-	12,775	0.311	34,927	-	37,645	0.286	1,485,972	-	1,862,609	0.261
12,776	-	13,122	0.310	37,646	-	40,824	0.285	1,862,610	-	2,056,832	0.260
13,123	-	13,488	0.309	40,825	-	44,590	0.284	2,056,833	-	2,296,276	0.259
13,489	-	13,875	0.308	44,591	-	49,121	0.283	2,296,277	-	2,598,814	0.258
13,876	-	14,285	0.307	49,122	-	54,677	0.282	2,598,815	-	2,993,168	0.257
14,286	-	14,720	0.306	54,678	-	61,650	0.281	2,993,169	-	3,528,614	0.256
14,721	-	15,182	0.305	61,651	-	70,662	0.280	3,528,615	-	4,297,367	0.255
15,183	-	15,674	0.304	70,663	-	82,759	0.279	4,297,368	-	5,494,389	0.254
15,675	-	16,199	0.303	82,760	-	99,853	0.278	5,494,390	-	7,615,737	0.253
16,200	-	16,761	0.302	99,854	-	125,848	0.277	7,615,738	-	12,405,365	0.252
16,762	-	17,363	0.301	125,849	-	170,142	0.276	12,405,366	-	33,429,719	0.251
17,364	-	18,010	0.300	170,143	-	207,621	0.275	33,429,720	-	OVER	0.250
18,011	-	18,707	0.299	207,622	-	222,334	0.274				
18,708	-	19,460	0.298	222,335	-	239,292	0.273				
19,461	-	20,276	0.297	239,293	-	259,049	0.272				

Table based on the following discounts:

Standard Premium	Discount
First	10,000 0.0%
Next	190,000 5.1%
Next	1,550,000 6.5%
Over	1,750,000 7.5%

Expected Loss Ratio

0.627

Tax Multiplier

1.055

**RETROSPECTIVE RATING PLAN MANUAL** **MASSACHUSETTS**  
**STATE SPECIAL RATING VALUES** **RR7**  
*Proposed Effective July 1, 2024*

**TABLE OF EXPENSE RATIOS—EXCLUDING ALLOCATED LOSS ADJUSTMENT EXPENSE  
 AND TAXES AND INCLUDING PROFIT**

**TYPE A COMPANY—MASSACHUSETTS**

Standard Premium		Expense Ratio	Standard Premium		Expense Ratio	Standard Premium		Expense Ratio
From	To		From	To		From	To	
0	10,058	0.264	18,449	18,851	0.224	127,676	149,856	0.184
10,059	10,177	0.263	18,852	19,273	0.223	149,857	181,365	0.183
10,178	10,298	0.262	19,274	19,713	0.222	181,366	204,526	0.182
10,299	10,423	0.261	19,714	20,174	0.221	204,527	213,189	0.181
10,424	10,550	0.260	20,175	20,657	0.220	213,190	222,618	0.180
10,551	10,681	0.259	20,658	21,164	0.219	222,619	232,920	0.179
10,682	10,815	0.258	21,165	21,696	0.218	232,921	244,222	0.178
10,816	10,952	0.257	21,697	22,256	0.217	244,223	256,677	0.177
10,953	11,093	0.256	22,257	22,846	0.216	256,678	270,470	0.176
11,094	11,238	0.255	22,847	23,467	0.215	270,471	285,830	0.175
11,239	11,386	0.254	23,468	24,124	0.214	285,831	303,039	0.174
11,387	11,538	0.253	24,125	24,818	0.213	303,040	322,453	0.173
11,539	11,695	0.252	24,819	25,553	0.212	322,454	344,526	0.172
11,696	11,856	0.251	25,554	26,333	0.211	344,527	369,842	0.171
11,857	12,021	0.250	26,334	27,162	0.210	369,843	399,173	0.170
12,022	12,191	0.249	27,163	28,045	0.209	399,174	433,558	0.169
12,192	12,365	0.248	28,046	28,988	0.208	433,559	474,425	0.168
12,366	12,545	0.247	28,989	29,996	0.207	474,426	523,798	0.167
12,546	12,730	0.246	29,997	31,077	0.206	523,799	584,641	0.166
12,731	12,921	0.245	31,078	32,238	0.205	584,642	661,476	0.165
12,922	13,118	0.244	32,239	33,490	0.204	661,477	761,563	0.164
13,119	13,320	0.243	33,491	34,843	0.203	761,564	897,338	0.163
13,321	13,529	0.242	34,844	36,309	0.202	897,339	1,092,031	0.162
13,530	13,745	0.241	36,310	37,905	0.201	1,092,032	1,394,616	0.161
13,746	13,967	0.240	37,906	39,647	0.200	1,394,617	1,788,669	0.160
13,968	14,197	0.239	39,648	41,557	0.199	1,788,670	1,949,989	0.159
14,198	14,435	0.238	41,558	43,661	0.198	1,949,990	2,143,293	0.158
14,436	14,680	0.237	43,662	45,989	0.197	2,143,294	2,379,140	0.157
14,681	14,935	0.236	45,990	48,579	0.196	2,379,141	2,673,308	0.156
14,936	15,198	0.235	48,580	51,478	0.195	2,673,309	3,050,485	0.155
15,199	15,470	0.234	51,479	54,745	0.194	3,050,486	3,551,576	0.154
15,471	15,753	0.233	54,746	58,455	0.193	3,551,577	4,249,651	0.153
15,754	16,046	0.232	58,456	62,705	0.192	4,249,652	5,289,275	0.152
16,047	16,350	0.231	62,706	67,620	0.191	5,289,276	7,002,302	0.151
16,351	16,666	0.230	67,621	73,372	0.190	7,002,303	10,356,413	0.150
16,667	16,994	0.229	73,373	80,194	0.189	10,356,414	19,877,996	0.149
16,995	17,336	0.228	80,195	88,414	0.188	19,877,997	OVER	0.148
17,337	17,691	0.227	88,415	98,512	0.187			
17,692	18,062	0.226	98,513	111,213	0.186			
18,063	18,448	0.225	111,214	127,675	0.185			

Table based on the following discounts:

Standard Premium	Discount	
First	10,000	0.0%
Next	190,000	9.1%
Next	1,550,000	11.3%
Over	1,750,000	12.3%

Expected Loss and Allocated Loss Adjustment  
 Expense Ratio (ALAE Option)

0.684

Tax Multiplier

1.055

# XII 000011

<b>MASSACHUSETTS</b>	<b>RETROSPECTIVE RATING PLAN MANUAL</b>
<b>RR8</b>	<b>STATE SPECIAL RATING VALUES</b>
<i>Proposed Effective July 1, 2024</i>	

**TABLE OF EXPENSE RATIOS—EXCLUDING ALLOCATED LOSS ADJUSTMENT EXPENSE  
 AND TAXES AND INCLUDING PROFIT**

**TYPE B COMPANY—MASSACHUSETTS**

Standard Premium		Expense Ratio	Standard Premium		Expense Ratio	Standard Premium		Expense Ratio
From	To		From	To		From	To	
0	- 10,105	0.264	20,277	- 21,164	0.239	259,050	- 282,363	0.214
10,106	- 10,320	0.263	21,165	- 22,133	0.238	282,364	- 310,288	0.213
10,321	- 10,545	0.262	22,134	- 23,195	0.237	310,289	- 344,343	0.212
10,546	- 10,781	0.261	23,196	- 24,364	0.236	344,344	- 386,795	0.211
10,782	- 11,026	0.260	24,365	- 25,657	0.235	386,796	- 441,186	0.210
11,027	- 11,284	0.259	25,658	- 27,095	0.234	441,187	- 513,377	0.209
11,285	- 11,553	0.258	27,096	- 28,704	0.233	513,378	- 613,815	0.208
11,554	- 11,836	0.257	28,705	- 30,516	0.232	613,816	- 763,112	0.207
11,837	- 12,133	0.256	30,517	- 32,572	0.231	763,113	- 1,008,378	0.206
12,134	- 12,446	0.255	32,573	- 34,926	0.230	1,008,379	- 1,485,971	0.205
12,447	- 12,775	0.254	34,927	- 37,645	0.229	1,485,972	- 1,862,609	0.204
12,776	- 13,122	0.253	37,646	- 40,824	0.228	1,862,610	- 2,056,832	0.203
13,123	- 13,488	0.252	40,825	- 44,590	0.227	2,056,833	- 2,296,276	0.202
13,489	- 13,875	0.251	44,591	- 49,121	0.226	2,296,277	- 2,598,814	0.201
13,876	- 14,285	0.250	49,122	- 54,677	0.225	2,598,815	- 2,993,168	0.200
14,286	- 14,720	0.249	54,678	- 61,650	0.224	2,993,169	- 3,528,614	0.199
14,721	- 15,182	0.248	61,651	- 70,662	0.223	3,528,615	- 4,297,367	0.198
15,183	- 15,674	0.247	70,663	- 82,759	0.222	4,297,368	- 5,494,389	0.197
15,675	- 16,199	0.246	82,760	- 99,853	0.221	5,494,390	- 7,615,737	0.196
16,200	- 16,761	0.245	99,854	- 125,848	0.220	7,615,738	- 12,405,365	0.195
16,762	- 17,363	0.244	125,849	- 170,142	0.219	12,405,366	- 33,429,719	0.194
17,364	- 18,010	0.243	170,143	- 207,621	0.218	33,429,720	- OVER	0.193
18,011	- 18,707	0.242	207,622	- 222,334	0.217			
18,708	- 19,460	0.241	222,335	- 239,292	0.216			
19,461	- 20,276	0.240	239,293	- 259,049	0.215			

Table based on the following discounts:

Standard Premium	Discount
First	10,000 0.0%
Next	190,000 5.1%
Next	1,550,000 6.5%
Over	1,750,000 7.5%

Expected Loss and Allocated Loss Adjustment  
 Expense Ratio (ALAE Option)

0.684

Tax Multiplier

1.055

# XII 000012

Section XII - Retrospective Rating  
 Subsection D - NCCI's Item R-1413  
 7/1/2024

Section XII - D  
 Exhibit 1

NATIONAL COUNCIL ON COMPENSATION INSURANCE, INC.

R-1413  
 PAGE 26

**ITEM R-1413—2017 UPDATE TO THE RETROSPECTIVE RATING PLAN PARAMETERS—HAZARD GROUP DIFFERENTIALS, EXCESS LOSS PURE PREMIUM FACTORS AND EXCESS LOSS AND ALLOCATED EXPENSE PURE PREMIUM FACTORS**

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**EXHIBIT 2-HG  
 DEVELOPMENT OF MICHIGAN HAZARD GROUP DIFFERENTIALS  
 FOR HAZARD GROUPS A TO G**

- Step 1.** Five years of historical experience is trended, on-leveled, and developed to estimate the severities for each hazard group. For a given hazard group, state severities are calculated by weighting the severities by claim group together using claim counts. The severities and claim counts have been adjusted using countrywide relativities from NCCI's excess loss factor methodology.
- Step 2.** The severities are weighted with the countrywide severities by hazard group using a credibility that is based on the number of claims in the state's experience period. For this purpose, 155,000 claims are regarded as fully credible and the square root rule is used to compute partial credibilities.
- Step 3.** Credibility weighted severities for each hazard group are produced. A countrywide average severity is calculated by taking the weighted average of the state severities using claim counts as weights.
- Step 4.** The differentials are calculated by dividing the countrywide severity by the individual state hazard group severities.

<b>Step 1</b>			
Severities	<u>Hazard Group</u>	<u>Michigan</u>	<u>Countrywide</u>
	A	27,381	37,282
	B	33,796	45,889
	C	36,053	51,116
	D	42,308	60,165
	E	49,253	71,093
	F	58,989	87,212
	G	65,830	100,004
 <b>Step 2</b>	 Claim Count	 =	 78,533
	Credibility	=	(78,533 / 155,000) ^ 0.5 = 0.712
 <b>Step 3</b>	 <u>Hazard Group</u>	 <u>Michigan</u>	 <u>Countrywide</u>
Credibility Weighted Severities	A	30,223	= (0.712)(27,381) + (0.288)(37,282)
	B	37,223	
	C	40,394	
	D	47,453	
	E	55,547	
	F	67,122	
	G	75,679	
	Countrywide Overall:	59,736	
 <b>Step 4</b>	 <u>Hazard Group</u>	 <u>Differentials</u>	 <u>Countrywide</u>
Differentials	A	1.98	= 59,736 / 30,223
	B	1.60	
	C	1.48	
	D	1.28	
	E	1.08	
	F	0.89	
	G	0.79	

**Note:** The underlying data source for the above calculations is NCCI's Unit Statistical data, excluding medical-only claims. The Unit Statistical data for each state is adjusted accordingly, as reflected in the data underlying the Excess Loss Factor (ELF) calculation.

# XII 000013

Section XII - Retrospective Rating  
 Subsection E - State Hazard Group Relativities  
 7/1/2024

Section XII - E  
 Exhibit 1

## Development of State Hazard Group Differentials

Step 1, Severities:

Hazard Group (1)	Massachusetts Severities (2)	Countrywide Severities (3)	Massachusetts Overall Severity Split Using CW Severity Relativities = Overall (2) x (3) / Overall (3) (4)
A	31,880	37,292	35,533
B	34,643	45,689	43,534
C	46,358	51,116	48,705
D	52,049	60,165	57,328
E	73,222	71,093	67,740
F	101,525	87,212	83,099
G	171,437	100,004	95,288
Overall	56,919	59,736	56,919

Step 2, Credibility:

(5) Massachusetts Claim Count =	39,987
(6) Requirement for Full Credibility =	155,000
(7) Massachusetts Credibility = = [ (5) / (6) ] <sup>0.5</sup>	0.51

Step 3, Credibility Weighted Severities:

Hazard Group (8)	Massachusetts Credibility Weighted Severities (9)
A	34,543
B	40,079
C	48,699
D	56,043
E	72,174
F	94,482
G	136,286

Step 4, Relativities:

Hazard Group (10)	Indicated Relativities = Overall (3) / (9) (11)	Indicated Relativities Based on MA Severity Split Using CW Relativities = Overall (3) / (4) (12)	Average of the Two Indicated Relativities = [ (11) + (12) ] / 2.0 (13)	Selected Hazard Group Differential (14)
A	1.73	1.68	1.71	1.71
B	1.49	1.37	1.43	1.43
C	1.23	1.23	1.23	1.23
D	1.07	1.04	1.05	1.05
E	0.83	0.88	0.85	0.85
F	0.63	0.72	0.68	0.68
G	0.44	0.63	0.53	0.53

Notes:

- (2), (5): Lost Time Claim Data for Policy Years 2021 at 1st report, 2020 at 2nd report, 2019 at 3rd report, adjusted for trend, law amendments and development factors.  
 (3), (6): Section XII - D, Exhibit 1 (NCCI's Item R-1413, Page 26.)  
 (9) = [ (2) x (7) ] + { (3) x [ 1.0 - (7) ] }

## EXCESS LOSS FACTORS

This Section proposes new Excess Loss Factors (ELFs) to be effective July 1, 2024. The proposed ELFs for the seven hazard groups<sup>1</sup> are shown in Exhibit 1, page 1. Exhibit 1, page 2 shows the Excess Loss and ALAE Expense Factors for the seven hazard groups.

The proposed ELFs in Exhibit 1, page 1 are the selected Excess Ratios in Exhibit 3, page 1 times 62.7%, the proposed Expected Loss Ratio (without LAE) underlying the Retrospective Rating Plans from Section XII-A, Exhibit 3. Generally, the excess loss factor for a limit is the product of an excess ratio and a permissible loss ratio.

Exhibit 3, page 3 shows the Excess Ratios based on the data used in the September 1, 2008 filing, and since then, adjusted for trend. Exhibit 3, page 2 shows the Excess Ratios for higher limits estimated by curve fitting. Exhibit 4 displays the parameters of the mixed Pareto-Exponential distribution, and a calculation of excess factors for different entry ratios.

### **Analysis from September 1, 2008 Filing**

The Excess Ratios calculated in this filing use the same data set and fitted curves used since the September 1, 2008 filing, with an adjustment for trend. On-level adjusted Schedule Z data for composite policy years 00/01, 99/00, 98/97, 96/97, and 95/96 at fifth report are used, and the Pareto-Exponential parameters from the September 1, 2008 filing are also used. An adjustment factor for trend and benefit changes from September 1, 2008 to the July 1, 2024 proposed effective date is shown on Exhibit 5. Rather than applying the factor to the data itself, the trend and benefit adjustment is made by dividing

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<sup>1</sup> The seven hazard groups are denoted using the letters A, B, C, D, E, F, and G. Hazard group A has the lowest expected claim severity while hazard group G has the highest expected claim severity.

# XII 000015

the limits, including the truncation point, by the trend and adjustment factor. Using the adjusted limits and truncation point and the on-level adjusted data from September 1, 2008, the excess ratios are estimated using the same methodology underlying the 2010, 2014, 2016, 2018, 2020, 2022 and 2023 filings.

## **Estimation of Excess Ratios**

For each hazard group this fitted curve, scaled to the observed mean, is used in Exhibit 3 to estimate the excess ratios for the data truncated and shifted at \$150,000.

The excess ratios for accident limits less than or equal to \$150,000 are determined directly from the data, as has been done in past filings. For accident limits  $L$  above \$150,000, the excess ratio is estimated from the product of (Empirical Excess Ratio at \$150,000,  $R(150,000)$ ) x (Excess Ratio estimated from mixed Pareto-Exponential curve for  $L - \$150,000$ ). (See the Appendix). The former is shown in Exhibit 3, page 3, the latter in Exhibit 3, page 2, while the product is in Exhibit 3, page 1. For accident limits of \$150,000 or less, the estimated excess ratio is equal to the observed excess ratio.

This method provides a smooth transition from relying on data for lower accident limits to relying on a fitted curve to provide some of the information at higher accident limits. It is important to note that even at higher accident limits, an important contribution to the excess ratio is  $R(150,000)$ , which is calculated directly from the data.

## **Calculation of Excess Loss Factors with ALAE Expenses**

The calculation of the Excess Loss Factors including ALAE expenses follows the same general methodology outlined above. The assumption is made that ALAE expenses are proportional to the underlying losses. Let  $x$  be the factor to load losses for

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Section XII – Retrospective Rating Plans  
Subsection F – Excess Loss Factors  
7/1/2024

Section XII-F  
Page 3

ALAE expenses. For an accident limit of L, the excess ratio is computed at a limit of L / x. The Excess Loss Factors are derived by multiplying this excess ratio by 68.4%, the expected loss and defense and cost containment ratio (from Section XII-A, Exhibit 4), which is a proxy for the expected loss and ALAE ratio.

## APPENDIX – EXCESS LOSS FACTORS

### Excess Ratios, Truncated and Shifted Data

Let  $f(x)$  be the size of loss probability density function. Then the excess ratio for limit L is given by:

$$\begin{aligned}
 R(x) &= \frac{\int_L^{\infty} (x - L) f(x) dx}{\int_0^{\infty} x f(x) dx} \\
 &= \frac{\text{average dollars of loss excess of } L}{\text{average size of loss}} \\
 &= \frac{\text{total dollars of loss excess of } L}{\text{total dollars of loss}}
 \end{aligned}$$

Assume we have a truncation point of T. Assume we look at the size of loss distribution for the data truncated and shifted at T. So for a loss  $x > T$ , we instead look at  $x - T$ . Then the excess ratio for the truncated and shifted data for ground up limit  $L > T$  can be written as

$$\hat{R}(L - T)$$

Assume we were computing the (observed) excess ratio for a \$500,000 accident limit, for hazard group 3 data

$$R(\$500,000) = \frac{\text{HG3 Losses Excess of } \$500,000}{\text{Total HG3 Losses}}$$

We can also express this in terms of the data truncated and shifted at \$150,000 as follows:

$$R(\$500,000) = \frac{\text{HG3 Losses Excess of } \$500,000}{\text{HG3 Losses Excess of } \$150,000} \times \frac{\text{HG3 Losses Excess of } \$150,000}{\text{Total HG3 Losses}}$$

# XII 000018

The second term is the excess ratio at \$150,000,  $R(\$150,000)$ , while the first term is  $\hat{R}(\$350,000)$  = excess ratio at \$350,000 for the data truncated and shifted at \$150,000.

Thus

$$R(\$500,000) = \hat{R}(\$350,000) \times R(\$150,000).$$

In general, for limits  $L > \$150,000$

$$R(L) = \hat{R}(L - \$150,000) \times R(\$150,000).$$

In the methodology we used,  $\hat{R}(L - \$150,000)$  is estimated via a curve fit to the data truncated and shifted at \$150,000, while  $R(\$150,000)$  is estimated from the data.

## Excess Ratios, Mixed Distributions

Let a (mixed) distribution be a weighted average of two other distributions:

$$f(x) = pg(x) + (1-p)h(x).$$

Then the mean is a weighted average of the two means:

$$\begin{aligned} m_f &= \int_0^{\infty} x f(x) d(x) = \int_0^{\infty} x \{pg(x) + (1-p) h(x)\} dx \\ &= p \int_0^{\infty} xg(x) dx + (1-p) \int_0^{\infty} x h(x) dx \\ &= pm_g + (1-p) m_h. \end{aligned}$$

The excess ratio for limit L is given by:

$$\begin{aligned} R(L) &= \frac{\int_L^{\infty} (x - L) f(x) dx}{\int_0^{\infty} x f(x) dx} \\ &= \frac{p \int_L^{\infty} (x - L) g(x) dx + (1-p) \int_L^{\infty} (x - L) h(x) dx}{pm_g + (1-p)m_h} \end{aligned}$$

# XII 000019

$$= \frac{pm_g R_g(L) + (1-p)m_h R_h(L)}{pm_g + (1-p)m_h}$$

So the excess ratio for a mixed distribution is a weighted average of the excess ratios for the individual distributions, with weights equal to the product of the mean of each distribution times the weight in the mixture of each distribution.

For example, for the mixed Pareto-Exponential distribution with parameters:

$p = 0.7344$ ,  $s = 2.3285$ ,  $b = 1.4950$ ,  $\theta = 0.6270$  (weight to Pareto, Pareto Shape, Pareto Scale, Exponential scale), at an entry ratio of 2, the excess ratio is computed as follows:

$$\text{Excess Ratio for Pareto} = \left(1 + \frac{x}{b}\right)^{1-s} = \left(1 + \frac{2}{1.4950}\right)^{1-2.3285} = 0.3236$$

$$\text{Excess Ratio for Exponential} = e^{-x/\theta} = e^{-2/0.6270} = 0.0412$$

$$\text{Mean for Pareto} = \frac{b}{s-1} = \frac{1.4950}{2.3285-1} = 1.1253$$

$$\text{Mean for Exponential} = \theta = 0.6270$$

Excess Ratio for Pareto-Exponential distribution at entry ratio 2

$$= \frac{(0.7344)(1.1253)(0.3236) + (1-0.7344)(0.6270)(0.0412)}{(0.7344)(1.1253) + (1-0.7344)(0.6270)} = 0.2763$$

This matches the value shown on Exhibit 4.

**PARETO DISTRIBUTION**

---

$$F(x;s,b) = 1 - \left(1 + \frac{x}{b}\right)^{-s}$$

$$f(x;s,b) = \frac{s}{b} \left(1 + \frac{x}{b}\right)^{-(s+1)}$$

$$E(X^y) = \frac{b^y \Gamma(y+1) \Gamma(s-y)}{\Gamma(s)}, \quad -1 < y < s$$

If  $y$  is an integer  $N$ ,

$$E(X^N) = \frac{b^N N!}{\prod_{i=1}^N (s-i)}, \quad N < s$$

$$\text{Mean} = \frac{b}{s-1}$$

$$\text{Variance} = \frac{b^2 s}{(s-1)^2 (s-2)}$$

$$\text{Coefficient of Variation} = \sqrt{\frac{s}{s-2}}, \quad s > 2$$

$$\text{Skewness} = \frac{2(s+1)}{s-3} \sqrt{\frac{s-2}{s}}, \quad s > 3$$

$$\text{Excess Ratio} = R(x) = \left(1 + \frac{x}{b}\right)^{1-s}$$

$$\text{Mean Residual Life} = e(x) = \frac{b+x}{s-1}$$


---

Note:  $s$  is the shape parameter,  $b$  is the scale parameter.

**EXPONENTIAL DISTRIBUTION**

---

$$F(x; \theta) = 1 - e^{-x/\theta}$$

$$f(x; \theta) = \frac{1}{\theta} e^{-x/\theta}$$

$$E(X^y) = \theta^y \Gamma(1 + y), \quad y > -1$$

If  $y$  is an integer  $N$ ,

$$E(X^N) = \theta^N N!, \quad N > -1$$

$$\text{Mean} = \theta$$

$$\text{Variance} = \theta^2$$

$$\text{Coefficient of Variation} = 1$$

$$\text{Skewness} = 2$$

$$\text{Excess ratio} = R(x) = e^{-x/\theta}$$

$$\text{Mean Residual Life} = e(x) = \theta$$

---

Note:  $\theta$  is the scale parameter.

# XII 00022

Section XII - Retrospective Rating  
Subsection F - Excess Loss Factors  
7/1/2024

Section XII - F  
Exhibit 1  
Page 1

## Excess Loss Factors Proposed to be Effective 07/01/2024

Accident Limit	Hazard Group						
	A	B	C	D	E	F	G
\$25,000	0.416	0.440	0.463	0.482	0.501	0.528	0.556
\$30,000	0.399	0.424	0.448	0.468	0.488	0.517	0.548
\$35,000	0.384	0.410	0.434	0.456	0.477	0.506	0.540
\$40,000	0.371	0.397	0.422	0.445	0.466	0.497	0.533
\$50,000	0.347	0.374	0.400	0.426	0.447	0.479	0.520
\$75,000	0.299	0.328	0.356	0.386	0.408	0.442	0.492
\$100,000	0.263	0.292	0.321	0.354	0.377	0.411	0.467
\$125,000	0.235	0.262	0.292	0.327	0.350	0.384	0.445
\$150,000	0.211	0.237	0.267	0.304	0.326	0.359	0.425
\$175,000	0.191	0.215	0.246	0.282	0.305	0.337	0.406
\$200,000	0.174	0.196	0.226	0.263	0.285	0.317	0.388
\$250,000	0.147	0.166	0.194	0.231	0.252	0.281	0.356
\$300,000	0.126	0.142	0.169	0.204	0.224	0.252	0.327
\$500,000	0.077	0.087	0.107	0.136	0.151	0.173	0.244
\$1,000,000	0.036	0.042	0.053	0.069	0.078	0.091	0.141
\$2,000,000	0.016	0.019	0.024	0.033	0.037	0.044	0.073
\$3,000,000	0.010	0.011	0.015	0.021	0.024	0.028	0.047
\$4,000,000	0.007	0.008	0.011	0.015	0.017	0.020	0.034
\$5,000,000	0.005	0.006	0.008	0.011	0.013	0.015	0.027

Note:

Exhibit 3, page 1 times the Expected Loss Ratio without LAE of 62.7% from Section XII-A, Exhibit 3.

# XII 000023

Section XII - Retrospective Rating  
Subsection F - Excess Loss Factors  
7/1/2024

Section XII - F  
Exhibit 1  
Page 2

Excess Loss and ALAE Factors Proposed to be Effective 07/01/2024

Accident Limit	Hazard Group						
	A	B	C	D	E	F	G
\$25,000	0.462	0.488	0.512	0.532	0.553	0.582	0.611
\$30,000	0.444	0.471	0.496	0.518	0.539	0.570	0.602
\$35,000	0.428	0.456	0.482	0.506	0.527	0.559	0.595
\$40,000	0.414	0.442	0.469	0.494	0.516	0.549	0.587
\$50,000	0.389	0.418	0.446	0.473	0.496	0.531	0.573
\$75,000	0.338	0.369	0.400	0.431	0.455	0.492	0.544
\$100,000	0.299	0.330	0.363	0.398	0.422	0.459	0.518
\$125,000	0.268	0.299	0.332	0.369	0.394	0.431	0.495
\$150,000	0.243	0.272	0.305	0.344	0.369	0.405	0.474
\$175,000	0.221	0.248	0.281	0.321	0.346	0.382	0.455
\$200,000	0.202	0.228	0.260	0.301	0.325	0.360	0.436
\$250,000	0.172	0.194	0.225	0.266	0.289	0.322	0.402
\$300,000	0.148	0.167	0.197	0.237	0.259	0.290	0.372
\$500,000	0.091	0.104	0.127	0.160	0.178	0.203	0.282
\$1,000,000	0.044	0.050	0.063	0.083	0.093	0.109	0.167
\$2,000,000	0.020	0.023	0.029	0.040	0.045	0.053	0.087
\$3,000,000	0.012	0.014	0.018	0.025	0.028	0.034	0.057
\$4,000,000	0.009	0.010	0.013	0.018	0.020	0.024	0.041
\$5,000,000	0.006	0.007	0.010	0.013	0.015	0.018	0.032

Excess Loss Factors Effective 9/1/2008

Accident Limit	Hazard Group						
	A	B	C	D	E	F	G
\$25,000	0.382	0.409	0.436	0.460	0.482	0.514	0.552
\$30,000	0.362	0.390	0.417	0.444	0.466	0.499	0.541
\$35,000	0.344	0.373	0.401	0.429	0.451	0.485	0.531
\$40,000	0.328	0.357	0.386	0.415	0.438	0.472	0.521
\$50,000	0.299	0.329	0.359	0.391	0.414	0.449	0.503
\$75,000	0.246	0.275	0.306	0.342	0.366	0.401	0.464
\$100,000	0.208	0.233	0.265	0.303	0.326	0.360	0.430
\$125,000	0.179	0.201	0.232	0.271	0.292	0.325	0.400
\$150,000	0.156	0.176	0.205	0.244	0.264	0.294	0.374
\$175,000	0.137	0.155	0.183	0.221	0.239	0.266	0.350
\$200,000	0.122	0.138	0.164	0.201	0.217	0.243	0.329
\$250,000	0.098	0.112	0.135	0.169	0.183	0.205	0.291
\$300,000	0.081	0.092	0.113	0.144	0.156	0.176	0.260
\$500,000	0.046	0.053	0.066	0.088	0.095	0.108	0.177
\$1,000,000	0.020	0.024	0.030	0.042	0.045	0.051	0.093
\$2,000,000	0.009	0.010	0.013	0.019	0.020	0.023	0.045
\$3,000,000	0.005	0.006	0.008	0.011	0.012	0.014	0.028
\$4,000,000	0.004	0.004	0.006	0.008	0.009	0.010	0.020
\$5,000,000	0.003	0.003	0.004	0.006	0.006	0.007	0.015

Note:  
 9/1/2008 Stipulation. Section XII-F, Exhibit 1, Page 1.

XII 000024

# XII 00025

Section XII - Retrospective Rating  
 Subsection F - Excess Loss Factors  
 7/1/2024

Section XII - F  
 Exhibit 3  
 Page 1

Estimated Excess Ratios Based on Adjusted Data and Curves Fit to Data Truncated and Shifted at \$150,000

Accident Limit	Hazard Group						
	A	B	C	D	E	F	G
\$25,000	0.663	0.702	0.738	0.769	0.799	0.843	0.888
\$30,000	0.637	0.676	0.714	0.747	0.779	0.825	0.874
\$35,000	0.613	0.654	0.693	0.728	0.760	0.808	0.862
\$40,000	0.591	0.633	0.673	0.711	0.743	0.792	0.851
\$50,000	0.553	0.597	0.639	0.679	0.713	0.764	0.830
\$75,000	0.477	0.523	0.568	0.616	0.652	0.705	0.785
\$100,000	0.420	0.465	0.513	0.565	0.602	0.656	0.745
\$125,000	0.374	0.418	0.466	0.522	0.559	0.612	0.710
\$150,000	0.337	0.378	0.427	0.484	0.521	0.573	0.678
\$175,000	0.305	0.343	0.392	0.450	0.486	0.537	0.647
\$200,000	0.278	0.313	0.361	0.420	0.455	0.505	0.619
\$250,000	0.234	0.265	0.310	0.368	0.402	0.449	0.567
\$300,000	0.200	0.227	0.270	0.326	0.357	0.402	0.522
\$500,000	0.122	0.139	0.171	0.216	0.241	0.276	0.389
\$1,000,000	0.058	0.066	0.084	0.110	0.125	0.146	0.226
\$2,000,000	0.026	0.030	0.039	0.052	0.060	0.070	0.116
\$3,000,000	0.016	0.018	0.024	0.033	0.038	0.045	0.076
\$4,000,000	0.011	0.013	0.017	0.023	0.027	0.032	0.055
\$5,000,000	0.008	0.010	0.013	0.018	0.020	0.024	0.042

**Note:**

For Accident Limit  $L \leq \$150,000$  excess ratios are from Page 3. For Accident Limit  $L > \$150,000$  excess ratios are from Page 2 times the estimated excess ratio at  $L = \$150,000$  (See Appendix).

Fitted Excess Ratios Based on Losses Truncated and Shifted to \$150,000

Accident Limit	Hazard Group													
	A		B		C		D		E		F		G	
	Entry Ratio	Excess Ratio	Entry Ratio	Excess Ratio	Entry Ratio	Excess Ratio	Entry Ratio	Excess Ratio	Entry Ratio	Excess Ratio	Entry Ratio	Excess Ratio	Entry Ratio	Excess Ratio
\$175,000	0.101	0.906	0.098	0.908	0.087	0.918	0.074	0.930	0.070	0.934	0.065	0.938	0.046	0.955
\$200,000	0.201	0.825	0.197	0.829	0.173	0.847	0.147	0.867	0.139	0.874	0.130	0.881	0.093	0.913
\$250,000	0.402	0.695	0.393	0.700	0.347	0.727	0.295	0.760	0.278	0.771	0.260	0.783	0.186	0.837
\$300,000	0.604	0.594	0.590	0.601	0.520	0.633	0.442	0.673	0.417	0.686	0.390	0.702	0.279	0.771
\$500,000	1.409	0.362	1.375	0.369	1.214	0.402	1.032	0.447	0.974	0.463	0.911	0.482	0.650	0.575
\$1,000,000	3.421	0.172	3.340	0.176	2.948	0.197	2.506	0.228	2.365	0.240	2.212	0.254	1.579	0.333
\$2,000,000	7.445	0.077	7.270	0.079	6.417	0.091	5.453	0.108	5.148	0.115	4.814	0.123	3.436	0.171
\$3,000,000	11.470	0.047	11.200	0.049	9.885	0.056	8.401	0.068	7.930	0.072	7.416	0.078	5.293	0.112
\$4,000,000	15.494	0.033	15.129	0.034	13.354	0.039	11.349	0.048	10.713	0.051	10.018	0.055	7.151	0.081
\$5,000,000	19.518	0.025	19.059	0.026	16.822	0.030	14.296	0.036	13.495	0.039	12.620	0.042	9.008	0.062

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Notes:

Entry Ratio = ( [ Limit ] - [ \$150,000 Truncation Point ] ) / [ Average Size of Data Truncated and Shifted to \$150,000 ]

For the seven Hazard Groups, the detrended average sizes are \$152,148 for HGA, \$155,815 for HGB, \$176,537 for HGC, \$207,723 for HGD, \$220,059 for HGE, \$235,309 for HGF and \$329,671 for HGG.

Excess Ratio is computed for a Mixed Pareto - Exponential distribution with parameters: 0.7344, 2.3285, 1.4950, 0.6270 (weight to Pareto, Pareto Shape, Pareto Scale, Exponential Scale).

# XII 000027

Section XII - Retrospective Rating  
 Subsection F - Excess Loss Factors  
 7/1/2024

Section XII - F  
 Exhibit 3  
 Page 3

Excess Ratios Based on Adjusted Data

Accident Limit	Hazard Group						
	A	B	C	D	E	F	G
\$25,000	0.663	0.702	0.738	0.769	0.799	0.843	0.888
\$30,000	0.637	0.676	0.714	0.747	0.779	0.825	0.874
\$35,000	0.613	0.654	0.693	0.728	0.760	0.808	0.862
\$40,000	0.591	0.633	0.673	0.711	0.743	0.792	0.851
\$50,000	0.553	0.597	0.639	0.679	0.713	0.764	0.830
\$75,000	0.477	0.523	0.568	0.616	0.652	0.705	0.785
\$100,000	0.420	0.465	0.513	0.565	0.602	0.656	0.745
\$125,000	0.374	0.418	0.466	0.522	0.559	0.612	0.710
\$150,000	0.337	0.378	0.427	0.484	0.521	0.573	0.678
\$175,000	0.306	0.344	0.392	0.451	0.486	0.537	0.648
\$200,000	0.279	0.314	0.362	0.421	0.455	0.505	0.620
\$250,000	0.236	0.267	0.311	0.371	0.400	0.446	0.571
\$300,000	0.202	0.230	0.272	0.330	0.355	0.397	0.528
\$500,000	0.124	0.144	0.176	0.227	0.232	0.260	0.405
\$1,000,000	0.059	0.063	0.092	0.138	0.115	0.127	0.259
\$2,000,000	0.024	0.026	0.051	0.094	0.053	0.060	0.157
\$3,000,000	0.011	0.016	0.037	0.081	0.034	0.037	0.098
\$4,000,000	0.004	0.014	0.031	0.076	0.026	0.026	0.072
\$5,000,000	0.001	0.013	0.027	0.072	0.023	0.018	0.052

**Notes:**

Unit Statistical Plan Data for Composite Policy Years 00/01, 99/00, 98/99, 97/98, 96/97, 95/96 at fifth report, adjusted for trend, law amendments and development factors using factors from Exhibit 5.

# XII 00028

Section XII - Retrospective Rating  
 Subsection F - Excess Loss Factors  
 7/1/2024

Section XII - F  
 Exhibit 4

## Mixed Pareto-Exponential Distribution

Parameters:

Pareto shape = s	2.3285
Pareto scale = b	1.4950
Exponential scale = $\theta$	0.6270
Weight to Pareto = p	0.7344
Mean =	1.0000
Variance =	5.5243
Coefficient of Variation =	2.3504
Skewness =	18.0452
Pareto Mean = $b / (s - 1.0)$	1.1253
Exponential Mean = $\theta$	0.6270

Entry Ratio	Excess Ratio	Entry Ratio	Excess Ratio
0.1	0.9067	11	0.0496
0.2	0.8263	12	0.0448
0.3	0.7567	13	0.0407
0.4	0.6960	14	0.0372
0.5	0.6428	15	0.0343
0.6	0.5960	20	0.0241
0.7	0.5546	25	0.0183
0.8	0.5178	30	0.0145
0.9	0.4849	35	0.0119
1.0	0.4555	40	0.0101
1.25	0.3941	45	0.0087
1.5	0.3460	50	0.0076
1.75	0.3075	55	0.0067
2.0	0.2763	60	0.0060
2.50	0.2286	65	0.0054
3.0	0.1942	70	0.0049
3.5	0.1682	75	0.0045
4.0	0.1479	80	0.0041
4.5	0.1316	85	0.0038
5.0	0.1183	90	0.0035
6.0	0.0978	95	0.0033
7.0	0.0828	100	0.0031
8.0	0.0714		
9.0	0.0625		
10.0	0.0554		

Notes:  
 See the Appendix for a sample calculation of an excess ratio.

# XII 000029

Section XII - Retrospective Rating  
Subsection F - Excess Loss Factors  
7/1/2024

Section XII - F  
Exhibit 5

## Total Severity Trend & Benefit Change Adjustment

	Indemnity	Lost Time Medical	Medical Only	Total
(1) PY 9/1/2008 Average Severity	27,942	10,409	805	
(2) PY 2021 Average Severity	38,502	11,106	1,039	
(3) Annual Severity Trend - From PY 2021 to Prospective Effective Period	3.8%	0.6%	2.4%	
(4) Trend Factor from PY 9/1/2008 to Prospective Effective Period = $[(2)/(1)] \times [1.000 + (3)]^{4.5}$	1.627	1.098	1.437	
(5) Injury Type Weight at Ultimate	70.27%	26.19%	3.54%	
(6) Total Severity Trend Factor from PY 9/1/2008 to Prospective Effective Period = (4) Weighted by (5)				1.482
(7) Total Benefit Level Change Factor from PY 9/1/2008 to Prospective Effective Period				1.102
(8) Combined Trend and Benefit Factor from PY 9/1/2008 to Prospective Effective Period = (6) x (7)				1.633

### Notes:

- (1),(2) : Section V-C, Exhibit 1, Page 1. Section V-D, Exhibit 1, Page 1. Section V-D, Exhibit 2, Page 1.  
PY9/1/2008 is a weighted average of PY2008 and PY2009. =  $(1/3) \times \text{PY2008} + (2/3) \times \text{PY2009}$
- (3): Section V-A, Exhibit 1.
- (5): Section IV-E, Exhibit 2, Pages 1 and 2.
- (7): Section IV-A, Exhibit 1.

## Data

The WCRIBMA systematically reviews the Aggregate Financial and Unit Statistical Report (“USR”) data submitted to the WCRIBMA by its members. Aggregate Financial data, the basis for the overall rate indication, is collected electronically. The application used to collect Aggregate Financial data, Massachusetts Financial Data Reporting Application (“MAFDRA”), contains both data validations and data edits. The data validations check individual fields against valid codes and values.

Aggregate Financial data is also subject to rigorous review and editing that compares the data reported for a given field to other data elements reported to the WCRIBMA. Edits are characterized as either basic or actuarial. Basic edits identify circumstances where something is obviously wrong. For example, if losses are reported for a policy year, a basic edit failure would occur if no premiums were reported for that same policy year. Actuarial edits identify circumstances where data appear anomalous, but may nonetheless be correct. Data flagged by actuarial edits require either an explanation or a correction from the reporting entity.

Aggregate Financial data used in ratemaking are carefully reviewed by the WCRIBMA’s actuarial staff for purposes of ratemaking. Actuarial staff review individual data reporters’ loss development factors, premium development factors, and expense ratios to identify anomalies that would have a material impact on the overall rate indication. Data reporters that have provided data deemed to be outliers are asked to explain the anomaly or provide a correction if needed. Actuarial staff also provides

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diagnostic reports to larger writers of workers' compensation in Massachusetts. Carriers are asked to review these reports and explain to the WCRIBMA whether or not the diagnostic reports align with their expectations.

USR data, the basis for the WCRIBMA's trend estimates and class rates, are collected electronically using a software system called Spectrum. Like Aggregate Financial data, USR data are subject to a multitude of validations and edits. The WCRIBMA's actuarial staff extracts the USR data from Spectrum and maps the data into data marts used by the actuarial staff. As part of the process to load the data into the actuarial data marts, the data are subject to a number of supplemental validations.

In 2005, the Commissioner ordered the WCRIBMA to develop reconciliations that compare Aggregate Financial data to USR data. In 2006, the Commissioner approved changes to the Massachusetts Workers' Compensation Statistical Plan that call for the WCRIBMA to annually conduct a series of mandated reconciliations and compare the results of the reconciliation process to tolerances defined within the Massachusetts Workers' Compensation Statistical Plan. Carriers whose data fall outside of tolerance are required to either provide an explanation for why the data are correct as reported, or submit corrections. Carriers who do not comply may be subject to further review by an independent audit firm if the Commissioner deems it necessary.

In preparation for this rate filing, actuarial staff assessed the available data to ensure data are suitable for ratemaking. For example, if a carrier has anomalous data or negative expenses due to accounting or other allocation processes, there will be a consideration of that data's suitability for ratemaking for the Industry as a whole. This

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review process led to the WCRIBMA excluding the Aggregate Financial data for several carriers, or limiting the use of those data in the filing. More details are provided below.

First, Aggregate Financial data from Praetorian Insurance Company were excluded from the estimation of loss development factors and premium development factors. For purposes of Aggregate Financial data reporting, Redland Insurance Company and Praetorian Insurance Company began submitting consolidated data beginning with the 2010 year end valuation. Prior to that, Redland Insurance Company had been exempt from filing Aggregate Financial data (consistent with the terms outlined in the Massachusetts Worker's Compensation Statistical Plan) for one of the valuation dates contained in the development triangles. Therefore, the consolidated data for one of the valuation dates used in the development triangle are necessarily understated and the use of the data from these companies in the loss development calculations would be inappropriate. The exclusion of data from Praetorian Insurance Company from the estimation of loss development factors and premium development factors has no material impact on the rate indication.

Second, Aggregate Financial data reported by AIG was excluded from the expense section of this filing. For calendar years 2020 and 2021, AIG's commission and brokerage ratio were outliers compared to the balance of the industry. Had the WCRIBMA included the data of AIG in expenses, the rate indication would have been lower.

Third, Aggregate Financial data from Zurich Insurance Group was excluded from the estimation of premium development factors because the data for certain valuation

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points appeared anomalous. The exclusion of data from Zurich Insurance Group from the estimation of premium development factors has no material impact on the rate indication.

Fourth, Aggregate Financial data from Zurich Insurance Group was excluded from the expense section of this filing. For calendar year 2020, Zurich Insurance Group reported negative values for general expenses on their Expense Call. Had the WCRIBMA included the data of Zurich Insurance Group in expenses, the rate indication would have been lower.

Finally, as has been done since the 2003 rate filing, this filing excludes Aggregate Financial losses associated with the catastrophic events of September 11, 2001. Similarly, as was done in the 2023 rate filing, this filing excludes losses reported with Catastrophe Number 12 (COVID-19 Coronavirus Pandemic) from Aggregate Financial losses and Unit Statistical losses.