

WCRIBMA
THE WORKERS' COMPENSATION RATING
AND INSPECTION BUREAU OF MASSACHUSETTS

December 23, 2022

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 4.0%. 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, 2023, applicable to new and renewal policies.

Sincerely,



Daniel R. Judson
President

**COMMONWEALTH OF MASSACHUSETTS
DIVISION OF INSURANCE**

Docket No. 22-

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, 2023**

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, 2023.

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. I also hold the designation of a Chartered Property Casualty Underwriter (CPCU). 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 and a 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 4.0% for workers' compensation, effective July 1, 2023.

Q. Ms. Bergh, can you explain the WCRIBMA's choice of policy year data used in this year's filing?

A. Yes, while typically a filing made in 2022 would use Policy Year 2020 data, Policy Year 2020 is not representative of the economic or workers compensation environment that the rates will be in effect, July 1, 2023 and beyond. Policy Year 2020 was so significantly affected due to mandatory shutdowns and bans on non-essential medical services during the calendar year 2020 associated with the COVID-19 pandemic. The mandatory shutdowns resulted in unemployment rising from 2.7% in March of 2020 to 16.4% in April of

2020. Unemployment remained at higher levels throughout 2020, ending the year at 8.4%. As of December 2021, unemployment improved to 4.6% and there has been continued improvement with MA unemployment rate, as of October 2022, of 3.5%. It would be inconsistent with the prospective nature of ratemaking to use a policy year, so significantly impacted by the distortions in employment and the ban on non-essential medical services.

Q. Ms. Bergh, can you explain the proposed weighting of the two policy years, 2018 and 2019 used in this filing?

A. Yes. The weighting used was also based on the distortive impacts of the COVID-19 pandemic. Policy Year 2019 included portions of calendar year 2020 and was thus impacted by the mandatory shutdowns and ban on non-essential medical services. Giving greater weight to Policy Year 2018, where the data is less distorted by COVID-19 anomalies and is more representative of the current employment and economic environment, is consistent with the prospective nature of ratemaking.

Q. Ms. Bergh can you explain how you determined that Policy Year 2018 should get 75% weight and Policy Year 2019 get 25% weight?

A. Yes, the WCRIBMA considered the issue from a couple of different perspectives; the proportion of the policy year affected by COVID-19 anomalies and the proportion of claims represented, prior to COVID-19 shutdowns and bans on non-essential medical services. On the policy year side, those policies written during 2018 were all fully earned by December 31, 2019. Claims had an opportunity to emerge and any medical services that were delayed have had the opportunity to be re-scheduled. The first three months (25%) of Policy Year 2019 were all fully earned, prior to the impacts of COVID-19 related shutdowns and bans on non-essential medical services. On the claims side, it has been observed, that 40% of

the policies are written in the first three months of the policy year and account for 34% of the claims. Using 100% of Policy Year 2018 claims and 34% of Policy Year 2019 claims, Policy Year 2018 would receive $(1.00/1.34)$ or 75% weight and Policy Year 2019 would receive $(.34/1.34)$ or 25% weight.

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 16th day of December 2022 under the pains and penalties of perjury.

Carolyn J. Bergh

Carolyn J. Bergh, FCAS, MAAA, CPCU

PROFESSIONAL EXPERIENCE:

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 VIII, IX, X, XI, XII and XIII of its filing for a general rate revision to be effective on and after July 1, 2023.

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 II of the filing. I had principal responsibility for the preparation of the following sections of the filing: Sections VIII (F-Class), 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 VIII (F-Class), 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 VIII (F-Class), 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 16th day of December, 2022 under the pains and penalties of perjury.



Anthony Salido, FCAS, MAAA

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

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, 2023.

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 2022.

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 8th day of December 2022 under the pains and penalties of perjury.



Sharon Tennyson

SHARON TENNYSON, Ph.D.

Jeb E. Brooks School of Public Policy and
Department of Economics
Cornell University
2214 MVR Hall, Ithaca, NY

Email: 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

- 2020- 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- 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-Universitat, Germany
- Feb 2011 Center for Insurance Research, Florida State University
- April 2000 Department of Insurance and Risk Management, University of Pennsylvania
- July 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 8th 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 6th 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, 7th 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, 13th 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

“School-Based Healthcare and Rural Community Health,” with John Sipple, Peter Fiduccia, Wendy Brunner, Elizabeth Lembo and Chris Kjolhede, revised and resubmitted to *Community Development*.

“The Effects of State Legal Environments on Automobile Insurance Costs and Compensation: Evidence from the *Royal Globe* Doctrine,” with Brian Richman, in revision for *Risk Management and Insurance 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.

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

“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 for submission.

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

REFEREED JOURNAL ARTICLES

“Price Subsidies and the Demand for Automobile Insurance”, with BoHeng Su, forthcoming, *The North American Actuarial Journal* (accepted May 2022).

“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* 2022: 01640275211046322.

“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 Laureen 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 Laureen 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 Lauren 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

“Insurer Liability and Claim Settlement Failures: Evidence from the United States,” Chapter 19 in *Contemporary Insurance Law, 20th 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* 2nd 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 7th 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:

- 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 7th Insurance Law Forum, IBDS, Sao Paulo, Brazil (presenter)
- 2016 7th 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

- 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 Grant*, "Drug Choice, Negative Information and Consumer Behavior" 2003-
- 2007 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 Lauren 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:

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:

Faculty Advisory Committee on Tenure Appeals, 2021; Atkinson Center Postdoctoral Fellowship Review Committee, 2020; Truman Scholarship Review Committee, 2018, 2019; 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:

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 Affairs; Policy Analysis and Management; 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. 22-

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, 2023**

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, 2023.

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 and Leverage Ratio

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.

In the current filing, the WCRIBMA has changed the calculation of 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 change produces an improvement on the previous practice. 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 8.64%.

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:

Method	Source	Date	WACC Estimate
CAPM	Kroll	9/30/22	7.0%
CAPM + Size Premium	Kroll	9/30/22	7.4%
CAPM Build-Up	Kroll	9/30/22	8.1%
Fama-French 5-Factor	Kroll	9/30/22	7.2%
Discounted Cash Flow (1-stage)	Kroll	9/30/22	10.60%
Discounted Cash Flow (3-stage)	Kroll	9/30/22	13.90%
CAPM	Damodaran Online	1/5/22*	6.54%

- The Damodaran estimate features an updated (as of 12/2/22) Treasury yield.

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 8.64%---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 2021 direct premiums written---only 63% 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 37%. 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 37% of the market would raise the WACC estimates presented earlier as follows:

Method	Source	Date	Adjusted WACC Estimate
CAPM	Kroll	9/30/22	7.8%
CAPM + Size Premium	Kroll	9/30/22	8.2%
CAPM Build-Up	Kroll	9/30/22	9.0%
Fama-French 5-Factor	Kroll	9/30/22	8.0%
Discounted Cash Flow (1-stage)	Kroll	9/30/22	11.8%
Discounted Cash Flow (3-stage)	Kroll	9/30/22	15.5%
CAPM	Damodaran Online	1/5/22	7.3%

This exercise underscores the conclusion that the WCRIBMA's WACC estimate of 8.64% 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

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George Zanjani

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

Signed this 15th day of December 2022 under the pains and penalties of perjury.

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-

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* (2nd edition), Georges Dionne (ed.), New York: Springer (2013)
- “Financial Pricing of Insurance,” (with Daniel Bauer and Richard D. Phillips), in *Handbook of Insurance* (2nd 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, 2022

“Dynamic Capital Allocation in General Insurance,” (with Daniel Bauer and Qiheng Guo), working paper, 2022

“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, 2022

- “Market Discipline and Guaranty Funds in Life Insurance,” (with Martin Grace, Shinichi Kamiya, and Robert W. Klein), working paper, 2019
- “The Effect of Government Guarantees on Market Discipline in the Property-Casualty Insurance Industry,” (with Yiling Deng, Ty Leverty, and Kenny Wunder), working paper, 2019
- “An Integrated Approach to Measuring Asset and Liability Risks in Financial Institutions,” (with Daniel Bauer), working paper, 2019
- “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

- 2022 Expert Witness, Various Insurance Rate Filings, North Carolina
- 2021 Expert Witness, Golson v. Provident Life and Accident
- 2021 Expert Witness, Workers’ Compensation Rate Filings, Massachusetts
- 2021 Expert Witness, Various Insurance Rate Filings, North Carolina
- 2020 Expert Witness, Various Insurance Rate Filings, North Carolina
- 2019 NCCI Review of Cost of Capital Methodology
- 2019 Expert Witness, Workers’ Compensation Rate Filings, Massachusetts
- 2019 Expert Witness, Various 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

- 2022 “The Ignorance of Crowds Understanding Reserving Errors in the Liability Crisis of 1997-2001,” Conference in Honor of David Cummins and Mary Weiss, Temple University, Philadelphia, PA
- 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,” 5th Infiniti 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 10th 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 7th 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 Securitizing 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 12th 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-)
- American Risk & Insurance Association President (2012-13)

Risk Theory Society President (2011-2012)
American Risk & Insurance Association Board Member (2007-2014)
International Research Advisory Board, Risk and Insurance Research Center, NCCU, Taiwan
Editorial Board, *Journal of Insurance Issues* (2012-2014)
Huebner Colloquium Panelist (2016-2019)

External Committees

American Risk & Insurance Association Program Committee, various years; ARIA Nominations Committee, 2015, 2016, 2018; Kulp-Wright Book Award Committee, 2005

Discussant: *ARIA Annual Meeting, Long Beach, 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; 5th 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
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.

John D. Emory, "The Value of Marketability as Illustrated in Initial Public Offerings of Common Stock-February 1992 through July 1993," *Business Valuation Review*, March 1994, 3-7.

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.

* 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 7/1/23

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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 4.0% for policies effective on and after July 1, 2023.

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 the rate level indication for F-Classes, 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 witness, 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 this introduction, the WCRIBMA presents a summary of the principal ratemaking issues and methods considered in the filing. Consistent with past practice, the WCRIBMA

I 000002

uses a loss ratio methodology to derive two separate rate indications that are then weighted together to produce the final recommendation. This year, the WCRIBMA derived one indication from policy year 2018 data and the other from policy year 2019 data.¹ Policy year 2018 data consist of premium and loss experience generated by policies written during 2018 and policy year 2019 data consist of premium and loss experience generated by policies written during 2019.

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, 2023 through June 30, 2024. The recommended rate change is designed to bring the Actual Cost Ratio into alignment 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 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.

¹ 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).

2018 and 2019 Policy Year Data

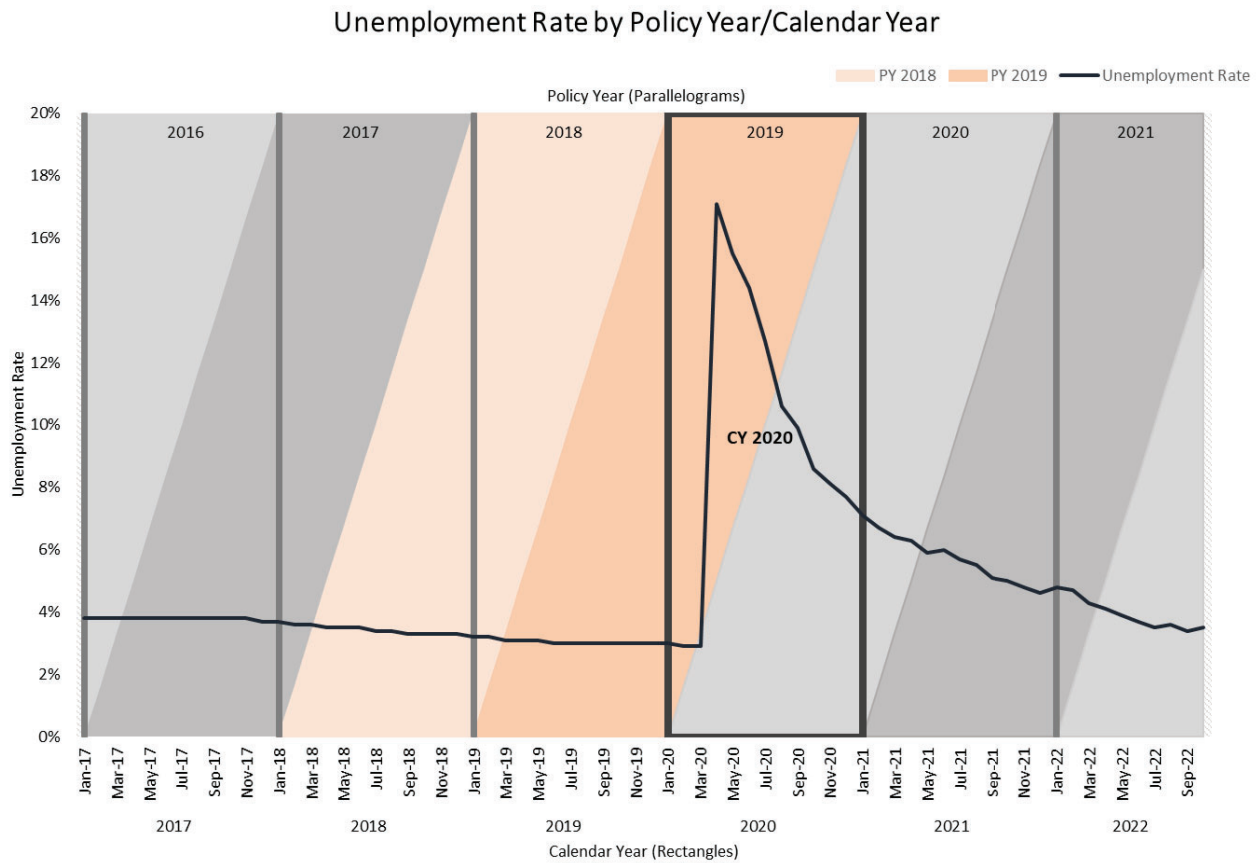
The Rate Filing utilizes data from policy years 2018 and 2019, evaluated as of December 31, 2021, rather than the latest available policy years 2019 and 2020 evaluated as of December 31, 2021, to temper the distortive impact that COVID-19 and the accompanying local, state and federal mandates (e.g., stay-at-home orders² and suspension of non-essential medical services³), as well as federal relief (e.g., Paycheck Protection Program) had on policy years 2019 and 2020 data, during calendar year 2020. For example, due to the ban on non-essential medical services for much of 2020, and the reluctance to seek out medical services to avoid exposure to hospital or clinical settings, the medical loss experience appears to be understated in calendar year 2020. Although losses and claims are recovering from pandemic lows, policy year 2019 is still being impacted by COVID-19 anomalies. Further, although all the 2019 policies were written prior to the COVID shutdowns and mandates, during the calendar year 2020, those 2019 policies were significantly impacted by the high unemployment rate that spiked, with only the first three effective months (25%)⁴ being fully earned and expired prior to the impacts of COVID-19. In addition, mandatory shut downs and stay at home orders resulted in

² 3/23/2020: Governor Charlie Baker Orders All Non-Essential Businesses To Cease In Person Operation, Directs the Department of Public Health to Issue Stay at Home Advisory For Two Weeks; 3/31/2020: Baker-Polito Administration Extends Non-Essential Business Closures (until May 4); 4/28/2020: Baker-Polito Administration Extends Non-Essential Business Closures to May 18th; 5/15/2020: Baker-Polito Administration & Employer Community Announce Continuation of Work From Home Policies.

³ 3/15/2020: Baker-Polito Administration Announces Emergency Actions to Address COVID-19; includes Hospitals must cancel non-essential elective procedures.

⁴ Approximately 40% of the policies written in a year have effective dates in the first quarter (source: WCRIBMA's Policy File Information System as of 11/15/2022) with 34% of the lost-time claims (source: Unit Statistical Data). Policy Year 2018 weight 75% (=1.00/1.34) and Policy Year 2019 weight 25% (=0.34/1.34).

lower non-COVID claims (both lost time⁵ and medical only) and the associated indemnity losses than would otherwise be expected. Further, during the period from March 2020 to April 2020, the Massachusetts unemployment rate rose from 2.7% to 16.4%. Unemployment remained at higher levels throughout 2020, ending the year at 8.4%. As of December 2021 unemployment improved to 4.6%⁶ and is showing continued recovery of the workforce. The unemployment rate was 3.5% as of October 2022.



It would be inconsistent with the prospective nature of rate making for the WCRIBMA to give equal weight to data so heavily distorted by COVID-19–related

⁵ WCRI: The Early Impact of COVID-19 on Workers’ Compensation Claim Composition, January 2021, Figure 5a: Comparing Changes in the Number of Non-COVID-19 Clams and Employment from 2019Q2 to 2020Q2.

⁶ Department of Unemployment Assistance (DUA) Labor Force and Unemployment Data (source: bls.gov)

anomalies to set adequate and reasonable rates for the policy year beginning in July 2023. While the WCRIBMA understands the effects of COVID-19 will continue to be felt in the coming years, the current lower unemployment rates, the renewed availability of medical and other services, vaccines, therapeutics and the waning availability of federal payroll relief, all point to more stable conditions than those experienced in 2020.

We expect conditions to continue to stabilize, at a higher unemployment level, going forward as shown in the chart above. These trends lead to the conclusion that we should give greater weight to data less distorted by COVID-19 anomalies when predicting the post July 2023 environment. In this filing we are therefore giving 75% weight to Policy Year 2018 and 25% weight to Policy Year 2019.

Losses

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 2018 and policy year 2019 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, and these are developed separately. The WCRIBMA calculates two different estimates of ultimate medical and indemnity losses, the first based on the development of paid losses, and the second based on the development of the sum of paid losses and case reserves. These are averaged when the WCRIBMA calculates the experience period loss ratios.

I 000006

Next, losses are adjusted to reflect benefit level changes. Separate adjustments are calculated to bring indemnity and medical losses for policy years 2018 and 2019 to the July 1, 2023 benefit level, and additional adjustments to bring losses from the July 1, 2023 benefit level to the projected benefit level for the period the rates will be in effect. 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)⁷ made every October 1st by the Commonwealth's Division of Unemployment Assistance. 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 previous SAWW, effective 10/1/2021 of \$1,694.24, was 14% ($1,694.24/1,487.78$) 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 (retail, restaurants and leisure and hospitality), as compared to higher wage paying professions which continued through remote work throughout mandated shutdowns. The latest SAWW, effective 10/1/2022, of \$1,765.34⁸ is 4.2% higher than the prior year. The rate of change has normalized off of the higher level in 2021. 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 4.3% as shown in Section IV - D,

⁷ As of 10/1/2022, Department of Unemployment Assistance (DUA) promulgated the State Average Weekly Wage (SAWW) of \$1,765.34 from the prior (10/1/2021) SAWW of \$1,694.24.

⁸ The WCRIBMA has estimated that the 10/1/2022 SAWW reflects data underlying the period from 4/1/2021 to 3/31/2022 and reflects the post-COVID-19 wage levels.

Exhibit 3. As in prior years, the WCRIBMA estimates the wage-based benefit effects with a simulation model.⁹

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. Regression techniques are used to analyze separately the distinct underlying components of observed loss trends: changes in claim frequency, claim severity and wages (used as a proxy for exposure because payroll is the predominant exposure base). Details of the loss trend calculations are found in Section V.

Premiums

For most workers' compensation policies, the final premium is not known until after the policy expires. Insurers base initial premiums on estimated payroll, subject to a post-expiration audit. As a result, policy year premium is developed using a technique much like loss development. The WCRIBMA also adjusts reported premiums to current rate level. These adjustments are found in Section III.

Expenses

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,

⁹ WCRIBMA simulation model is based on NCCI's previously utilized automatics model.

commissions, and other acquisition expenses) or losses (loss adjustment expenses). Fixed expenses are divided into expense categories (salaries, postage, utilities, etc.). As in the 2022 rate filing, the WCRIBMA uses a composite external index to estimate 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

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 ratemaking¹⁰ 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.¹¹

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

¹⁰ 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.”

¹¹ 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.

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.

In this filing, the WCRIBMA has also re-evaluated the calculation of the leverage ratio and amended for the way of calculating the amount of surplus in the model. This method, which uses a weighted average of surplus to reserves (as compared to reserves to surplus), is recommended because of our change in methodology to calculate various inputs based on weighted averages of companies writing Workers Compensation in the Commonwealth.¹² 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. See Section VII for more details on the leverage ratio derivation.

Longshore and Harbor Workers' Compensation

Section VIII describes the derivation of rate recommendations for risks that have exposure to the benefits and risks that apply under the United States Longshore and Harbor Workers' Compensation Act, also known as the "F-Classes".

¹² 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.

Classifications and Rating Plan Parameters

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.

Data

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 provide an expanded array of information.¹³ 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.

¹³ 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. In addition, this year's survey includes carriers' response to COVID-19 on their operations.

I 000012

Section I - Rate Recommendation
Subsection A - Introduction
7/1/2023

Section I - A
Exhibit 1

RATE INDICATION SUMMARY

Statewide Rate Change Summary		
<i>Indication Effective Date: 7/1/2023</i>		
(1)	Indicated Rate Change Based on Policy Year 2018 Data (Section I-B, Exhibit 1)	-2.9%
(2)	Indicated Rate Change Based on Policy Year 2019 Data (Section I-B, Exhibit 1)	-7.3%
(3)	Weighted Average Indicated Rate Change = 0.75 x (1) + 0.25 x (2)	-4.0%

Expense Constants			
	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 000013

Section I - Rate Recommendation
 Subsection B - Calculation of Indicated Rate Change
 7/1/2023

Section I - B
 Exhibit 1

	Policy Year <u>2018</u>	Policy Year <u>2019</u>
(1) Standard Earned Premium plus Adjusted ARAP Premium (Section I-D, Exhibit 2)	1,257,191,166	1,220,866,284
(2) Composite Adjustment Factor (Section I-D, Exhibit 2)	1.039	1.032
(3) Adjusted Standard Earned Premium plus Adjusted ARAP = [(1) x (2)]	1,305,632,842	1,259,536,374
(4) Cumulative Premium Development Factor to Ultimate (Section I-D, Exhibit 2)	1.000	0.999
(5) Rate On-Level Factor (Section I-D, Exhibit 2)	0.834	0.900
(6) Factor to Remove Expense Constant (Section I-D, Exhibit 2)	0.962	0.960
(7) Adjusted On-Level Standard Earned Premium plus Adjusted ARAP at Ultimate = [(3) x (4) x (5) x (6)]	1,046,411,348	1,086,333,438
(8) Annual Wage Trend (Section I-D, Exhibit 4)	0.043	0.043
(9) Wage Trend Factor to 7/1/2024 (based on Section I-D, Exhibit 4)	1.260	1.208
(10) Standard Earned Premium plus ARAP Projected to Prospective Effective Period = [(7) x (9)]	1,318,579,494	1,312,551,401
(11) Average On-Level Incurred Losses Projected to Prospective Effective Period (Section I-C Exhibit I, Page 1 Item (30), Page 2 Item (30))	801,572,919	759,932,989
(12) Loss Ratio Projected to Prospective Effective Period = [(11) / (10)]	0.608	0.579
(13) Factor to Remove the Large Deductible Contribution to the Residual Market Subsidy (Section I-E)	0.997	0.997
(14) Loss Adjustment Expense Factor (Section I-D, Exhibit 5)	1.183	1.183
(15) Fixed Expense Ratio (Section VI-B, Exhibit 1)	0.055	0.055
(16) Indicated Policy Year Loss, LAE, and Fixed Expense Ratio = { [(12) x (14)] + (15) } x (13)	0.772	0.737
(17) Commission and Other Acquisition Expense Ratio (Section I-D, Exhibit 5)	0.126	0.126
(18) Premium Tax Ratio (Section I-D, Exhibit 5)	0.022	0.022
(19) Premium Discount Ratio (Section I-D, Exhibit 5)	0.056	0.056
(20) Variable Expense Ratio = [(17) + (18) + (19)]	0.204	0.204
(21) Underwriting Profit Provision (Section VII-A)	0.001	0.001
(22) Permissible Loss, LAE, and Fixed Expense Ratio = [1.0 - (20) - (21)]	0.795	0.795
(23) Indicated Rate Change = [(16) / (22)] - 1.0	-2.9%	-7.3%
(24) Overall Indicated Rate Change = 0.75 x (23) PY2018 + 0.25 x (23) PY2019		-4.0%

I 000014

Section I - Rate Recommendation
 Subsection C - Indicated Rate Change Detail
 7/1/2023

Section I - C
 Exhibit 1
 Page 1

Premium and Incurred Losses Projected to the Prospective Effective Period
 Policy Year 2018

Premium

(1)	Adjusted On-Level Standard Earned Premium plus Adjusted ARAP at Ultimate (Section I -D, Exhibit 2)	1,046,411,348
(2)	Annual Wage Trend (Section I-D, Exhibit 4)	0.043
(3)	Wage Trend Factor to Prospective Effective Period (7/1/2024)	1.260
(4)	Standard Earned Premium plus ARAP Projected to Prospective Effective Period = [(1) x (3)]	1,318,579,494

Indemnity Losses

		<u>Paid</u>	<u>Paid + Case</u>
(5)	Indemnity Losses at Latest Month - Industry Total (Section I-D, Exhibit 1)	358,854,892	447,380,183
(6)	Indemnity Loss Development Factor to 252 Months (Section I-D, Exhibit 1)	1.314	1.112
(7)	Tail Factor 252 Months to Ultimate (Section I-D, Exhibit 1)	1.036	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)]	510,435,654	505,041,225
(10)	Annual Indemnity Loss Trend (Section I-D, Exhibit 4)	0.008	0.008
(11)	Indemnity Loss Trend Factor to 7/1/2024	1.046	1.046
(12)	Estimated Indemnity Losses Trended = [(9) x (11)]	533,761,081	528,120,142
(13)	Estimated Benefit Change Factor Prior to 1/1/2023 (Section I-D, Exhibit 3)	1.075	1.075
(14)	On Level Losses = [(12) x (13)]	573,937,831	567,872,293
(15)	Estimated Benefit Change Factor Subsequent to 1/1/2023 (Section I-D, Exhibit 3)	1.015	1.015
(16)	On-Level Incurred Losses Projected to Prospective Effective Period = [(14) x (15)]	582,323,660	576,169,498

Medical Losses

(17)	Medical Losses at Latest Month - Industry Total (Section I-D, Exhibit 1)	187,001,232	233,846,055
(18)	Medical Loss Development Factor to 252 Months (Section I-D, Exhibit 1)	1.162	0.946
(19)	Tail Factor 252 Months to Ultimate (Section I-D, Exhibit 1)	1.073	0.980
(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)]	233,205,499	216,854,269
(22)	Annual Medical Loss Trend (Section I-D, Exhibit 4)	-0.002	-0.002
(23)	Medical Loss Trend Factor to 7/1/2024	0.988	0.988
(24)	Estimated Medical Losses Trended = [(21) x (23)]	230,403,732	214,248,948
(25)	Estimated Benefit Change Factor Prior to 1/1/2023 (Section I-D, Exhibit 3)	1.000	1.000
(26)	On Level Losses = [(24) x (25)]	230,403,732	214,248,948
(27)	Estimated Benefit Change Factor Subsequent to 1/1/2023 (Section I-D, Exhibit 3)	1.000	1.000
(28)	On-Level Incurred Losses Projected to Prospective Effective Period = [(26) x (27)]	230,403,732	214,248,948

Total Combined Medical and Indemnity Losses

(29)	Total Estimated Ultimate Losses Trended and On Level = [(16) + (28)]	812,727,392	790,418,446
(30)	Average On-Level Incurred Losses Projected to Prospective Effective Period	801,572,919	

I 000015

Section I - Rate Recommendation
 Subsection C - Indicated Rate Change Detail
 7/1/2023

Section I - C
 Exhibit 1
 Page 2

Premium and Incurred Losses Projected to the Prospective Effective Period Policy Year 2019

Premium

(1)	Adjusted On-Level Standard Earned Premium plus Adjusted ARAP at Ultimate (Section I-D, Exhibit 2)	1,086,333,438
(2)	Annual Wage Trend (Section I-D, Exhibit 4)	0.043
(3)	Wage Trend Factor to Prospective Effective Period (7/1/2024)	1.208
(4)	Standard Earned Premium plus ARAP Projected to Prospective Effective Period = [(1) x (3)]	1,312,551,401

Indemnity Losses

		<u>Paid</u>	<u>Paid + Case</u>
(5)	Indemnity Losses at Latest Month - Industry Total (Section I-D, Exhibit 1)	257,184,694	374,558,611
(6)	Indemnity Loss Development Factor to 252 Months (Section I-D, Exhibit 1)	1.780	1.279
(7)	Tail Factor 252 Months to Ultimate (Section I-D, Exhibit 1)	1.036	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)]	495,812,401	486,241,283
(10)	Annual Indemnity Loss Trend (Section I-D, Exhibit 4)	0.008	0.008
(11)	Indemnity Loss Trend Factor to 7/1/2024	1.037	1.037
(12)	Estimated Indemnity Losses Trended = [(9) x (11)]	514,275,482	504,347,954
(13)	Estimated Benefit Change Factor Prior to 1/1/2023 (Section I-D, Exhibit 3)	1.065	1.065
(14)	On Level Losses = [(12) x (13)]	547,699,282	537,126,544
(15)	Estimated Benefit Change Factor Subsequent to 1/1/2023 (Section I-D, Exhibit 3)	1.015	1.015
(16)	On-Level Incurred Losses Projected to Prospective Effective Period = [(14) x (15)]	555,701,739	544,974,522

Medical Losses

(17)	Medical Losses at Latest Month - Industry Total (Section I-D, Exhibit 1)	157,145,731	224,531,354
(18)	Medical Loss Development Factor to 252 Months (Section I-D, Exhibit 1)	1.252	0.965
(19)	Tail Factor 252 Months to Ultimate (Section I-D, Exhibit 1)	1.073	0.980
(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)]	211,059,093	212,296,910
(22)	Annual Medical Loss Trend (Section I-D, Exhibit 4)	-0.002	-0.002
(23)	Medical Loss Trend Factor to 7/1/2024	0.990	0.990
(24)	Estimated Medical Losses Trended = [(21) x (23)]	208,982,040	210,207,676
(25)	Estimated Benefit Change Factor Prior to 1/1/2023 (Section I-D, Exhibit 3)	1.000	1.000
(26)	On Level Losses = [(24) x (25)]	208,982,040	210,207,676
(27)	Estimated Benefit Change Factor Subsequent to 1/1/2023 (Section I-D, Exhibit 3)	1.000	1.000
(28)	On-Level Incurred Losses Projected to Prospective Effective Period = [(26) x (27)]	208,982,040	210,207,676

Total Combined Medical and Indemnity Losses

(29)	Total Estimated Ultimate Losses Trended and On Level = [(16) + (28)]	764,683,779	755,182,198
(30)	Average On-Level Incurred Losses Projected to Prospective Effective Period	759,932,989	

I 000016

Summary of Estimated Ultimate Losses

Paid Loss Development Method

Policy Year (1)	Benefit Type (2)	Paid Losses at 12/31/21 (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)
2018	Indemnity	358,854,892	1.314	471,417,656	1.036	1.045	510,435,654
2018	Medical	187,001,232	1.162	217,314,985	1.073	1.000	233,205,499
2018	Total	545,856,124		688,732,641			743,641,153
2019	Indemnity	257,184,694	1.780	457,912,213	1.036	1.045	495,812,401
2019	Medical	157,145,731	1.252	196,677,625	1.073	1.000	211,059,093
2019	Total	414,330,425		654,589,837			706,871,493

Paid Plus Case Loss Development Method

Policy Year (9)	Benefit Type (10)	Paid Plus Case Losses at 12/31/21 (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)
2018	Indemnity	447,380,183	1.112	497,697,296	1.015	1.000	505,041,225
2018	Medical	233,846,055	0.946	221,228,169	0.980	1.000	216,854,269
2018	Total	681,226,238		718,925,465			721,895,494
2019	Indemnity	374,558,611	1.279	479,170,729	1.015	1.000	486,241,283
2019	Medical	224,531,354	0.965	216,578,889	0.980	1.000	212,296,910
2019	Total	599,089,965		695,749,617			698,538,192

Notes:

Policy Year 2019 excludes a single large loss with a Calendar Year change in excess of \$10 million from the estimation of loss development factors. This single loss is included in the base for estimation of ultimate losses.

(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.

I 000017

Section I - Rate Recommendation
 Subsection D - Premium Summary
 7/1/2023

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 12/31/2021	
	2018	2019
(1) Standard Earned Premium plus Adjusted ARAP Premium	1,257,191,166	1,220,866,284
(2) Adjustment for Experience and Merit Rating, ARAP, and Construction Credit Off-balance	1.038	1.034
(3) Adjustment Factor to Remove the Impact of Loading for Recoupment of Insolvency Fund Assessments	1.000	0.997
(4) Composite Adjustment Factor = (2) x (3)	1.039	1.032
(5) Adjusted Standard Earned Premium plus ARAP = (1) x (4)	1,305,632,842	1,259,536,374
(6) Cumulative Premium Development Factor to Ultimate (see Section III-A, Exhibit 1, Page 2)	1.000	0.999
(7) Rate On-Level Factor	0.834	0.900
(8) Factor to Remove Expense Constant	0.962	0.960
(9) Adjusted On-Level Standard Earned Premium plus Adjusted ARAP at Ultimate = (5) x (6) x (7) x (8)	1,046,411,348	1,086,333,438

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 000018

Section I - Rate Recommendation
 Subsection D - Benefit Change Adjustments Summary
 7/1/2023

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
1/1/2023	Prosp. Eff. Period					1.015	1.000	
PY 2018	1/1/2023					1.075	1.000	
PY 2019	1/1/2023					1.065	1.000	
PY 2005	Prosp. Eff. Period	1.128	1.152	1.263	1.094	1.201	1.032	
PY 2006	Prosp. Eff. Period	1.122	1.144	1.244	1.090	1.188	1.032	
PY 2007	Prosp. Eff. Period	1.116	1.134	1.227	1.085	1.176	1.032	
PY 2008	Prosp. Eff. Period	1.109	1.125	1.209	1.080	1.162	1.024	
PY 2009	Prosp. Eff. Period	1.107	1.122	1.203	1.078	1.158	1.002	
PY 2010	Prosp. Eff. Period	1.108	1.123	1.204	1.078	1.159	1.000	
PY 2011	Prosp. Eff. Period	1.104	1.117	1.194	1.076	1.151	1.000	
PY 2012	Prosp. Eff. Period	1.099	1.110	1.181	1.072	1.141	1.000	
PY 2013	Prosp. Eff. Period	1.096	1.107	1.175	1.071	1.137	1.000	
PY 2014	Prosp. Eff. Period	1.091	1.103	1.168	1.068	1.130	1.000	
PY 2015	Prosp. Eff. Period	1.079	1.096	1.156	1.065	1.121	1.000	
PY 2016	Prosp. Eff. Period	1.073	1.089	1.144	1.060	1.112	1.000	
PY 2017	Prosp. Eff. Period	1.066	1.081	1.131	1.055	1.102	1.000	
PY 2018	Prosp. Eff. Period	1.059	1.072	1.117	1.049	1.091	1.000	
PY 2019	Prosp. Eff. Period	1.052	1.063	1.104	1.044	1.081	1.000	
PY 2020	Prosp. Eff. Period	1.043	1.053	1.088	1.036	1.068	1.000	
PY 2018	CPY 2019_07	1.011	1.013	1.020	1.009		1.000	
PY 2019	CPY 2020_07	1.016	1.020	1.031	1.014		1.000	
PY 2020	CPY 2021_07	1.026	1.032	1.054	1.022		1.000	
CPY 2019_07	Prosp. Eff. Period							1.050
CPY 2020_07	Prosp. Eff. Period							1.037
CPY 2021_07	Prosp. Eff. Period							1.017
CPY 2008_09	Prosp. Eff. Period							1.105
Prior Eff. Period	Prosp. Eff. Period					1.040	1.000	1.027

Notes:

From Section IV-A, Exhibit 1.

1/1/2023 refers to a point in time. All other time periods refer to Policy Years.

Example: PY 2012 to Prosp. Eff. Period for Permanent Partial = $1.181 = 1.276 / 1.080$,

where 1.276 is the Index Factor for Prosp. Eff. Period and 1.08 is the Index Factor for PY 2012 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%	100.0%	-2.3%	28.2%	2.1%	100.0%	-2.3%	28.2%	2.5%	90.9%	-3.7%	19.7%	6.8%	59.0%	
6 Year	2.4%	100.0%	-2.3%	42.1%	1.3%	74.2%	-2.3%	42.1%	2.9%	100.0%	-3.8%	29.1%	6.0%	68.7%	
7 Year	2.8%	100.0%	-2.1%	55.7%	2.2%	62.5%	-2.1%	55.7%	2.4%	100.0%	-3.9%	38.0%	5.4%	76.4%	
8 Year	2.7%	100.0%	-2.0%	68.4%	2.2%	77.4%	-2.0%	68.4%	2.3%	100.0%	-3.9%	46.7%	5.0%	80.6%	
9 Year	2.5%	100.0%	-2.0%	80.5%	2.0%	89.6%	-2.0%	80.5%	2.4%	100.0%	-4.2%	48.5%	4.7%	85.2%	
10 Year	2.7%	100.0%	-2.1%	89.2%	2.2%	100.0%	-2.1%	89.2%	2.4%	100.0%	-4.4%	50.7%	4.4%	88.5%	
(2) Selected Trend	3.0%		-2.1%		2.1%		-2.1%		2.9%		-4.4%		4.4%		
(3) 15 Year Massachusetts Complement of Credibility	2.4%		-1.8%		2.0%		-1.8%		2.0%		-4.2%		3.4%		
(4) Credibility Weighted Trend	3.0%		-2.1%		2.1%		-2.1%		2.9%		-4.3%		4.3%		

	Lost-Time Medical	Medical Only
(5) Medical Loss Trend	0.0%	-1.6%
(6) Fraction of Total Medical	88.0%	12.0%
(7) Total Medical Loss Trend	-0.2%	

	Indemnity	Medical
(8) Total Loss Trend	0.8%	-0.2%
(9) SAWW Trend	4.3%	4.3%
(10) Total Net Trend	-3.3%	-4.3%

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) = $\{ [1.0 + (8)] / [1.0 + (9)] \} - 1.0$

I 000019

I 000020

Section I - Rate Recommendation
Subsection D - Expenses Summary
7/1/2023

Section I - D
Exhibit 5

Summary of Expense Ratios

(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)	Variable Expense Ratio = (1) + (2) + (3)	20.4%
(5)	Fixed Expense Ratio	5.5%
(6)	Total Loss Adjustment Expense Ratio (LAE / Loss)	18.3%

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 000021

Section I - Rate Recommendation
 Subsection E - Reflecting the Impact of Large Deductibles
 7/1/2023

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	79.5%		
(2) Fixed Expense Ratio	5.5%		
(3) Permissible Loss and LAE Ratio = [(1) - (2)]	74.0%		
(4) Loss Ratio Differential, r	1.281		
(5) Market Weight - w_x		19%	81%
(6) Implied Permissible Loss and LAE Ratio		0.900	0.702
(7) Implied Permissible Loss, LAE, and Fixed Expense Ratio		0.955	0.757
(8) Implied Permissible Loss, LAE, and Fixed Expense Ratio Differential	1.261		
(9) Variable Expense Ratio	20.4%	10.0%	22.8%
(10) Underwriting Profit Provision	0.15%		
(11) Implied Rate Factor Equivalent		1.063	0.983
(12) Implied Rate Differential, d	1.082		
(13) Residual Market Rate equivalent, Q_{rm}	1.065		
(14) Proportion of Total Voluntary Assessable Premium Not from Large Deductibles, u	0.734		
(15) Factor to Remove the Large Deductible Contribution to the Residual Market Subsidy	0.997		

Notes

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

(2): Section VI-B, Exhibit 1, average of column (18).

(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 _{rm} / LR _{vol} = (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)
2014	1,077	668	62.0%	242	159	65.9%	835	509	60.9%	1.082
2015	1,150	654	56.9%	262	163	62.0%	887	492	55.4%	1.118
2016	1,198	659	55.0%	267	175	65.3%	930	485	52.1%	1.255
2017	1,270	706	55.6%	273	171	62.5%	997	536	53.8%	1.163
2018	1,254	681	54.3%	259	163	63.1%	996	518	52.0%	1.214
2019	1,218	599	49.2%	235	155	65.8%	983	444	45.2%	1.457
2020	1,174	416	35.5%	219	103	47.2%	956	313	32.8%	1.440
(12) Average of 2018 and 2019				247	159	64.4%	989	481	48.6%	1.325
(13) Average All Years				251	156	62.0%	940	471	50.1%	1.238
(14) Selected Loss Ratio Differential										1.281

Notes:
 Data as of 12/31/2021 from Aggregate Financial Database, excluding large deductible policies.

1000022

Residual Market Weight "w_{rm}"
 Proportion of Voluntary Assessable Premium Not from Large Deductibles "u"
 (\$ amounts in millions)

Calendar Year	Voluntary Assessable Premium Basis Used to Determine Shares of the Residual Market	Take-Out Program Written Premium	Take-Out Credits	Residual Market Direct Written Premium	Large Deductible Standard + ARAP Written Premium	Voluntary Non-Large Deductible Not in Take-Out Program Written Premium = (2) - (3) - (6) + (4)	Residual Market Weight "w _{rm} " = (5) / [(3) + (5) + (7)]	"u" -- Proportion of Assessable Premium Not from Large Deductibles = (7) / [(7) + (6)]
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2020	1179	45	44	219	300	878	0.191	0.746
2021	1198	39	39	210	333	864	0.189	0.722
Selected	1188	42	41	215	316	871	0.190	0.734

Note:

Refers to the prospective effective period from 7/1/2023 through 7/1/2024.

(2),(3),(4),(5),(6): Massachusetts Workers' Compensation Assigned Risk Pool Special Bulletin No. SB-11-21 for Calendar Year 2020 and Special Bulletin No. SB-09-22 for Calendar Year 2021.

(2),(3),(4),(5),(6),(7): Selected based on two-year average of Calendar Year 2020 and 2021.

I 000023

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”¹ 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.² 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

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

² As explained in Section I, reviewing historical losses which were heavily distorted by COVID-19 to predict future development is problematic for several reasons. While the WCRIBMA understands the effects of COVID-19 will continue to be felt in the coming years, the current unemployment rates, the renewed availability of medical and other services, vaccines, therapeutics and the waning impacts of federal payroll relief, all suggest that use of data less distorted by COVID-19 anomalies would be more predictive of the post July 2023 environment. Policy years 2018 and 2019, evaluated as of 12/31/2021, are more representative of the post-July-2023 environment than policy years 2019 and 2020.

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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.

In this section of the Filing, reported losses for policy years 2018 and 2019 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, the WCRIBMA has examined the results of more than one method of estimating ultimate losses in an effort to derive a reasonable estimate of losses. 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 2018 policy year and 2019 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 of the goals when using historical data as the basis for the ultimate loss predictions is to balance stability with responsiveness. Stability is a desirable quality to avoid large fluctuations that are not representative of future anticipated losses. The more years that are considered, the more stable the result is likely to be. We must, however, also consider responsiveness: we only want to include data that we believe represent

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current and ongoing conditions. This, in turn, weighs in favor of using the most recent reliable data available. Due to COVID-19's significant impact on the levels of unemployment during calendar year 2020, the most recent reliable data comes from Policy Years 2018 and 2019, evaluated as of 12/31/2021, rather than Policy Year 2020.

Due to the stability in the Massachusetts benefit delivery system and claim adjudication process,³ 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. One of the reasons for additional volatility in paid plus case results from the presence or absence of large losses in a given year.⁴ In order to better represent the occurrence of these events, a five year average is selected.

As in past filings, medical and indemnity losses are developed separately because of their differing development patterns. The use of separate 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. The underlying details of the methodology are displayed 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

³ Workers' Compensation Research Institute CompScope™ (Benchmarks for Massachusetts, 16th Edition and Medical Benchmarks for Massachusetts, 20th Edition)

⁴ Large losses are being defined as lost-time claims where indemnity plus medical losses are greater than or equal to ten million dollars.

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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, 2001⁵, claims and losses associated with COVID-19⁶, and loss data from a single claim with a calendar year change in excess of ten million dollars due to a subrogation recovery.⁷ In this filing, Policy Year 2019 excludes a single large loss with a Calendar Year change in excess of ten million dollars from the estimation of loss development factors. This single loss is included, after development, in the experience base for the estimation of ultimate losses.

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). See Section II-D for the details of the calculation.

⁵ Consistent with past practice since the 2003 rate filing.

⁶ Claims and losses coded as CAT-12, consistent with the 2022 rate filing.

⁷ Consistent with Unit Statistical Data reporting requirements, carriers are required to submit corrections for first through fifth reports.

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 method to develop the tail factor employed by the Commissioner in the 2003 Rate Decision and by the WCRIBMA in all subsequent rate filings. The WCRIBMA's estimation of tail factors involves calculating the calendar year

change in 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.

We calculate separate tail factors directly for medical and indemnity losses in order to reflect their differing development patterns. Medical losses tend to develop differently than do indemnity losses (Section II-B). Application of separate tail factors captures 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. 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 2001 had the same level of ultimate losses as policy year 2001 – this assumption is not true. Stated mathematically, if the ratios used to calculate the tail factor reflect

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losses in the numerator that relate to a different level of ultimate losses than do the losses used in the denominator,⁸ 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 2001, 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.⁹

⁸ See Formula in Section II-C: [(Inception-to-date losses for PYs Prior to Policy Year 2001 at 12/31/[Y] - Inception-to-date losses for PYs Prior to Policy Year 2001 at 12/31/[Y] - 1 year)] / (Losses for Policy Year 2001 at 12/31/[Y]).

⁹ 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 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. These older, unescalated losses exhibit a development pattern that will differ from the expected development of indemnity losses that are subject to escalation.

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 1997 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 2001 and prior. Reported losses for policy years prior to 1987 do not reflect the impact of escalation and therefore 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

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Section II - Loss Development
Subsection A - Summary
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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.

ACCIDENT YEAR PAID LOSS DEVELOPMENT FACTORS**Used in Section VII - Profit**

Accident year loss flows are needed for purposes of estimating a profit provision in Section VII. Using the Aggregate Financial Data evaluated as of December 31, 2021, the WCRIBMA has updated the medical and the indemnity accident year paid losses used to derive an accident year payment pattern. The combined loss flow is a weighted average of the medical and indemnity paid loss flows.

Medical Paid Loss Flow

As with the policy year loss development, we develop accident year losses to 252 months. We compute accident year medical paid loss development factors from the averages of the two latest link ratios. Losses developed to 252 months are multiplied by a medical paid loss tail factor. For purposes of modeling cash flows in Section VII, a policy year medical paid loss tail factor is used, in lieu of developing a separate accident year tail factor.

Indemnity Paid Loss Flow

The flow for indemnity paid losses has been derived from the Aggregate Financial Data using a method identical to the method used for medical paid losses except that the indemnity paid losses have been adjusted for escalation of benefits.

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Section II - Loss Development
 Subsection A - Loss Development Summary
 7/1/2023

Section II - A
 Exhibit 1

Summary of Estimated Ultimate Losses Industry

Paid Loss Development Method

Policy Year (1)	Benefit Type (2)	Paid Losses at 12/31/21 (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)
2018	Indemnity	358,854,892	1.314	471,417,656	1.036	1.045	510,435,654
2018	Medical	187,001,232	1.162	217,314,985	1.073	1.000	233,205,499
2018	Total	545,856,124		688,732,641			743,641,153

2019	Indemnity	257,184,694	1.780	457,912,213	1.036	1.045	495,812,401
2019	Medical	157,145,731	1.252	196,677,625	1.073	1.000	211,059,093
2019	Total	414,330,425		654,589,837			706,871,493

Paid Plus Case Loss Development Method

Policy Year (9)	Benefit Type (10)	Paid Plus Case Losses at 12/31/21 (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)
2018	Indemnity	447,380,183	1.112	497,697,296	1.015	1.000	505,041,225
2018	Medical	233,846,055	0.946	221,228,169	0.980	1.000	216,854,269
2018	Total	681,226,238		718,925,465			721,895,494

2019	Indemnity	374,558,611	1.279	479,170,729	1.015	1.000	486,241,283
2019	Medical	224,531,354	0.965	216,578,889	0.980	1.000	212,296,910
2019	Total	599,089,965		695,749,617			698,538,192

Notes:

Policy Year 2019 excludes a single large loss with a Calendar Year change in excess of \$10 million from the estimation of loss development factors. This single loss is included in the base for estimation of ultimate losses.

(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
(1) Indemnity Paid Losses																			
2 Year Average	1.801	1.355	1.153	1.053	1.024	1.009	1.010	1.005	1.003	1.004	1.006	1.002	1.002	1.002	1.002	1.003	1.002	1.002	1.001
Cumulative Factor to 252	3.207	1.780	1.314	1.139	1.082	1.056	1.046	1.035	1.031	1.027	1.023	1.017	1.014	1.013	1.011	1.008	1.005	1.003	1.001
(2) Medical Paid Losses																			
2 Year Average	1.280	1.077	1.037	1.016	1.014	1.005	1.009	1.009	1.008	1.006	1.004	1.001	1.009	1.007	1.004	1.003	1.005	1.006	1.008
Cumulative Factor to 252	1.602	1.252	1.162	1.120	1.102	1.087	1.081	1.072	1.062	1.053	1.047	1.043	1.042	1.033	1.026	1.021	1.019	1.014	1.008
(3) Indemnity Paid Plus Case Losses																			
5 Year Average	1.450	1.150	1.060	1.021	1.007	1.002	1.000	1.006	1.002	1.002	1.002	1.001	1.001	1.002	1.001	1.001	1.001	1.000	1.001
Cumulative Factor to 252	1.855	1.279	1.112	1.049	1.027	1.020	1.018	1.018	1.013	1.011	1.009	1.007	1.006	1.005	1.003	1.002	1.001	1.001	1.001
(4) Medical Paid Plus Case Losses																			
5 Year Average	1.072	1.020	0.998	0.996	0.994	0.998	1.002	0.987	1.001	0.994	1.002	0.999	1.000	0.999	0.994	0.995	0.996	0.994	0.995
Cumulative Factor to 252	1.034	0.965	0.946	0.948	0.951	0.957	0.959	0.957	0.969	0.968	0.974	0.972	0.973	0.974	0.974	0.980	0.985	0.989	0.995

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

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Policy Year Aggregate Financial Data
 Calculation of Indemnity 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	
2015	134,978	251,451	1.863	2005	331,659	333,017	1.004
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	258,035	1.785	2008	326,517	327,754	1.004
2019	141,402	257,008	1.818	2009	315,043	317,928	1.009
2 Yr Average			1.801	2 Yr Average			1.006
5 Yr Average			1.848	5 Yr Average			1.005
Selected Average			1.801	Selected Average			1.006
	36	48			156	168	
2014	246,269	333,986	1.356	2004	338,374	339,456	1.003
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	258,035	358,349	1.389	2008	327,754	328,705	1.003
2 Yr Average			1.355	2 Yr Average			1.002
5 Yr Average			1.339	5 Yr Average			1.003
Selected Average			1.355	Selected Average			1.002
	48	60			168	180	
2013	294,625	335,498	1.139	2003	306,264	306,608	1.001
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	409,257	1.173	2007	337,594	337,764	1.001
2 Yr Average			1.153	2 Yr Average			1.002
5 Yr Average			1.141	5 Yr Average			1.002
Selected Average			1.153	Selected Average			1.002
	60	72			180	192	
2012	323,696	345,266	1.067	2002	288,672	288,973	1.001
2013	335,498	350,903	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	397,059	1.060	2006	327,530	327,926	1.001
2 Yr Average			1.053	2 Yr Average			1.002
5 Yr Average			1.053	5 Yr Average			1.003
Selected Average			1.053	Selected Average			1.002
	72	84			192	204	
2011	342,822	350,176	1.021	2001	271,384	271,584	1.001
2012	345,266	355,189	1.029	2002	288,973	289,461	1.002
2013	350,903	360,538	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	406,282	1.035	2005	335,329	336,121	1.002
2 Yr Average			1.024	2 Yr Average			1.002
5 Yr Average			1.025	5 Yr Average			1.002
Selected Average			1.024	Selected Average			1.002
	84	96			204	216	
2010	330,041	333,718	1.011	2000	266,926	267,149	1.001
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	360,538	363,106	1.007	2003	308,144	308,771	1.002
2014	402,548	407,048	1.011	2004	342,156	343,449	1.004
2 Yr Average			1.009	2 Yr Average			1.003
5 Yr Average			1.012	5 Yr Average			1.002
Selected Average			1.009	Selected Average			1.003
	96	108			216	228	
2009	308,736	310,836	1.007	1999	238,583	238,739	1.001
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	363,106	367,645	1.013	2003	308,771	309,411	1.002
2 Yr Average			1.010	2 Yr Average			1.002
5 Yr Average			1.009	5 Yr Average			1.001
Selected Average			1.010	Selected Average			1.002
	108	120			228	240	
2008	321,000	322,911	1.006	1998	225,443	226,160	1.003
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
2 Yr Average			1.005	2 Yr Average			1.002
5 Yr Average			1.006	5 Yr Average			1.002
Selected Average			1.005	Selected Average			1.002
	120	132			240	252	
2007	333,013	334,293	1.004	1997	209,774	210,135	1.002
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
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
	132	144					
2006	323,358	324,293	1.003				
2007	334,293	336,118	1.005				
2008	325,771	326,517	1.002				
2009	313,605	315,043	1.005				
2010	338,616	339,532	1.003				
2 Yr Average			1.004				
5 Yr Average			1.004				
Selected Average			1.004				

Notes:
 Losses from Aggregate Financial Data.

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Section II - Loss Development
 Subsection B - Policy Year Data
 7/1/2023

Section II - B
 Exhibit 2
 Page 2

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	
2015	126,708	164,287	1.297	2005	168,577	169,857	1.008
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	137,657	172,359	1.249	2008	159,320	159,821	1.003
2019	117,349	153,878	1.311	2009	160,748	161,589	1.005
2 Yr Average			1.280	2 Yr Average			1.004
5 Yr Average			1.284	5 Yr Average			1.007
Selected Average			1.280	Selected Average			1.004
	36	48			156	168	
2014	166,068	181,331	1.092	2004	170,586	171,858	1.007
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	172,359	186,723	1.083	2008	159,821	160,376	1.003
2 Yr Average			1.077	2 Yr Average			1.001
5 Yr Average			1.084	5 Yr Average			1.006
Selected Average			1.077	Selected Average			1.001
	48	60			168	180	
2013	160,964	165,520	1.028	2003	157,262	158,282	1.006
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	192,516	1.046	2007	173,001	173,523	1.003
2 Yr Average			1.037	2 Yr Average			1.009
5 Yr Average			1.034	5 Yr Average			1.007
Selected Average			1.037	Selected Average			1.009
	60	72			180	192	
2012	166,130	168,321	1.013	2002	146,648	147,943	1.009
2013	165,520	168,364	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	185,187	1.017	2006	180,120	181,505	1.008
2 Yr Average			1.016	2 Yr Average			1.007
5 Yr Average			1.017	5 Yr Average			1.007
Selected Average			1.016	Selected Average			1.007
	72	84			192	204	
2011	170,388	172,418	1.012	2001	128,835	129,888	1.008
2012	168,321	169,928	1.010	2002	147,943	148,981	1.007
2013	168,364	169,822	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	190,144	1.018	2005	173,040	173,760	1.004
2 Yr Average			1.014	2 Yr Average			1.004
5 Yr Average			1.012	5 Yr Average			1.006
Selected Average			1.014	Selected Average			1.004
	84	96			204	216	
2010	164,441	166,607	1.013	2000	122,313	123,664	1.011
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	169,822	170,326	1.003	2003	160,260	160,851	1.004
2014	194,572	196,047	1.008	2004	174,522	174,811	1.002
2 Yr Average			1.005	2 Yr Average			1.003
5 Yr Average			1.010	5 Yr Average			1.006
Selected Average			1.005	Selected Average			1.003
	96	108			216	228	
2009	156,740	158,007	1.008	1999	116,205	117,206	1.009
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	170,326	171,302	1.006	2003	160,851	161,312	1.003
2 Yr Average			1.009	2 Yr Average			1.005
5 Yr Average			1.010	5 Yr Average			1.006
Selected Average			1.009	Selected Average			1.005
	108	120			228	240	
2008	156,916	157,632	1.005	1998	111,562	112,370	1.007
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
2 Yr Average			1.009	2 Yr Average			1.006
5 Yr Average			1.008	5 Yr Average			1.007
Selected Average			1.009	Selected Average			1.006
	120	132			240	252	
2007	170,346	171,562	1.007	1997	98,449	98,900	1.005
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
2 Yr Average			1.008	2 Yr Average			1.008
5 Yr Average			1.007	5 Yr Average			1.007
Selected Average			1.008	Selected Average			1.008
	132	144					
2006	169,842	172,248	1.014				
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				
2 Yr Average			1.006				
5 Yr Average			1.007				
Selected Average			1.006				

Notes:
 Losses from Aggregate Financial Data.

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Section II - Loss Development
 Subsection B - Policy Year Data
 7/1/2023

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			Evaluated at Month	Evaluated at Month	
	24	36			144	156	
2015	250,030	350,206	1.401	2005	337,550	338,936	1.004
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	373,851	1.463	2008	333,047	333,160	1.000
2019	251,733	373,705	1.485	2009	322,810	323,653	1.003
2 Yr Average			1.474	2 Yr Average			1.001
5 Yr Average			1.450	5 Yr Average			1.002
Selected Average			1.450	Selected Average			1.002
	36	48			156	168	
2014	352,317	397,448	1.128	2004	345,684	346,166	1.001
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	373,851	446,780	1.195	2008	333,160	333,962	1.002
2 Yr Average			1.176	2 Yr Average			1.001
5 Yr Average			1.150	5 Yr Average			1.001
Selected Average			1.150	Selected Average			1.001
	48	60			168	180	
2013	345,728	365,655	1.058	2003	311,102	311,168	1.000
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	467,150	1.085	2007	340,669	340,757	1.000
2 Yr Average			1.070	2 Yr Average			1.001
5 Yr Average			1.060	5 Yr Average			1.001
Selected Average			1.060	Selected Average			1.001
	60	72			180	192	
2012	357,497	366,468	1.025	2002	294,138	294,450	1.001
2013	365,655	373,398	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	432,360	1.033	2006	330,028	330,354	1.001
2 Yr Average			1.026	2 Yr Average			1.001
5 Yr Average			1.021	5 Yr Average			1.002
Selected Average			1.021	Selected Average			1.002
	72	84			192	204	
2011	364,926	366,585	1.005	2001	274,018	274,280	1.001
2012	366,468	371,695	1.014	2002	294,450	294,966	1.002
2013	373,398	374,723	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	427,315	1.007	2005	340,430	341,073	1.002
2 Yr Average			1.007	2 Yr Average			1.001
5 Yr Average			1.007	5 Yr Average			1.001
Selected Average			1.007	Selected Average			1.001
	84	96			204	216	
2010	340,930	341,673	1.002	2000	270,712	270,856	1.001
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	374,723	374,030	0.998	2003	312,028	312,599	1.002
2014	426,347	428,820	1.006	2004	348,310	348,886	1.002
2 Yr Average			1.002	2 Yr Average			1.002
5 Yr Average			1.002	5 Yr Average			1.001
Selected Average			1.002	Selected Average			1.001
	96	108			216	228	
2009	321,138	319,973	0.996	1999	241,669	241,772	1.000
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	374,030	374,694	1.002	2003	312,599	313,081	1.002
2 Yr Average			1.000	2 Yr Average			1.002
5 Yr Average			1.000	5 Yr Average			1.001
Selected Average			1.000	Selected Average			1.001
	108	120			228	240	
2008	328,397	331,121	1.008	1998	229,904	229,846	1.000
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
2 Yr Average			1.005	2 Yr Average			1.000
5 Yr Average			1.006	5 Yr Average			1.000
Selected Average			1.006	Selected Average			1.000
	120	132			240	252	
2007	339,741	340,689	1.003	1997	213,240	213,489	1.001
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
2 Yr Average			1.003	2 Yr Average			1.000
5 Yr Average			1.002	5 Yr Average			1.001
Selected Average			1.002	Selected Average			1.001
	132	144					
2006	329,156	329,762	1.002				
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				
2 Yr Average			1.003				
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
 7/1/2023

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) Evaluated at Month		Loss Development Factor	Policy Year	Losses (in 000's) Evaluated at Month		Loss Development Factor
	24	36			144	156	
2015	209,227	226,561	1.083	2005	190,313	192,613	1.012
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	228,929	1.068	2008	172,189	172,144	1.000
2019	193,445	206,883	1.069	2009	179,284	179,056	0.999
2 Yr Average			1.069	2 Yr Average			0.999
5 Yr Average			1.072	5 Yr Average			1.002
Selected Average			1.072	Selected Average			1.002
	36	48			156	168	
2014	237,260	240,904	1.015	2004	194,192	194,158	1.000
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	228,929	233,532	1.020	2008	172,144	171,876	0.988
2 Yr Average			1.014	2 Yr Average			0.993
5 Yr Average			1.020	5 Yr Average			0.999
Selected Average			1.020	Selected Average			0.999
	48	60			168	180	
2013	198,797	200,174	1.007	2003	175,820	176,741	1.005
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	235,883	1.010	2007	186,036	185,532	0.997
2 Yr Average			0.999	2 Yr Average			0.997
5 Yr Average			0.998	5 Yr Average			1.000
Selected Average			0.998	Selected Average			1.000
	60	72			180	192	
2012	217,150	214,637	0.988	2002	170,097	169,687	0.998
2013	200,174	200,669	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	224,018	0.999	2006	200,477	199,521	0.995
2 Yr Average			0.996	2 Yr Average			0.997
5 Yr Average			0.996	5 Yr Average			0.999
Selected Average			0.996	Selected Average			0.999
	72	84			192	204	
2011	210,441	211,592	1.005	2001	151,840	151,608	0.998
2012	214,637	210,152	0.979	2002	169,687	169,579	0.999
2013	200,669	198,983	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	226,598	1.000	2005	191,536	191,585	1.000
2 Yr Average			0.997	2 Yr Average			0.997
5 Yr Average			0.994	5 Yr Average			0.994
Selected Average			0.994	Selected Average			0.994
	84	96			204	216	
2010	199,870	201,999	1.011	2000	148,926	148,550	0.997
2011	211,592	210,622	0.995	2001	151,608	151,860	1.002
2012	210,152	210,518	1.002	2002	169,579	169,301	0.998
2013	198,983	196,754	0.989	2003	174,126	173,052	0.994
2014	239,042	237,838	0.995	2004	193,438	189,830	0.981
2 Yr Average			0.992	2 Yr Average			0.988
5 Yr Average			0.998	5 Yr Average			0.995
Selected Average			0.998	Selected Average			0.995
	96	108			216	228	
2009	185,809	186,118	1.002	1999	140,702	141,056	1.003
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	196,754	196,394	0.998	2003	173,052	171,358	0.990
2 Yr Average			1.003	2 Yr Average			0.990
5 Yr Average			1.002	5 Yr Average			0.996
Selected Average			1.002	Selected Average			0.996
	108	120			228	240	
2008	171,869	171,380	0.997	1998	137,373	134,066	0.976
2009	186,118	183,132	0.984	1999	141,056	141,537	1.003
2010	202,503	197,628	0.976	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
2 Yr Average			0.989	2 Yr Average			0.996
5 Yr Average			0.987	5 Yr Average			0.994
Selected Average			0.987	Selected Average			0.994
	120	132			240	252	
2007	190,934	192,003	1.006	1997	107,355	107,352	1.000
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	197,628	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
2 Yr Average			1.005	2 Yr Average			0.994
5 Yr Average			1.001	5 Yr Average			0.995
Selected Average			1.001	Selected Average			0.995
	132	144					
2006	198,590	198,297	0.999				
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				
2 Yr Average			0.991				
5 Yr Average			0.994				
Selected Average			0.994				

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		(5) 252 - Ult for PY	(6) Growth Factor	(7) Indicated 252 - Ult for PY
		Previous	Current			
1996	196,376,366		9,120,676,419			
1997	210,135,315	9,317,052,785	9,333,702,245	1.079	0.520	1.041
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
					5yr average	1.036

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		(12) 252 - Ult for PY	(13) Growth Factor	(14) Indicated 252 - Ult for PY
		Previous	Current			
1996	96,219,682		2,928,963,739			
1997	98,899,548	3,025,183,421	3,035,302,766	1.102	0.760	1.078
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
					5yr average	1.073

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 2001	Prior to 2000	Prior to 1999	Prior to 1998	Prior to 1997	Prior to 2001	Prior to 2000	Prior to 1999	Prior to 1998	Prior to 1997
1972	62,767,213					0.013%					7,971					24,869
1973	73,759,346					0.011%				8,033					23,213	49,738
1974	77,865,871			0.012%		0.022%				9,092					26,637	74,606
1975	78,107,817		0.009%	0.023%	0.033%	0.051%				7,372					53,274	99,475
1976	94,145,927	0.010%	0.019%	0.035%	0.044%	0.063%	9,696	17,772	32,979	41,013	59,781	27,007	48,445	79,911	92,851	124,344
1977	109,594,217	0.021%	0.028%	0.047%	0.054%	0.076%	22,574	31,033	51,187	59,679	83,508	54,015	72,667	106,548	116,064	149,213
1978	154,813,691	0.031%	0.038%	0.058%	0.065%	0.089%	47,832	58,450	90,385	101,164	137,625	81,022	96,890	133,185	139,276	174,082
1979	179,429,626	0.041%	0.047%	0.070%	0.076%	0.102%	73,917	84,680	125,708	136,791	182,295	108,029	121,112	159,822	162,489	198,950
1980	199,752,841	0.051%	0.057%	0.082%	0.087%	0.114%	102,861	113,126	163,270	174,040	228,311	135,037	145,335	186,459	185,702	223,819
1981	237,008,170	0.062%	0.066%	0.093%	0.098%	0.127%	146,455	156,595	221,396	232,312	300,991	162,044	169,557	213,096	208,915	248,688
1982	260,515,583	0.072%	0.076%	0.105%	0.109%	0.140%	187,811	196,716	273,774	283,726	363,929	189,051	193,780	239,733	232,127	273,557
1983	293,478,029	0.082%	0.085%	0.117%	0.120%	0.152%	241,799	249,307	342,682	351,588	447,247	216,059	218,002	266,370	255,340	298,426
1984	355,837,967	0.093%	0.094%	0.128%	0.131%	0.165%	329,825	335,868	457,047	465,049	587,471	243,066	242,225	293,008	278,553	323,295
1985	438,534,312	0.103%	0.104%	0.140%	0.142%	0.178%	451,640	455,316	614,470	620,886	779,690	270,073	266,447	319,645	301,765	348,163
1986	552,105,171	0.113%	0.113%	0.152%	0.152%	0.190%	625,465	625,345	838,072	841,812	1,051,729	297,081	290,670	346,282	324,978	373,032
1987	695,660,221	0.124%	0.123%	0.163%	0.163%	0.203%	859,739	853,605	1,137,211	1,136,459	1,413,539	324,088	314,892	372,919	348,191	397,901
1988	772,012,181	0.134%	0.132%	0.175%	0.174%	0.216%	1,033,608	1,020,161	1,352,170	1,345,270	1,666,724	351,095	339,115	399,556	371,404	422,770
1989	802,368,271	0.144%	0.142%	0.187%	0.185%	0.229%	1,156,885	1,136,008	1,499,028	1,485,552	1,834,158	378,103	363,337	426,193	394,616	447,639
1990	728,654,947	0.154%	0.151%	0.199%	0.196%	0.241%	1,125,645	1,100,420	1,446,395	1,428,432	1,758,191	405,110	387,560	452,830	417,829	472,507
1991	488,888,984	0.165%	0.160%	0.210%	0.210%	0.254%	805,598	784,469	1,027,540	1,011,647	1,241,740	432,117	411,782	479,467	441,042	497,376
1992	303,138,664	0.175%	0.170%	0.222%	0.218%	0.267%	530,736	515,027	672,529	660,293	808,446	459,125	436,005	506,104	464,255	522,245
1993	246,118,632	0.185%	0.179%	0.234%	0.229%	0.279%	456,253	441,382	574,765	562,897	687,635	486,132	460,227	532,741	487,467	547,114
1994	197,907,758	0.196%	0.189%	0.245%	0.240%	0.292%	387,262	373,602	485,286	474,188	578,071	513,139	484,450	559,378	510,680	571,983
1995	201,060,384	0.206%	0.198%	0.257%	0.250%	0.305%	414,138	398,531	516,494	503,639	612,814	540,147	508,672	586,015	533,893	596,851
1996	187,578,951	0.216%	0.208%	0.269%	0.261%	0.317%	405,688	389,514	503,765	490,298	595,545	567,154	532,895	612,652	557,105	621,720
1997	195,823,310	0.227%	0.217%	0.280%	0.272%		443,686	425,117	548,772	533,175		594,161	557,117	639,289	580,318	
1998	213,138,040	0.237%	0.227%	0.292%			504,867	482,824	622,181			621,169	581,340	665,926		
1999	228,123,554	0.247%	0.236%				563,858	538,303				648,176	605,562			
2000	256,627,056	0.257%					660,740					675,183				
2001	262,236,591															
							11,588,576	10,790,543	13,624,439	12,990,424	15,515,490	8,777,383	7,872,311	8,657,041	7,544,137	8,082,363
(6) Indicated Growth Factor:												0.757	0.730	0.635	0.581	0.521
(7) Selected Growth Factor:												0.760	0.730	0.640	0.580	0.520

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- 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)]

Growth Factor Adjustment
 Medical Paid Losses

Policy Year (1)	Paid Losses (2)	Relative Development for Report Interval (3)					Dollar Development (4)					On-Level Dollar Development (5)								
		Prior to 2001	Prior to 2000	Prior to 1999	Prior to 1998	Prior to 1997	Prior to 2001	Prior to 2000	Prior to 1999	Prior to 1998	Prior to 1997	Prior to 2001	Prior to 2000	Prior to 1999	Prior to 1998	Prior to 1997				
1972	19,744,461					0.024%					4,697									21,621
1973	24,809,893					0.021%				0.048%									20,461	43,241
1974	26,568,349					0.021%				0.041%									40,921	64,862
1975	28,043,207					0.022%				0.062%									61,382	86,483
1976	31,930,835	0.025%	0.043%	0.063%	0.083%	0.119%	8,019	13,776	20,229	26,426	37,980	30,362	48,678	65,712	81,842	108,104				108,104
1977	36,223,466	0.050%	0.065%	0.084%	0.103%	0.143%	18,195	23,442	30,598	37,473	51,703	60,724	73,017	87,616	102,303	129,724				129,724
1978	47,243,917	0.075%	0.086%	0.106%	0.124%	0.167%	35,596	40,765	49,883	58,648	78,672	91,086	97,356	109,520	122,763	151,345				151,345
1979	53,532,015	0.100%	0.108%	0.127%	0.145%	0.190%	53,778	57,739	67,827	77,529	101,878	121,448	121,695	131,424	143,224	172,966				172,966
1980	59,099,604	0.126%	0.129%	0.148%	0.166%	0.214%	74,214	76,493	87,362	97,820	126,533	151,810	146,034	153,329	163,684	194,587				194,587
1981	70,929,091	0.151%	0.151%	0.169%	0.186%	0.238%	106,882	107,105	119,827	132,075	168,733	182,172	170,373	175,233	184,145	216,207				216,207
1982	71,162,485	0.176%	0.173%	0.190%	0.207%	0.262%	125,106	122,808	135,249	147,233	186,217	212,534	194,713	197,137	204,605	237,828				237,828
1983	80,710,732	0.201%	0.194%	0.211%	0.228%	0.285%	162,163	156,697	170,440	183,686	230,403	242,896	219,052	219,041	225,066	259,449				259,449
1984	96,964,340	0.226%	0.216%	0.232%	0.248%	0.309%	219,172	209,170	225,240	240,739	299,869	273,258	243,391	240,945	245,527	281,070				281,070
1985	124,826,995	0.251%	0.237%	0.253%	0.269%	0.333%	313,501	296,202	316,322	335,741	415,731	303,620	267,730	262,849	265,987	302,690				302,690
1986	147,197,787	0.276%	0.259%	0.275%	0.290%	0.357%	406,653	381,039	404,096	426,366	525,253	333,982	292,069	284,753	286,448	324,311				324,311
1987	180,574,846	0.301%	0.280%	0.296%	0.310%	0.381%	544,212	506,393	533,858	560,405	687,311	364,344	316,408	306,657	306,908	345,932				345,932
1988	204,470,082	0.326%	0.302%	0.317%	0.331%	0.404%	667,579	617,511	647,681	676,866	826,903	394,706	340,747	328,561	327,369	367,553				367,553
1989	219,795,860	0.352%	0.324%	0.338%	0.352%	0.428%	772,818	711,209	742,642	773,075	941,170	425,068	365,086	350,465	347,829	389,173				389,173
1990	206,461,244	0.377%	0.345%	0.359%	0.372%	0.452%	777,785	712,599	741,187	768,890	933,185	455,430	389,425	372,369	368,290	410,794				410,794
1991	174,776,908	0.402%	0.367%	0.380%	0.393%	0.476%	702,318	640,943	664,350	687,054	831,553	485,793	413,764	394,273	388,750	432,415				432,415
1992	134,101,538	0.427%	0.388%	0.401%	0.414%	0.500%	572,549	520,707	538,056	554,903	669,929	516,155	438,103	416,178	409,211	454,035				454,035
1993	111,526,161	0.452%	0.410%	0.422%	0.434%	0.523%	504,172	457,106	471,028	484,562	583,681	546,517	462,442	438,082	429,672	475,656				475,656
1994	94,935,812	0.477%	0.431%	0.443%	0.455%	0.547%	453,016	409,588	421,007	432,121	519,438	576,879	486,781	459,986	450,132	497,277				497,277
1995	88,906,924	0.502%	0.453%	0.465%	0.476%	0.571%	446,576	402,756	413,046	423,074	507,601	607,241	511,120	481,890	470,593	518,898				518,898
1996	86,336,465	0.527%	0.475%	0.486%	0.497%	0.595%	455,348	409,736	419,336	428,705	513,464	637,603	535,459	503,794	491,053	540,518				540,518
1997	90,885,509	0.553%	0.496%	0.507%	0.517%		502,166	450,930	460,623	470,097		667,965	559,799	525,698	511,514					
1998	98,892,685	0.578%	0.518%	0.528%			571,244	511,991	522,089			698,327	584,138	547,602						
1999	103,725,336	0.603%	0.539%				625,210	559,386				728,689	608,477							
2000	112,828,077	0.628%					708,414					759,051								
2001	120,892,981																			
							9,826,684	8,402,140	8,219,432	8,057,020	9,299,353	9,867,661	7,910,197	7,118,827	6,649,679	7,026,739				
(6) Indicated Growth Factor:												1.004	0.941	0.866	0.825	0.756				
(7) Selected Growth Factor:												1.000	0.940	0.870	0.830	0.760				

II 000019

- 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			
1996	199,853,680		9,222,724,944			
1997	213,488,927	9,422,578,624	9,428,179,044	1.026	0.490	1.013
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
					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			
1996	106,793,617		3,082,926,369			
1997	107,352,129	3,189,719,986	3,184,319,520	0.950	0.730	0.963
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
					5yr average	0.980

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) = $1.000 + [(5) - 1.000] \times (6)$
- (12) = $1.000 + [(11) - (10)] / (9)$
- (13): From Page 3
- (14) = $1.000 + [(12) - 1.000] \times (13)$

II 000020

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 2001	Prior to 2000	Prior to 1999	Prior to 1998	Prior to 1997	Prior to 2001	Prior to 2000	Prior to 1999	Prior to 1998	Prior to 1997
1977	38,587,362					-0.018%					(6,792)					(18,321)
1978	49,815,665					0.006%				2,860	(17,538)				7,360	(36,642)
1979	57,472,939					-0.001%				(321)	6,599			(708)	14,721	(54,963)
1980	62,122,817					-0.025%				(15,655)	(694)			(38,034)	(1,416)	22,081
1981	77,677,866					-0.010%				(7,534)	(39,150)			(1,302)	17,838	(68,368)
1982	74,813,207					-0.019%				(14,512)	(56,559)			(1,672)	21,475	(79,016)
1983	85,766,376					-0.029%				(24,955)	(86,452)			(2,396)	29,543	(105,682)
1984	104,980,448					-0.039%				(40,728)	(132,275)			(3,520)	42,189	(147,837)
1985	137,155,127					-0.048%				(66,512)	(207,378)			(5,365)	62,993	(217,290)
1986	164,067,413					-0.058%				(95,476)	(289,414)			(7,335)	84,773	(288,806)
1987	198,799,980					-0.068%				(134,969)	(400,780)			(9,998)	114,132	(384,940)
1988	217,918,342					-0.078%				(169,085)	(494,238)			(12,178)	137,619	(460,319)
1989	231,139,216					-0.087%				(201,761)	(582,469)			(14,208)	159,238	(528,934)
1990	217,474,912					-0.097%				(210,926)	(602,839)			(14,583)	162,309	(535,947)
1991	183,795,164					-0.107%				(196,086)	(555,795)			(13,352)	147,725	(485,299)
1992	141,603,167					-0.116%				(164,807)	(463,891)			(11,078)	121,942	(398,820)
1993	126,882,200					-0.126%				(159,979)	(447,639)			(10,636)	116,550	(379,694)
1994	115,172,605					-0.136%				(156,386)	(435,351)			(10,298)	112,406	(364,927)
1995	102,074,365					-0.145%				(148,501)	(411,563)			(9,697)	105,482	(341,393)
1996	99,448,260					-0.155%				(154,325)	(426,035)			(10,003)	108,478	(350,116)
1997	104,079,057					-0.165%				(171,606)	(472,101)			(11,051)	119,504	
1998	128,207,506					-0.175%				(223,824)	(613,856)			(14,329)		
1999	126,734,409					-0.184%				(233,544)	(638,740)					
2000	150,930,797					-0.194%				(292,771)						
2001	152,687,652															
						(2,868,286)	(7,372,180)	(164,017)	1,684,354	(5,235,811)	(3,109,879)	(7,987,238)	(148,725)	1,545,694	(3,847,397)	
(6) Indicated Growth Factor:											1.084	1.083	0.907	0.918	0.735	
(7) Selected Growth Factor:											1.080	1.080	0.910	0.920	0.730	

II 000022

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 000023

Section II - Loss Development
 Subsection D - Adjustment for Escalation of Benefits
 7/1/2023

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	1.154	1.149	1.143	1.138	1.132
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	1.060	1.057	1.054	1.052	1.049

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	1.089	1.086	1.084	1.082	1.079

Selected Differential in Indemnity Loss Development at Month 420 1.045

Notes:

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

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

II 000024

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	1.80%
Escalated	Permanent Total	1,668,738	409,709	448,697	488,350	528,641	569,759	10.75%
Escalated	Other Indemnity							57.19%
Escalated	Total Indemnity							69.74%
Unescalated	Fatal	465,615	239,708	250,218	260,195	269,862	279,221	0.96%
Unescalated	Permanent Total	824,906	336,400	359,427	381,858	403,713	424,987	5.31%
Unescalated	Other Indemnity							57.19%
Unescalated	Total Indemnity							63.46%

Escalated or Unescalated (6)	Injury Type (7)	Estimated Losses at Month					
		Ultimate (8)	168	180	192 (9)	204	216
Escalated	Fatal	1,801	593	630	666	703	740
Escalated	Permanent Total	10,748	2,639	2,890	3,145	3,405	3,670
Escalated	Other Indemnity	57,190	57,190	57,190	57,190	57,190	57,190
Escalated	Total Indemnity	69,740	60,422	60,710	61,002	61,298	61,600
Unescalated	Fatal	959	494	515	536	556	575
Unescalated	Permanent Total	5,313	2,167	2,315	2,459	2,600	2,737
Unescalated	Other Indemnity	57,190	57,190	57,190	57,190	57,190	57,190
Unescalated	Total Indemnity	63,462	59,850	60,020	60,185	60,346	60,502

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 000025

Section II - Loss Development
 Subsection D - Adjustment for Escalation of Benefits
 7/1/2023

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	1.053	1.050	1.047	1.045	1.042
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	1.017	1.016	1.015

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	1.033	1.031	1.029	1.028	1.026

Selected Differential in Indemnity Loss Development at Month 420 1.000

Notes:

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

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

II 000026

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	1.80%
Escalated	Permanent Total	1,668,738	1,193,905	1,219,988	1,245,595	1,270,688	1,295,221	10.75%
Escalated	Other Indemnity							57.19%
Escalated	Total Indemnity							69.74%
Unescalated	Fatal	465,615	384,035	388,719	393,217	397,535	401,676	0.96%
Unescalated	Permanent Total	824,906	658,201	668,658	678,696	688,321	697,538	5.31%
Unescalated	Other Indemnity							57.19%
Unescalated	Total Indemnity							63.46%

Escalated or Unescalated (6)	Injury Type (7)	Estimated Losses at Month					
		Ultimate (8)	168	180	192 (9)	204	216
Escalated	Fatal	1,801	1,320	1,344	1,368	1,391	1,414
Escalated	Permanent Total	10,748	7,690	7,858	8,022	8,184	8,342
Escalated	Other Indemnity	57,190	57,190	57,190	57,190	57,190	57,190
Escalated	Total Indemnity	69,740	66,200	66,392	66,581	66,766	66,947
Unescalated	Fatal	959	791	800	810	819	827
Unescalated	Permanent Total	5,313	4,239	4,307	4,371	4,433	4,493
Unescalated	Other Indemnity	57,190	57,190	57,190	57,190	57,190	57,190
Unescalated	Total Indemnity	63,462	62,220	62,297	62,371	62,442	62,510

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	2.810	1.586	1.245	1.093	1.035	1.017	1.008	1.008	1.004	1.003	1.005	1.005	1.003	1.001	1.003	1.003	1.003	1.003	1.001	1.002	1.036	1.045
Cumulative	7.261	2.584	1.629	1.308	1.197	1.157	1.138	1.129	1.119	1.115	1.112	1.107	1.101	1.098	1.097	1.094	1.091	1.088	1.085	1.084	1.083	1.045
<u>(2) Medical Paid Losses</u>																						
2 Yr Average	2.033	1.141	1.052	1.025	1.012	1.011	1.010	1.008	1.008	1.008	1.005	1.004	1.004	1.007	1.004	1.004	1.004	1.006	1.005	1.009	1.073	1.000
Cumulative	2.991	1.471	1.290	1.226	1.196	1.182	1.170	1.158	1.149	1.140	1.131	1.125	1.120	1.116	1.107	1.103	1.098	1.094	1.088	1.082	1.073	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 000027

II 000028

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	24			Evaluated at Month	144	
2016	63,518	184,424	2.903	2006	319,770	320,859	1.003
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	69,349	198,237	2.859	2009	313,811	315,868	1.007
2020	58,718	162,186	2.762	2010	316,215	317,073	1.003
2 Yr Average			2.810	2 Yr Average			1.005
5 Yr Average			2.899	5 Yr Average			1.004
Selected Average			2.810	Selected Average			1.005
	24	36			144	156	
2015	191,261	304,299	1.591	2005	335,453	336,525	1.003
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	198,237	324,064	1.635	2009	315,868	319,090	1.010
2 Yr Average			1.586	2 Yr Average			1.005
5 Yr Average			1.581	5 Yr Average			1.004
Selected Average			1.586	Selected Average			1.005
	36	48			156	168	
2014	266,718	330,894	1.241	2004	328,449	329,222	1.002
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	393,053	1.269	2008	343,535	344,098	1.002
2 Yr Average			1.245	2 Yr Average			1.003
5 Yr Average			1.233	5 Yr Average			1.003
Selected Average			1.245	Selected Average			1.003
	48	60			168	180	
2013	326,151	355,850	1.091	2003	306,503	306,684	1.001
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
2 Yr Average			1.093	2 Yr Average			1.001
5 Yr Average			1.085	5 Yr Average			1.002
Selected Average			1.093	Selected Average			1.001
	60	72			180	192	
2012	319,533	333,712	1.044	2002	276,987	277,454	1.002
2013	355,850	366,578	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	397,632	1.046	2006	323,161	323,589	1.001
2 Yr Average			1.035	2 Yr Average			1.003
5 Yr Average			1.039	5 Yr Average			1.002
Selected Average			1.035	Selected Average			1.003
	72	84			192	204	
2011	357,278	359,932	1.007	2001	265,544	265,677	1.001
2012	333,712	342,179	1.025	2002	277,454	278,028	1.002
2013	366,578	369,905	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	419,700	1.024	2005	339,874	340,817	1.003
2 Yr Average			1.017	2 Yr Average			1.003
5 Yr Average			1.015	5 Yr Average			1.002
Selected Average			1.017	Selected Average			1.003
	84	96			204	216	
2010	307,707	312,030	1.014	2000	257,605	257,886	1.001
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	369,905	373,064	1.009	2003	307,619	308,158	1.002
2014	378,793	381,932	1.008	2004	331,794	333,199	1.004
2 Yr Average			1.008	2 Yr Average			1.003
5 Yr Average			1.011	5 Yr Average			1.002
Selected Average			1.008	Selected Average			1.003
	96	108			216	228	
2009	307,661	310,150	1.008	1999	224,093	224,664	1.003
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	373,064	376,142	1.008	2003	308,158	309,349	1.004
2 Yr Average			1.008	2 Yr Average			1.003
5 Yr Average			1.007	5 Yr Average			1.002
Selected Average			1.008	Selected Average			1.003
	108	120			228	240	
2008	339,415	340,444	1.003	1998	228,374	228,823	1.002
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
2 Yr Average			1.004	2 Yr Average			1.001
5 Yr Average			1.005	5 Yr Average			1.001
Selected Average			1.004	Selected Average			1.001
	120	132			240	252	
2007	330,464	331,941	1.004	1997	195,833	196,048	1.001
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
2 Yr Average			1.003	2 Yr Average			1.002
5 Yr Average			1.004	5 Yr Average			1.001
Selected Average			1.003	Selected Average			1.002

Notes:
 Losses from Aggregate Financial Data.

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Accident Year Aggregate Financial Data Calculation of Medical Paid Loss Development Factors

Accident Year	Losses (in 000's) Evaluated at Month		Loss Development Factor	Accident Year	Losses (in 000's) Evaluated at Month		Loss Development Factor
	12	24			132	144	
2016	78,916	152,508	1.933	2006	161,062	162,269	1.007
2017	77,962	149,117	1.913	2007	178,143	180,406	1.013
2018	81,842	164,765	2.013	2008	169,256	170,070	1.005
2019	81,021	153,991	1.901	2009	155,355	155,882	1.003
2020	57,416	124,329	2.165	2010	164,551	165,660	1.007
2 Yr Average			2.033	2 Yr Average			1.005
5 Yr Average			1.985	5 Yr Average			1.007
Selected Average			2.033	Selected Average			1.005
	24	36			144	156	
2015	149,460	172,005	1.151	2005	171,085	172,517	1.008
2016	152,508	173,305	1.136	2006	162,269	163,300	1.006
2017	149,117	172,972	1.160	2007	180,406	182,605	1.012
2018	164,765	185,418	1.125	2008	170,070	170,712	1.004
2019	153,991	178,020	1.156	2009	155,882	156,595	1.005
2 Yr Average			1.141	2 Yr Average			1.004
5 Yr Average			1.146	5 Yr Average			1.007
Selected Average			1.141	Selected Average			1.004
	36	48			156	168	
2014	166,388	176,609	1.061	2004	169,194	170,437	1.007
2015	172,005	181,904	1.058	2005	172,517	173,399	1.005
2016	173,305	182,074	1.051	2006	163,300	164,548	1.008
2017	172,972	181,492	1.049	2007	182,605	183,631	1.006
2018	185,418	195,440	1.054	2008	170,712	171,204	1.003
2 Yr Average			1.052	2 Yr Average			1.004
5 Yr Average			1.055	5 Yr Average			1.006
Selected Average			1.052	Selected Average			1.004
	48	60			168	180	
2013	169,397	172,246	1.017	2003	156,855	157,844	1.006
2014	176,609	181,971	1.030	2004	170,437	171,751	1.008
2015	181,904	185,740	1.021	2005	173,399	174,766	1.008
2016	182,074	184,751	1.015	2006	164,548	165,808	1.008
2017	181,492	188,059	1.036	2007	183,631	184,941	1.007
2 Yr Average			1.025	2 Yr Average			1.007
5 Yr Average			1.024	5 Yr Average			1.007
Selected Average			1.025	Selected Average			1.007
	60	72			180	192	
2012	160,368	162,390	1.013	2002	140,039	141,667	1.012
2013	172,246	174,020	1.010	2003	157,844	158,768	1.006
2014	181,971	185,814	1.021	2004	171,751	172,916	1.007
2015	185,740	187,912	1.012	2005	174,766	175,685	1.005
2016	184,751	186,940	1.012	2006	165,808	166,369	1.003
2 Yr Average			1.012	2 Yr Average			1.004
5 Yr Average			1.014	5 Yr Average			1.007
Selected Average			1.012	Selected Average			1.004
	72	84			192	204	
2011	173,437	175,011	1.009	2001	120,897	121,504	1.005
2012	162,390	164,044	1.010	2002	141,667	142,877	1.009
2013	174,020	175,131	1.006	2003	158,768	159,573	1.005
2014	185,814	187,609	1.010	2004	172,916	173,668	1.004
2015	187,912	190,099	1.012	2005	175,685	176,281	1.003
2 Yr Average			1.011	2 Yr Average			1.004
5 Yr Average			1.009	5 Yr Average			1.005
Selected Average			1.011	Selected Average			1.004
	84	96			204	216	
2010	157,719	159,875	1.014	2000	119,570	121,108	1.013
2011	175,011	177,298	1.013	2001	121,504	121,967	1.004
2012	164,044	166,284	1.014	2002	142,877	144,522	1.012
2013	175,131	177,051	1.011	2003	159,573	160,537	1.006
2014	187,609	189,256	1.009	2004	173,668	174,066	1.002
2 Yr Average			1.010	2 Yr Average			1.004
5 Yr Average			1.012	5 Yr Average			1.007
Selected Average			1.010	Selected Average			1.004
	96	108			216	228	
2009	152,678	153,722	1.007	1999	114,688	115,518	1.007
2010	159,875	161,661	1.011	2000	121,108	122,342	1.010
2011	177,298	178,744	1.008	2001	121,967	122,357	1.003
2012	166,284	167,709	1.009	2002	144,522	145,485	1.007
2013	177,051	178,300	1.007	2003	160,537	161,295	1.005
2 Yr Average			1.008	2 Yr Average			1.006
5 Yr Average			1.008	5 Yr Average			1.006
Selected Average			1.008	Selected Average			1.006
	108	120			228	240	
2008	167,309	168,204	1.005	1998	104,688	105,331	1.006
2009	153,722	154,593	1.006	1999	115,518	116,058	1.005
2010	161,661	163,310	1.010	2000	122,342	123,944	1.013
2011	178,744	180,299	1.009	2001	122,357	122,809	1.004
2012	167,709	169,059	1.008	2002	145,485	146,361	1.006
2 Yr Average			1.008	2 Yr Average			1.005
5 Yr Average			1.008	5 Yr Average			1.007
Selected Average			1.008	Selected Average			1.005
	120	132			240	252	
2007	175,853	178,143	1.013	1997	96,118	96,586	1.005
2008	168,204	169,256	1.006	1998	105,331	105,772	1.004
2009	154,593	155,355	1.005	1999	116,058	116,645	1.005
2010	163,310	164,551	1.008	2000	123,944	125,658	1.014
2011	180,299	181,777	1.008	2001	122,809	123,251	1.004
2 Yr Average			1.008	2 Yr Average			1.009
5 Yr Average			1.008	5 Yr Average			1.006
Selected Average			1.008	Selected Average			1.009

Notes:
 Losses from Aggregate Financial Data.

PREMIUMS

Background

To derive a rate indication, this filing evaluates the adequacy of the current rate level by comparing a historical loss, Loss Adjustment Expense (“LAE”), and fixed expense ratio to a permissible loss, LAE, and fixed expense ratio. 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 are the premiums related to the portion of the policy year that has already expired. Standard premium is defined as the premium resulting from standard rating procedures, using WCRIBMA rates, after the application of 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 impacted 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 2018 and policy year 2019 are calculated in Section III-A.¹

¹ As described in Section I, this Rate Filing utilizes policy years 2018 and 2019, evaluated as of December 31, 2021, to temper the distortive impact of COVID-19 and use data more predictive of the prospective post July 2023 environment. Policy year 2018 data consist of premium and loss experience generated by policies written during 2018. Policy year 2019 data consist of premium and loss experience generated by policies written during 2019.

III 000002

Policy years 2018 and 2019 earned standard and adjusted ARAP premiums are used in the indication and are brought to the current rate level in Section III.

Summary

Initial workers' compensation insurance premiums are by necessity estimates. They are typically a function of the employer's payroll during the time the policy is in effect and consequently are 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.

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 which gave 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,

III 000003

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 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

III 000004

the impact of these programs to the level anticipated in the current rates. Adjustment factors applicable to policy year 2018 and policy year 2019 are calculated in Section III-B.

Consistent with past practice, the WCRIBMA uses the historical experience modification anticipated in the rates in the derivation of the adjustment factor. This is appropriate as the intention 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 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 during policy year 2018 and policy year 2019 were not precisely in balance with the ARAP surcharge anticipated by the offset in the rates.

An adjustment for the Construction Credit offset is necessary to reflect the fact that the extent to which Construction Credits were actually applied in the data for policy year 2018 and policy year 2019 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 2018 and policy year 2019 premiums so that the one-time loadings for recoupment of Insolvency Fund assessments are excluded.

III 000005

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 premium is not written evenly throughout the year, and a disproportionate number of policies take effect on January 1 and July 1. To take this into account, the on-level factors derived in this filing use rate level weights based on USR data for the historical period. Premium on-level factors are calculated in Section III-D.

Premium Adjustment Factor

Premium adjustment factors are intended to bring historical standard premium data to the level applicable for a different policy period. 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 000006

Section III - Premiums
 Subsection A - Summary
 7/1/2023

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 12/31/2021	
	2018	2019
(1) Standard Earned Premium plus Adjusted ARAP Premium	1,257,191,166	1,220,866,284
(2) Adjustment for Experience and Merit Rating, ARAP, and Construction Credit Off-balance	1.038	1.034
(3) Adjustment Factor to Remove the Impact of Loading for Recoupment of Insolvency Fund Assessments	1.000	0.997
(4) Composite Adjustment Factor = (2) x (3)	1.039	1.032
(5) Adjusted Standard Earned Premium plus ARAP = (1) x (4)	1,305,632,842	1,259,536,374
(6) Cumulative Premium Development Factor to Ultimate (see Page 2)	1.000	0.999
(7) Rate On-Level Factor	0.834	0.900
(8) Factor to Remove Expense Constant	0.962	0.960
(9) Adjusted On-Level Standard Earned Premium plus Adjusted ARAP at Ultimate = (5) x (6) x (7) x (8)	1,046,411,348	1,086,333,438

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	1.012	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	1.011	0.999	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
5 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

Notes:
 Page 3

III 000007

III 000008

Section III - Premiums
Subsection A - Summary
7/1/2023

Section III - A
Exhibit 1
Page 3

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	
2015	1,080,427	1,088,524	1.007	2006	998,598	998,597	1.000
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	1,172,243	1,193,160	1.018	2009	768,933	768,933	1.000
2019	1,144,335	1,151,646	1.006	2010	842,867	842,867	1.000
2 yr Average			1.012	2 yr Average			1.000
5 yr Average			1.013	5 yr Average			1.000
	36	48			144	156	
2014	1,028,781	1,027,787	0.999	2005	937,360	937,360	1.000
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	1,193,160	1,191,885	0.999	2009	768,933	768,933	1.000
2 yr Average			1.000	2 yr Average			1.000
5 yr Average			0.999	5 yr Average			1.000
	48	60			156	168	
2013	976,011	975,743	1.000	2004	900,201	900,201	1.000
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	1,204,751	1.000	2008	806,640	806,640	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	
2012	928,413	928,309	1.000	2003	897,175	897,175	1.000
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	1,131,067	1.000	2007	981,963	981,963	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	
2011	913,952	913,907	1.000	2002	838,890	838,885	1.000
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	1,087,272	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
	84	96			192	204	
2010	842,644	842,668	1.000	2001	723,089	723,086	1.000
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	1,027,235	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
	96	108			204	216	
2009	768,918	768,910	1.000	2000	664,304	664,304	1.000
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
2 yr Average			1.000	2 yr Average			1.000
5 yr Average			1.000	5 yr Average			1.000
	108	120			216	228	
2008	806,681	806,636	1.000	1999	679,445	679,445	1.000
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
2 yr Average			1.000	2 yr Average			1.000
5 yr Average			1.000	5 yr Average			1.000
	120	132			228	240	
2007	981,971	981,967	1.000	1998	707,400	707,400	1.000
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
2 yr Average			1.000	2 yr Average			1.000
5 yr Average			1.000	5 yr Average			1.000
					240	252	
				1997	717,369	717,369	1.000
				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
				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)				2018 (9)	2019 (10)	2019 (11)	2020 (12)	2021 (13)
7/1/2016	1.000	0.840	-0.020	0.160	0.997	0.052	-0.042	56.8%		11.5%		
7/1/2018	1.000	0.860	-0.021	0.140	0.997	0.051	-0.033	43.2%	100.0%	88.5%	87.3%	11.2%
7/1/2020	1.000	0.870	-0.022	0.130	0.997	0.053	-0.033				12.7%	88.8%
7/1/2022	1.000	0.870	-0.022	0.130	0.997	0.054	-0.037					

	Policy Year		Calendar Year Earned		
	2018	2019	2019	2020	2021
(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	0.051	0.051	0.051	0.053
(16) Percentage of Premium for CCPAP Eligible Classes	0.381	0.374	0.377	0.378	0.378
(17) Weighted Average Construction Credit anticipated in rates	-0.015	-0.012	-0.013	-0.012	-0.012
(18) Combined Weighted Average impact anticipated in rates = (14) x [1.0 + (15)] x [1.0 + (17)]	1.033	1.035	1.035	1.035	1.037
(19) Manual Premium	1,229,820,608	1,181,367,273	1,205,593,941	1,170,751,620	
(20) Standard Earned Premium at DSR Level, excluding Expense Constants	1,169,114,986	1,127,494,260	1,148,304,623	1,119,945,745	
(21) ARAP Premium	51,722,114	51,749,007	51,735,561	51,463,946	
(22) Adjustment Factor to Adjust from Company Level to DSR Level Premium	1.054	1.055	1.056	1.059	
(23) Standard Earned Premium plus Adjusted ARAP = (20) + [(21) x (22)]	1,223,628,794	1,182,081,698	1,202,917,272	1,174,444,805	
(24) Combined Actual impact = (23) / (19)	0.995	1.001	0.998	1.003	1.003
(25) Adjustment for Experience and Merit Rating, ARAP, and Construction Credit Off-balance = (18) / (24)	1.038	1.034	1.037	1.032	1.033

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 2021 uses CY 2020 values.
 (22): Section III-B, Exhibit 2.

III 00009

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

	Policy Year valued as of 12/31/2021		Calendar Years		
	2018	2019	2019	2020	2021
(1) Aggregate Financial: Standard Earned Premium at DSR Level	1,203,082,168	1,166,107,362	1,186,600,053	1,157,016,335	1,129,373,934
(2) Aggregate Financial: Standard Earned Premium at Company Level	1,141,471,409	1,105,472,250	1,124,087,920	1,092,580,780	1,078,894,878
(3) Aggregate Financial: ARAP Premium	51,338,035	51,911,574	52,653,640	50,924,455	49,558,783
(4) Adjustment Factor to Adjust from Company Level to DSR Level Premium = (1) / (2)	1.054	1.055	1.056	1.059	1.047
(5) Adjusted ARAP Premium = (3) x (4)	54,108,998	54,758,922	55,581,784	53,927,753	51,877,527
(6) Standard Earned Premium plus adjusted ARAP Premium = (1) + (5)	1,257,191,166	1,220,866,284	1,242,181,837	1,210,944,088	1,181,251,461

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

III 000010

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		
		2018 (3)	2019 (4)	2019 (5)	2020 (6)	2021 (7)
7/1/2016	-0.23%	56.8%		11.5%		
7/1/2018	0.26%	43.2%	100.0%	88.5%	87.3%	11.2%
7/1/2020	-0.54%				12.7%	88.8%
7/1/2022						

Policy Year		Calendar Year Earned		
2018	2019	2019	2020	2021

(8) Weighted Average Loading for Recoupment of Insolvency Fund Assessment in the Rates = Sum [(2) x (3) through (7)]	-0.0002	0.0026	0.0020	0.0016	-0.0045
(9) Adjustment Factor to Remove the Impact of Loading for Recoupment of Insolvency Fund Assessments = [1.0 - (8)]	1.000	0.997	0.998	0.998	1.005

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 000011

III 000012

Section III - Premiums
 Subsection D - Rate On-Level Factors
 7/1/2023

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	
				2018 (5)	2019 (6)
7/1/2016		1.000	0.784	56.8%	
7/1/2018	0.871	0.871	0.900	43.2%	100.0%
7/1/2020	0.932	0.812	0.965		
7/1/2022	0.965	0.784	1.000		

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

Policy Year	
2018	2019
0.834	0.900

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.

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Section III - Premiums
 Subsection D - Premium On-Level Factors
 7/1/2023

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)
		7/1/2016 (3)	7/1/2018 (4)	7/1/2020 (5)	
2018	1	211,618,191			211,618,191
2018	2	79,729,939			79,729,939
2018	3	96,925,852			96,925,852
2018	4	117,422,496			117,422,496
2018	5	97,660,184			97,660,184
2018	6	116,300,259			116,300,259
2018	7		137,300,458		137,300,458
2018	8		72,471,161		72,471,161
2018	9		87,067,871		87,067,871
2018	10		89,959,470		89,959,470
2018	11		69,436,633		69,436,633
2018	12		92,054,482		92,054,482
2018	Total	719,656,921	548,290,075		1,267,946,997

2019	1		209,444,814		209,444,814
2019	2		76,081,091		76,081,091
2019	3		90,357,289		90,357,289
2019	4		110,705,277		110,705,277
2019	5		87,239,996		87,239,996
2019	6		108,150,746		108,150,746
2019	7		135,374,810		135,374,810
2019	8		72,001,601		72,001,601
2019	9		87,280,652		87,280,652
2019	10		90,474,301		90,474,301
2019	11		71,172,858		71,172,858
2019	12		88,575,313		88,575,313
2019	Total		1,226,858,747		1,226,858,747

2020	1		196,719,904		196,719,904
2020	2		75,047,845		75,047,845
2020	3		84,751,546		84,751,546
2020	4		115,883,167		115,883,167
2020	5		86,981,504		86,981,504
2020	6		114,262,605		114,262,605
2020	7			128,388,681	128,388,681
2020	8			67,497,515	67,497,515
2020	9			89,255,957	89,255,957
2020	10			94,232,629	94,232,629
2020	11			68,189,682	68,189,682
2020	12			90,194,644	90,194,644
2020	Total		673,646,571	537,759,107	1,211,405,678

Rate Level Effective Date (7)	Policy Year Weights		
	2018 (8)	2019 (9)	2020 (10)
7/1/2016	56.8%		
7/1/2018	43.2%	100.0%	55.6%
7/1/2020			44.4%

Notes:

(3),(4),(5): Unit Statistical Data. PY 2020 based on PY 2019 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 000014

Section III - Premiums
 Subsection D - Premium On-Level Factors
 7/1/2023

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)
			7/1/2016 (4)	7/1/2018 (5)	7/1/2020 (6)	
2017	12	2019	2			2
2018	1	2019	2,288,187			2,288,187
2018	2	2019	8,174,276			8,174,276
2018	3	2019	17,953,054			17,953,054
2018	4	2019	30,735,672			30,735,672
2018	5	2019	32,960,177			32,960,177
2018	6	2019	51,011,840			51,011,840
2018	7	2019		68,919,012		68,919,012
2018	8	2019		43,431,970		43,431,970
2018	9	2019		60,518,364		60,518,364
2018	10	2019		68,729,784		68,729,784
2018	11	2019		58,955,094		58,955,094
2018	12	2019		88,465,134		88,465,134
2019	1	2019		207,250,224		207,250,224
2019	2	2019		68,207,783		68,207,783
2019	3	2019		73,331,787		73,331,787
2019	4	2019		81,814,746		81,814,746
2019	5	2019		57,243,810		57,243,810
2019	6	2019		61,331,347		61,331,347
2019	7	2019		67,781,707		67,781,707
2019	8	2019		28,939,667		28,939,667
2019	9	2019		26,706,995		26,706,995
2019	10	2019		21,322,263		21,322,263
2019	11	2019		10,788,873		10,788,873
2019	12	2019		3,512,839		3,512,839
Total		2019	143,123,208	1,097,251,399		1,240,374,606

2018	12	2020				0
2019	1	2020		2,203,368		2,203,368
2019	2	2020		7,876,006		7,876,006
2019	3	2020		17,029,763		17,029,763
2019	4	2020		28,897,376		28,897,376
2019	5	2020		30,002,601		30,002,601
2019	6	2020		46,829,862		46,829,862
2019	7	2020		67,610,923		67,610,923
2019	8	2020		43,069,848		43,069,848
2019	9	2020		60,585,712		60,585,712
2019	10	2020		69,164,254		69,164,254
2019	11	2020		60,393,198		60,393,198
2019	12	2020		85,073,653		85,073,653
2020	1	2020		194,613,599		194,613,599
2020	2	2020		67,354,793		67,354,793
2020	3	2020		69,003,101		69,003,101
2020	4	2020		85,658,319		85,658,319
2020	5	2020		57,000,338		57,000,338
2020	6	2020		64,692,797		64,692,797
2020	7	2020			64,056,949	64,056,949
2020	8	2020			26,952,857	26,952,857
2020	9	2020			27,286,273	27,286,273
2020	10	2020			22,047,523	22,047,523
2020	11	2020			10,009,985	10,009,985
2020	12	2020			3,607,193	3,607,193
Total		2020		1,057,059,511	153,960,780	1,211,020,290

Rate Level Effective Date (8)	Calendar Year Earned Weights	
	2019 (9)	2020 (10)
7/1/2016	11.5%	
7/1/2018	88.5%	87.3%
7/1/2020		12.7%

Notes:

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

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

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

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Section III - Premiums
 Subsection D - Premium On-Level Factors
 7/1/2023

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)
			7/1/2016 (4)	7/1/2018 (5)	7/1/2020 (6)	
2019	12	2021		17		17
2020	1	2021		2,145,954		2,145,954
2020	2	2021		7,699,180		7,699,180
2020	3	2021		15,753,908		15,753,908
2020	4	2021		30,229,783		30,229,783
2020	5	2021		29,980,875		29,980,875
2020	6	2021		49,564,219		49,564,219
2020	7	2021			64,317,347	64,317,347
2020	8	2021			40,536,495	40,536,495
2020	9	2021			61,952,099	61,952,099
2020	10	2021			72,164,110	72,164,110
2020	11	2021			58,162,837	58,162,837
2020	12	2021			86,556,656	86,556,656
2021	1	2021			189,821,297	189,821,297
2021	2	2021			65,693,045	65,693,045
2021	3	2021			67,318,832	67,318,832
2021	4	2021			83,557,811	83,557,811
2021	5	2021			55,609,339	55,609,339
2021	6	2021			63,110,842	63,110,842
2021	7	2021			67,036,625	67,036,625
2021	8	2021			28,212,445	28,212,445
2021	9	2021			28,559,491	28,559,491
2021	10	2021			23,076,527	23,076,527
2021	11	2021			10,477,396	10,477,396
2021	12	2021			3,775,707	3,775,707
Total		2021		135,373,937	1,069,938,899	1,205,312,836

Rate Level Effective Date (8)	Calendar Year Earned Weights
	2021 (9)
7/1/2016	
7/1/2018	11.2%
7/1/2020	88.8%

Notes:

(4),(5),(6): Unit Statistical Data. PY 2021 based on PY 2020 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)]

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Section III - Premiums
Subsection E - Premium Adjustment Factors
7/1/2023

Section III - E
Exhibit 1

Calculation of Premium Adjustment Factor
PY 2019 to Prospective Effective Period 7/1/2023 - 6/30/2024

(1)	Wage Trend from PY 2019 to Prospective Effective Period 7/1/2023 - 6/30/2024	1.283
(2)	Exposure Growth	1.034
(3)	Rate On-Level Factor	0.900
(4)	Overall Indicated Rate Change for Policies Effective 7/1/2023	0.960
(5)	Adjustment Factor to Balance Experience Rating, ARAP, and Construction Credits	1.034
(6)	Impact of Change in Indicated Loading for Recoupment of Insolvency Fund Assessments	0.997
(7)	Adjustment Factor = (1) x (2) x (3) x (4) x (5) x (6)	1.183
(8)	Selected Factor	1.18

Notes:

(1):	Statewide Average Weekly Wage for PY 2019 (Section V-G, Exhibit 1)	1,544.09
	Statewide Average Weekly Wage for 10/1/2022, based on data period 4/1/21 to 4/1/22 (Section V-G, Exhibit 1)	1,765.34
	Statewide Average Weekly Wage at 7/1/2024 (using wage trend of 4.3%, Section V-A, Exhibit 1)	1,981.77
(2):	Exposure growth from PY 2019 to Prospective Effective Period 7/1/2023 - 6/30/2024 (Section V-H, Exhibit 3)	
(3):	Section III-D, Exhibit 1.	
(4):	Section I-B, Exhibit 1.	
(5):	Exhibit 2.	
(6):	PY 2019 factor to load for Recoupment of Insolvency Fund (Section III-C, Exhibit 1: [1.0 + (8)]).	1.003
	Policy Effective factor to load for Recoupment of Insolvency Fund Assessments (Section IX-K, Exhibit 5, Page 1).	1.000

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Section III - Premiums
Subsection E - Premium Adjustment Factors
7/1/2023

Section III - E
Exhibit 2

Factor to Balance Experience Rating, ARAP, and Construction Credit

Beginning Period - PY 2019

(1)	Anticipated Impact on Manual Rates of Experience Rating, ARAP, and Construction Credits	1.035
(2)	Actual Impact on Manual Rates of Experience Rating, ARAP, and Construction Credits	1.001
(3)	Ratio of Anticipated to Actual = (1) / (2)	1.034

Ending Period - Prospective Effective Period 7/1/2023 - 6/30/2024

(4)	Anticipated Impact on Manual Rates of Experience Rating, ARAP, and Construction Credits	1.037
(5)	Actual is Assumed to be equal to the Anticipated, Since the Actual Impact has yet to be Determined	1.037
(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)	1.034

Notes:

(1),(2): PY 2019, Section III-B, Exhibit 1.

(4),(5): Prospective Effective Period, Section IX-K, Exhibit 1.

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BENEFIT CHANGE ADJUSTMENTS

In Section IV, we calculate benefit change adjustment factors that are used in Sections I, II, V, VIII, IX, X, XI, and XII of the rate filing. Benefit change adjustment factors are used 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 2018 and 2019 to the July 1, 2023 benefit level, and additional adjustments to bring losses from the July 1, 2023 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 1st 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 (\$1,694.24/\$1,487.78) than the prior year. This large jump in the SAWW was largely due to the disproportionate impact that the shutdowns had on job losses in lower wage service industries such as hospitality, retail and restaurants, as compared to higher wage paying

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professions which continued remotely during mandated shutdowns. The latest SAWW of \$1,765.34, effective 10/1/2022, however, is only 4.2% higher than the prior year. The rate of change thus appears to have normalized since 2021's uniquely rapid increase as would be expected with the return of more diverse economy. 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, and utilizes a SAWW trend factor of 4.3% as shown in Section IV - D, Exhibit 3.

In Section IV-B, we display in detail the derivation of our estimates of the effects of the changes in the SAWW announced in 2022 and projected for 2023 and 2024. 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, and Section IV-F details the USL&HW benefit level changes.

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 are dependent on changes in the SAWW. In Massachusetts, SAWW changes are announced every

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October. Indemnity benefits are generally determined as a percentage of the SAWW, subject to maximum and minimum amounts.

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, 2022, and the projected SAWW changes of October 1, 2023 and October 1, 2024. Exhibit 1, pages 1 and 2, estimate 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 plus burial payments, both of which are functions of the SAWW.¹ 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 not only the time value of money, but also the possible occurrence

¹ 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.

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of a contingent event that would cause the payment stream to cease. Examples of contingent events that would affect dependent survivor benefits for workers' compensation include death or remarriage of the dependent survivor. The WCRIBMA estimated annuity values using the model that underlies the currently approved pension tables in the Massachusetts' Workers' Compensation Statistical Plan which assume an interest rate of 3.5% and COLA adjustments of 1.6%. 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 either the application of the statutory minimum benefit, the application of the statutory maximum benefit, or a benefit that falls somewhere between the minimum and the maximum. As in the 2022 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 promulgated SAWW. Therefore, changes to the SAWW affect the average

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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.

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 a wage earning capacity at a level below his pre-injury wage. Different benefit structures apply to the two periods. 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.

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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.

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.

Section IV-F – Effects of USL&HW Benefit Changes

Section IV-F contains the derivation of benefit change adjustment factors related to claims paid or payable under the USL&HW Act. The calculations are analogous to those for state workers' compensation benefits in Section IV-A. The assumed changes in benefit levels used in Section IV-F are provided by NCCI.

IV 000007

Section IV - Benefit Change Adjustments
 Subsection A - Summary
 7/1/2023

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
1/1/2023	Prosp. Eff. Period					1.015	1.000	
PY 2018	1/1/2023					1.075	1.000	
PY 2019	1/1/2023					1.065	1.000	
PY 2005	Prosp. Eff. Period	1.128	1.152	1.263	1.094	1.201	1.032	
PY 2006	Prosp. Eff. Period	1.122	1.144	1.244	1.090	1.188	1.032	
PY 2007	Prosp. Eff. Period	1.116	1.134	1.227	1.085	1.176	1.032	
PY 2008	Prosp. Eff. Period	1.109	1.125	1.209	1.080	1.162	1.024	
PY 2009	Prosp. Eff. Period	1.107	1.122	1.203	1.078	1.158	1.002	
PY 2010	Prosp. Eff. Period	1.108	1.123	1.204	1.078	1.159	1.000	
PY 2011	Prosp. Eff. Period	1.104	1.117	1.194	1.076	1.151	1.000	
PY 2012	Prosp. Eff. Period	1.099	1.110	1.181	1.072	1.141	1.000	
PY 2013	Prosp. Eff. Period	1.096	1.107	1.175	1.071	1.137	1.000	
PY 2014	Prosp. Eff. Period	1.091	1.103	1.168	1.068	1.130	1.000	
PY 2015	Prosp. Eff. Period	1.079	1.096	1.156	1.065	1.121	1.000	
PY 2016	Prosp. Eff. Period	1.073	1.089	1.144	1.060	1.112	1.000	
PY 2017	Prosp. Eff. Period	1.066	1.081	1.131	1.055	1.102	1.000	
PY 2018	Prosp. Eff. Period	1.059	1.072	1.117	1.049	1.091	1.000	
PY 2019	Prosp. Eff. Period	1.052	1.063	1.104	1.044	1.081	1.000	
PY 2020	Prosp. Eff. Period	1.043	1.053	1.088	1.036	1.068	1.000	
PY 2018	CPY 2019_07	1.011	1.013	1.020	1.009		1.000	
PY 2019	CPY 2020_07	1.016	1.020	1.031	1.014		1.000	
PY 2020	CPY 2021_07	1.026	1.032	1.054	1.022		1.000	
CPY 2019_07	Prosp. Eff. Period							1.050
CPY 2020_07	Prosp. Eff. Period							1.037
CPY 2021_07	Prosp. Eff. Period							1.017
CPY 2008_09	Prosp. Eff. Period							1.105
Prior Eff. Period	Prosp. Eff. Period					1.040	1.000	1.027

Notes:

1/1/2023 refers to a point in time. All other time periods refer to Policy Years.

Example: PY 2012 to Prosp. Eff. Period for Permanent Partial = $1.181 = 1.276 / 1.080$,

where 1.276 is the Index Factor for Prosp. Eff. Period and 1.08 is the Index Factor for PY 2012 for Indemnity Permanent Partial, from Exhibit 2.

Benefit Level Changes and Weights

Injury Type: Total Indemnity																								
Date of Change	10/1/2004	10/1/2005	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	
Benefit Level Change	1.000	1.011	1.011	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 Benefit	1.000	1.011	1.022	1.033	1.046	1.046	1.046	1.044	1.055	1.064	1.066	1.073	1.074	1.083	1.091	1.102	1.113	1.124	1.137	1.179	1.193	1.207	1.221	
Time Period																								
PY 2005	0.336	0.635	0.029																				1.008	
PY 2006		0.340	0.632	0.028																				1.019
PY 2007			0.343	0.630	0.027																			1.030
PY 2008				0.350	0.417	0.209	0.025																	1.041
PY 2009					0.055	0.290	0.025	0.026																1.046
PY 2010							0.332	0.641	0.027															1.045
PY 2011								0.343	0.632	0.025														1.051
PY 2012									0.341	0.634	0.025													1.061
PY 2013										0.340	0.635	0.025												1.065
PY 2014											0.340	0.408	0.227	0.025										1.071
PY 2015												0.044	0.295	0.636	0.024									1.080
PY 2016														0.340	0.636	0.025								1.089
PY 2017															0.341	0.635	0.025							1.099
PY 2018																0.335	0.640	0.025						1.110
PY 2019																	0.348	0.629	0.023					1.120
PY 2020																		0.335	0.640	0.025				1.134
CPY 2019_07																			0.690	0.272	0.025			1.127
CPY 2020_07																			0.037	0.691	0.272			1.148
CPY 2021_07																				0.037	0.691	0.272		1.182
CPY 2008_09				0.004	0.181	0.426	0.390																	1.046
Prior Eff. Period																				0.037	0.690	0.273		1.197
Prosp. Eff. Period																					0.037	0.691	0.272	1.211
1/1/2023																					1.000			1.193

Indemnity All Injury Types - Average Benefit Level for Current Policy Period, Estimated at 7/1/2022 (using benefit level projections from prior filing).																						
Date of Change	10/1/2004	10/1/2005	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
Benefit Level Change	1.000	1.011	1.011	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	0.984	1.010
Cumulative Level Change	1.000	1.011	1.022	1.033	1.046	1.046	1.046	1.044	1.055	1.064	1.066	1.073	1.074	1.083	1.091	1.102	1.113	1.124	1.137	1.179	1.161	1.172

Weighted Average Benefit Level
1.164

Medical All Injury Types - Average Benefit Level for Current Policy Period, Estimated at 7/1/2022 (using benefit level projections from prior filing).																						
Date of Change	10/1/2004	10/1/2005	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
Benefit Level Change	1.000	1.000	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
Cumulative Level Change	1.000	1.000	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

Weighted Average Benefit Level
1.032

All Injury Types - Average Benefit Level for Current Policy Period, Estimated at 7/1/2022 (using benefit level projections from prior filing).																						
Date of Change	10/1/2004	10/1/2005	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
Benefit Level Change	1.000	1.007	1.007	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	0.989	1.007
Cumulative Level Change	1.000	1.007	1.014	1.021	1.028	1.042	1.042	1.041	1.048	1.053	1.054	1.059	1.059	1.065	1.071	1.078	1.084	1.091	1.100	1.128	1.115	1.123

Weighted Average Benefit Level
1.118

Time Period	Indemnity					Medical	Total
	Death	Permanent Total	Permanent Partial	Temporary Total	All Injury Types	All Injury Types	All Injury Types
PY 2005	1.003	1.006	1.010	1.003	1.008	1.000	1.005
PY 2006	1.008	1.013	1.025	1.007	1.019	1.000	1.012
PY 2007	1.014	1.021	1.040	1.011	1.030	1.000	1.019
PY 2008	1.020	1.030	1.055	1.016	1.041	1.007	1.029
PY 2009	1.022	1.032	1.060	1.018	1.046	1.030	1.041
PY 2010	1.022	1.032	1.059	1.018	1.045	1.032	1.041
PY 2011	1.025	1.037	1.068	1.020	1.051	1.032	1.046
PY 2012	1.030	1.044	1.080	1.023	1.061	1.032	1.051
PY 2013	1.032	1.047	1.085	1.025	1.065	1.032	1.054
PY 2014	1.038	1.051	1.093	1.027	1.071	1.032	1.058
PY 2015	1.049	1.057	1.104	1.031	1.080	1.032	1.063
PY 2016	1.055	1.064	1.115	1.035	1.089	1.032	1.069
PY 2017	1.062	1.072	1.128	1.040	1.099	1.032	1.075
PY 2018	1.069	1.081	1.142	1.046	1.110	1.032	1.082
PY 2019	1.076	1.089	1.156	1.052	1.120	1.032	1.089
PY 2020	1.085	1.100	1.173	1.059	1.134	1.032	1.098
CPY 2019_07	1.080	1.095	1.164	1.055	1.127	1.032	1.094
CPY 2020_07	1.093	1.111	1.192	1.066	1.148	1.032	1.107
CPY 2021_07	1.113	1.136	1.236	1.082	1.182	1.032	1.129
CPY 2008_09	1.022	1.032	1.060	1.018	1.046	1.026	1.039
Prior Eff. Period	1.122	1.148	1.256	1.090	1.197	1.032	1.139
Prosp. Eff. Period	1.132	1.159	1.276	1.097	1.211	1.032	1.148
1/1/2023	1.120	1.145	1.252	1.088	1.193	1.032	1.137

Notes:
 1/1/2023 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 000008

IV 000009

Section IV - Benefit Change Adjustments
 Subsection A - Summary
 7/1/2023

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	0.8%	0.9%	1.5%	0.7%	1.2%	0.0%	0.8%
10/1/2024	0.8%	0.9%	1.5%	0.7%	1.2%	0.0%	0.8%

Notes:

Estimated changes for 10/1/2023 and 10/1/2024 use projected SAWW values for 10/1/2023 and 10/1/2024.

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 10/1/2022		Effects of SAWW Change of 10/1/2023		Effects of SAWW Change of 10/1/2024	
						10/1/2021 Cost (7)	10/1/2022 Cost (8)	10/1/2022 Cost (9)	10/1/2023 Cost (10)	10/1/2023 Cost (11)	10/1/2024 Cost (12)
None	204	0	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Spouse, No Children	212	1	40	$a_{40:\overline{Life}}$	24.28	258,825,596	260,838,095	269,888,419	272,036,532	281,475,562	283,715,935
Spouse with Children	407	1	38	$a_{38:\overline{Life}}$	24.23	495,947,608	499,803,849	517,145,590	521,261,689	539,348,247	543,641,130
Child(ren)		1.9	10	$a_{\overline{6}}$	7.31						
Orphan, No Sibling	21	1	13	$a_{13:\overline{5}}$	4.68	4,940,098	4,978,510	5,151,250	5,192,250	5,372,409	5,415,170
Orphan with Sibling(s)	15	2.5	12	$a_{\overline{6}}$	5.57	4,204,979	4,237,675	4,384,710	4,419,609	4,572,959	4,609,357
Other Dependents (No Spouse)	141	1.7	58	$a_{58:\overline{Life}}$	19.27	18,750,785	18,750,785	18,750,497	18,750,497	18,750,835	18,750,835
(15) Total Survivor Benefits	1,000					782,669,066	788,608,913	815,320,465	821,660,577	849,520,011	856,132,427
(16) Cost of Burial (1,000 cases)						13,553,920	14,122,720	14,122,720	14,729,281	14,729,281	15,361,894
(17) Total Monetary Cost [= (15) + (16)]						796,222,986	802,731,633	829,443,185	836,389,859	864,249,292	871,494,320
(18) Fatal Benefit Change Factors							1.008		1.008		1.008

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 x (2) x (6) x [Page 2, (14)] for Spouses and Orphans and = 52 x (2) x (3) x (6) x [Page 2, (30)] for All Others Dependents

(8), (10), (12), (14) = 52 x (2) x (6) x [Page 2, (15)] for Spouses and Orphans and = 52 x (2) x (3) x (6) x [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 10/1/2021

(1)	Nominal Rate of Compensation Based on Gross Wages ("Comp. Rate")	66.67%
(2)	Min Weekly Compensation	110.00
(3)	Max Weekly Compensation	1,694.24
(4)	Average Injured Worker Weekly Wage ("AIWWW") for 12 months starting 10/1/2022	1,555.34

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)	Workers (8)	Wages (9)		
0.00 165.00	Statutory Minimum	0.00	0.10	0.35%	0.02%	99.20	110.00
165.00 2,541.36	Actual Wage x Comp. Rate	0.10	1.65	88.63%	75.22%	1,320.04	880.03
2,541.36 over	Statutory Maximum	1.65	over	11.03%	24.76%	3,492.11	1,694.24

(12) Average Weekly Benefit **967.15**

	Effects of SAWW Change		
	10/1/2022	10/1/2023	10/1/2024
(13) Starting date of 12 month period for AIWWW			
(14) Benefits Effective	10/1/2021	10/1/2022	10/1/2023
Average Weekly Benefits	967.15	1008.49	1051.78
(15) Benefits Effective	10/1/2022	10/1/2023	10/1/2024
Average Weekly Benefits	974.67	1016.51	1060.16
(16) Fatal: Spouse and Orphans Benefit Change Factors	1.008	1.008	1.008

Fatal: All Others - Effective 10/1/2021

(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 10/1/2022	1,555.34

Wage Intervals (21)	Benefit (22)	Wage Distribution Entry Ratios = (21) / (20) (23)		Percentage in Interval		Average Wage in Interval = (25) / (24) x (20) (26)	Average Benefit in Interval (27)
		Workers (24)	Wages (25)	Workers (24)	Wages (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%	99.20	66.13
120.00 over	Statutory Maximum	0.10	over	99.65%	99.98%	1,560.40	80.00

(28) Average Weekly Benefit **79.95**

	Effects of SAWW Change		
	10/1/2022	10/1/2023	10/1/2024
(29) Starting date of 12 month period for AIWWW			
(30) Benefits Effective	10/1/2021	10/1/2022	10/1/2023
Average Weekly Benefits	79.95	79.95	79.95
(31) Benefits Effective	10/1/2022	10/1/2023	10/1/2024
Average Weekly Benefits	79.95	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
 7/1/2023

Section IV-B
 Exhibit 2

Determination of the Average Weekly Benefit for Permanent Totals

Permanent Total - Effective 10/1/2021

(1)	Nominal Rate of Compensation Based on Gross Wages ("Comp. Rate")	66.67%
(2)	Min Weekly Compensation	338.85
(3)	Max Weekly Compensation	1,694.24
(4)	Average Injured Worker Weekly Wage ("AIWWW") for 12 months starting 10/1/2022	1,555.34

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	508.27	Statutory Minimum	0.00	0.35	7.27%	1.83%	390.62	338.85
508.27	2,541.36	Actual Wage x Comp. Rate	0.35	1.65	81.70%	73.41%	1,397.57	931.71
2,541.36	over	Statutory Maximum	1.65	over	11.03%	24.76%	3,492.11	1,694.24

(12) Average Weekly Benefit **972.70**

	Effects of SAWW Change		
	10/1/2022	10/1/2023	10/1/2024
(13) Starting date of 12 month period for AIWWW	10/1/2022	10/1/2023	10/1/2024
(14) Benefits Effective	10/1/2021	10/1/2022	10/1/2023
Average Weekly Wage Loss Benefit	972.70	981.25	989.33
(15) Benefits Effective	10/1/2022	10/1/2023	10/1/2024
Average Weekly Wage Loss Benefit	981.25	989.33	996.61
(16) Permanent Total Wage Loss Benefit Change Factors	1.009	1.008	1.007
(17) Specific Injury Benefits			
SAWW Effect on Specific Injury Benefits	1.042	1.043	1.043
(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	1.010	1.009	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 10/1/2022 = SAWW 10/1/2022 / SAWW 10/1/2021 = 1.042 = 1,765.34 / 1,694.24

(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
 7/1/2023

Section IV-B
 Exhibit 3

Determination of the Average Weekly Benefit for Permanent Partials

Permanent Partial - Effective 10/1/2021

(1)	Nominal Rate of Compensation Based on Gross Wages ("Comp. Rate")	37.20%
(2)	Min Weekly Compensation	0.00
(3)	Max Weekly Compensation	1,270.68
(4)	Average Injured Worker Weekly Wage ("AIWWW") for 12 months starting 10/1/2022	1,555.34
(5)	SAWW effective 10/1/2021	1,694.24

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	3,415.81	Actual Wage x Comp. Rate	0.00	2.20	96.38%	89.09%	1,437.67	534.81
3,415.81	5,573.16	Statutory Maximum	2.20	3.60	3.03%	7.93%	4,073.92	1270.68
5,573.16	8,917.05	Statutorily Reduced	3.60	5.75	0.50%	2.16%	6,762.83	818.61
8,917.05	over	Exceeds Statutory Limit	5.75	over	0.09%	0.82%	13,751.75	0.00

(13) Average Weekly Benefit **558.01**

	Effects of SAWW Change		
	10/1/2022	10/1/2023	10/1/2024
(14) Starting date of 12 month period for AIWWW	10/1/2022	10/1/2023	10/1/2023
(15) Benefits Effective Average Weekly Wage Loss Benefit	10/1/2021 558.01	10/1/2022 581.93	10/1/2023 606.92
(16) Benefits Effective Average Weekly Wage Loss Benefit	10/1/2022 560.18	10/1/2023 584.24	10/1/2024 609.33
(17) Permanent Partial Wage Loss Benefit Change Factors	1.004	1.004	1.004
(18) Specific Injury Benefits SAWW Effect on Specific Injury Benefits	1.042	1.043	1.043
(19) Permanent Partial Healing Period Effect on Healing Period Benefits	1.007	1.007	1.007
(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)]	1.015	1.015	1.015

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 10/1/2022 = 1.042 = 1,765.34 / 1,694.24
- (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
 7/1/2023

Section IV-B
 Exhibit 4

Determination of the Average Weekly Benefit for Temporary Totals

Temporary Total - Effective 10/1/2021

(1)	Nominal Rate of Compensation Based on Gross Wages ("Comp. Rate")	60.00%
(2)	Min Weekly Compensation	338.85
(3)	Max Weekly Compensation	1,694.24
(4)	Average Injured Worker Weekly Wage ("AIWWW") for 12 months starting 10/1/2022	1,555.34

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	338.85	Actual Wage	0.00	0.20	1.71%	0.24%	217.55	217.55
338.85	564.75	Statutory Minimum	0.20	0.35	5.56%	1.59%	443.97	338.85
564.75	2,823.73	Actual Wage x Comp. Rate	0.35	1.80	84.70%	78.57%	1,442.81	865.69
2,823.73	over	Statutory Maximum	1.80	over	8.03%	19.60%	3,796.32	1,694.24

(12) Average Weekly Benefit **891.85**

	Effects of SAWW Change		
	10/1/2022	10/1/2023	10/1/2024
(13) Starting date of 12 month period for AIWW	10/1/2022	10/1/2023	10/1/2024
(14) Benefits Effective	10/1/2021	10/1/2022	10/1/2023
Average Weekly Benefits	891.85	930.00	969.95
(15) Benefits Effective	10/1/2022	10/1/2023	10/1/2024
Average Weekly Benefits	897.80	936.36	976.58
(16) Temporary Total Benefit Change Factors	1.007	1.007	1.007

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

	10/1/2021	10/1/2022	10/1/2023	10/1/2024
(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	\$1,694.24	\$1,765.34	<i>\$1,841.16</i>	<i>\$1,920.24</i>
Others	\$80.00	\$80.00	\$80.00	\$80.00
Each Additional Child	\$6.00, if benefit under \$150.00	\$6.00, if benefit under \$150.00	\$6.00, if benefit under \$150.00	\$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	\$338.85	\$353.07	<i>\$368.23</i>	<i>\$384.05</i>
Maximum Weekly Benefit	\$1,694.24	\$1,765.34	<i>\$1,841.16</i>	<i>\$1,920.24</i>
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	\$338.85	\$353.07	<i>\$368.23</i>	<i>\$384.05</i>
Maximum Weekly Benefit	\$1,694.24	\$1,765.34	<i>\$1,841.16</i>	<i>\$1,920.24</i>
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	\$1,270.68	\$1,324.01	<i>\$1,380.87</i>	<i>\$1,440.18</i>
(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	\$15,000.00	\$15,000.00	\$15,000.00
Benefit	As determined by the reviewing board	As determined by the reviewing board	As determined by the reviewing board	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
 7/1/2023

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
 7/1/2023

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	204	0	N/A
Spouse, No Children	212	1	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
Spouse with Children	407	1	38
Summary		1.9	10
Orphan, No Sibling	21	1	13
1 Child			
Orphans with Sibling(s)	10	2	12
2 Children		3	12
3 Children	3	3	12
4 Children	1	4	12
More than 4 Children	1	5	12
Orphans with Sibling(s)	15	2.5	12
Summary			
Other Dependents (No Spouse)	41	1	62
1 Parent			
2 Parents	91	2	58
Sibling	7	1	37
Other	2	2	31
Other Dependents	141	1.7	58
Summary			

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)
10/1/2021	4/1/20 to 4/1/21	10/1/2020	1,694.24		1,694.24	10/1/21 to 10/1/22	1,491.29
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	1,555.34
10/1/2023	4/1/22 to 4/1/23	10/1/2022		1.043	1,841.16	10/1/23 to 10/1/24	1,622.14
10/1/2024	4/1/23 to 4/1/24	10/1/2023		1.043	1,920.24	10/1/24 to 10/1/25	1,691.81

Notes:

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

(5): 4.3% Estimated Annual Trend in SAWW, Section V-A, Exhibit 1.

(6): For SAWW Effective Date 10/1/2021 - 10/1/2022, (6) = (4)

For SAWW Effective Date 10/1/2023, (6) = (5) x (6) from prior period

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

(8): For the AIWWW Period 10/1/21 to 10/1/22, (8) is the product of .827 and the average of the SAWWs effective 10/1/2022 and 10/1/2023, respectively.

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 Periods 10/1/23 to 10/1/24 and 10/1/24 to 10/1/25, (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

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 Subsection D - Massachusetts Data
 7/1/2023

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)	
Average Wage Loss for Major Permanent Partial Claimants						
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
(6) Selected Average Wage Loss for Major Permanent Partial Claimants						0.62

Average Wage Loss for Minor Permanent Partial Claimants						
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
(7) Selected Average Wage Loss for Minor Permanent Partial Claimants						0.62

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	2012	1,909,719	1.099	2,098,154	8,207,921	1.099	9,017,811	11,115,966	1.76%
Death	2013	1,592,212	1.096	1,745,666	8,255,702	1.096	9,051,370	10,797,036	
Death	2014	6,153,067	1.091	6,710,735	2,550,363	1.091	2,781,509	9,492,244	
Death	2015	1,142,621	1.079	1,232,477	13,439,677	1.079	14,496,571	15,729,047	
Death	2016	327,800	1.073	351,575	11,646,103	1.073	12,490,780	12,842,355	
Total Death		11,125,419		12,138,607	44,099,766		47,838,041	59,976,648	
Permanent Total	2012	57,202,597	1.110	63,494,998	0	1.110	0	63,494,998	10.06%
Permanent Total	2013	56,061,855	1.107	62,054,592	0	1.107	0	62,054,592	
Permanent Total	2014	67,181,481	1.103	74,074,019	0	1.103	0	74,074,019	
Permanent Total	2015	61,360,192	1.096	67,255,698	0	1.096	0	67,255,698	
Permanent Total	2016	68,812,856	1.089	74,937,637	0	1.089	0	74,937,637	
Total Permanent Total		310,618,981		341,816,943	0		0	341,816,943	
Permanent Partial	2012	75,020,193	1.181	88,611,120	118,069,159	1.181	139,458,991	228,070,110	35.69%
Permanent Partial	2013	72,186,331	1.175	84,849,185	123,723,481	1.175	145,426,930	230,276,116	
Permanent Partial	2014	87,062,305	1.168	101,651,773	135,567,252	1.168	158,284,938	259,936,711	
Permanent Partial	2015	85,011,144	1.156	98,259,308	134,726,764	1.156	155,722,627	253,981,935	
Permanent Partial	2016	77,297,486	1.144	88,434,882	133,158,966	1.144	152,345,155	240,780,038	
Total Permanent Partial		396,577,459		461,806,269	645,245,622		751,238,641	1,213,044,909	
Temporary Total	2012	36,303,381	1.072	38,933,558	72,654,892	1.072	77,918,732	116,852,290	19.83%
Temporary Total	2013	31,954,142	1.071	34,209,966	83,078,427	1.071	88,943,404	123,153,370	
Temporary Total	2014	41,085,314	1.068	43,882,307	85,809,593	1.068	91,651,312	135,533,620	
Temporary Total	2015	40,875,117	1.065	43,514,436	92,090,207	1.065	98,036,500	141,550,936	
Temporary Total	2016	47,035,959	1.060	49,869,761	100,885,635	1.060	106,963,749	156,833,510	
Total Temporary Total		197,253,913		210,410,028	434,518,754		463,513,697	673,923,725	
(11) Total Indemnity		915,575,772		1,026,171,847	1,123,864,142		1,262,590,379	2,288,762,225	67.33%

- (12) Aggregate Financial Policy Year Call, Indemnity Fifth to Ultimate Development Factor Paid + Case 1.042
 (13) Tail Development Attributed to Likely to Develop Claims 0.8
 (14) Percentage Likely to Develop 0.448
 (15) Indemnity Likely to Develop - Loss Development Factor from 5th Report to Ultimate = $1.0 + \{ [(12) - 1.0] \times (13) \} / (14)$ 1.076
 (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) = $1.027 \times 1.015 \times 1$ where 1.027 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	2012	233,322	1.000	233,322	334,710	1.000	334,710	568,032	
Death	2013	277,312	1.000	277,312	593,619	1.000	593,619	870,931	
Death	2014	2,281,814	1.000	2,281,814	198,777	1.000	198,777	2,480,591	
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	
Total Death		2,997,593		2,997,593	2,884,834		2,884,834	5,882,427	0.17%
Permanent Total	2012	41,537,099	1.000	41,537,099	0	1.000	0	41,537,099	
Permanent Total	2013	28,016,688	1.000	28,016,688	0	1.000	0	28,016,688	
Permanent Total	2014	39,792,412	1.000	39,792,412	0	1.000	0	39,792,412	
Permanent Total	2015	41,807,781	1.000	41,807,781	0	1.000	0	41,807,781	
Permanent Total	2016	35,327,893	1.000	35,327,893	0	1.000	0	35,327,893	
Total Permanent Total		186,481,873		186,481,873	0		0	186,481,873	5.49%
Permanent Partial	2012	32,646,007	1.000	32,646,007	43,145,138	1.000	43,145,138	75,791,145	
Permanent Partial	2013	27,447,782	1.000	27,447,782	48,288,593	1.000	48,288,593	75,736,375	
Permanent Partial	2014	37,976,871	1.000	37,976,871	49,635,021	1.000	49,635,021	87,611,892	
Permanent Partial	2015	32,597,341	1.000	32,597,341	44,826,974	1.000	44,826,974	77,424,315	
Permanent Partial	2016	31,970,314	1.000	31,970,314	43,164,154	1.000	43,164,154	75,134,468	
Total Permanent Partial		162,638,315		162,638,315	229,059,880		229,059,880	391,698,195	11.52%
Temporary Total	2012	16,404,309	1.000	16,404,309	55,961,666	1.000	55,961,666	72,365,975	
Temporary Total	2013	13,088,215	1.000	13,088,215	59,560,811	1.000	59,560,811	72,649,026	
Temporary Total	2014	21,434,047	1.000	21,434,047	60,869,206	1.000	60,869,206	82,303,253	
Temporary Total	2015	19,056,450	1.000	19,056,450	63,010,048	1.000	63,010,048	82,066,498	
Temporary Total	2016	21,668,648	1.000	21,668,648	68,608,247	1.000	68,608,247	90,276,895	
Total Temporary Total		91,651,669		91,651,669	308,009,978		308,009,978	399,661,647	11.76%
Medical Only	2012	0	1.000	0	25,210,964	1.000	25,210,964	25,210,964	
Medical Only	2013	0	1.000	0	25,636,631	1.000	25,636,631	25,636,631	
Medical Only	2014	0	1.000	0	25,478,305	1.000	25,478,305	25,478,305	
Medical Only	2015	0	1.000	0	25,457,616	1.000	25,457,616	25,457,616	
Medical Only	2016	0	1.000	0	24,948,119	1.000	24,948,119	24,948,119	
Total Medical Only		0		0	126,731,635		126,731,635	126,731,635	3.73%
(11) Total Medical		443,769,450		443,769,450	666,686,327		666,686,327	1,110,455,777	32.67%
(12) Total Medical & Indemnity		1,359,345,222		1,469,941,297	1,790,550,469		1,929,276,706	3,399,218,002	

- (13) Medical Only fraction of Total Medical 11.41%
- (14) Aggregate Financial Policy Year Call, Medical Fifth to Ultimate Development Factor Paid + Cash 0.932
- (15) Tail Development Attributed to Likely to Develop Claims 0.8
- (16) Percentage Likely to Develop 0.400
- (17) Medical Likely to Develop - Loss Development Factor from 5th Report to Ultimate = $1.0 + \{ [(14) - 1.0] \times (15) \} / (16)$ 0.864
- (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 30.19%
- (20) Indemnity Not Likely Weight at 5th Report 37.14%
- (21) Medical Likely Weight at 5th Report 13.06%
- (22) Medical Not Likely Weight at 5th Report 19.61%

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) = 0.951×0.98 where 0.951 is the loss development factor from Section II - B, Exhibit 1, 0.98 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	2012	2,098,154	1.076	2,257,021	9,017,811	1.015	9,156,548	11,413,569	1.80%
Death	2013	1,745,666	1.076	1,877,843	9,051,370	1.015	9,190,623	11,068,466	
Death	2014	6,710,735	1.076	7,218,852	2,781,509	1.015	2,824,302	10,043,154	
Death	2015	1,232,477	1.076	1,325,796	14,496,571	1.015	14,719,598	16,045,394	
Death	2016	351,575	1.076	378,195	12,490,780	1.015	12,682,948	13,061,143	
Total Death		12,138,607		13,057,707	47,838,041		48,574,019	61,631,727	
Permanent Total	2012	63,494,998	1.076	68,302,655	0	1.015	0	68,302,655	10.75%
Permanent Total	2013	62,054,592	1.076	66,753,186	0	1.015	0	66,753,186	
Permanent Total	2014	74,074,019	1.076	79,682,690	0	1.015	0	79,682,690	
Permanent Total	2015	67,255,698	1.076	72,348,105	0	1.015	0	72,348,105	
Permanent Total	2016	74,937,637	1.076	80,611,698	0	1.015	0	80,611,698	
Total Permanent Total		341,816,943		367,698,334	0		0	367,698,334	
Permanent Partial	2012	88,611,120	1.076	95,320,497	139,458,991	1.015	141,604,538	236,925,036	36.82%
Permanent Partial	2013	84,849,185	1.076	91,273,720	145,426,930	1.015	147,664,294	238,938,014	
Permanent Partial	2014	101,651,773	1.076	109,348,551	158,284,938	1.015	160,720,119	270,068,670	
Permanent Partial	2015	98,259,308	1.076	105,699,219	155,722,627	1.015	158,118,387	263,817,606	
Permanent Partial	2016	88,434,882	1.076	95,130,916	152,345,155	1.015	154,688,954	249,819,870	
Total Permanent Partial		461,806,269		496,772,904	751,238,641		762,796,291	1,259,569,195	
Temporary Total	2012	38,933,558	1.076	41,881,494	77,918,732	1.015	79,117,496	120,998,990	20.37%
Temporary Total	2013	34,209,966	1.076	36,800,246	88,943,404	1.015	90,311,780	127,112,025	
Temporary Total	2014	43,882,307	1.076	47,204,949	91,651,312	1.015	93,061,349	140,266,298	
Temporary Total	2015	43,514,436	1.076	46,809,223	98,036,500	1.015	99,544,771	146,353,994	
Temporary Total	2016	49,869,761	1.076	53,645,755	106,963,749	1.015	108,609,364	162,255,119	
Total Temporary Total		210,410,028		226,341,667	463,513,697		470,644,759	696,986,426	
(11) Total Indemnity		1,026,171,847		1,103,870,611	1,262,590,379		1,282,015,070	2,385,885,681	69.74%

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	2012	233,322	0.864	201,691	334,710	0.977	327,159	528,850	
Death	2013	277,312	0.864	239,717	593,619	0.977	580,227	819,944	
Death	2014	2,281,814	0.864	1,972,470	198,777	0.977	194,293	2,166,762	
Death	2015	179,725	0.864	155,360	1,246,106	0.977	1,217,994	1,373,354	
Death	2016	25,420	0.864	21,974	511,622	0.977	500,080	522,054	
Total Death		2,997,593		2,591,211	2,884,834		2,819,752	5,410,963	0.16%
Permanent Total	2012	41,537,099	0.864	35,905,938	0	0.977	0	35,905,938	
Permanent Total	2013	28,016,688	0.864	24,218,482	0	0.977	0	24,218,482	
Permanent Total	2014	39,792,412	0.864	34,397,778	0	0.977	0	34,397,778	
Permanent Total	2015	41,807,781	0.864	36,139,924	0	0.977	0	36,139,924	
Permanent Total	2016	35,327,893	0.864	30,538,511	0	0.977	0	30,538,511	
Total Permanent Total		186,481,873		161,200,633	0		0	161,200,633	4.71%
Permanent Partial	2012	32,646,007	0.864	28,220,207	43,145,138	0.977	42,171,787	70,391,994	
Permanent Partial	2013	27,447,782	0.864	23,726,702	48,288,593	0.977	47,199,206	70,925,908	
Permanent Partial	2014	37,976,871	0.864	32,828,369	49,635,021	0.977	48,515,259	81,343,627	
Permanent Partial	2015	32,597,341	0.864	28,178,138	44,826,974	0.977	43,815,681	71,993,819	
Permanent Partial	2016	31,970,314	0.864	27,636,117	43,164,154	0.977	42,190,374	69,826,491	
Total Permanent Partial		162,638,315		140,589,533	229,059,880		223,892,307	364,481,839	10.65%
Temporary Total	2012	16,404,309	0.864	14,180,386	55,961,666	0.977	54,699,175	68,879,561	
Temporary Total	2013	13,088,215	0.864	11,313,853	59,560,811	0.977	58,217,124	69,530,977	
Temporary Total	2014	21,434,047	0.864	18,528,246	60,869,206	0.977	59,496,001	78,024,247	
Temporary Total	2015	19,056,450	0.864	16,472,978	63,010,048	0.977	61,588,546	78,061,524	
Temporary Total	2016	21,668,648	0.864	18,731,042	68,608,247	0.977	67,060,450	85,791,492	
Total Temporary Total		91,651,669		79,226,505	308,009,978		301,061,297	380,287,802	11.12%
Medical Only	2012	0	0.864	0	25,210,964	0.977	24,642,207	24,642,207	
Medical Only	2013	0	0.864	0	25,636,631	0.977	25,058,271	25,058,271	
Medical Only	2014	0	0.864	0	25,478,305	0.977	24,903,516	24,903,516	
Medical Only	2015	0	0.864	0	25,457,616	0.977	24,883,294	24,883,294	
Medical Only	2016	0	0.864	0	24,948,119	0.977	24,385,291	24,385,291	
Total Medical Only		0		0	126,731,635		123,872,579	123,872,579	3.62%
(11) Total Medical		443,769,450		383,607,882	666,686,327		651,645,935	1,035,253,817	30.26%
(12) Total Medical & Indemnity		1,469,941,297		1,487,478,493	1,929,276,706		1,933,661,005	3,421,139,498	

- (13) Medical Only fraction of Total Medical 11.97%
- (14) Indemnity Likely to Develop at Ultimate 32.27%
- (15) Indemnity Not Likely to Develop at Ultimate 37.47%
- (16) Medical Likely to Develop at Ultimate 11.21%
- (17) Medical Not Likely to Develop at Ultimate 19.05%

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

USL&HW Benefit Level 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
PY 2016	Prosp. Eff. Period	1.040	1.032	1.016	1.032	1.024	1.000	1.016
PY 2017	Prosp. Eff. Period	1.035	1.028	1.014	1.028	1.021	1.000	1.014
PY 2018	Prosp. Eff. Period	1.030	1.024	1.012	1.024	1.018	1.000	1.012
PY 2019	Prosp. Eff. Period	1.025	1.020	1.010	1.020	1.015	1.000	1.010
PY 2020	Prosp. Eff. Period	1.020	1.016	1.008	1.016	1.012	1.000	1.008
CPY 2019_07	Prosp. Eff. Period	1.020	1.016	1.008	1.016	1.012	1.000	1.008
CPY 2020_07	Prosp. Eff. Period	1.015	1.012	1.006	1.012	1.009	1.000	1.006
CPY 2021_07	Prosp. Eff. Period	1.010	1.008	1.004	1.008	1.006	1.000	1.004
Prior Eff. Period (using benefit level projections from prior filing) Prosp. Eff. Period						1.003	1.000	1.002

IV 000024

Notes:

All time periods refer to Policy Years.

Example: PY 2020 to Prosp. Eff. Period for Indemnity Permanent Partial = 1.008 = 1.016 / 1.008

where 1.016 is the Index Factor of Prosp. Eff. Period and 1.008 is the Index Factor of PY 2020 for Indemnity Permanent Partial, from Exhibit 2.

USL&HW Benefit Level Changes and Weights

Death											
Benefit Level Change	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
Cumulative Benefit Level Change	1.000	1.004	1.009	1.014	1.019	1.024	1.029	1.034	1.040	1.045	
Time Period											
PY 2016	0.375	0.620	0.005								1.003
PY 2017		0.319	0.677	0.004							1.007
PY 2018			0.347	0.650	0.003						1.012
PY 2019				0.330	0.667	0.003					1.017
PY 2020					0.325	0.671	0.004				1.023
CPY 2019_07				0.005	0.403	0.592					1.022
CPY 2020_07					0.005	0.411	0.584				1.027
CPY 2021_07						0.005	0.411	0.584			1.032
Prior Eff. Period							0.005	0.410	0.585		1.037
Prosp. Eff. Period								0.005	0.411	0.584	1.043

Indemnity All Injury Types - Average Benefit Level for Current Policy Period, Estimated at 7/1/2022 (using benefit level projections from prior filing).

Date of Change	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	Weighted Average Benefit Level
Benefit Level Change	1.000	1.002	1.003	1.003	1.003	1.003	1.003	1.003	1.003	
Cumulative Level Change	1.000	1.002	1.005	1.008	1.011	1.014	1.017	1.020	1.023	1.022

Medical All Injury Types - Average Benefit Level for Current Policy Period, Estimated at 7/1/2022 (using benefit level projections from prior filing).

Date of Change	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	Weighted Average Benefit Level
Benefit Level Change	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	1.000	1.000	1.000	1.000	1.000	1.000	1.000

All Injury Types - Average Benefit Level for Current Policy Period, Estimated at 7/1/2022 (using benefit level projections from prior filing).

Date of Change	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	Weighted Average Benefit Level
Benefit Level Change	1.000	1.001	1.002	1.002	1.002	1.002	1.002	1.002	1.002	
Cumulative Level Change	1.000	1.001	1.003	1.005	1.007	1.009	1.011	1.013	1.015	1.014

Index Factors for All Injury Types

Time Period	Indemnity					Medical	Total
	Death	Permanent Total	Permanent Partial	Temporary Total	All Injury Types	All Injury Types	All Injury Types
PY 2016	1.003	1.002	1.001	1.002	1.001	1.000	1.001
PY 2017	1.007	1.006	1.002	1.006	1.004	1.000	1.002
PY 2018	1.012	1.010	1.004	1.010	1.007	1.000	1.004
PY 2019	1.017	1.014	1.006	1.014	1.010	1.000	1.006
PY 2020	1.023	1.018	1.008	1.018	1.013	1.000	1.008
CPY 2019_07	1.022	1.017	1.008	1.017	1.013	1.000	1.008
CPY 2020_07	1.027	1.022	1.010	1.022	1.016	1.000	1.010
CPY 2021_07	1.032	1.026	1.012	1.026	1.019	1.000	1.012
Prior Eff. Period	1.037	1.030	1.014	1.030	1.022	1.000	1.014
Prosp. Eff. Period	1.043	1.034	1.016	1.034	1.025	1.000	1.016

Notes:

All time periods refer to Policy Years.

Index Factors for All Injury Types is an Excel Data Table that repeats the calculation of the Weighted Average Benefit Level for all Injury Types.

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Section IV - Benefit Change Adjustments
 Subsection F - Effects of USL&HW Benefit Changes
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 Exhibit 3

USL&HW 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)
10/1/2015	0.4%	0.3%	0.1%	0.3%	0.2%	0.0%	0.1%
10/1/2016	0.4%	0.3%	0.1%	0.3%	0.2%	0.0%	0.1%
10/1/2017	0.5%	0.4%	0.2%	0.4%	0.3%	0.0%	0.2%
10/1/2018	0.5%	0.4%	0.2%	0.4%	0.3%	0.0%	0.2%
10/1/2019	0.5%	0.4%	0.2%	0.4%	0.3%	0.0%	0.2%
10/1/2020	0.5%	0.4%	0.2%	0.4%	0.3%	0.0%	0.2%
10/1/2021	0.5%	0.4%	0.2%	0.4%	0.3%	0.0%	0.2%
10/1/2022	0.5%	0.4%	0.2%	0.4%	0.3%	0.0%	0.2%
10/1/2023	0.5%	0.4%	0.2%	0.4%	0.3%	0.0%	0.2%
10/1/2024	0.5%	0.4%	0.2%	0.4%	0.3%	0.0%	0.2%

Notes:

Values prior to 10/1/2018 are from NCCI's Annual Statistical Bulletin, 2020 Edition, Exhibit 3.
 Changes for 10/1/2018 - 10/1/2024 are assumed to be the same as 10/1/2017.

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, 2023), 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 2018 and 2019) to July 1, 2024, 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, meaning that 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 has used net trend factors of -3.3% per year for indemnity losses, and

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-4.3% per year for medical losses.¹ The indicated trend factors and their key components are summarized in Section V-A Exhibit 1, Page 1.

Indemnity Net Trend	-3.3%
Medical Net Trend	-4.3%

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 3.0% and 2.1% for indemnity and lost-time medical benefits, respectively and 2.9% for medical-only benefits. We are projecting downward movement in claim frequency per worker week, at a pace of 2.1% annually for lost-time indemnity and medical claims and 4.3% for medical-only claims. Finally, we are projecting an increase of 4.3% annually in average wages.

Trend	Indemnity	Lost-time Medical	Medical Only
Severity	3.0%	2.1%	2.9%
Frequency	-2.1%	-2.1%	-4.3%
SAWW	4.3%		
Net	-3.3%	-4.3%	

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.

¹ Based on NCCI's latest pending and approved filings as of November 4, 2022, with respect to medical net trend, twelve NCCI states filed higher medical trends than the WCRIBMA is proposing in this filing. With respect to indemnity net trend, ten 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 movements in the underlying factors of claim severity, claim frequency, and wages – rather than fitting time trends to loss ratios themselves. 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 (claim severity, frequency, and wage trend), our primary method of measuring trends is an exponential least squares regression fit to the historical Massachusetts Unit Statistical Data. As we did in the 2020 and 2022 filings, we are relying 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 2019. 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

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consistency between the historical data and the fitted exponential curves. Using a methodology from the actuarial literature,² 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.

² Venter, Gary, "Classical Partial Credibility with Application to Trend," *PCAS LXXIII* (the "Venter Paper") (1986) pp. 27-51.

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 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 2019. 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 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 95th percentile of

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the t-distribution with $n-2$ degrees of freedom. We use the 95th 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 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 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 trend³. The WCRIBMA expects trends observed over a longer period of time (i.e., 15 years) using Massachusetts data will provide useful information related to variation in the claim data resulting from the Great Recession of 2008 and the ensuing economic recovery specific to Massachusetts⁴. 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

³ The prior complement relied on adjusted NCCI severities. NCCI no longer calculates the on-level factors previously used for the adjustment.

⁴ 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).

average weekly wage trends. We then selected fifteen years of data to calculate the long-term Massachusetts trends.

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 are available for policies written through December 2020. For the trend section of this filing, we use Unit Statistical Data for policies written through December 2019. This is consistent with the WCRIBMA's overall approach regarding COVID-19 era data as described in Section I⁵. Unit Statistical Data used in this trend analysis have been compiled on a "policy year" basis. Policy year 2019, for example, includes all policies with inception dates between January 1, 2019 and December 31, 2019. For policy year 2019, the average policy inception date is assumed to be July 1, 2019 and the average accident date is assumed to be January 1, 2020.

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

⁵ Trend is less affected by COVID-19 data anomalies, due to how frequency and severity are calculated as well as the credibility weighting of trend factors. Despite that, we believe it is appropriate to use trend data from the same time period as other data used in this rate filing.

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successive twelve month intervals, 30, 42, 54, 66, 78, 90, 102, 114, and 126 months after policy inception.⁶ 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 mature policy years. For this rate filing, policy year data is developed from the most recent report. For example, the most recent Policy Year 2019 is developed from the 30 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

⁶ 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 12/31/2021.

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:

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- (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, 2023 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 2012 policy year were handled and reported based on the benefits in effect at that time. Similarly, claims from the 2019 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, 2023 Massachusetts benefit levels. By placing all of the loss data on July 1, 2023 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.⁷

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'

⁷ 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 10/1/2022 SAWW reflects data underlying the period from 4/1/2021 to 3/31/2022.

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 2019 distribution of payrolls by classification, the weighted average of the current rates is \$0.745, while using the 2005 distribution of payrolls by classification against the same current rates produces an average rate of \$.861. 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.

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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:

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 2020, Exhibit 2, Page 4 for calendar year 2021, and weights from prior filings for all other years to derive the overall average

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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 2021 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				Medical Only				Trend	Credibility	
	Trend	Credibility	Trend	Credibility	Severity		Frequency		Severity		Frequency				
					Trend	Credibility	Trend	Credibility	Trend	Credibility	Trend	Credibility			
(1)	Massachusetts Trend														
	5 Year	3.0%	100.0%	-2.3%	28.2%	2.1%	100.0%	-2.3%	28.2%	2.5%	90.9%	-3.7%	19.7%	6.8%	59.0%
	6 Year	2.4%	100.0%	-2.3%	42.1%	1.3%	74.2%	-2.3%	42.1%	2.9%	100.0%	-3.8%	29.1%	6.0%	68.7%
	7 Year	2.8%	100.0%	-2.1%	55.7%	2.2%	62.5%	-2.1%	55.7%	2.4%	100.0%	-3.9%	38.0%	5.4%	76.4%
	8 Year	2.7%	100.0%	-2.0%	68.4%	2.2%	77.4%	-2.0%	68.4%	2.3%	100.0%	-3.9%	46.7%	5.0%	80.6%
	9 Year	2.5%	100.0%	-2.0%	80.5%	2.0%	89.6%	-2.0%	80.5%	2.4%	100.0%	-4.2%	48.5%	4.7%	85.2%
	10 Year	2.7%	100.0%	-2.1%	89.2%	2.2%	100.0%	-2.1%	89.2%	2.4%	100.0%	-4.4%	50.7%	4.4%	88.5%
(2)	Selected Trend	3.0%		-2.1%		2.1%		-2.1%		2.9%		-4.4%		4.4%	
(3)	15 Year Massachusetts Complement of Credibility	2.4%		-1.8%		2.0%		-1.8%		2.0%		-4.2%		3.4%	
(4)	Credibility Weighted Trend	3.0%		-2.1%		2.1%		-2.1%		2.9%		-4.3%		4.3%	
						Lost-Time Medical				Medical Only					
(5)	Medical Loss Trend					0.0%				-1.6%					
(6)	Fraction of Total Medical					88.0%				12.0%					
(7)	Total Medical Loss Trend					-0.2%									
		Indemnity				Medical									
(8)	Total Loss Trend	0.8%				-0.2%									
(9)	SAWW Trend	4.3%				4.3%									
(10)	Total Net Trend	-3.3%				-4.3%									

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 + Credibility Weighted Severity Trend) x (1.0 + 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 + Credibility Weighted Severity Trend) x (1.0 + Credibility Weighted Frequency Trend) - 1.0
 Medical = Row (7)
- (9): (4) for SAWW.
- (10) = [(1.0 + (8))] / [(1.0 + (9))] - 1.0

V 000020

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	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared
2010	26,890											27,312	177,329
2011	28,641											28,041	360,021
2012	28,930							28,747	33,689	28,236	164,586	28,953	494
2013	28,915					29,415	249,891	29,522	368,527	29,688	597,501	28,791	19,535
2014	31,112			30,583	280,523	30,235	769,351	30,318	631,296	30,442	449,860	29,560	416,176
2015	31,250	30,901	121,818	31,328	6,141	31,078	29,320	31,135	13,148	31,214	1,242	30,350	581,488
2016	31,608	31,817	43,654	32,092	233,547	31,945	113,512	31,974	133,937	32,007	158,860	31,161	7,938
2017	32,459	32,761	91,160	32,874	171,914	32,836	142,190	31,974	133,937	32,007	158,860	31,993	148,040
2018	33,510	33,733	49,906	32,874	171,914	32,836	142,190	32,836	142,190	32,820	129,856	32,848	151,087
2019	35,127	34,734	154,690	33,675	27,398	33,752	58,843	33,722	44,902	33,653	20,519	33,726	46,636
				34,496	398,219	34,694	187,823	34,631	246,430	34,508	384,037	34,627	250,345
(1)	Massachusetts Trend		3.0%		2.4%		2.8%		2.7%		2.5%		2.7%
(2)	n		5		6		7		8		9		10
(3)	s		392.10		528.62		556.94		518.67		521.94		519.45
(4)	t		2.35		2.13		2.02		1.94		1.89		1.86
(5)	m		6.50		7.00		7.50		8.00		8.50		9.00
(6)	$[1 + 1/n + 12 \times m^2 / (n^3 - n)]^{.5}$		2.33		1.99		1.77		1.63		1.52		1.44
(7)	Confidence Interval		2,148.45		2,244.60		1,991.75		1,640.33		1,504.49		1,393.85
(8)	Projected Value Prospective Period		39,614.18		38,448.44		39,262.34		39,038.48		38,627.79		38,995.10
(9)	CI/Projected Severity		0.05		0.06		0.05		0.04		0.04		0.04
(10)	Credibility - MA Trend (Z)		100%		100%		100%		100%		100%		100%
(11)	Complement of Credibility								2.4%				
(12)	Credibility Weighted Severity Trend		3.0%		2.4%		2.8%		2.7%		2.5%		2.7%

- 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 000021

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	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared
2010	10,029											10,184	24,185
2011	10,599									10,476	14,979	10,405	37,555
2012	10,625							10,627	6	10,689	4,144	10,630	26
2013	10,394					10,858	215,875	10,857	214,533	10,907	262,994	10,860	217,445
2014	11,735			11,421	98,460	11,093	412,091	11,091	413,516	11,128	367,459	11,095	408,872
2015	11,362	11,317	1,979	11,565	41,452	11,332	903	11,331	948	11,355	53	11,335	711
2016	11,496	11,554	3,414	11,712	46,691	11,576	6,447	11,576	6,385	11,585	8,013	11,581	7,151
2017	11,726	11,796	4,940	11,861	18,065	11,826	9,975	11,826	9,975	11,821	9,020	11,831	11,042
2018	12,182	12,043	19,303	12,011	29,424	12,081	10,261	12,081	10,179	12,061	14,622	12,087	9,047
2019	12,242	12,296	2,845	12,163	6,281	12,342	9,871	12,342	10,035	12,307	4,146	12,349	11,352
(1)	Massachusetts Trend		2.1%		1.3%		2.2%		2.2%		2.0%		2.2%
(2)	n		5		6		7		8		9		10
(3)	s		104.05		245.14		364.81		333.06		312.92		301.54
(4)	t		2.35		2.13		2.02		1.94		1.89		1.86
(5)	m		6.50		7.00		7.50		8.00		8.50		9.00
(6)	$[1 + 1/n + 12 \times m^2/(n^3-n)]^{.5}$		2.33		1.99		1.77		1.63		1.52		1.44
(7)	Confidence Interval		570.14		1,040.90		1,304.63		1,053.32		901.99		809.12
(8)	Projected Value Prospective Period		13,496.76		12,872.71		13,584.61		13,589.42		13,473.11		13,599.35
(9)	CI/Projected Severity		0.04		0.08		0.10		0.08		0.07		0.06
(10)	Credibility - MA Trend (Z)		100%		74%		62%		77%		90%		100%
(11)	Complement of Credibility								2.0%				
(12)	Credibility Weighted Severity Trend		2.1%		1.5%		2.1%		2.1%		2.0%		2.2%

- 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) x (10)] + { (11) x [1.0 - (10)] }

V 000022

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	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared
2010	797											798	0
2011	809									817	63	817	59
2012	850							841	82	837	173	836	179
2013	872					855	305	860	149	857	240	856	246
2014	853			864	119	876	511	880	710	877	585	877	579
2015	895	898	5	889	46	897	3	900	20	898	8	898	8
2016	914	920	30	914	0	919	21	920	36	920	29	920	29
2017	948	942	28	940	59	941	41	941	41	942	37	942	37
2018	982	966	276	967	236	964	323	963	378	964	328	964	324
2019	976	990	192	995	357	988	149	985	84	987	135	988	138
(1)	Massachusetts Trend		2.5%		2.9%		2.4%		2.3%		2.4%		2.4%
(2)	n		5		6		7		8		9		10
(3)	s		13.31		14.29		16.45		15.81		15.11		14.14
(4)	t		2.35		2.13		2.02		1.94		1.89		1.86
(5)	m		6.50		7.00		7.50		8.00		8.50		9.00
(6)	$[1 + 1/n + 12 \times m^2/(n^3-n)]^{.5}$		2.33		1.99		1.77		1.63		1.52		1.44
(7)	Confidence Interval		72.91		60.67		58.84		50.01		43.56		37.94
(8)	Projected Value Prospective Period		1,104.29		1,129.30		1,101.27		1,090.54		1,098.27		1,098.93
(9)	CI/Projected Severity		0.07		0.05		0.05		0.05		0.04		0.03
(10)	Credibility - MA Trend (Z)		91%		100%		100%		100%		100%		100%
(11)	Complement of Credibility							2.0%					
(12)	Credibility Weighted Severity Trend		2.4%		2.9%		2.4%		2.3%		2.4%		2.4%

- 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 000023

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	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared
2010	187.49											186	3
2011	181.53									181	0	182	0
2012	175.45							177	2	177	3	178	6
2013	172.95					174	1	173	0	174	0	174	1
2014	171.26			171	0	170	1	170	2	170	2	170	1
2015	164.69	167	7	167	7	167	5	166	3	167	4	167	4
2016	161.88	164	3	164	3	163	2	163	2	163	2	163	2
2017	165.76	160	34	160	34	160	35	160	35	160	35	160	36
2018	160.24	156	15	156	15	156	14	157	13	157	14	156	15
2019	147.69	153	26	153	26	153	30	153	34	153	32	153	28
(1)	Massachusetts Trend		-2.3%		-2.3%		-2.1%		-2.0%		-2.0%		-2.1%
(2)	n		5		6		7		8		9		10
(3)	s		5.35		4.63		4.19		3.88		3.61		3.48
(4)	t		2.35		2.13		2.02		1.94		1.89		1.86
(5)	m		6.50		7.00		7.50		8.00		8.50		9.00
(6)	$[1 + 1/n + 12 \times m^2 / (n^3 - n)]^{.5}$		2.33		1.99		1.77		1.63		1.52		1.44
(7)	Confidence Interval		29.30		19.66		14.98		12.28		10.42		9.35
(8)	Projected Value Prospective Period		137.89		137.87		139.06		140.12		139.76		138.93
(9)	CI/Projected Frequency		0.21		0.14		0.11		0.09		0.07		0.07
(10)	Credibility - MA Trend (Z)		28%		42%		56%		68%		80%		89%
(11)	Complement of Credibility								-1.8%				
(12)	Credibility Weighted Frequency Trend		-1.9%		-2.0%		-2.0%		-1.9%		-2.0%		-2.1%

- 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) = $[(1) \times (10)] + \{(11) \times [1.0 - (10)]\}$

V 000024

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	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared
2010	404.55											395	87
2011	383.19											378	27
2012	355.54											362	36
2013	341.62					340	4					346	18
2014	325.87			325	0	326	0	327	1	329	12	331	24
2015	307.70	313	23	313	28	314	38	314	42	316	62	316	75
2016	295.95	301	25	301	28	302	33	302	35	302	42	303	44
2017	299.48	290	93	290	91	290	89	290	89	290	93	289	101
2018	292.60	279	182	279	183	279	189	279	193	278	221	277	248
2019	256.31	269	156	269	151	268	138	268	132	266	97	265	72
(1)	Massachusetts Trend		-3.7%		-3.8%		-3.9%		-3.9%		-4.2%		-4.4%
(2)	n		5		6		7		8		9		10
(3)	s		12.64		10.97		9.92		9.09		9.42		9.57
(4)	t		2.35		2.13		2.02		1.94		1.89		1.86
(5)	m		6.50		7.00		7.50		8.00		8.50		9.00
(6)	$[1 + 1/n + 12 \times m^2 / (n^3 - n)]^{.5}$		2.33		1.99		1.77		1.63		1.52		1.44
(7)	Confidence Interval		69.25		46.59		35.47		28.75		27.17		25.68
(8)	Projected Value Prospective Period		226.88		226.12		224.49		223.74		219.81		216.78
(9)	CI/Projected Frequency		0.31		0.21		0.16		0.13		0.12		0.12
(10)	Credibility - MA Trend (Z)		20%		29%		38%		47%		49%		51%
(11)	Complement of Credibility								-4.2%				
(12)	Credibility Weighted Frequency Trend		-4.1%		-4.1%		-4.1%		-4.1%		-4.2%		-4.3%

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) = $[(1) \times (10)] + \{ (11) \times [1.0 - (10)] \}$

V 000025

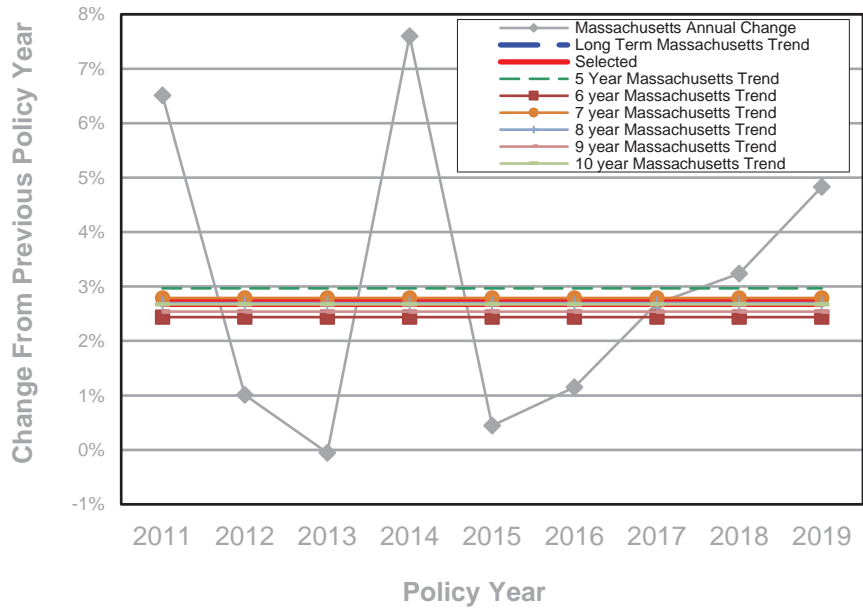
Statewide Average Weekly Wage Trend Calculation

Data Period	Statewide Average Weekly Wage	5 Year		6 Year		7 Year		8 Year		9 Year		10 Year	
		Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared	Exponential Fit	Difference Squared
4/1/12 to 4/1/13	1,181											1,147	1,198
4/1/13 to 4/1/14	1,215											1,197	313
4/1/14 to 4/1/15	1,256							1,220	1,353	1,237	386	1,250	40
4/1/15 to 4/1/16	1,292					1,259	1,074	1,281	126	1,295	8	1,305	186
4/1/16 to 4/1/17	1,338			1,305	1,102	1,327	114	1,344	40	1,355	293	1,363	624
4/1/17 to 4/1/18	1,383	1,355	788	1,383	0	1,400	260	1,411	787	1,419	1,232	1,423	1,584
4/1/18 to 4/1/19	1,432	1,447	242	1,466	1,147	1,476	1,931	1,482	2,522	1,485	2,827	1,486	2,959
4/1/19 to 4/1/20	1,488	1,545	3,314	1,553	4,271	1,556	4,626	1,556	4,626	1,554	4,418	1,552	4,083
4/1/20 to 4/1/21	1,694	1,650	1,947	1,646	2,329	1,640	2,904	1,633	3,701	1,627	4,533	1,620	5,482
4/1/21 to 4/1/22	1,765	1,762	11	1,744	439	1,730	1,284	1,715	2,546	1,703	3,890	1,692	5,416
(1)	Massachusetts Trend		6.8%		6.0%		5.4%		5.0%		4.7%		4.4%
(2)	n		5		6		7		8		9		10
(3)	s		45.83		48.19		49.38		51.16		51.69		52.30
(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		228.97		189.39		165.61		153.24		142.33		134.94
(8)	Projected Value Prospective Period		2,253.40		2,169.61		2,109.17		2,058.92		2,021.24		1,989.81
(9)	CI/Projected Wage		0.10		0.09		0.08		0.07		0.07		0.07
(10)	Credibility - MA Trend (Z)		59%		69%		76%		81%		85%		88%
(11)	Complement of Credibility								3.4%				
(12)	Credibility Weighted Wage Trend		5.4%		5.2%		4.9%		4.7%		4.5%		4.3%

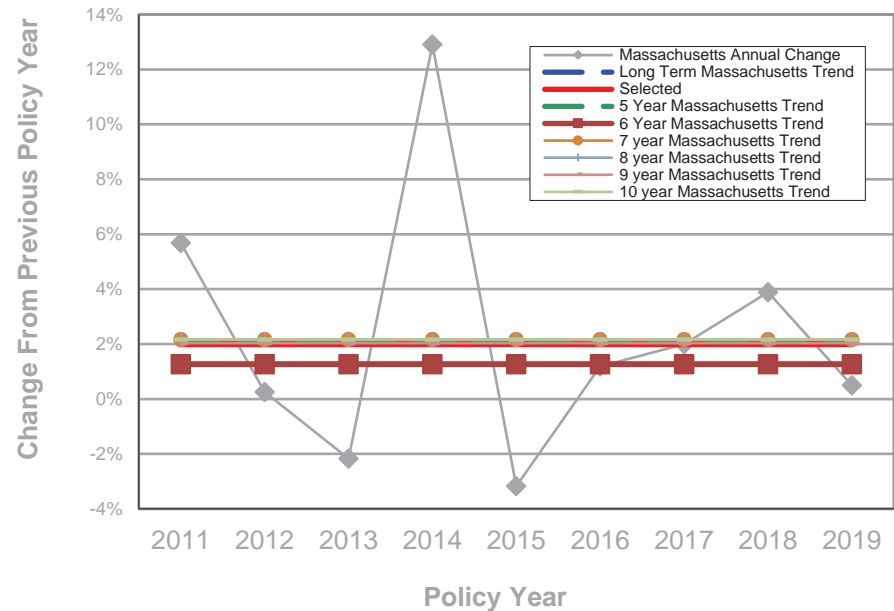
- Notes:
- (1): Massachusetts Trend from exponential fit to the SAWW.
 - (2): Number of data points used in the exponential fitting of the statewide average weekly wages.
 - (3): $\sqrt{SSR/(n - 2)}$ where SSR is the sum of squared residuals and n is the number of data points used in the exponential 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) = $[(1) \times (10)] + \{(11) \times [1.0 - (10)]\}$

V 000026

Indemnity Severity Trend



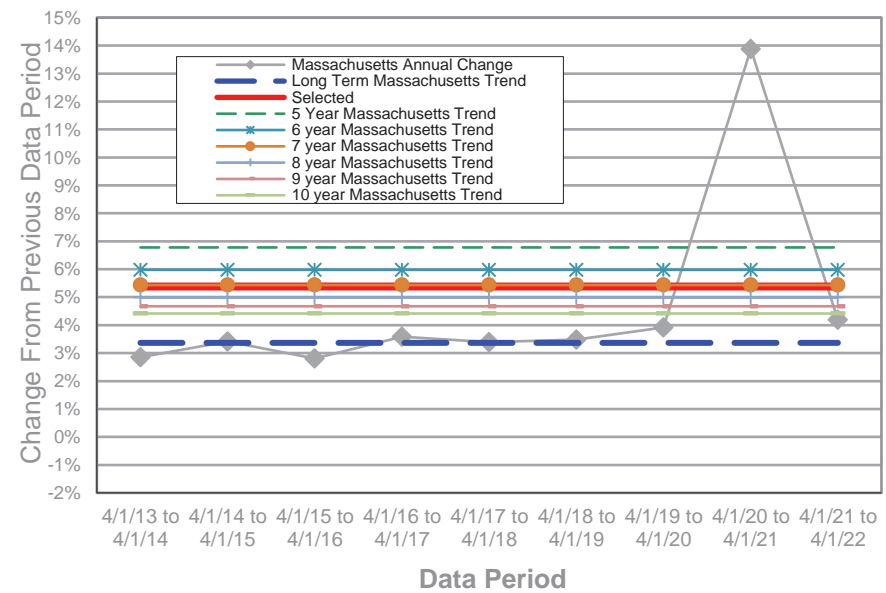
Lost Time Medical Severity Trend



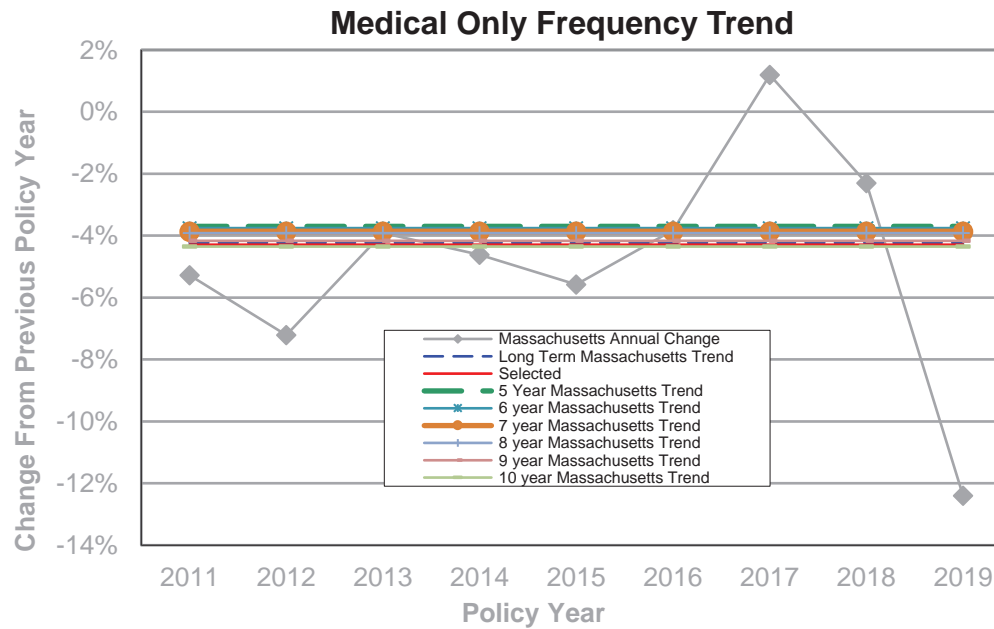
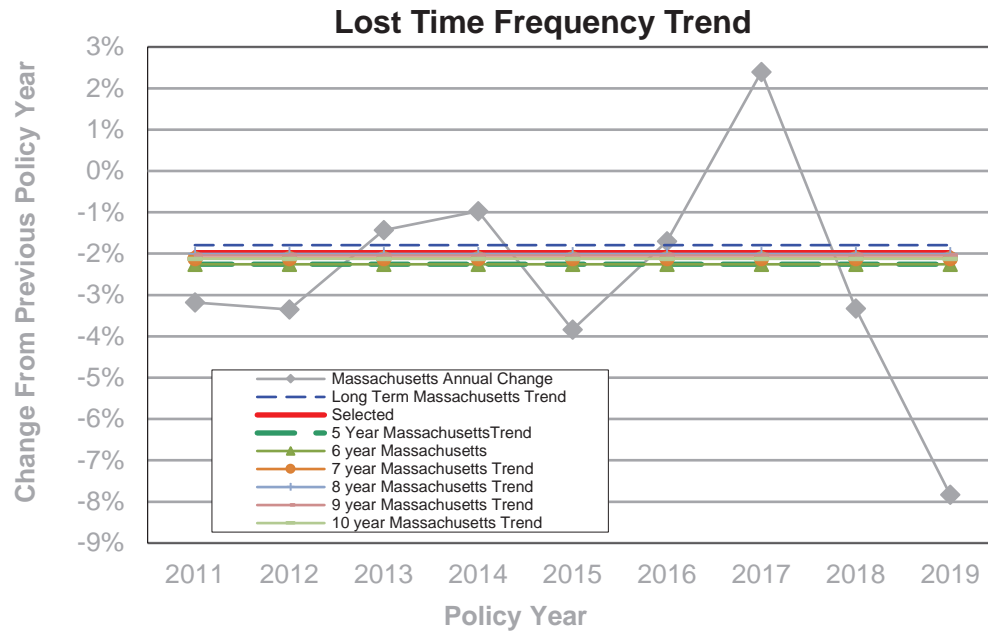
Medical Only Severity Trend



SAWW Trend



V 000027



V 000028

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							
2005_01	16,774	17,058	17,138	17,174	17,199	17,208	17,215	17,218	17,230	17,237	17,237	73.57	234.29	0.866	202.79		
2006_01	15,489	15,766	15,865	15,914	15,925	15,942	15,943	15,943	15,962	15,968	15,968	75.65	211.07	0.918	193.83	-4.4%	
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	0.962	193.67	-0.1%	
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	0.994	181.98	-6.0%	
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	1.003	177.78	-2.3%	
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	1.009	187.49	5.5%	
2011_01	14,468	14,697	14,790	14,830	14,865	14,878	14,878	14,882	14,888	14,888	14,889	82.97	179.46	1.012	181.53	-3.2%	
2012_01	14,207	14,462	14,532	14,562	14,587	14,590	14,596	14,602	14,601		14,602	83.65	174.57	1.005	175.45	-3.4%	
2013_01	14,411	14,672	14,748	14,798	14,819	14,823	14,823	14,832			14,836	85.14	174.25	0.993	172.95	-1.4%	
2014_01	14,800	15,071	15,155	15,194	15,212	15,221	15,220				15,231	87.14	174.80	0.980	171.26	-1.0%	
2015_01	14,852	15,071	15,149	15,189	15,216	15,226					15,237	90.37	168.61	0.977	164.69	-3.8%	
2016_01	14,629	14,845	14,930	14,958	14,975						14,995	90.20	166.24	0.974	161.88	-1.7%	
2017_01	15,270	15,542	15,621	15,655							15,699	91.72	171.17	0.968	165.76	2.4%	
2018_01	14,908	15,160	15,227								15,301	92.67	165.11	0.970	160.24	-3.3%	
2019_01	13,331	13,539									13,669	92.55	147.69	1.000	147.69	-7.8%	
Age-to-Age Development Factors											Selected Complement of Credibility			-1.8%			
	18 - 30	30 - 42	42 - 54	54 - 66	66 - 78	78 - 90	90 - 102	102 - 114	114 - 126								
2 Yr Weighted Average	1.016	1.005	1.002	1.001	1.001	1.000	1.001	1.000	1.000								
Selected	1.016	1.005	1.002	1.001	1.001	1.000	1.001	1.000	1.000								
Cumulative	1.026	1.010	1.005	1.003	1.001	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 000029

Medical Only Reported Claim Counts - Industrywide

Policy Year (1)	Medical Only 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)																
2005_01	40,395	41,188	41,301	41,315	41,320	41,323	41,320	41,328	41,331	41,332	41,332	73.57	561.79	0.866	486.27		
2006_01	37,304	38,011	38,090	38,118	38,117	38,118	38,123	38,146	38,177	38,176	38,176	75.65	504.63	0.918	463.41	-4.7%	
2007_01	36,550	37,075	37,123	37,122	37,131	37,121	37,124	37,161	37,161	37,159	37,159	78.30	474.58	0.962	456.76	-1.4%	
2008_01	32,711	33,074	33,138	33,153	33,174	33,171	33,190	33,193	33,191	33,194	33,194	78.57	422.48	0.994	419.87	-8.1%	
2009_01	29,840	30,132	30,166	30,174	30,180	30,187	30,186	30,186	30,181	30,187	30,187	75.29	400.96	1.003	402.15	-4.2%	
2010_01	31,550	31,919	31,969	31,976	31,969	31,967	31,969	31,967	31,966	31,970	31,970	79.76	400.82	1.009	404.55	0.6%	
2011_01	30,939	31,372	31,423	31,446	31,441	31,437	31,430	31,427	31,428	31,428	31,428	82.97	378.81	1.012	383.19	-5.3%	
2012_01	29,128	29,510	29,565	29,592	29,587	29,585	29,584	29,589	29,588			29,590	83.65	353.75	1.005	355.54	-7.2%
2013_01	28,894	29,225	29,286	29,304	29,301	29,299	29,309	29,303				29,305	85.14	344.19	0.993	341.62	-3.9%
2014_01	28,527	28,929	28,989	28,987	28,988	28,981	28,980					28,981	87.14	332.60	0.980	325.87	-4.6%
2015_01	27,918	28,379	28,443	28,454	28,462	28,463						28,469	90.37	315.03	0.977	307.70	-5.6%
2016_01	26,908	27,365	27,395	27,410	27,412							27,415	90.20	303.92	0.974	295.95	-3.8%
2017_01	27,941	28,307	28,334	28,356								28,364	91.72	309.26	0.968	299.48	1.2%
2018_01	27,637	27,892	27,913									27,939	92.67	301.50	0.970	292.60	-2.3%
2019_01	23,385	23,680										23,722	92.55	256.31	1.000	256.31	-12.4%
	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	1.011	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000								
Selected	1.011	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000								
Cumulative	1.013	1.002	1.001	1.000	1.000	1.000	1.000	1.000	1.000								
													Selected Complement of Credibility				-4.2%

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 000030

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)
2005_01	349,657	1.201	420,099	17,237	24,372
2006_01	343,142	1.188	407,814	15,968	25,539
2007_01	342,885	1.176	403,081	15,756	25,583
2008_01	332,279	1.162	386,264	14,387	26,848
2009_01	321,646	1.158	372,373	13,345	27,904
2010_01	343,817	1.159	398,435	14,817	26,890
2011_01	370,362	1.151	426,440	14,889	28,641
2012_01	370,147	1.141	422,440	14,602	28,930
2013_01	377,428	1.137	428,965	14,836	28,915
2014_01	419,232	1.130	473,882	15,231	31,112
2015_01	424,652	1.121	476,148	15,237	31,250
2016_01	426,184	1.112	473,971	14,995	31,608
2017_01	462,530	1.102	509,575	15,699	32,459
2018_01	469,963	1.091	512,722	15,301	33,510
2019_01	444,366	1.081	480,161	13,669	35,127

15 Year Indemnity Trend

2.4%

Notes:

- (2): (3) Exhibit 1, Page 2
- (3): Section IV-A, Exhibit 1.
- (5): Section V-B, Exhibit 1.

V 000031

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)										
2005_01	110,114	196,752	259,782	297,958	321,547	335,386	342,734	344,717	347,959	349,657	349,657
2006_01	100,324	186,197	254,668	293,733	313,566	324,673	333,625	338,678	341,533	343,142	343,142
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	109,341	213,099	283,775	327,474	349,051	359,355	365,428	367,935	368,827		370,147
2013_01	117,451	223,296	294,413	335,664	356,417	365,819	370,030	373,715			377,428
2014_01	127,507	247,486	334,385	379,224	397,244	404,903	411,641				419,232
2015_01	132,268	251,088	331,266	376,898	395,569	411,123					424,652
2016_01	132,909	252,812	332,383	378,153	400,869						426,184
2017_01	140,608	268,447	353,895	412,448							462,530
2018_01	143,182	264,742	363,778								469,963
2019_01	138,610	255,545									444,366
	Age-to-Age Development Factors										
	18 - 30	30 - 42	42 - 54	54 - 66	66 - 78	78 - 90	90 - 102	102 - 114	114 - 126		
2005_01	1.787	1.320	1.147	1.079	1.043	1.022	1.006	1.009	1.005		
2006_01	1.856	1.368	1.153	1.068	1.035	1.028	1.015	1.008	1.005		
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	1.332	1.154	1.066	1.030	1.017	1.007	1.002			
2013_01	1.901	1.318	1.140	1.062	1.026	1.012	1.010				
2014_01	1.941	1.351	1.134	1.048	1.019	1.017					
2015_01	1.898	1.319	1.138	1.050	1.039						
2016_01	1.902	1.315	1.138	1.060							
2017_01	1.909	1.318	1.165								
2018_01	1.849	1.374									
2019_01	1.844										
2 Yr Weighted Average	1.846	1.346	1.152	1.055	1.029	1.014	1.008	1.006	1.004		
5 Yr Weighted Average	1.880	1.336	1.143	1.057	1.028	1.015	1.008	1.007	1.005		
Selected	1.846	1.346	1.152	1.055	1.029	1.014	1.008	1.006	1.004		
Cumulative	3.211	1.739	1.292	1.121	1.063	1.033	1.018	1.010	1.004		

Notes:
 Development factors are loss weighted average, paid data uses two years.

V 000032

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)
2005_01	148,621	1.032	153,377	17,237	8,898
2006_01	152,728	1.032	157,616	15,968	9,871
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	155,143	1.000	155,143	14,602	10,625
2013_01	154,196	1.000	154,196	14,836	10,394
2014_01	178,733	1.000	178,733	15,231	11,735
2015_01	173,119	1.000	173,119	15,237	11,362
2016_01	172,383	1.000	172,383	14,995	11,496
2017_01	184,086	1.000	184,086	15,699	11,726
2018_01	186,398	1.000	186,398	15,301	12,182
2019_01	167,342	1.000	167,342	13,669	12,242

15 Year Lost Time Medical Trend

2.0%

Notes:

- (2): (3) Exhibit 1, Page 2
- (3): Section IV-A, Exhibit 1.
- (5): Section V-B, Exhibit 1.

V 000033

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)										
2005_01	88,369	115,528	127,448	134,077	138,067	140,547	143,417	145,078	146,961	148,621	148,621
2006_01	85,564	112,793	126,804	133,695	138,424	141,821	145,744	148,143	150,548	152,728	152,728
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	136,907	142,691	145,929	147,930	150,140	152,018	153,615	155,143	155,143
2013_01	96,063	124,400	136,618	143,081	146,130	148,369	149,642	150,941			154,196
2014_01	107,786	141,058	155,196	163,564	168,492	171,271	173,124				178,733
2015_01	105,900	139,715	152,454	158,099	163,118	166,063					173,119
2016_01	108,619	138,216	152,058	158,764	162,550						172,383
2017_01	113,814	147,233	160,873	168,893							184,086
2018_01	116,692	148,961	163,328								186,398
2019_01	102,726	133,964									167,342
	Age-to-Age Development Factors										
	18 - 30	30 - 42	42 - 54	54 - 66	66 - 78	78 - 90	90 - 102	102 - 114	114 - 126		
2005_01	1.307	1.103	1.052	1.030	1.018	1.020	1.012	1.013	1.011		
2006_01	1.318	1.124	1.054	1.035	1.025	1.028	1.016	1.016	1.014		
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			
2013_01	1.295	1.098	1.047	1.021	1.015	1.009					
2014_01	1.309	1.100	1.054	1.030	1.016	1.011					
2015_01	1.319	1.091	1.037	1.032	1.018						
2016_01	1.272	1.100	1.044	1.024							
2017_01	1.294	1.093	1.050								
2018_01	1.277	1.096									
2019_01	1.304										
2 Yr Weighted Average	1.289	1.095	1.047	1.028	1.017	1.010	1.011	1.012	1.010		
5 Yr Weighted Average	1.293	1.096	1.046	1.026	1.017	1.013	1.012	1.010	1.009		
Selected	1.289	1.095	1.047	1.028	1.017	1.010	1.011	1.012	1.010		
Cumulative	1.611	1.249	1.141	1.090	1.060	1.042	1.032	1.022	1.010		

Notes:
 Development factors are loss weighted averages, paid data uses two years

V 000034

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)
2005_01	28,840	1.032	29,763	41,332	720
2006_01	28,353	1.032	29,260	38,176	766
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	25,144	1.000	25,144	29,590	850
2013_01	25,558	1.000	25,558	29,305	872
2014_01	24,720	1.000	24,720	28,981	853
2015_01	25,489	1.000	25,489	28,469	895
2016_01	25,065	1.000	25,065	27,415	914
2017_01	26,883	1.000	26,883	28,364	948
2018_01	27,447	1.000	27,447	27,939	982
2019_01	23,147	1.000	23,147	23,722	976

15 Year Medical Only Trend

2.0%

Notes:

- (2): (3) Exhibit 2, Page 2
- (3): Section IV-A, Exhibit 1.
- (5): Section V-B, Exhibit 2.

V 000035

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)										
2005_01	26,403	28,509	28,742	28,784	28,775	28,798	28,790	28,807	28,825	28,840	28,840
2006_01	25,974	27,944	28,154	28,278	28,296	28,344	28,192	28,258	28,354	28,353	28,353
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	22,799	24,519	24,895	25,047	25,033	25,077	25,097	25,163	25,141	25,144	25,144
2013_01	23,731	24,878	25,214	25,281	25,334	25,401	25,544	25,560		25,558	25,558
2014_01	22,820	24,293	24,676	24,570	24,593	24,659	24,682			24,720	24,720
2015_01	22,942	24,741	25,078	25,201	25,295	25,365				25,489	25,489
2016_01	22,496	24,284	24,661	24,816	24,876					25,065	25,065
2017_01	24,427	25,909	26,113	26,598						26,883	26,883
2018_01	24,529	26,404	26,817							27,447	27,447
2019_01	20,670	22,353								23,147	23,147
	Age-to-Age Development Factors										
	18 - 30	30 - 42	42 - 54	54 - 66	66 - 78	78 - 90	90 - 102	102 - 114	114 - 126		
2005_01	1.080	1.008	1.001	1.000	1.001	1.000	1.001	1.001	1.001		
2006_01	1.076	1.007	1.004	1.001	1.002	0.995	1.002	1.003	1.000		
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			
2013_01	1.048	1.013	1.003	1.002	1.003	1.006	1.001				
2014_01	1.065	1.016	0.996	1.001	1.003	1.001					
2015_01	1.078	1.014	1.005	1.004	1.003						
2016_01	1.079	1.016	1.006	1.002							
2017_01	1.061	1.008	1.019								
2018_01	1.076	1.016									
2019_01	1.081										
2 Yr Weighted Average	1.079	1.012	1.013	1.003	1.003	1.003	1.002	1.000	1.000		
5 Yr Weighted Average	1.075	1.014	1.006	1.002	1.002	1.001	1.001	0.999	1.000		
Selected	1.079	1.012	1.013	1.003	1.003	1.003	1.002	1.000	1.000		
Cumulative	1.117	1.036	1.023	1.011	1.008	1.005	1.002	1.000	1.000		

Notes:
 Development factors are loss weighted averages, paid data uses two years

V 000036

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)												
2005_01										74,399	74,399	1,011.25	73.57
2006_01										79,901	79,901	1,056.18	75.65
2007_01										85,512	85,512	1,092.12	78.30
2008_01									85,859	85,859	85,859	1,092.79	78.57
2009_01								82,944	82,944	82,944	82,944	1,101.70	75.29
2010_01							91,311	91,311	91,311	91,311	91,311	1,144.80	79.76
2011_01						97,424	97,419	97,419	97,419	97,419	97,419	1,174.21	82.97
2012_01					99,595	99,579	99,582	99,582	99,580	99,580	99,580	1,190.50	83.65
2013_01				104,382	104,352	104,351	104,352	104,350		104,349	104,349	1,225.60	85.14
2014_01			110,244	110,230	110,227	110,228	110,237			110,235	110,235	1,265.09	87.14
2015_01		117,820	117,798	117,799	117,798	117,808				117,811	117,811	1,303.66	90.37
2016_01	121,768	121,733	121,711	121,703	121,708					121,717	121,717	1,349.36	90.20
2017_01	127,651	127,946	127,989	127,984						127,996	127,996	1,395.56	91.72
2018_01	133,812	133,981	133,986							133,991	133,991	1,445.94	92.67
2019_01	141,917	142,882								142,913	142,913	1,544.09	92.55

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	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Selected	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Cumulative	1.004	1.000	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 000037

V 000038

Section V - Trend
Subsection F - Calculation of Class Mix Adjustment Factor
7/1/2023

Section V - F
Exhibit 1

Class Mix Adjustment Factors

Policy Year (1)	Average Rates Based on Rates Effective 7/1/22 (2)	Class Mix Adjustment Factor = 0.745 / (2) (3)
2005_01	0.861	0.866
2006_01	0.811	0.918
2007_01	0.774	0.962
2008_01	0.749	0.994
2009_01	0.743	1.003
2010_01	0.738	1.009
2011_01	0.736	1.012
2012_01	0.741	1.005
2013_01	0.750	0.993
2014_01	0.760	0.980
2015_01	0.763	0.977
2016_01	0.765	0.974
2017_01	0.769	0.968
2018_01	0.767	0.970
2019_01	0.745	1.000

Notes:

(2): Current rates (Effective 7/1/22) averaged over class payrolls (excluding large deductibles) by Policy Year.

(3): Adjustment to 2019_01 Policy Year level.

V 000039

Section V - Trend
 Subsection G - External Data
 7/1/2023

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)
10/1/03	4/1/02 to 4/1/03	884.46
10/1/04	4/1/03 to 4/1/04	918.78
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
15 Year Exponential Fit, Trend =		3.4%

Policy Year (4)	SAWW (5)
2005_01	1,011.25
2006_01	1,056.18
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

Notes:

(5): SAWW for Policy Year $i = [0.03125 \times \text{SAWW during period } 4/1/(i-1) \text{ to } 4/1/i] + [0.6875 \times \text{SAWW during period } 4/1/i \text{ to } 4/1/(i+1)] + [0.28125 \times \text{SAWW during period } 4/1/(i+1) \text{ to } 4/1/(i+2)]$

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

V 000040

Section V - Trend
 Subsection H - Expense Trends
 7/1/2023

Section V - H
 Exhibit 1

Calculation of Expense Trend Index

Time Interval (1)	Time Index (2)	Expense Trend Index (3)	Expense Trend Factors		
			PY2018 (4)	PY2019 (5)	7/1/2023 (6)
CY2007	7/1/2007	69.07			
CY2008	7/1/2008	73.44			
CY2009	7/1/2009	73.74			
CY2010	7/1/2010	75.83			
CY2011	7/1/2011	73.10			
CY2012	7/1/2012	73.33			
CY2013	7/1/2013	77.70			
CY2014	7/1/2014	78.01			
CY2015	7/1/2015	82.79			
CY2016	7/1/2016	84.19			
CY2017	7/1/2017	85.16			
CY2018	7/1/2018	89.00			
CY2019	7/1/2019	91.91	0.984	1.025	1.200
CY2020	7/1/2020	96.45	0.938	0.976	1.144
CY2021	7/1/2021	100.00	0.905	0.942	1.103

15 Year Exponential Fit, Trend: 2.4%

PY2018	1/1/2019	90.45			1.219
PY2019	1/1/2020	94.18			1.171
7/1/2022	7/1/2023	106.75			1.033
7/1/2023	7/1/2024	110.30			

Notes:

- (1): 7/1/22 and 7/1/23 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 3.3%.
- (3): Calendar Years: Exhibit 2, Page 2, col (17), Converted to Index with 2021 = 100.
 PY2018 - Average of indices for CY2018 and CY2019.
 PY2019 - Average of indices for CY2019 and CY2020.
 The exponential trend rate derived from an exponential regression of the Expense Trend Index for CY2015 - CY2021 is applied to the CY2021 Expense Trend Index value to derive the Expense Trend Index values for 7/1/2022 and 7/1/2023.
- (4) = [(3) for PY2018] / (3)
- (5) = [(3) for PY2019] / (3)
- (6) = [(3) for 7/1/2023] / (3)

V 000041

Section V - Trend
 Subsection H - Expense Trends
 7/1/2023

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)
2015	82.79	81.35	2.07
2016	84.19	84.05	0.02
2017	85.16	86.84	2.84
2018	89.00	89.73	0.53
2019	91.91	92.71	0.64
2020	96.45	95.79	0.44
2021	100.00	98.97	1.06

(5)	7 Year Expense Index Trend	3.3%
(6)	n	7
(7)	s	1.23
(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	3.87
(12)	Projected Value Prospective Period	109.17
(13)	CI/Projected Expense Index	0.04
(14)	Credibility - 7 Year Expense Index Trend (Z)	100%
(15)	Complement of Credibility - 15 year	2.4%
(16)	Credibility Weighted Expense Trend	3.3%

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 000042

Section V - Trend
 Subsection H - Expense Trends
 7/1/2023

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)
2007	1,752.00	206.41	181.50	98.37	206.88	114.60	169.30
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

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)
2007								
2008	6.4%	4.5%	6.1%	2.2%	3.4%	6.5%	8.9%	6.3%
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%

Weights							
Calendar Year (18)	Average Weekly Earnings (19)	Food (20)	Private Transportation (21)	Phone (22)	Postage (23)	Machines & Equipment (24)	Paper (25)
2007	79.9%	2.1%	2.1%	1.8%	1.8%	10.4%	1.8%
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%	2.0%	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	81.4%	0.6%	0.6%	1.2%	1.2%	14.3%	0.6%

Notes:

- (2): Average Weekly Earnings, Covered Employment and Wages, Private Fire, Marine, and Casualty Insurers - Massachusetts Unadjusted for Seasonality
 Years CY2015 - CY2021: 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 2020-2021. Prior Filings for all other years.

V 000043

Section V - Trend
 Subsection H - Expense Trends
 7/1/2023

Section V - H
 Exhibit 2
 Page 3

Calendar Year 2020
 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	7.35%	65.9%	Average Weekly Earnings Covered Employment and Wages; Private Fire, Marine, Casualty Massachusetts	80.7%
Payroll Taxes	0.49%	4.4%		
Employee Relations	1.17%	10.5%		
Travel & Travel Items	0.14%	1.3%	Food Away From Home-CPI-US	0.6%
			Private Transportation-CPI-US	0.6%
Postage & Telephone	0.28%	2.5%	Postage-CPI-US	1.3%
			Telephone-CPI-US	1.3%
Equipment	1.66%	14.9%	Office & Stores Machines & Equipment-PPI	14.9%
Printing & Stationery	0.07%	0.6%	Paper-PPI	0.6%
Total	11.16%	100.0%		100.0%

Notes:

(2): 2021 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
 7/1/2023

Section V - H
 Exhibit 2
 Page 4

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%	67.0%	Average Weekly Earnings Covered Employment and Wages; Private Fire, Marine, Casualty Massachusetts	81.4%
Payroll Taxes	0.46%	4.4%		
Employee Relations	1.06%	10.1%		
Travel & Travel Items	0.13%	1.2%	Food Away From Home-CPI-US	0.6%
			Private Transportation-CPI-US	0.6%
Postage & Telephone	0.26%	2.5%	Postage-CPI-US	1.2%
			Telephone-CPI-US	1.2%
Equipment	1.50%	14.3%	Office & Stores Machines & Equipment-PPI	14.3%
Printing & Stationary	0.06%	0.6%	Paper-PPI	0.6%
Total	10.50%	100.0%		100.0%

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 000045

Section V - Trend
 Subsection H - Expense Trends
 7/1/2023

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)
2005	73.57		
2006	75.65		
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	90.37	90.14	0.05
2016	90.20	90.81	0.37
2017	91.72	91.50	0.05
2018	92.67	92.18	0.23
2019	92.55	92.87	0.10

15 Year Million Worker-Weeks Trend

1.8%

(5)	5 Year MA Trend	0.8%
(6)	n	5
(7)	s	0.52
(8)	t	2.35
(9)	m	6.50
(10)	$[1 + 1/n + 12 \times m^2 / (n^3 - n)]^{.5}$	2.33
(11)	Confidence Interval	2.85
(12)	Projected	96.05
(13)	CI / Projected	0.03
(14)	Credibility - 5 Year MA Trend (Z)	100%
(15)	Complement of Credibility	1.8%
(16)	Credibility-Weighted Overall Exposure Growth	0.8%

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 2022 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 2019, 2020, and 2021¹ (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, 7/1/2024). 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

¹ 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. .

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estimated using the actual WCRIBMA expenses taken from WCRIBMA Financial Statements and Expense Analysis Report rather than the Incurred Boards and Bureaus expense item from the Expense Call.

Calendar year data (2019-2021), 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, 7/1/2024). 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 (2022) 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, 7/1/2024) (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 direct commission expenses to direct written premium for three calendar years (2019-2021) 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.²

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 (2019-2021). The WCRIBMA then averages these three ratios to determine the other acquisition expense ratio (Section VI-G, Exhibit 2).

² 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.

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 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 2019, 2020, and 2021. 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 constants³ 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 to any distortion created by the various treatments of DCCE that exist in the large deductible market.⁴ 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 2022 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

³ WCRIBMA introduced a three tiered expense constants system in the 2008 rate filing.

⁴ 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.

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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 12/31/2021. 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 (2018-2020) was selected as the DCCE load (Section VI-H, Exhibit 1, Page 1).⁵

The WCRIBMA calculates the AO load by taking the ratios of adjusted AO to adjusted losses for three calendar years (2019-2021). 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 of net losses.⁶ 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

⁵ 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.

⁶ “*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, 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.

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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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Section VI - Expenses
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Section VI - A
Exhibit 1

Summary of Expense Ratios

(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)	Variable Expense Ratio = (1) + (2) + (3)	20.4%
(5)	Fixed Expense Ratio	5.5%
(6)	Total Loss Adjustment Expense Ratio (LAE / Loss)	18.3%

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 2018			Projected to PY 2019		
				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)
2019	35,572,185	1,301,686	36,873,870	0.984	0.996	36,155,382	1.025	1.004	37,926,896
2020	35,118,942	1,158,816	36,277,758	0.938	0.989	33,642,660	0.976	0.996	35,291,058
2021	37,734,155	1,284,168	39,018,323	0.905	0.981	34,640,295	0.942	0.989	36,337,574
Average			37,389,984			34,812,779			36,518,510

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 7/1/2024 (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)
2018	34,812,779	2,019,941	36,832,720	1.219	44,914,783	816,352,996	5.5%
2019	36,518,510	2,118,912	38,637,422	1.171	45,251,758	826,209,551	5.5%
Average							5.5%

Notes:

- (2): Exhibit 2, Page 1.
- (3): Exhibit 2, Page 3.
- (5): Section V-H, Exhibit 1.
- (6): 0.8% annual growth in worker-weeks, from Section V-H, Exhibit 3; -0.5 years from CY 2019 to PY 2018, -1.5 years from CY 2020 to PY 2018, -2.5 years from CY 2021 to PY 2018.
- (8): Section V-H, Exhibit 1.
- (9): 0.8% annual growth in worker-weeks, from Section V-H, Exhibit 3; 0.5 years from CY 2019 to PY 2019, -0.5 years from CY 2020 to PY 2019, -1.5 years from CY 2021 to PY 2019.
- (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.

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Section VI - Expenses
 Subsection B - Fixed Expenses
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Section VI - B
 Exhibit 2
 Page 1

General Expense Exclusive of Proposed Expense Constant

	Calendar Year		
	2019	2020	2021
(1) Standard Earned Premium Including Expense Constant Premium	761,215,908	734,895,197	752,052,813
(2) ARAP Premium at Company Level	31,554,272	31,338,601	31,056,758
(3) Adjustment Factor to Adjust from Company Level to DSR Level Premium	1.056	1.059	1.047
(4) Standard Earned Premium plus Adjusted ARAP = (1) + [(2) x (3)]	794,524,958	768,082,009	784,562,647
(5) Adjustment for Experience and Merit Rating, ARAP, and Construction Credit Off-balance	1.037	1.032	1.033
(6) Adjustment Factor to Remove the Impact of Loading for Recoupment of Insolvency Fund Assessments	0.998	0.998	1.005
(7) Adjusted Standard Earned Premium plus ARAP = (4) x (5) x (6)	822,119,363	791,290,275	814,420,875
(8) Ratio of Adjusted General Expense to Adjusted Standard Earned Premium plus ARAP	6.0%	6.3%	6.5%
(9) General Expenses = (7) x (8)	49,290,544	49,701,833	52,853,540
(10) Expense Constant Premium	30,630,268	30,541,480	30,606,552
(11) General Expense Portion of Expense Constant	51.0%	51.0%	51.0%
(12) Average Expense Constant in Effect	250.26	246.34	246.87
(13) Proposed Average Expense Constant	263.89	263.89	263.89
(14) Expense Trend Factor - Calendar Year XXXX to 7/1/24, the midpoint of the Prospective Effective Period	1.200	1.144	1.103
(15) Trend Factor to Adjust Proposed Average Expense Constant to Calendar Year XXXX = 1.0 / (14)	0.833	0.874	0.907
(16) Detrended Proposed Average Expense Constant = (13) x (15)	219.89	230.76	239.25
(17) Adjusted General Expenses Generated by the Expense Constant = [(10) x (11)] x [(16) / (12)]	13,718,359	14,582,891	15,119,385
(18) General Expenses Exclusive of Expense Constant Premium = (9) - (17)	35,572,185	35,118,942	37,734,155

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.

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Section VI - Expenses
 Subsection B - Fixed Expenses
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 Exhibit 2
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Calculation of General Expense

	Calendar Year		
	2019	2020	2021
(1) Standard Earned Premium Including Expense Constant Premium	952,296,677	915,172,108	920,343,199
(2) ARAP Premium at Company Level	38,815,576	37,728,950	37,611,910
(3) Adjustment Factor to Adjust from Company Level to DSR Level Premium	1.056	1.059	1.047
(4) Standard Earned Premium plus Adjusted ARAP = (1) + [(2) x (3)]	993,270,843	955,126,144	959,714,885
(5) Adjustment for Experience and Merit Rating, ARAP, and Construction Credit Off-balance	1.037	1.032	1.033
(6) Adjustment Factor to Remove the Impact of Loading for Recoupment of Insolvency Fund Assessments	0.998	0.998	1.005
(7) Adjusted Standard Earned Premium plus ARAP = (4) x (5) x (6)	1,027,767,830	983,986,110	996,238,911
(8) Actual WCRIBMA Expenses	8,929,031	9,434,175	10,345,685
(9) General Expenses (excluding Boards & Bureaus Expenses)	52,691,261	52,371,100	54,307,315
(10) Adjusted General Expense = (8) + (9)	61,620,292	61,805,275	64,653,000
(11) Ratio of Adjusted General Expense to Adjusted Standard Earned Premium plus ARAP (including expense constants) = (10) / (7)	6.0%	6.3%	6.5%

Notes:

- (1),(2): Aggregate Financial Reconciliation Report Calls, Calendar Years 2019 - 2021, 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 2019 - 2021.

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Section VI - Expenses
Subsection B - Fixed Expenses
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Section VI - B
Exhibit 2
Page 3

Calculation of Pool Expense

	Calendar Year		
	2019	2020	2021
(1) Administrative Expenses	548,444	551,604	550,546
(2) Other Expense Allowances	-	-	-
(3) Workers' Compensation Bureau Pool Expenses	2,121,129	1,857,197	2,031,265
(4) Total Pool Expenses = (1) + (2) + (3)	2,669,573	2,408,801	2,581,811
(5) Target Pool Expenses for Excluded Companies	895,450	829,400	831,562
(6) Total Pool Expenses, excluding 4 company(ies) = (4) - (5)	1,774,124	1,579,401	1,750,249
(7) Proportion of Voluntary Assessable Premium Not from Large Deductibles " u "	0.734	0.734	0.734
(8) Total Pool Expenses for Non-Large Deductibles = (6) x (7)	1,301,686	1,158,816	1,284,168

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
(7): Section I-E, Exhibit 2.

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Section VI - Expenses
Subsection B - Fixed Expenses
7/1/2023

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.

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Section VI - Expenses
Subsection C - Other Taxes
7/1/2023

Section VI - C
Exhibit 1

Calculation of Other Taxes

(1)	Calendar Year 2021 Standard Earned Premium Including Expense Constant Premium	752,052,813		
(2)	Calendar Year 2021 ARAP Premium at Company Level	31,056,758		
(3)	Adjustment Factor to Adjust from Company Level to DSR Level Premium	1.047		
(4)	Calendar Year 2021 Standard Earned Premium plus Adjusted ARAP = (1) + [(2) x (3)]	784,562,647		
(5)	Calendar Year 2021 Other Taxes Ratio	0.29%		
(6)	Calendar Year 2021 Other Taxes = (4) x (5)	2,275,232		
			<u>PY2018</u>	<u>PY2019</u>
(7)	Other Tax Trend Factor from CY 2021 to PY XXXX	0.905	0.942	
(8)	Annual Exposure Growth	0.8%	0.8%	
(9)	Trend Length	-2.5	-1.5	
(10)	Provision for Other Taxes = (6) x (7) x { [1.0 + (8)] ^ (9) }	2,019,941	2,118,912	

Notes:

(1),(2): Based on Aggregate Financial Policy Year Call.

(3): Section III-B, Exhibit 2.

(5): 2022 Best's Aggregates and Averages. Page 26.

(7): Section V-H, Exhibit 1.

(8): Section V-H, Exhibit 3.

(9): -2.5 years from CY 2021 to PY 2018, -1.5 years from CY 2021 to PY 2019.

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Section VI - Expenses
 Subsection D - Expense Constant
 7/1/2023

Section VI - D
 Exhibit 1

Calculation of Expense Constant

Standard Premium Ranges		PY 2019 Adjusted Policy Count	Adjusted Policy Distribution	Current Expense Constant	Trend Factor from 7/1/23 to 7/1/24	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 \$169	37,207	30%	\$159.00	1.033	1.000	\$159.00
\$200 to \$1,000	\$169 to \$847	27,984	23%	\$250.00	1.033	1.000	\$250.00
\$1,000 or more	\$847 or more	57,913	47%	\$338.00	1.033	1.000	\$338.00
Total		123,104	100%	\$263.89			\$263.89

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, 1.18, from Section III-E, Exhibit 1.

(3): Unit Statistical Data PY 2019 (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)

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Section VI - Expenses
Subsection E - Expenses Net of Premium Discount
7/1/2023

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	7.8%	4.0%
(2) Percentage of Voluntary Written Premium by Discount Type	75.7%	24.3%
(3) Weighted Average Premium Discount as a % of Standard Premium in Voluntary Market = (1) weighted by (2)	6.9%	
(4) Voluntary Market Share	85.8%	
(5) Average Premium Discount in Total Market = (3) x (4)	5.9%	
(6) Average ARAP Surcharge for Prospective Effective Period as a % of Standard Premium	5.5%	
(7) Average Premium Discount as a % of Standard Premium + ARAP = (5) / [1.0 + (6)]	5.6%	

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.

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Section VI - Expenses
 Subsection E - Expenses Net of Premium Discount
 7/1/2023

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 2019				Total = [Sum of (2)] (3)
	0 - 10,000	10,000 - 200,000	200,000 - 1,750,000	1,750,000 & Over	
0 - 10,000	108,673,428	75,680,000	3,150,000	70,000	187,573,428
10,000 - 200,000		189,202,490	59,850,000	1,330,000	250,382,490
200,000 - 1,750,000			68,972,465	10,850,000	79,822,465
1,750,000 - & Over				9,414,828	9,414,828
Total	108,673,428	264,882,490	131,972,465	21,664,828	527,193,211

Interstate Intervals					
Layer of Standard Premium (4)	Standard Premium Ranges - PY 2019				Total Premium in Layer (6)
	0 - 10,000	10,000 - 200,000	200,000 - 1,750,000	1,750,000 & Over	
0 - 10,000	161,706	4,086,385	1,686,427	235,125	6,169,643
10,000 - 200,000		25,651,478	32,042,112	4,467,381	62,160,971
200,000 - 1,750,000			61,855,257	36,444,420	98,299,677
1,750,000 - & Over				94,723,280	94,723,280
Total	161,706	29,737,863	95,583,796	135,870,206	261,353,571

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	193,743,071	24.6%	0.0%
10,000 - 200,000	312,543,461	39.6%	9.1%
200,000 - 1,750,000	178,122,142	22.6%	11.3%
1,750,000 - & Over	104,138,108	13.2%	12.3%
Total	788,546,782	100.0%	7.8%

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)

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Section VI - Expenses
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 Exhibit 3

Average Premium Discount Voluntary Market Risks - Type "B" Discounts

Intrastate Intervals					
Layer of Standard Premium (1)	Standard Premium Ranges - PY 2019				Total = [Sum of (2)] (3)
	0 - 10,000	10,000 - 200,000	200,000 - 1,750,000	1,750,000 & Over	
0 - 10,000	61,783,780	34,150,000	920,000	10,000	96,863,780
10,000 - 200,000		59,684,523	17,480,000	190,000	77,354,523
200,000 - 1,750,000			17,535,094	1,550,000	19,085,094
1,750,000 - & Over				596,991	596,991
Total	61,783,780	93,834,523	35,935,094	2,346,991	193,900,388

Interstate Intervals					
Layer of Standard Premium (4)	Standard Premium Ranges - PY 2019				Total Premium in Layer (6)
	0 - 10,000	10,000 - 200,000	200,000 - 1,750,000	1,750,000 & Over	
0 - 10,000	63,790	1,770,576	509,921	45,955	2,390,242
10,000 - 200,000		9,605,490	9,688,486	873,139	20,167,115
200,000 - 1,750,000			18,694,769	7,122,973	25,817,742
1,750,000 - & Over				47,323,500	47,323,500
Total	63,790	11,376,066	28,893,176	55,365,567	95,698,599

Layer of Standard Premium (7)	Total = (3) + (6) (8)	Proportion of Premium in Layer (9)	% Premium Discount Type B Company (10)
0 - 10,000	99,254,022	34.3%	0.0%
10,000 - 200,000	97,521,638	33.7%	5.1%
200,000 - 1,750,000	44,902,836	15.5%	6.5%
1,750,000 - & Over	47,920,491	16.5%	7.5%
Total	289,598,987	100.0%	4.0%

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)

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Subsection E - Expenses Net of Premium Discount

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Exhibit 4

Calendar Year 2021 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)
33758	ASSOCIATED INDUSTRIES OF MASS. MUTUAL INS. CO.	A	82,291,143	45,645,717	36,645,426	36,645,426	0
22667	ACE AMERICAN INSURANCE COMPANY	A	55,159,873	24,113,373	31,046,500	31,046,500	0
25682	TRAVELERS INDEMNITY COMPANY OF CONNECTICUT	A	42,840,227	0	42,840,227	42,840,227	0
40142	AMERICAN ZURICH INSURANCE COMPANY	A	37,664,617	10,395,541	27,269,076	27,269,076	0
11104	ASSOCIATED EMPLOYERS INSURANCE COMPANY	B	37,002,582	0	37,002,582	0	37,002,582
16535	ZURICH AMERICAN INSURANCE COMPANY	A	34,138,755	0	34,138,755	34,138,755	0
44326	ATLANTIC CHARTER INSURANCE COMPANY	A	31,638,576	8,078,414	23,560,162	23,560,162	0
30104	HARTFORD UNDERWRITERS INSURANCE COMPANY	A	31,179,469	16,981,917	14,197,552	14,197,552	0
25666	TRAVELERS INDEMNITY COMPANY OF AMERICA	A	28,048,441	23,790,383	4,258,058	4,258,058	0
33600	LM INSURANCE CORPORATION	A	24,536,259	23,605,737	930,522	930,522	0
23035	LIBERTY MUTUAL FIRE INSURANCE COMPANY	A	24,460,085	16,777,140	7,682,945	7,682,945	0
23841	NEW HAMPSHIRE INSURANCE COMPANY	B	24,367,119	0	24,367,119	0	24,367,119
31470	NORGUARD INSURANCE COMPANY	A	24,285,767	0	24,285,767	24,285,767	0
25658	TRAVELERS INDEMNITY COMPANY	A	22,609,045	0	22,609,045	22,609,045	0
25011	WESCO INSURANCE COMPANY	A	22,469,287	0	22,469,287	22,469,287	0
42390	AMGUARD INSURANCE COMPANY	A	22,184,577	11,723,744	10,460,833	10,460,833	0
29459	TWIN CITY FIRE INSURANCE COMPANY	B	20,787,903	0	20,787,903	0	20,787,903
11984	INDEPENDENCE CASUALTY INSURANCE COMPANY	A	19,468,299	0	19,468,299	19,468,299	0
25674	TRAVELERS PROPERTY CASUALTY COMPANY OF AMERICA	A	19,126,719	17,067,808	2,058,911	2,058,911	0
22357	HARTFORD ACCIDENT AND INDEMNITY COMPANY	A	18,555,736	0	18,555,736	18,555,736	0
19682	HARTFORD FIRE INSURANCE COMPANY	B	18,468,076	0	18,468,076	0	18,468,076
20281	FEDERAL INSURANCE COMPANY	A	17,078,177	0	17,078,177	17,078,177	0
24147	OLD REPUBLIC INSURANCE COMPANY	A	16,182,302	0	16,182,302	16,182,302	0
42404	LIBERTY INSURANCE CORPORATION	A	16,128,087	0	16,128,087	16,128,087	0
12262	PENNSYLVANIA MANUFACTURERS' ASSOCIATION INS. CO.	A	14,829,276	9,409,785	5,419,491	5,419,491	0
37478	HARTFORD INSURANCE COMPANY OF THE MIDWEST	B	14,656,537	0	14,656,537	0	14,656,537
29424	HARTFORD CASUALTY INSURANCE COMPANY	B	12,551,597	0	12,551,597	0	12,551,597
31325	ACADIA INSURANCE COMPANY	B	12,370,724	-36,655	12,407,379	0	12,407,379
12886	MASSACHUSETTS EMPLOYERS INSURANCE COMPANY	A	11,921,539	0	11,921,539	11,921,539	0
41360	ARBELLA PROTECTION INSURANCE COMPANY, INC.	A	10,374,493	0	10,374,493	10,374,493	0
19399	AIU INSURANCE COMPANY	B	9,946,737	0	9,946,737	0	9,946,737
13083	NEW HAMPSHIRE EMPLOYERS INSURANCE COMPANY	A	9,863,326	0	9,863,326	9,863,326	0
24074	OHIO CASUALTY INSURANCE COMPANY (THE)	B	9,653,699	0	9,653,699	0	9,653,699
39926	SELECTIVE INSURANCE COMPANY OF THE SOUTHEAST	A	9,515,316	0	9,515,316	9,515,316	0
11150	ARCH INSURANCE COMPANY	A	9,220,871	0	9,220,871	9,220,871	0
22292	HANOVER INSURANCE COMPANY (THE)	A	9,113,360	0	9,113,360	9,113,360	0
20443	CONTINENTAL CASUALTY COMPANY	B	8,574,446	2,912,827	5,661,619	0	5,661,619
28258	CONTINENTAL INDEMNITY COMPANY	B	8,447,670	0	8,447,670	0	8,447,670
11030	MEMIC INDEMNITY COMPANY	A	8,131,900	0	8,131,900	8,131,900	0
12416	PROTECTIVE INSURANCE COMPANY	A	8,011,952	0	8,011,952	8,011,952	0
19038	TRAVELERS CASUALTY AND SURETY COMPANY	A	7,907,014	0	7,907,014	7,907,014	0
12777	CHUBB INDEMNITY INSURANCE COMPANY	A	7,419,868	0	7,419,868	7,419,868	0
42376	TECHNOLOGY INSURANCE COMPANY INC.	A	7,409,128	0	7,409,128	7,409,128	0
18023	STAR INSURANCE COMPANY	A	7,346,564	0	7,346,564	7,346,564	0
37257	PRAETORIAN INSURANCE COMPANY	A	7,090,431	0	7,090,431	7,090,431	0
39217	QBE INSURANCE CORPORATION	B	6,874,633	0	6,874,633	0	6,874,633
23965	NORFOLK & DEDHAM MUTUAL FIRE INSURANCE COMPANY	A	6,852,954	0	6,852,954	6,852,954	0
13935	FEDERATED MUTUAL INSURANCE COMPANY	A	6,639,741	0	6,639,741	6,639,741	0
20052	NATIONAL LIABILITY & FIRE INSURANCE COMPANY	A	6,637,565	0	6,637,565	6,637,565	0
21458	EMPLOYERS INSURANCE COMPANY OF WAUSAU	B	6,460,466	0	6,460,466	0	6,460,466
14164	MEMIC CASUALTY COMPANY	A	6,284,219	0	6,284,219	6,284,219	0
38318	STARR INDEMNITY & LIABILITY COMPANY	A	5,444,053	0	5,444,053	5,444,053	0
13803	FARM FAMILY CASUALTY INSURANCE COMPANY	A	5,421,522	0	5,421,522	5,421,522	0
20478	NATIONAL FIRE INSURANCE COMPANY OF HARTFORD	B	5,168,327	0	5,168,327	0	5,168,327

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Section VI - Expenses
 Subsection E - Expenses Net of Premium Discount
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Section VI - E
 Exhibit 4

Calendar Year 2021 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)
39152	SERVICE AMERICAN INDEMNITY COMPANY	A	5,021,055	0	5,021,055	5,021,055	0
13374	ARROW MUTUAL LIABILITY INSURANCE COMPANY	B	4,949,544	0	4,949,544	0	4,949,544
15105	SAFETY NATIONAL CASUALTY CORPORATION	A	4,677,800	0	4,677,800	4,677,800	0
25224	GREAT DIVIDE INSURANCE COMPANY	A	4,604,247	0	4,604,247	4,604,247	0
25976	UTICA MUTUAL INSURANCE COMPANY	A	4,540,920	0	4,540,920	4,540,920	0
21113	UNITED STATES FIRE INSURANCE COMPANY	A	4,506,047	0	4,506,047	4,506,047	0
11000	SENTINEL INSURANCE COMPANY, LTD.	A	4,426,040	0	4,426,040	4,426,040	0
19259	SELECTIVE INSURANCE COMPANY OF SOUTH CAROLINA	A	4,257,218	0	4,257,218	4,257,218	0
25615	CHARTER OAK FIRE INSURANCE COMPANY, (THE)	A	4,249,717	0	4,249,717	4,249,717	0
35408	IMPERIUM INSURANCE COMPANY	A	4,235,673	0	4,235,673	4,235,673	0
19445	NATIONAL UNION FIRE INS. CO. OF PITTSBURGH PA	B	4,121,635	0	4,121,635	0	4,121,635
19429	INSURANCE COMPANY OF THE STATE OF PENNSYLVANIA	A	4,114,293	0	4,114,293	4,114,293	0
31534	CITIZENS INSURANCE COMPANY OF AMERICA	A	4,050,248	0	4,050,248	4,050,248	0
21415	EMPLOYERS MUTUAL CASUALTY COMPANY	A	3,933,661	0	3,933,661	3,933,661	0
15563	CLEAR SPRING PROPERTY AND CASUALTY COMPANY	A	3,913,837	0	3,913,837	3,913,837	0
21784	FIREMEN'S INSURANCE COMPANY OF WASHINGTON, D.C.	B	3,886,054	0	3,886,054	0	3,886,054
21261	ELECTRIC INSURANCE COMPANY	A	3,810,234	0	3,810,234	3,810,234	0
21105	NORTH RIVER INSURANCE COMPANY	A	3,741,862	0	3,741,862	3,741,862	0
10052	CHUBB NATIONAL INSURANCE COMPANY	A	3,705,038	0	3,705,038	3,705,038	0
10017	ARBELLA INDEMNITY INSURANCE COMPANY, INC.	A	3,665,508	0	3,665,508	3,665,508	0
24988	SENTRY INSURANCE A MUTUAL COMPANY	A	3,556,602	0	3,556,602	3,556,602	0
20044	BERKSHIRE HATHAWAY HOMESTATE INSURANCE COMPANY	A	3,554,375	0	3,554,375	3,554,375	0
36897	MANUFACTURERS ALLIANCE INSURANCE COMPANY	A	3,509,889	0	3,509,889	3,509,889	0
14788	NGM INSURANCE COMPANY	A	3,483,494	0	3,483,494	3,483,494	0
20427	AMERICAN CASUALTY COMPANY OF READING, PENNSYLVANIA	B	3,445,749	0	3,445,749	0	3,445,749
31003	TRI-STATE INSURANCE COMPANY OF MINNESOTA	A	3,278,421	0	3,278,421	3,278,421	0
25496	STARSTONE NATIONAL INSURANCE COMPANY	A	3,150,322	0	3,150,322	3,150,322	0
21172	VANLINER INSURANCE COMPANY	A	3,059,699	0	3,059,699	3,059,699	0
20494	TRANSPORTATION INSURANCE COMPANY	B	3,017,327	0	3,017,327	0	3,017,327
12475	REPUBLIC FRANKLIN INSURANCE COMPANY	A	2,977,002	0	2,977,002	2,977,002	0
22306	MASSACHUSETTS BAY INSURANCE COMPANY	A	2,940,855	0	2,940,855	2,940,855	0
10664	ENDEAVOUR INSURANCE COMPANY	B	2,825,224	0	2,825,224	0	2,825,224
25844	UNION INSURANCE COMPANY	B	2,806,002	0	2,806,002	0	2,806,002
14702	EASTGUARD INSURANCE COMPANY	A	2,798,069	0	2,798,069	2,798,069	0
41840	ALLMERICA FINANCIAL BENEFIT INSURANCE COMPANY	A	2,734,514	0	2,734,514	2,734,514	0
24082	OHIO SECURITY INSURANCE COMPANY	B	2,731,552	0	2,731,552	0	2,731,552
16109	STARR SPECIALTY INSURANCE COMPANY	A	2,704,181	0	2,704,181	2,704,181	0
35289	CONTINENTAL INSURANCE COMPANY, (THE)	B	2,657,974	0	2,657,974	0	2,657,974
10510	CAROLINA CASUALTY INSURANCE COMPANY	A	2,651,645	0	2,651,645	2,651,645	0
36064	HANOVER AMERICAN INSURANCE COMPANY (THE)	A	2,566,658	0	2,566,658	2,566,658	0
20346	PACIFIC INDEMNITY COMPANY	A	2,520,267	0	2,520,267	2,520,267	0
40045	STARNET INSURANCE COMPANY	A	2,513,195	0	2,513,195	2,513,195	0
31348	CRUM & FORSTER INDEMNITY COMPANY	B	2,482,053	0	2,482,053	0	2,482,053
20508	VALLEY FORGE INSURANCE COMPANY	B	2,449,093	0	2,449,093	0	2,449,093
23434	MIDDLESEX INSURANCE COMPANY	A	2,359,880	0	2,359,880	2,359,880	0
10391	BERKSHIRE HATHAWAY DIRECT INSURANCE COMPANY	A	2,273,893	0	2,273,893	2,273,893	0
37885	XL SPECIALTY INSURANCE COMPANY	A	2,270,256	0	2,270,256	2,270,256	0
23329	MERCHANTS MUTUAL INSURANCE COMPANY	A	2,222,550	0	2,222,550	2,222,550	0
41394	BENCHMARK INSURANCE COMPANY	A	2,167,935	0	2,167,935	2,167,935	0
41424	PENNSYLVANIA MANUFACTURERS INDEMNITY COMPANY	A	2,099,869	0	2,099,869	2,099,869	0
25623	PHOENIX INSURANCE COMPANY, (THE)	A	2,068,569	0	2,068,569	2,068,569	0
20230	CENTRAL MUTUAL INSURANCE COMPANY	B	2,038,498	0	2,038,498	0	2,038,498
25984	GRAPHIC ARTS MUTUAL INSURANCE COMPANY	A	1,943,854	0	1,943,854	1,943,854	0
19801	ARGONAUT INSURANCE COMPANY	A	1,943,097	0	1,943,097	1,943,097	0

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 Subsection E - Expenses Net of Premium Discount
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Calendar Year 2021 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)
43478	UTICA NATIONAL INSURANCE COMPANY OF TEXAS	A	1,938,023	0	1,938,023	1,938,023	0
24554	XL INSURANCE AMERICA, INC.	A	1,860,382	0	1,860,382	1,860,382	0
10687	UTICA NATIONAL ASSURANCE COMPANY	A	1,704,263	0	1,704,263	1,704,263	0
16045	EVEREST PREMIER INSURANCE COMPANY	A	1,629,474	0	1,629,474	1,629,474	0
23817	ILLINOIS NATIONAL INSURANCE COMPANY	B	1,613,128	0	1,613,128	0	1,613,128
16608	NEW YORK MARINE AND GENERAL INSURANCE COMPANY	A	1,605,247	0	1,605,247	1,605,247	0
29939	MAIN STREET AMERICA ASSURANCE COMPANY	A	1,557,042	0	1,557,042	1,557,042	0
10120	EVEREST NATIONAL INSURANCE COMPANY	B	1,530,700	0	1,530,700	0	1,530,700
42552	NOVA CASUALTY COMPANY	A	1,527,621	0	1,527,621	1,527,621	0
11673	REDWOOD FIRE AND CASUALTY INSURANCE COMPANY	A	1,504,497	0	1,504,497	1,504,497	0
33588	FIRST LIBERTY INSURANCE CORPORATION (THE)	A	1,462,894	0	1,462,894	1,462,894	0
25402	EMPLOYERS ASSURANCE COMPANY	A	1,456,645	0	1,456,645	1,456,645	0
11512	EMPLOYERS COMPENSATION INSURANCE COMPANY	A	1,453,992	0	1,453,992	1,453,992	0
18767	CHURCH MUTUAL INSURANCE COMPANY	B	1,450,023	0	1,450,023	0	1,450,023
10804	CONTINENTAL WESTERN INSURANCE COMPANY	B	1,413,201	0	1,413,201	0	1,413,201
28932	MARKEL AMERICAN INSURANCE COMPANY	A	1,399,800	0	1,399,800	1,399,800	0
10346	EMPLOYERS PREFERRED INSURANCE COMPANY	A	1,377,347	0	1,377,347	1,377,347	0
27855	ZURICH AMERICAN INSURANCE COMPANY OF ILLINOIS	A	1,336,012	0	1,336,012	1,336,012	0
11126	SOMPO JAPAN INSURANCE COMPANY OF AMERICA	A	1,333,442	0	1,333,442	1,333,442	0
12831	STATE NATIONAL INSURANCE COMPANY INC.	A	1,311,173	0	1,311,173	1,311,173	0
11149	MAINE EMPLOYERS' MUTUAL INSURANCE COMPANY	B	1,268,467	0	1,268,467	0	1,268,467
25135	STATE AUTOMOBILE MUTUAL INSURANCE COMPANY	A	1,249,693	0	1,249,693	1,249,693	0
38970	MARKEL INSURANCE COMPANY	A	1,248,909	0	1,248,909	1,248,909	0
28460	SENTRY CASUALTY COMPANY	A	1,233,988	0	1,233,988	1,233,988	0
19879	SECURITY NATIONAL INSURANCE COMPANY	A	1,223,502	0	1,223,502	1,223,502	0
31232	WORK FIRST CASUALTY COMPANY	A	1,207,531	0	1,207,531	1,207,531	0
24139	OLD REPUBLIC GENERAL INSURANCE CORPORATION	A	1,130,984	0	1,130,984	1,130,984	0
23280	CINCINNATI INDEMNITY COMPANY	A	1,109,217	0	1,109,217	1,109,217	0
21407	EMCASCO INSURANCE COMPANY	A	1,084,388	0	1,084,388	1,084,388	0
23809	GRANITE STATE INSURANCE COMPANY	B	1,061,819	0	1,061,819	0	1,061,819
38997	SOMPO AMERICAN FIRE AND MARINE INSURANCE COMPANY	A	1,048,912	0	1,048,912	1,048,912	0
38911	BERKLEY NATIONAL INSURANCE COMPANY	A	1,012,321	0	1,012,321	1,012,321	0
20303	GREAT NORTHERN INSURANCE COMPANY	A	1,009,896	0	1,009,896	1,009,896	0
32620	NATIONAL INTERSTATE INSURANCE COMPANY	A	982,225	0	982,225	982,225	0
13714	PHARMACISTS MUTUAL INSURANCE COMPANY	A	867,090	0	867,090	867,090	0
16356	CHIRON INSURANCE COMPANY	A	802,429	0	802,429	802,429	0
27154	ATLANTIC SPECIALTY INSURANCE COMPANY	A	793,891	0	793,891	793,891	0
29157	UNITED WISCONSIN INSURANCE COMPANY	A	793,586	0	793,586	793,586	0
28304	FEDERATED SERVICE INSURANCE COMPANY	A	793,144	0	793,144	793,144	0
13706	DORCHESTER MUTUAL INSURANCE COMPANY	A	731,582	0	731,582	731,582	0
26247	AMERICAN GUARANTEE AND LIABILITY INSURANCE COMPANY	A	702,982	0	702,982	702,982	0
33723	GREAT AMERICAN SPIRIT INSURANCE COMPANY	A	668,487	0	668,487	668,487	0
20397	VIGILANT INSURANCE COMPANY	A	635,678	0	635,678	635,678	0
16044	EVEREST DENALI INSURANCE COMPANY	A	634,281	0	634,281	634,281	0
12304	ACCIDENT FUND GENERAL INSURANCE COMPANY	A	602,144	0	602,144	602,144	0
10677	CINCINNATI INSURANCE COMPANY	A	593,361	0	593,361	593,361	0
15954	AMTRUST INSURANCE COMPANY	A	586,501	0	586,501	586,501	0
15032	GUIDEONE MUTUAL INSURANCE COMPANY	A	570,749	0	570,749	570,749	0
12901	MERCHANTS PREFERRED INSURANCE COMPANY	A	567,040	0	567,040	567,040	0
40460	SAGAMORE INSURANCE COMPANY	A	556,810	0	556,810	556,810	0
18279	BANKERS STANDARD INSURANCE COMPANY	A	551,338	0	551,338	551,338	0
14190	OBI NATIONAL INSURANCE COMPANY	A	550,683	0	550,683	550,683	0
20222	ALL AMERICA INSURANCE COMPANY	A	530,991	0	530,991	530,991	0
26832	GREAT AMERICAN ALLIANCE INSURANCE COMPANY	A	497,728	0	497,728	497,728	0

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Section VI - Expenses
 Subsection E - Expenses Net of Premium Discount
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Section VI - E
 Exhibit 4

Calendar Year 2021 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)
26662	MILWAUKEE CASUALTY INSURANCE CO.	A	497,191	0	497,191	497,191	0
44393	WEST AMERICAN INSURANCE COMPANY	B	495,190	0	495,190	0	495,190
41106	TRIUMPH CASUALTY COMPANY	A	494,451	0	494,451	494,451	0
16024	FEDERATED RESERVE INSURANCE COMPANY	A	483,467	0	483,467	483,467	0
14923	PATRONS MUTUAL INSURANCE COMPANY OF CONNECTICUT	A	467,757	0	467,757	467,757	0
13978	FLORISTS' MUTUAL INSURANCE COMPANY	A	459,209	0	459,209	459,209	0
23396	AMERISURE MUTUAL INSURANCE COMPANY	B	452,086	0	452,086	0	452,086
26182	HARLEYSVILLE WORCESTER INSURANCE COMPANY	A	444,979	0	444,979	444,979	0
11991	NATIONAL CASUALTY COMPANY	A	432,816	0	432,816	432,816	0
27626	FIRSTCOMP INSURANCE COMPANY	A	420,512	0	420,512	420,512	0
10749	INTREPID INS CO	A	420,326	0	420,326	420,326	0
20362	MITSUI SUMITOMO INSURANCE COMPANY OF AMERICA	A	404,385	0	404,385	404,385	0
31925	FALLS LAKE NATIONAL INSURANCE COMPANY	A	400,230	0	400,230	400,230	0
21423	UNION INSURANCE COMPANY OF PROVIDENCE	A	397,357	0	397,357	397,357	0
29580	BERKLEY REGIONAL INSURANCE COMPANY	A	393,028	0	393,028	393,028	0
28665	CINCINNATI CASUALTY COMPANY	A	372,986	0	372,986	372,986	0
22748	PACIFIC EMPLOYERS INSURANCE COMPANY	A	372,904	0	372,904	372,904	0
15911	AMERICAN MINING INSURANCE COMPANY	A	364,608	0	364,608	364,608	0
10800	PREMIER GROUP INSURANCE COMPANY	B	361,546	0	361,546	0	361,546
24414	GENERAL CASUALTY COMPANY OF WISCONSIN	A	353,817	0	353,817	353,817	0
23442	PATRIOT GENERAL INSURANCE COMPANY	A	322,487	0	322,487	322,487	0
10166	ACCIDENT FUND INSURANCE COMPANY OF AMERICA	A	294,832	0	294,832	294,832	0
30830	ARCH INDEMNITY INSURANCE COMPANY	B	285,028	0	285,028	0	285,028
22551	MITSUI SUMITOMO INSURANCE USA INC.	A	276,349	0	276,349	276,349	0
25127	STATE AUTO PROPERTY & CASUALTY INSURANCE COMPANY	A	266,096	0	266,096	266,096	0
23582	HARLEYSVILLE INSURANCE COMPANY	A	259,215	0	259,215	259,215	0
13269	ZENITH INSURANCE COMPANY	A	255,624	0	255,624	255,624	0
21180	SENTRY SELECT INSURANCE COMPANY	A	240,352	0	240,352	240,352	0
28223	NATIONWIDE AGRIBUSINESS INSURANCE COMPANY	B	232,602	0	232,602	0	232,602
32280	WELLFLEET INSURANCE COMPANY	A	220,573	0	220,573	220,573	0
35696	HARLEYSVILLE PREFERRED INSURANCE COMPANY	A	219,578	0	219,578	219,578	0
23612	MIDWEST EMPLOYERS CASUALTY COMPANY	A	213,582	0	213,582	213,582	0
10945	TOKIO MARINE AMERICA INSURANCE COMPANY	A	209,571	0	209,571	209,571	0
11242	ALLIED EASTERN INDEMNITY COMPANY	A	200,703	0	200,703	200,703	0
20931	ATLANTA INTERNATIONAL INSURANCE COMPANY	B	199,251	0	199,251	0	199,251
27847	INSURANCE COMPANY OF THE WEST	A	195,333	0	195,333	195,333	0
13528	BROTHERHOOD MUTUAL INSURANCE COMPANY	B	192,666	0	192,666	0	192,666
19984	ACIG INSURANCE COMPANY	A	185,899	0	185,899	185,899	0
27740	NORTH POINTE INSURANCE COMPANY	A	170,097	0	170,097	170,097	0
21849	AMERICAN AUTOMOBILE INSURANCE COMPANY	A	152,704	0	152,704	152,704	0
23787	NATIONWIDE MUTUAL INSURANCE COMPANY	A	152,351	0	152,351	152,351	0
41343	HDI GLOBAL INSURANCE COMPANY	A	150,219	0	150,219	150,219	0
41238	TRANS PACIFIC INSURANCE COMPANY	A	148,856	0	148,856	148,856	0
13056	RLI INSURANCE COMPANY	A	146,127	0	146,127	146,127	0
13998	UTICA NATIONAL INSURANCE COMPANY OF OHIO	A	144,956	0	144,956	144,956	0
10642	CHEROKEE INSURANCE COMPANY	A	131,076	0	131,076	131,076	0
10665	AMERITRUST INSURANCE CORPORATION	A	126,990	0	126,990	126,990	0
24449	REGENT INSURANCE COMPANY	A	121,120	0	121,120	121,120	0
11050	AMERISURE PARTNERS INSURANCE COMPANY	B	121,079	0	121,079	0	121,079
25186	EMC PROPERTY & CASUALTY COMPANY	A	111,511	0	111,511	111,511	0
12305	ACCIDENT FUND NATIONAL INSURANCE COMPANY	A	107,560	0	107,560	107,560	0
28886	TRANSGUARD INSURANCE COMPANY OF AMERICA, INC.	A	106,796	0	106,796	106,796	0
24066	AMERICAN FIRE AND CASUALTY COMPANY	B	104,157	0	104,157	0	104,157
31895	AMERICAN INTERSTATE INSURANCE COMPANY	A	93,399	0	93,399	93,399	0

VI 000024

Section VI - Expenses
 Subsection E - Expenses Net of Premium Discount
 7/1/2023

Section VI - E
 Exhibit 4

Calendar Year 2021 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)
10885	KEY RISK INSURANCE COMPANY	A	83,899	0	83,899	83,899	0
21873	FIREMAN'S FUND INSURANCE COMPANY	A	83,782	0	83,782	83,782	0
20699	ACE PROPERTY AND CASUALTY INSURANCE COMPANY	A	80,414	0	80,414	80,414	0
24767	ST. PAUL FIRE & MARINE INSURANCE COMPANY	A	75,369	0	75,369	75,369	0
10212	ALLMERICA FINANCIAL ALLIANCE INSURANCE COMPANY	A	73,154	0	73,154	73,154	0
21881	NATIONAL SURETY CORPORATION	A	72,305	0	72,305	72,305	0
19402	AIG PROPERTY CASUALTY COMPANY	B	69,137	0	69,137	0	69,137
19488	AMERISURE INSURANCE COMPANY	B	68,861	0	68,861	0	68,861
15645	OBI AMERICA INS CO	A	42,754	0	42,754	42,754	0
10006	CERITY INSURANCE COMPANY	A	35,647	0	35,647	35,647	0
19410	COMMERCE AND INDUSTRY INSURANCE COMPANY	B	33,458	0	33,458	0	33,458
40517	ADVANTAGE WORKERS COMPENSATION INSURANCE COMPANY	A	31,984	0	31,984	31,984	0
25143	STATE FARM FIRE AND CASUALTY COMPANY	A	30,374	0	30,374	30,374	0
22136	GREAT AMERICAN INSURANCE COMPANY OF NEW YORK	A	29,397	0	29,397	29,397	0
26344	GREAT AMERICAN ASSURANCE COMPANY	A	26,103	0	26,103	26,103	0
38300	SAMSUNG FIRE & MARINE INSURANCE CO. LTD (U.S. BRANCH)	A	24,546	0	24,546	24,546	0
16691	GREAT AMERICAN INSURANCE COMPANY	A	24,416	0	24,416	24,416	0
12866	T.H.E INSURANCE COMPANY	B	24,399	0	24,399	0	24,399
34630	OAK RIVER INSURANCE COMPANY	A	20,344	0	20,344	20,344	0
19828	ARGONAUT-MIDWEST INSURANCE COMPANY	A	16,790	0	16,790	16,790	0
14982	PENN MILLERS INSURANCE COMPANY	A	15,910	0	15,910	15,910	0
10030	WESTCHESTER FIRE INSURANCE COMPANY	B	15,416	0	15,416	0	15,416
21709	TRUCK INSURANCE EXCHANGE	A	14,709	0	14,709	14,709	0
11371	GREAT WEST CASUALTY COMPANY	A	12,698	0	12,698	12,698	0
24198	PEERLESS INSURANCE COMPANY	A	8,248	0	8,248	8,248	0
43575	INDEMNITY INSURANCE COMPANY OF NORTH AMERICA	A	7,327	0	7,327	7,327	0
14990	PENNSYLVANIA NATIONAL MUTUAL CASUALTY INS. CO.	B	6,905	0	6,905	0	6,905
15350	WEST BEND MUTUAL INSURANCE COMPANY	A	6,437	0	6,437	6,437	0
13019	EASTERN ADVANTAGE ASSURANCE COMPANY	A	5,345	0	5,345	5,345	0
23043	LIBERTY MUTUAL INSURANCE COMPANY	B	4,561	0	4,561	0	4,561
23663	NATIONAL AMERICAN INSURANCE COMPANY	A	3,175	0	3,175	3,175	0
37877	NATIONWIDE PROPERTY & CASUALTY INSURANCE COMPANY	B	1,716	0	1,716	0	1,716
23450	AMERICAN FAMILY HOME INSURANCE COMPANY	A	1,698	0	1,698	1,698	0
36307	GRAY INSURANCE COMPANY (THE)	A	1,544	0	1,544	1,544	0
34690	PROPERTY AND CASUALTY INSURANCE CO. OF HARTFORD	A	561	0	561	561	0
20095	BITCO GENERAL INSURANCE CORPORATION	A	494	0	494	494	0
24171	NETHERLANDS INSURANCE COMPANY (THE)	A	215	0	215	215	0
42803	GUIDEONE ELITE INSURANCE COMPANY	B	194	0	194	0	194
25453	NATIONWIDE INSURANCE COMPANY OF AMERICA	A	104	0	104	104	0
Total			1,202,293,470	210,465,731	991,827,739	750,957,100	240,870,639

Percentage of Voluntary written premium electing Type A Discount: 75.7%
 Percentage of Voluntary written premium electing Type B Discount: 24.3%

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
7/1/2023

Section VI - F
Exhibit 1

Calculation of Expense Constant as Percent of Premium for Prospective Effective Period

(1) Expense Constant Offset for Policy Year 2019	0.960
(2) Expense Constant as Percent of Premium for Policy Year 2019 = 1.0 - (1)	4.0%
(3) Calculated Expense Constant for Policy Year 2019	\$248.92
(4) Factor to Bring Policy Year 2019 Premium to Premium Level of Prospective Effective Period	1.18
(5) Estimated Expense Constant for Prospective Effective Period	\$263.89
(6) Expense Constant as Percent of Premium for Prospective Effective Period = { (2) x [(5) / (3)] } / { [(1) x (4)] + [(2) x ((5) / (3))] }	3.6%

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
 7/1/2023

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)
2018	1,162,491,659	51,722,114	1.054	48,595,077	0.962
2019	1,120,313,227	51,749,007	1.055	49,416,237	0.960

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)
2019	714,267,061	31,504,988	1.055	30,786,330	0.960

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 2019 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
7/1/2023

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	2.5%
(2)	Selected Average Commission Ratio, Excluding Expense Constants	9.2%
(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)	12.6%

Notes:

(1): Exhibit 2.

(2): Exhibit 3.

(3): Exhibit 4, Page 1.

(4): Exhibit 5.

VI 000028

Section VI - Expenses
 Subsection G - Acquisition Expenses
 7/1/2023

Section VI - G
 Exhibit 2

Calculation of Other Acquisition Expense

	Calendar Year		
	2019	2020	2021
(1) Standard Earned Premium Including Expense Constant Premium	952,296,677	915,172,108	920,343,199
(2) ARAP Premium at Company Level	38,815,576	37,728,950	37,611,910
(3) Adjustment Factor to Adjust from Company Level to DSR Level Premium	1.056	1.059	1.047
(4) Standard Earned Premium plus Adjusted ARAP = (1) + [(2) x (3)]	993,270,843	955,126,144	959,714,885
(5) Adjustment for Experience and Merit Rating, ARAP, and Construction Credit Off-balance	1.037	1.032	1.033
(6) Adjustment Factor to Remove the Impact of Loading for Recoupment of Insolvency Fund Assessments	0.998	0.998	1.005
(7) Adjusted Standard Earned Premium plus ARAP = (4) x (5) x (6)	1,027,767,830	983,986,110	996,238,911
(8) Other Acquisition, Field Supervision, Collection Expenses for Home Office and Branch Office, excluding Commissions	41,841,670	39,119,271	41,204,023
(9) Other Acquisition Expense Ratio = (8) / (7)	4.1%	4.0%	4.1%
(10) Three Year Average		4.1%	
(11) Expense Constant as Percent of Premium for Prospective Effective Period		3.6%	
(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)		1.7%	
(14) Other Acquisition and Field Supervision Expense Ratio, Excluding Expense Constants = [(10) - (13)] / [1.0 - (11)]		2.5%	

Notes:

- (1), (2): Aggregate Financial Reconciliation Report Calls, Calendar Years 2019 - 2021.
 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 2019 - 2021.
- (11): Section VI-F, Exhibit 1.
- (12): Section VI-B, Exhibit 3.

VI 000029

Section VI - Expenses
Subsection G - Acquisition Expenses
7/1/2023

Section VI - G
Exhibit 3

Calculation of Average Commission Rate

	Calendar Year		
	2019	2020	2021
(1) Direct Written Premium	803,391,423	774,305,211	811,545,422
(2) Total Commissions for Agents and Brokers	68,877,762	67,584,465	74,481,203
(3) Average Commission Rate = (2) / (1)	8.6%	8.7%	9.2%
(4) Three Year Average		8.8%	
(5) Expense Constant as Percent of Premium for Prospective Effective Period		3.6%	
(6) Average Commission Ratio, Excluding Expense Constants = (4) / [1.0 - (5)]		9.2%	
(7) Selected Average Commission Ratio, Excluding Expense Constants		9.2%	

Notes:

(1),(2): Annual Statement, Statutory Page 14, Exhibit of Premium and Loss, Calendar Years 2019 - 2021.

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

VI 000030

Section VI - Expenses
 Subsection G - Acquisition Expenses
 7/1/2023

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)
2007	14.0%	4.9%	4.2%	0.5%	23.6%
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%
(7) Average	18.6%	2.9%	3.2%	0.3%	25.0%
(8) Estimated Ceding Commission & Brokerage Rate for Workers' Compensation Non-Proportional Reinsurance	15.8%				
(9) Adjusted Average = (7) - (8)	2.8%	2.9%	3.2%	0.3%	9.2%
(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)					1.37%
(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 2008 - 2022.

(8): Page 2, (10).

(10): Page 2, (11).

VI 000031

Section VI - Expenses
 Subsection G - Acquisition Expenses
 7/1/2023

Section VI - G
 Exhibit 4
 Page 2

Estimate of Ceding Commission & Brokerage Rate for Workers' Compensation Non-Proportional Reinsurance

Calendar Year (1)	Written Premiums (000's)			Ratio of Commission & Brokerage Incurred to Written Premium		Commission & Brokerage Expenses Incurred (000's)		
	Direct (2)	Net (3)	Direct - Net = (2) - (3) (4)	Direct (5)	Net (6)	Direct = (2) x (5) (7)	Net = (3) x (6) (8)	Direct - Net = (7) - (8) (9)
2007	50,367,861	44,207,021	6,160,840	0.071	0.061	3,576,118	2,696,628	879,490
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	0.087	0.086	4,537,351	3,858,834	678,517
Total	737,321,677	627,784,702	109,536,975	0.085	0.072	62,453,278	45,130,550	17,322,729

- (10) Estimated Ceding Commission & Brokerage Rate for Workers' Compensation Non-Proportional Reinsurance = Total (9) / Total (4) 15.8%
- (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 2008 - 2022.

VI 000032

Section VI - Expenses
 Subsection G - Acquisition Expenses
 7/1/2023

Section VI - G
 Exhibit 5

Effect of Incidental Income and Earned but Uncollected Premium

	Calendar Year		
	2019	2020	2021
(1) Standard Earned Premium Including Expense Constant Premium	952,296,677	915,172,108	920,343,199
(2) ARAP Premium at Company Level	38,815,576	37,728,950	37,611,910
(3) Adjustment Factor to Adjust from Company Level to DSR Level Premium	1.056	1.059	1.047
(4) Standard Earned Premium plus Adjusted ARAP = (1) + [(2) x (3)]	993,270,843	955,126,144	959,714,885
(5) Adjustment for Experience and Merit Rating, ARAP, and Construction Credit Off-balance	1.037	1.032	1.033
(6) Adjustment Factor to Remove the Impact of Loading for Recoupment of Insolvency Fund Assessments	0.998	0.998	1.005
(7) Adjusted Standard Earned Premium plus ARAP = (4) x (5) x (6)	1,027,767,830	983,986,110	996,238,911
(8) Earned But Uncollected Premium ("EBUP")	5,148,442	6,299,598	8,264,694
(9) Incidental Income	1,202,758	1,840,046	1,269,569
(10) Net Effect of Incidental Income and EBUP Expense = [(8) - (9)] / (7)	0.4%	0.5%	0.7%
(11) Three Year Average		0.5%	
(12) Expense Constant as Percent of Premium for Prospective Effective Period		3.6%	
(13) Effect of Incidental Income and EBUP Expense, Excluding Expense Constants = (11) / [1.0 - (12)]		0.5%	
(14) Selected Effect of Incidental Income and EBUP Expense, Excluding Expense Constants		0.0%	

Notes:

- (1), (2): Aggregate Financial Reconciliation Report Calls, Calendar Years 2019 - 2021.
 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
7/1/2023

Section VI - H
Exhibit 1
Page 1

Defense and Cost Containment Expense ("DCCE") Ratio and Total Loss Adjustment Expense ("LAE") Ratio

	Policy Year		
	2018	2019	2020
(1) Defense and Cost Containment Expense Ratio	8.7%	8.5%	8.1%
(2) Three Year Average Defense and Cost Containment Expense Ratio = Average of (1)		8.4%	
(3) Selected Three Year Average Defense and Cost Containment Expense Ratio		8.4%	
(4) Total Loss Adjustment Expense Ratio (LAE / Loss)		18.3%	

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	
	(2)																					
1999															17,779	17,869	17,955	18,059	18,137	18,263	18,312	18,405
2000														18,001	18,081	18,157	18,214	18,276	18,248	18,390	18,460	18,476
2001												17,786	17,877	17,989	18,095	18,175	18,169	18,178	18,226	18,256	18,276	
2002											18,655	18,787	18,895	18,998	19,097	19,224	19,238	19,334	19,413	19,488		
2003										18,639	18,866	18,963	19,075	19,150	19,219	19,214	19,466	19,562	19,636			
2004									17,837	17,870	17,976	18,133	18,252	18,318	18,270	18,252	18,335	18,372				
2005								17,722	17,963	18,159	18,315	18,473	18,620	18,868	18,936	19,068	19,119					
2006								19,125	19,429	19,704	19,865	20,020	20,159	20,258	20,339	20,444	20,490					
2007						21,246	21,916	22,352	22,652	22,934	23,006	23,006	23,006	23,380	23,469	23,567						
2008					20,902	22,091	22,791	23,304	23,628	23,909	24,003	24,223	24,352	24,434								
2009				18,846	20,482	21,526	22,243	22,572	22,896	23,124	23,180	23,286	23,384									
2010			15,579	18,785	20,834	21,890	22,558	22,922	23,207	23,460	23,615	23,780										
2011		11,584	18,305	22,302	24,474	25,573	26,314	26,726	27,065	27,319	27,507											
2012	2,430	12,339	19,855	23,778	26,138	27,432	28,104	28,771	29,124	29,371												
2013	2,653	13,151	20,773	24,598	26,699	27,508	28,006	28,295	28,510													
2014	2,953	14,207	22,537	26,810	29,674	30,899	31,796	32,265														
2015	2,536	13,174	21,376	25,652	28,086	29,281	30,017															
2016	2,787	14,443	23,164	27,843	30,233	31,593																
2017	2,792	14,815	23,841	28,465	30,919																	
2018	3,066	15,413	24,047	29,292																		
2019	2,806	13,261	21,738																			
2020	2,110	12,350																				

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	
	(3)																					
1999															217,482	218,374	218,941	220,136	220,867	221,480	222,146	222,721
2000														215,102	216,139	216,726	217,385	218,136	218,639	219,103	219,633	220,200
2001												211,580	212,689	214,079	215,195	217,535	218,299	218,989	219,754	220,371	220,967	
2002											225,033	226,311	227,305	228,753	229,748	230,671	231,368	231,944	233,294	234,812		
2003										219,404	222,359	224,029	225,381	226,634	227,207	227,954	228,758	229,288	229,956			
2004									222,136	224,282	225,900	227,873	228,948	229,842	230,184	231,515	232,194	232,796				
2005								222,152	224,706	226,302	227,446	229,435	231,119	231,922	232,818	234,134	235,026					
2006						232,426	237,411	241,267	242,264	244,733	245,571	246,693	248,286	249,327	249,968							
2007					253,598	258,209	263,749	268,704	271,432	273,123	274,313	275,560	275,539	275,951								
2008					242,691	254,530	260,819	264,058	266,490	267,682	270,878	271,646	272,764	273,592								
2009				225,593	251,264	264,787	270,910	274,998	277,172	279,086	280,290	281,679	284,964									
2010			181,115	220,473	246,100	256,750	263,915	267,573	269,209	272,077	272,960	274,145										
2011		131,384	203,626	256,544	285,705	295,967	301,137	305,668	309,649	311,835	313,555											
2012	32,044	137,837	222,050	271,929	300,675	317,164	323,642	328,506	331,705	333,048												
2013	32,474	142,720	222,811	270,143	297,524	308,013	313,578	315,447	318,381													
2014	37,444	156,918	250,340	315,829	349,121	362,568	366,462	371,289														
2015	36,477	154,609	246,740	304,180	332,570	342,963	353,894															
2016	38,425	161,766	257,469	313,404	342,470	357,220																
2017	37,631	165,648	264,448	321,757	360,921																	
2018	40,129	174,463	268,031	338,151																		
2019	41,504	157,707	253,396																			
2020	33,221	152,089																				

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
1999															0.082	0.082	0.082	0.082	0.082	0.082	0.083	0.083
2000													0.084	0.084	0.084	0.084	0.084	0.083	0.084	0.084	0.084	0.084
2001												0.084	0.084	0.084	0.084	0.084	0.083	0.083	0.083	0.083	0.083	0.083
2002												0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083
2003										0.085	0.085	0.085	0.085	0.084	0.085	0.084	0.085	0.085	0.085	0.085	0.085	0.085
2004									0.080	0.080	0.080	0.080	0.080	0.080	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079
2005								0.080	0.080	0.080	0.080	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081
2006								0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082
2007						0.084	0.085	0.085	0.085	0.084	0.084	0.084	0.084	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.086
2008					0.086	0.087	0.087	0.087	0.088	0.088	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.090
2009				0.084	0.082	0.081	0.082	0.082	0.083	0.083	0.083	0.083	0.083	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082
2010			0.086	0.085	0.085	0.085	0.085	0.086	0.086	0.086	0.086	0.086	0.086	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087
2011		0.088	0.090	0.087	0.086	0.086	0.087	0.087	0.087	0.087	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088
2012	0.076	0.090	0.089	0.087	0.087	0.087	0.087	0.087	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.089
2013	0.082	0.092	0.093	0.091	0.090	0.089	0.089	0.089	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
2014	0.079	0.091	0.090	0.085	0.085	0.085	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	0.088
2015	0.070	0.085	0.087	0.084	0.084	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.086
2016	0.073	0.089	0.090	0.089	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.090
2017	0.074	0.089	0.090	0.088	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.088
2018	0.076	0.088	0.090	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
2019	0.068	0.084	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.085
2020	0.064	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081

	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	
1999																					
2000													1.000	1.001	1.002	1.000	1.001	1.004	1.000	1.002	1.002
2001												1.000	1.000	1.001	0.994	0.996	0.997	0.999	0.999	0.999	0.998
2002											1.001	1.001	0.999	1.001	1.003	0.998	1.002	0.998	0.997	0.998	0.998
2003										0.999	0.998	1.000	0.998	1.001	0.997	1.010	1.003	1.001	1.001	1.001	1.001
2004									0.992	0.999	1.000	1.002	1.000	0.996	0.993	1.002	0.999	0.999	0.999	0.999	0.999
2005								1.002	1.004	1.004	1.000	1.001	1.010	1.000	1.001	0.999	0.999	0.999	0.999	0.999	0.999
2006							0.995	0.998	1.004	0.998	1.003	1.000	0.998	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2007						1.013	0.998	0.995	1.002	0.997	1.006	1.001	1.004	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2008					1.008	1.007	1.010	1.005	1.007	0.992	1.006	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2009				0.976	0.997	1.010	1.000	1.006	1.003	0.998	1.000	0.993	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2010			0.991	0.994	1.007	1.003	1.002	1.006	1.000	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003
2011		1.020	0.967	0.985	1.009	1.011	1.001	1.000	1.002	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001
2012	1.181	0.999	0.978	0.994	0.995	1.004	1.009	1.003	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
2013	1.128	1.012	0.977	0.986	0.995	1.000	1.004	0.998	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
2014	1.148	0.994	0.943	1.001	1.003	1.018	1.002	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
2015	1.225	1.017	0.973	1.001	1.011	0.993	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
2016	1.231	1.008	0.987	0.994	1.002	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
2017	1.205	1.008	0.981	0.968	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
2018	1.156	1.016	0.966	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
2019	1.244	1.020	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	1.000
2020	1.278	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	1.000	1.000
2 Yr Weighted Average	1.261	1.018	0.973	0.981	1.006	1.006	1.003	1.000	1.003	1.002	1.001	0.997	1.002	1.002	1.000	1.000	1.001	1.000	0.998	0.998	0.998
3 Yr Weighted Average	1.226	1.015	0.978	0.988	1.005	1.004	1.005	1.000	1.002	1.001	1.003	0.998	1.001	1.001	0.998	1.003	1.002	0.999	0.999	0.999	1.000
5 Yr Weighted Average	1.223	1.014	0.970	0.990	1.001	1.005	1.003	1.003	1.003	0.998	1.004	0.999	1.002	1.000	0.999	1.001	1.000	1.002	0.999	0.999	1.000
Selected	1.226	1.015	0.978	0.988	1.005	1.004	1.005	1.000	1.002	1.001	1.003	0.998	1.001	1.001	0.998	1.003	1.002	0.999	0.999	0.999	1.000
Cumulative	1.228	1.001	0.987	1.009	1.022	1.016	1.012	1.008	1.007	1.005	1.004	1.001	1.003	1.002	1.001	1.003	1.000	0.998	0.999	0.999	1.000

Notes:
 (2): [(2) Exhibit 1, Page 1] / [(3) Exhibit 1, Page 1]
 Paid DCCE Ratios are calculated as Paid DCCE/(Paid Medical + Paid Indemnity)

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VI 000036

Section VI - Expenses
 Subsection H - Loss Adjustment Expense
 7/1/2023

Section VI - H
 Exhibit 2

Adjusting and Other ("AO") Expense Ratio

	Calendar Year		
	2019	2020	2021
(1) Direct Incurred Losses	451,498,520	465,195,895	488,721,614
(2) Factor to Adjust the Direct Losses to Full Coverage Losses	1.203	1.214	1.225
(3) Estimated Full Coverage Incurred Losses = (1) x (2)	543,361,428	564,687,548	598,598,474
(4) Direct Incurred Adjusting and Other Expense	55,361,076	52,325,869	44,166,201
(5) Factor to Adjust the Direct Adjusting and Other Expense to Full Coverage AO Expense	1.092	1.097	1.101
(6) Estimated Full Coverage Adjusting and Other Expense = (4) x (5)	60,472,981	57,380,798	48,629,324
(7) Adjusted Adjusting and Other Expense Ratio = (6) / (3)	11.13%	10.16%	8.12%
(8) Three Year Average Adjusted Adjusting and Other Expense Ratio = Average of (7)		9.8%	
(9) Selected Three Year Average Adjusted Adjusting and Other Expense Ratio		9.8%	

Notes:

(1): Annual Statement, Statutory Page 14, Exhibit of Premium and Loss.

(4): Aggregate Financial Calendar Year Expense Data Calls, 2019 - 2021.

VI 000037

Section VI - Expenses
Subsection I - Adjustment for Large Deductible Policies
7/1/2023

Section VI - I
Exhibit 1
Page 1

Adjustment to the Adjusting and Other Expense Provision

	Calendar Year		
	2019	2020	2021
(1) Average Premium Reduction Factor for Large Deductible Policies	0.814	0.826	0.835
(2) Loss Elimination Ratio (LER) for Large Deductible Policies = (1) x 1.118	91.0%	92.4%	93.4%
(3) Market Share (Standard Premium Basis) of Large Deductible Policies	18.6%	19.1%	19.7%
(4) LER for Full Coverage plus Large Deductible Policies = [(2) x (3)] + { 0.0 x [1.0 - (3)] }	16.9%	17.6%	18.4%
(5) Factor to Adjust the Direct Losses to Full Coverage Losses = 1.0 / [1.0 - (4)]	1.203	1.214	1.225
(6) Factor to Adjust the Direct AO Expense to Full Coverage AO Expense = 1.0 / { 1.0 - [0.5 x (4)] }	1.092	1.097	1.101

Notes:

(1),(3): Exhibit 2.

(2): 1.118 from Exhibit 1, Page 2.

(6): Assumes 50% of Adjusting & Other expense varies directly with losses.

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Section VI - Expenses
Subsection I - Adjustment for Large Deductible Policies
7/1/2023

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	5.4%
(3) Premium Tax Ratio = 2.28% x [1.0 - (2)]	2.2%
(4) Profit Provision	-0.5%
(5) Insolvency Fund Assessment	0.6%
(6) Residual Market Subsidy (Retrospectively-rated policies)	0.3%
(7) Variable Expense Ratio = (1) + (2) + (3) + (4) + (5) + (6)	20.5%
(8) Expected Loss Ratio without LAE	62.5%
(9) Defense and Cost Containment Expense ("DCC")	5.3%
(10) Adjusting and Other Expenses ("AO")	6.4%
(11) Variable Adjusting and Other Expenses = 0.5 x (10)	3.2%
(12) Portion of Expected Loss + LAE Ratio that varies with deductible (ELARD) = (8) + (9) + (11)	71.0%
(13) LER / D = [1.0 - (7)] / (12)	1.118

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 7/1/22.

(1) - (6) = From prior Rate Decision/Stipulation

(8) = From prior Rate Decision/Stipulation

(9) = 8.5% x (8), ratio of DCC to Losses from the 7/1/22 filing.

(10) = 10.2% x (8), ratio of AO to Losses from the 7/1/22 filing.

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Section VI - Expenses
 Subsection I - Adjustment for Large Deductible Policies
 7/1/2023

Section VI - I
 Exhibit 2

Average Large Deductible Premium Reduction Factor and Large Deductible Market Share

		Policy Year												
		2018	2019	2020	2021*									
(1)	Standard Earned Premium Excluding Large Deductible Policies	766,433,821	745,070,043	735,961,341	411,092,313									
(2)	Earned Premium Net of Deductible Credit for Large Deductible Policies	33,370,473	30,650,410	29,962,592	16,371,408									
(3)	Standard Earned Premium for Large Deductible Policies	169,782,987	174,841,315	174,073,507	103,921,821									
(4)	Standard Earned Premium for All Policies = (1) + (3)	936,216,808	919,911,358	910,034,848	515,014,134									
(5)	Average Premium Reduction Factor for Large Deductible Policies = 1.0 - [(2) / (3)]	0.803	0.825	0.828	0.842									
(6)	Market Share (Standard Premium Basis) of Large Deductible Policies = (3) / (4)	18.1%	19.0%	19.1%	20.2%									
		<table border="1" style="width: 100%; border-collapse: collapse; margin: 10px auto;"> <thead> <tr> <th colspan="3" style="text-align: center;">Calendar Year</th> </tr> <tr> <th style="text-align: center;">2019</th> <th style="text-align: center;">2020</th> <th style="text-align: center;">2021</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0.814</td> <td style="text-align: center;">0.826</td> <td style="text-align: center;">0.835</td> </tr> </tbody> </table>				Calendar Year			2019	2020	2021	0.814	0.826	0.835
Calendar Year														
2019	2020	2021												
0.814	0.826	0.835												
(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	18.6%	19.1%	19.7%										

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 2021 is an incomplete Policy Year, valued as of 12/31/2021

VI 000040

Section VI - Expenses
Subsection J - Expected Loss Ratios Underlying the Proposed Rates & Rating Values
7/1/2023

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	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) Variable Expense Ratio = (1) + (2) + (3)	20.4%
(5) Underwriting Profit Provision	0.1%
(6) Permissible Loss, LAE, and Fixed Expense Ratio = 1.0 - [(4) + (5)]	79.5%
(7) Fixed Expense Ratio	5.7%
(8) Expected Loss and Loss Adjustment Expense Ratio = (6) - (7)	73.8%
(9) Total Loss Adjustment Expense Ratio (LAE / Loss)	18.3%
(10) Expected Loss Ratio without Loss Adjustment Expense = (8) / [1.0 + (9)]	62.4%

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, 5.5%, is divided by [1.0 + indicated rate change], -4%, to derive the Fixed Expense Ratio underlying the proposed rates.

(9): Section VI-H, Exhibit 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.¹ 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.² 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

¹ 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."

² 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.

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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.³ 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:

³ 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).

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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 0.15%. 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 80 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. 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 current 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.⁴

⁴ A detailed mathematical explanation of the aggregation problem and an example is presented in the accompanying appendix.

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We address this problem in the current filing 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 2018 and policy year 2019 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 weighted average of the two policy year weights is used in the DCF models. Consistent with the calculation of the indicated rate change shown in Section I-A, Exhibit 1, we are weighting 75% to policy year 2018 and 25% weight to policy year 2019.

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.

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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 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.

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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

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Massachusetts. These data are taken from A.M. Best's Global Insurance Database using BestLink.

We begin our calculation of the portfolio rate of return by assigning weights to each asset category. In this filing, consistent with prior year's filing, 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 80 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

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year (and in the rate filings from 2005 to present), the WCRIBMA has relied on yields averaged over the last 3 months.⁵

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 prior year's rate filing, 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 prior year's rate filing, 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,

⁵ 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.

real estate and fixed income. The calculation of the pretax return on other assets is shown in Exhibit 2, Page 4.

Market Risk Premium

We use market returns from 1926-2021 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 *2022 SBBi 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.⁶ The pre-tax

⁶ 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 presents

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 14.98% on capital gains, we derive an overall average tax rate of 14.38% (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 3.94%. The tax rates used in these calculations fully reflect the changes associated with the Tax Cut and Jobs Act of 2017, including the reduction in the base corporate rate, as well as the adjustments to the proration provision and the dividends received deduction.

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.

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	87.5	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 - Profit
 Subsection A - Summary
 7/1/2023

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	944.24
(2)	Collected Premium Net - After Premium Discount	944.24
(3)	Loss & LAE Ratio	73.78%
(4)	Commission Ratio	9.15%
(5)	Premium Discount	5.58%
(6)	General Expense Ratio	5.40%
(7)	Other Acquisition Expense Ratio	2.48%
(8)	Premium Tax Rate	2.15%
(9)	Reinsurance Expense Ratio	1.00%
(10)	Miscellaneous and Other Taxes	0.31%
Cost of Capital:		
(11)	Weighted Average Cost of Capital	8.64%
Portfolio Rate of Return:		
(12)	After Tax Portfolio Rate of Return	3.94%
Leverage Ratio:		
(13)	Reserves to Surplus Ratio	1.51
Profit Provision:		
(14)	Profit Provision Calculation	0.15%

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 the fair rate of return has been established (based on the cost of capital analyses presented in the filing), the underwriting profit provision can be determined so that the total return on equity (including both underwriting and investment income) is equal to 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. Virtually every textbook on modern corporate and managerial finance cites the IRR model along with the net present value method as the most widely supported investment decision-making rules currently known. 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 introduced 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. Rather, while it produces exactly the same results as 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.

The IRR and ICC Models

Both the IRR and ICC models are variants of the more generic discounted cash flow (DCF) methodology that is a 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.

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 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 time period

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between the sale of policies and the payment of all losses and expenses against otherwise-indicated premium requirements.

Both DCF models account for all such income based on the investment yields insurers can expect to earn when the investible funds are received. However, the ICC model is 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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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, and 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. These are exactly the policies for which the rate of return should be calculated, as they 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 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 arise from funds supplied by investors (initial capital to support reserves and additional capital to prepay expenses and taxes) along with 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

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product of the 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 end result is different, because in the ICC one of the cash outflows is the periodic payment of the cost of capital to investors. Since that cost has already been considered explicitly, 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 that produces an IRR equal to the cost of capital, the ICC model solves for the underwriting profit factor that produces a net present value of future insurance company cash flows equal to zero. That profit factor is identical to the result obtained when solving for the underwriting profit 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.

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

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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 return on the equity investment is 10%. While the cash flows that derive from a real

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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 cash flows associated with the alternative IRR/ICC perspectives (Subsection B - Tables

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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 in Tables C2_1 through C2_7) are deducted to obtain the post-tax cash flows from underwriting.

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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.

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

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(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 0.15%, 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 8.64%. 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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Section VII - Profit
 Subsection B - DCF Models
 7/1/2023

Section VII-B
 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)
07/01/22	09/30/22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/01/22	12/31/22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01/01/23	03/31/23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/01/23	06/30/23	(4.38)	0.00	(4.38)	0.00	0.00	0.00	(4.38)	(4.11)
07/01/23	09/30/23	(7.68)	0.00	(7.68)	0.05	(144.17)	0.00	(151.79)	(139.72)
10/01/23	12/31/23	(14.22)	0.06	(14.16)	0.37	(109.15)	1.40	(121.54)	(109.58)
01/01/24	03/31/24	(15.69)	0.11	(15.58)	1.14	(145.70)	2.46	(157.68)	(139.25)
04/01/24	06/30/24	(4.60)	0.17	(4.43)	2.33	(100.67)	3.87	(98.90)	(85.55)
07/01/24	09/30/24	14.53	0.21	14.74	3.47	58.19	4.85	81.24	68.84
10/01/24	12/31/24	16.79	0.18	16.97	4.22	52.10	4.28	77.57	64.38
01/01/25	03/31/25	11.19	0.15	11.35	4.41	43.39	3.78	62.93	51.15
04/01/25	06/30/25	(12.88)	0.13	(12.74)	4.30	35.98	3.36	30.89	24.60
07/01/25	09/30/25	(9.39)	0.13	(9.27)	4.20	31.08	3.01	29.02	22.64
10/01/25	12/31/25	11.26	0.12	11.38	4.03	28.94	2.71	47.06	35.95
01/01/26	03/31/26	6.22	0.10	6.32	3.63	25.74	2.43	38.12	28.52
04/01/26	06/30/26	3.03	0.09	3.11	3.26	23.02	2.18	31.57	23.14
07/01/26	09/30/26	1.28	0.08	1.36	2.93	20.72	1.95	26.96	19.36
10/01/26	12/31/26	0.56	0.07	0.63	2.63	19.07	1.75	24.09	16.94
01/01/27	03/31/27	0.29	0.06	0.35	2.35	16.65	1.57	20.92	14.41
04/01/27	06/30/27	0.29	0.06	0.35	2.11	14.59	1.40	18.45	12.45
07/01/27	09/30/27	0.29	0.05	0.34	1.90	12.69	1.26	16.19	10.70
10/01/27	12/31/27	0.29	0.05	0.33	1.71	11.21	1.14	14.40	9.32
01/01/28	03/31/28	0.13	0.04	0.17	1.55	9.11	1.03	11.86	7.52
04/01/28	06/30/28	0.13	0.04	0.17	1.42	7.33	0.94	9.85	6.12
07/01/28	09/30/28	0.13	0.04	0.16	1.31	5.97	0.87	8.32	5.06
10/01/28	12/31/28	0.13	0.03	0.16	1.23	5.19	0.81	7.39	4.40
01/01/29	03/31/29	0.10	0.03	0.13	1.15	4.09	0.76	6.13	3.58
04/01/29	06/30/29	0.10	0.03	0.12	1.09	3.16	0.72	5.10	2.92
07/01/29	09/30/29	0.10	0.03	0.12	1.05	2.55	0.69	4.41	2.47
10/01/29	12/31/29	0.10	0.03	0.12	1.01	2.30	0.67	4.09	2.25
01/01/30	03/31/30	0.08	0.03	0.11	0.97	1.93	0.65	3.66	1.97
04/01/30	06/30/30	0.08	0.03	0.11	0.95	1.63	0.63	3.31	1.74
07/01/30	09/30/30	0.08	0.02	0.11	0.92	1.41	0.61	3.05	1.57
10/01/30	12/31/30	0.08	0.02	0.11	0.90	1.29	0.60	2.89	1.46
01/01/31	03/31/31	0.07	0.02	0.10	0.88	1.11	0.59	2.68	1.32
04/01/31	06/30/31	0.07	0.02	0.10	0.87	0.97	0.57	2.50	1.21
07/01/31	09/30/31	0.07	0.02	0.10	0.85	0.89	0.57	2.41	1.14
10/01/31	12/31/31	0.07	0.02	0.10	0.84	0.88	0.56	2.37	1.10
01/01/32	03/31/32	0.09	0.02	0.11	0.83	0.86	0.55	2.35	1.07
04/01/32	06/30/32	0.09	0.02	0.11	0.81	0.84	0.54	2.30	1.03
07/01/32	09/30/32	0.09	0.02	0.11	0.80	0.79	0.53	2.24	0.98
10/01/32	12/31/32	0.09	0.02	0.11	0.79	0.74	0.52	2.16	0.93
01/01/33	03/31/33	0.07	0.02	0.09	0.78	0.65	0.52	2.04	0.85
04/01/33	06/30/33	0.07	0.02	0.09	0.77	0.58	0.51	1.95	0.80
07/01/33	09/30/33	0.07	0.02	0.09	0.76	0.54	0.50	1.89	0.76
10/01/33	12/31/33	0.07	0.02	0.09	0.75	0.52	0.50	1.86	0.73
01/01/34	03/31/34	0.06	0.02	0.08	0.75	0.49	0.49	1.81	0.70
04/01/34	06/30/34	0.06	0.02	0.08	0.74	0.46	0.49	1.77	0.67
07/01/34	09/30/34	0.06	0.02	0.08	0.73	0.45	0.49	1.76	0.65
10/01/34	12/31/34	0.06	0.02	0.08	0.73	0.47	0.48	1.76	0.64
01/01/35	03/31/35	0.06	0.02	0.08	0.72	0.48	0.48	1.76	0.62
04/01/35	06/30/35	0.06	0.02	0.08	0.71	0.49	0.47	1.75	0.61
07/01/35	09/30/35	0.06	0.02	0.08	0.70	0.50	0.47	1.75	0.60
10/01/35	12/31/35	0.06	0.02	0.08	0.70	0.51	0.46	1.75	0.58
01/01/36	03/31/36	0.05	0.02	0.07	0.69	0.52	0.46	1.74	0.57
04/01/36	06/30/36	0.05	0.02	0.07	0.68	0.52	0.45	1.73	0.55
07/01/36	09/30/36	0.05	0.02	0.07	0.67	0.50	0.45	1.70	0.53
10/01/36	12/31/36	0.05	0.02	0.07	0.67	0.46	0.44	1.65	0.51
01/01/37	03/31/37	0.05	0.02	0.07	0.66	0.41	0.44	1.57	0.47
04/01/37	06/30/37	0.05	0.02	0.07	0.65	0.36	0.43	1.52	0.45
07/01/37	09/30/37	0.05	0.02	0.07	0.65	0.33	0.43	1.48	0.43
10/01/37	12/31/37	0.05	0.02	0.07	0.64	0.32	0.43	1.46	0.41
01/01/38	03/31/38	0.05	0.02	0.07	0.64	0.31	0.42	1.44	0.40
04/01/38	06/30/38	0.05	0.02	0.07	0.64	0.29	0.42	1.42	0.38
07/01/38	09/30/38	0.05	0.02	0.07	0.63	0.29	0.42	1.41	0.37
10/01/38	12/31/38	0.05	0.02	0.07	0.63	0.30	0.42	1.41	0.37
01/01/39	03/31/39	0.05	0.02	0.06	0.62	0.31	0.41	1.41	0.36
04/01/39	06/30/39	0.05	0.02	0.06	0.62	0.32	0.41	1.41	0.35
07/01/39	09/30/39	0.05	0.02	0.06	0.61	0.33	0.41	1.41	0.34
10/01/39	12/31/39	0.05	0.02	0.06	0.61	0.32	0.40	1.40	0.34
01/01/40	03/31/40	0.05	0.02	0.06	0.60	0.32	0.40	1.38	0.32
04/01/40	06/30/40	0.05	0.02	0.06	0.60	0.31	0.40	1.37	0.32
07/01/40	09/30/40	0.05	0.02	0.06	0.59	0.32	0.39	1.37	0.31
10/01/40	12/31/40	0.05	0.02	0.06	0.59	0.33	0.39	1.37	0.30
01/01/41	03/31/41	0.04	0.02	0.05	0.58	0.34	0.39	1.37	0.30
04/01/41	06/30/41	0.04	0.02	0.05	0.58	0.35	0.38	1.37	0.29
07/01/41	09/30/41	0.04	0.02	0.05	0.57	0.36	0.38	1.37	0.28
10/01/41	12/31/41	0.04	0.01	0.05	0.57	0.37	0.38	1.37	0.28
01/01/42	03/31/42	0.01	0.01	0.03	0.56	0.37	0.37	1.33	0.26
04/01/42	06/30/42	0.01	0.01	0.03	0.56	0.37	0.37	1.33	0.26
07/01/42	09/30/42	0.01	0.01	0.03	0.55	0.35	0.37	1.30	0.25
10/01/42	12/31/42	0.01	0.01	0.03	0.55	0.32	0.36	1.26	0.24
01/01/43	03/31/43	0.00	0.01	0.02	0.54	0.28	0.36	1.20	0.22
04/01/43	06/30/43	0.00	0.01	0.02	0.54	0.24	0.36	1.16	0.21
07/01/43	09/30/43	0.00	0.01	0.02	0.54	0.25	0.36	1.16	0.20

VII 00039

Section VII - Profit
Subsection B - DCF Models
7/1/2023

Section VII-B
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)
10/01/43	12/31/43	0.00	0.01	0.02	0.53	0.29	0.35	1.19	0.20
01/01/44	03/31/44	0.00	0.01	0.02	0.53	0.34	0.35	1.23	0.21
04/01/44	06/30/44	0.00	0.01	0.02	0.52	0.38	0.35	1.27	0.21
07/01/44	09/30/44	0.00	0.01	0.02	0.52	0.43	0.34	1.31	0.21
10/01/44	12/31/44	0.00	0.01	0.02	0.51	0.48	0.34	1.35	0.21
01/01/45	03/31/45	0.00	0.01	0.02	0.51	0.54	0.33	1.39	0.22
04/01/45	06/30/45	0.00	0.01	0.02	0.50	0.59	0.33	1.43	0.22
07/01/45	09/30/45	0.00	0.01	0.02	0.49	0.62	0.32	1.44	0.21
10/01/45	12/31/45	0.00	0.01	0.02	0.48	0.62	0.32	1.43	0.21
01/01/46	03/31/46	0.00	0.01	0.02	0.47	0.62	0.31	1.41	0.20
04/01/46	06/30/46	0.00	0.01	0.01	0.46	0.61	0.31	1.39	0.19
07/01/46	09/30/46	0.00	0.01	0.01	0.45	0.62	0.30	1.38	0.19
10/01/46	12/31/46	0.00	0.01	0.01	0.44	0.62	0.29	1.37	0.18
01/01/47	03/31/47	0.00	0.01	0.01	0.43	0.62	0.29	1.35	0.18
04/01/47	06/30/47	0.00	0.01	0.01	0.43	0.61	0.28	1.33	0.17
07/01/47	09/30/47	0.00	0.01	0.01	0.42	0.62	0.28	1.32	0.17
10/01/47	12/31/47	0.00	0.01	0.01	0.41	0.62	0.27	1.31	0.16
01/01/48	03/31/48	0.00	0.01	0.01	0.40	0.62	0.26	1.29	0.16
04/01/48	06/30/48	0.00	0.01	0.01	0.39	0.61	0.26	1.27	0.15
07/01/48	09/30/48	0.00	0.01	0.01	0.38	0.62	0.25	1.26	0.15
10/01/48	12/31/48	0.00	0.01	0.01	0.37	0.62	0.25	1.25	0.14
01/01/49	03/31/49	0.00	0.01	0.01	0.36	0.62	0.24	1.23	0.14
04/01/49	06/30/49	0.00	0.01	0.01	0.35	0.61	0.23	1.21	0.13
07/01/49	09/30/49	0.00	0.01	0.01	0.34	0.62	0.23	1.20	0.13
10/01/49	12/31/49	0.00	0.01	0.01	0.34	0.62	0.22	1.19	0.12
01/01/50	03/31/50	0.00	0.01	0.01	0.33	0.62	0.22	1.17	0.12
04/01/50	06/30/50	0.00	0.01	0.01	0.32	0.61	0.21	1.15	0.12
07/01/50	09/30/50	0.00	0.01	0.01	0.31	0.62	0.20	1.14	0.11
10/01/50	12/31/50	0.00	0.01	0.01	0.30	0.62	0.20	1.13	0.11
01/01/51	03/31/51	0.00	0.01	0.01	0.29	0.62	0.19	1.11	0.10
04/01/51	06/30/51	0.00	0.01	0.01	0.28	0.61	0.19	1.09	0.10
07/01/51	09/30/51	0.00	0.01	0.01	0.27	0.62	0.18	1.08	0.10
10/01/51	12/31/51	0.00	0.01	0.01	0.26	0.62	0.17	1.07	0.09
01/01/52	03/31/52	0.00	0.01	0.01	0.25	0.62	0.17	1.05	0.09
04/01/52	06/30/52	0.00	0.01	0.01	0.24	0.61	0.16	1.03	0.09
07/01/52	09/30/52	0.00	0.01	0.01	0.24	0.62	0.16	1.02	0.08
10/01/52	12/31/52	0.00	0.01	0.01	0.23	0.62	0.15	1.00	0.08
01/01/53	03/31/53	0.00	0.01	0.01	0.22	0.62	0.14	0.99	0.08
04/01/53	06/30/53	0.00	0.01	0.01	0.21	0.61	0.14	0.97	0.08
07/01/53	09/30/53	0.00	0.01	0.01	0.20	0.62	0.13	0.96	0.07
10/01/53	12/31/53	0.00	0.00	0.01	0.19	0.62	0.13	0.94	0.07
01/01/54	03/31/54	0.00	0.00	0.01	0.18	0.62	0.12	0.92	0.07
04/01/54	06/30/54	0.00	0.00	0.01	0.17	0.61	0.11	0.91	0.07
07/01/54	09/30/54	0.00	0.00	0.01	0.16	0.62	0.11	0.89	0.06
10/01/54	12/31/54	0.00	0.00	0.01	0.15	0.62	0.10	0.88	0.06
01/01/55	03/31/55	0.00	0.00	0.01	0.14	0.62	0.10	0.86	0.06
04/01/55	06/30/55	0.00	0.00	0.01	0.14	0.61	0.09	0.85	0.06
07/01/55	09/30/55	0.00	0.00	0.01	0.13	0.62	0.08	0.83	0.05
10/01/55	12/31/55	0.00	0.00	0.01	0.12	0.62	0.08	0.82	0.05
01/01/56	03/31/56	0.00	0.00	0.01	0.11	0.62	0.07	0.80	0.05
04/01/56	06/30/56	0.00	0.00	0.01	0.10	0.61	0.07	0.78	0.05
07/01/56	09/30/56	0.00	0.00	0.01	0.09	0.62	0.06	0.77	0.05
10/01/56	12/31/56	0.00	0.00	0.00	0.08	0.62	0.05	0.76	0.04
01/01/57	03/31/57	0.00	0.00	0.00	0.07	0.62	0.05	0.74	0.04
04/01/57	06/30/57	0.00	0.00	0.00	0.06	0.61	0.04	0.72	0.04
07/01/57	09/30/57	0.00	0.00	0.00	0.05	0.62	0.04	0.71	0.04
10/01/57	12/31/57	0.00	0.00	0.00	0.05	0.62	0.03	0.70	0.04
01/01/58	03/31/58	0.00	0.00	0.00	0.04	0.62	0.02	0.68	0.04
04/01/58	06/30/58	0.00	0.00	0.00	0.03	0.61	0.02	0.66	0.03
07/01/58	09/30/58	0.00	0.00	0.00	0.02	0.53	0.01	0.56	0.03
10/01/58	12/31/58	0.00	0.00	0.00	0.01	0.40	0.01	0.42	0.02
01/01/59	03/31/59	(0.00)	0.00	0.00	0.00	0.23	0.00	0.23	0.01
04/01/59	06/30/59	0.00	0.00	0.00	0.00	0.08	0.00	0.08	0.00
TOTAL		1.17	3.53	4.70	114.05	(0.00)	86.45	205.20	(0.00)

Notes:

(3) = Table C1, (14) - [Table C3, (7), incremental]

(4) = Table B2, (5)

(5) = (3) + (4)

(6) = Table C3, (7)_{t-1} x { [1.0 + Table A1, (12)] ^ 0.25 - 1.0 }

(7) = -1.0 X Table D1, (7), incremental

(8) = Table D1, (7)_{t-1} x { [1.0 + Table A1, (12)] ^ 0.25 - 1.0 }

(9) = (5) + (6) + (7) + (8)

(10) = (9) x (1 + WACC)^{time in years}, based on the time interval with beginning date 07/01/22

WACC is the weighted average cost of capital from Section VII-E, Exhibit 1 which is equal to 8.64%.

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 0.15% 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)						
07/01/22	09/30/22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/01/22	12/31/22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01/01/23	03/31/23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/01/23	06/30/23	4.38	0.00	0.00	0.00	0.00	1.16	0.00	0.00	0.00	0.00
07/01/23	09/30/23	156.22	0.09	0.00	0.09	0.04	25.71	0.01	0.00	(0.04)	(0.03)
10/01/23	12/31/23	279.58	3.27	0.06	3.21	1.52	91.53	0.25	0.00	(1.44)	(1.30)
01/01/24	03/31/24	440.97	5.85	0.11	5.74	2.71	198.18	0.89	0.00	(2.14)	(1.89)
04/01/24	06/30/24	546.24	9.23	0.17	9.06	4.28	311.02	1.92	0.00	(2.86)	(2.47)
07/01/24	09/30/24	473.52	11.43	0.21	11.22	5.30	402.55	3.02	0.00	(2.91)	(2.46)
10/01/24	12/31/24	404.63	9.91	0.18	9.73	4.59	439.74	3.91	0.00	(1.23)	(1.02)
01/01/25	03/31/25	350.06	8.47	0.15	8.31	3.93	438.75	4.27	0.00	(0.12)	(0.10)
04/01/25	06/30/25	326.95	7.33	0.13	7.19	3.40	416.38	4.26	0.00	0.46	0.37
07/01/25	09/30/25	305.26	6.84	0.13	6.72	3.17	389.23	4.04	0.00	0.49	0.39
10/01/25	12/31/25	265.06	6.39	0.12	6.27	2.96	359.29	3.78	0.00	0.47	0.36
01/01/26	03/31/26	233.10	5.55	0.10	5.45	2.57	327.48	3.49	0.00	0.61	0.46
04/01/26	06/30/26	207.06	4.88	0.09	4.79	2.26	296.21	3.18	0.00	0.65	0.48
07/01/26	09/30/26	185.06	4.33	0.08	4.25	2.01	266.46	2.87	0.00	0.63	0.45
10/01/26	12/31/26	165.42	3.87	0.07	3.80	1.80	238.40	2.59	0.00	0.58	0.41
01/01/27	03/31/27	148.49	3.46	0.06	3.40	1.60	213.70	2.31	0.00	0.52	0.36
04/01/27	06/30/27	133.61	3.11	0.06	3.05	1.44	192.13	2.07	0.00	0.46	0.31
07/01/27	09/30/27	120.63	2.80	0.05	2.75	1.30	173.42	1.86	0.00	0.42	0.27
10/01/27	12/31/27	109.13	2.52	0.05	2.48	1.17	156.96	1.68	0.00	0.37	0.24
01/01/28	03/31/28	99.89	2.28	0.04	2.24	1.06	143.45	1.52	0.00	0.34	0.22
04/01/28	06/30/28	92.44	2.09	0.04	2.05	0.97	132.65	1.39	0.00	0.31	0.19
07/01/28	09/30/28	86.34	1.93	0.04	1.90	0.90	123.89	1.29	0.00	0.28	0.17
10/01/28	12/31/28	81.02	1.81	0.03	1.77	0.84	116.32	1.20	0.00	0.27	0.16
01/01/29	03/31/29	76.83	1.70	0.03	1.66	0.79	110.25	1.13	0.00	0.25	0.15
04/01/29	06/30/29	73.58	1.61	0.03	1.58	0.75	105.60	1.07	0.00	0.24	0.14
07/01/29	09/30/29	70.93	1.54	0.03	1.51	0.71	101.87	1.02	0.00	0.23	0.13
10/01/29	12/31/29	68.54	1.48	0.03	1.46	0.69	98.52	0.99	0.00	0.22	0.12
01/01/30	03/31/30	66.53	1.43	0.03	1.41	0.66	95.69	0.96	0.00	0.21	0.11
04/01/30	06/30/30	64.82	1.39	0.03	1.37	0.65	93.32	0.93	0.00	0.21	0.11
07/01/30	09/30/30	63.33	1.36	0.02	1.33	0.63	91.29	0.91	0.00	0.20	0.10
10/01/30	12/31/30	61.96	1.33	0.02	1.30	0.61	89.44	0.89	0.00	0.20	0.10
01/01/31	03/31/31	60.78	1.30	0.02	1.27	0.60	87.83	0.87	0.00	0.20	0.10
04/01/31	06/30/31	59.74	1.27	0.02	1.25	0.59	86.45	0.85	0.00	0.19	0.09
07/01/31	09/30/31	58.77	1.25	0.02	1.23	0.58	85.18	0.84	0.00	0.19	0.09
10/01/31	12/31/31	57.82	1.23	0.02	1.21	0.57	83.93	0.83	0.00	0.19	0.09
01/01/32	03/31/32	56.87	1.21	0.02	1.19	0.56	82.70	0.81	0.00	0.19	0.09
04/01/32	06/30/32	55.94	1.19	0.02	1.17	0.55	81.51	0.80	0.00	0.19	0.08
07/01/32	09/30/32	55.06	1.17	0.02	1.15	0.54	80.38	0.79	0.00	0.18	0.08
10/01/32	12/31/32	54.23	1.15	0.02	1.13	0.53	79.34	0.78	0.00	0.18	0.08
01/01/33	03/31/33	53.51	1.13	0.02	1.11	0.53	78.44	0.77	0.00	0.18	0.08
04/01/33	06/30/33	52.86	1.12	0.02	1.10	0.52	77.65	0.76	0.00	0.18	0.07
07/01/33	09/30/33	52.25	1.11	0.02	1.09	0.51	76.93	0.75	0.00	0.18	0.07
10/01/33	12/31/33	51.67	1.09	0.02	1.07	0.51	76.24	0.75	0.00	0.18	0.07
01/01/34	03/31/34	51.12	1.08	0.02	1.06	0.50	75.58	0.74	0.00	0.18	0.07
04/01/34	06/30/34	50.60	1.07	0.02	1.05	0.50	74.95	0.73	0.00	0.18	0.07
07/01/34	09/30/34	50.08	1.06	0.02	1.04	0.49	74.33	0.73	0.00	0.18	0.07
10/01/34	12/31/34	49.55	1.05	0.02	1.03	0.49	73.69	0.72	0.00	0.18	0.06
01/01/35	03/31/35	49.01	1.04	0.02	1.02	0.48	73.03	0.71	0.00	0.18	0.06
04/01/35	06/30/35	48.46	1.03	0.02	1.01	0.48	72.35	0.71	0.00	0.18	0.06
07/01/35	09/30/35	47.90	1.01	0.02	1.00	0.47	71.66	0.70	0.00	0.18	0.06
10/01/35	12/31/35	47.32	1.00	0.02	0.98	0.46	70.95	0.70	0.00	0.18	0.06
01/01/36	03/31/36	46.75	0.99	0.02	0.97	0.46	70.22	0.69	0.00	0.18	0.06
04/01/36	06/30/36	46.18	0.98	0.02	0.96	0.45	69.49	0.68	0.00	0.17	0.06
07/01/36	09/30/36	45.62	0.97	0.02	0.95	0.45	68.79	0.67	0.00	0.17	0.05
10/01/36	12/31/36	45.14	0.95	0.02	0.94	0.44	68.12	0.67	0.04	0.21	0.06
01/01/37	03/31/37	44.73	0.94	0.02	0.93	0.44	67.50	0.66	0.05	0.22	0.07
04/01/37	06/30/37	44.37	0.94	0.02	0.92	0.43	66.96	0.65	0.05	0.22	0.06
07/01/37	09/30/37	44.04	0.93	0.02	0.91	0.43	66.46	0.65	0.05	0.22	0.06
10/01/37	12/31/37	43.72	0.92	0.02	0.90	0.43	65.98	0.64	0.05	0.22	0.06
01/01/38	03/31/38	43.41	0.91	0.02	0.90	0.42	65.52	0.64	0.05	0.22	0.06
04/01/38	06/30/38	43.12	0.91	0.02	0.89	0.42	65.07	0.64	0.05	0.21	0.06
07/01/38	09/30/38	42.82	0.90	0.02	0.89	0.42	64.63	0.63	0.05	0.21	0.06
10/01/38	12/31/38	42.52	0.90	0.02	0.88	0.42	64.17	0.63	0.05	0.21	0.06
01/01/39	03/31/39	42.21	0.89	0.02	0.87	0.41	63.70	0.62	0.05	0.21	0.05
04/01/39	06/30/39	41.89	0.88	0.02	0.87	0.41	63.22	0.62	0.05	0.21	0.05
07/01/39	09/30/39	41.56	0.88	0.02	0.86	0.41	62.72	0.61	0.05	0.21	0.05
10/01/39	12/31/39	41.24	0.87	0.02	0.85	0.40	62.24	0.61	0.05	0.21	0.05
01/01/40	03/31/40	40.92	0.86	0.02	0.85	0.40	61.75	0.60	0.05	0.20	0.05
04/01/40	06/30/40	40.60	0.86	0.02	0.84	0.40	61.28	0.60	0.05	0.20	0.05
07/01/40	09/30/40	40.28	0.85	0.02	0.83	0.39	60.80	0.59	0.05	0.20	0.04
10/01/40	12/31/40	39.95	0.84	0.02	0.83	0.39	60.30	0.59	0.05	0.20	0.04
01/01/41	03/31/41	39.61	0.84	0.02	0.82	0.39	59.79	0.58	0.04	0.19	0.04
04/01/41	06/30/41	39.26	0.83	0.02	0.81	0.38	59.26	0.58	0.04	0.19	0.04
07/01/41	09/30/41	38.90	0.82	0.02	0.81	0.38	58.72	0.57	0.04	0.19	0.04
10/01/41	12/31/41	38.53	0.81	0.01	0.80	0.38	58.18	0.57	0.04	0.19	0.04
01/01/42	03/31/42	38.16	0.81	0.01	0.79	0.37	57.65	0.56	0.01	0.16	0.03
04/01/42	06/30/42	37.80	0.80	0.01	0.78	0.37	57.12	0.56	0.01	0.16	0.03

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)						
07/01/42	09/30/42	37.44	0.79	0.01	0.78	0.37	56.61	0.55	0.01	0.16	0.03
10/01/42	12/31/42	37.12	0.78	0.01	0.77	0.36	56.15	0.55	0.01	0.15	0.03
01/01/43	03/31/43	36.84	0.78	0.01	0.76	0.36	55.73	0.54	0.00	0.14	0.03
04/01/43	06/30/43	36.60	0.77	0.01	0.76	0.36	55.37	0.54	0.00	0.14	0.03
07/01/43	09/30/43	36.35	0.77	0.01	0.75	0.36	55.00	0.54	0.00	0.14	0.03
10/01/43	12/31/43	36.06	0.76	0.01	0.75	0.35	54.57	0.53	0.00	0.14	0.02
01/01/44	03/31/44	35.72	0.75	0.01	0.74	0.35	54.06	0.53	0.00	0.14	0.02
04/01/44	06/30/44	35.34	0.75	0.01	0.73	0.35	53.49	0.52	0.00	0.14	0.02
07/01/44	09/30/44	34.91	0.74	0.01	0.73	0.34	52.83	0.52	0.00	0.14	0.02
10/01/44	12/31/44	34.43	0.73	0.01	0.72	0.34	52.11	0.51	0.00	0.14	0.02
01/01/45	03/31/45	33.89	0.72	0.01	0.71	0.33	51.29	0.51	0.00	0.13	0.02
04/01/45	06/30/45	33.30	0.71	0.01	0.70	0.33	50.40	0.50	0.00	0.13	0.02
07/01/45	09/30/45	32.68	0.70	0.01	0.68	0.32	49.47	0.49	0.00	0.13	0.02
10/01/45	12/31/45	32.06	0.68	0.01	0.67	0.32	48.53	0.48	0.00	0.13	0.02
01/01/46	03/31/46	31.45	0.67	0.01	0.66	0.31	47.60	0.47	0.00	0.13	0.02
04/01/46	06/30/46	30.83	0.66	0.01	0.65	0.31	46.67	0.46	0.00	0.12	0.02
07/01/46	09/30/46	30.22	0.65	0.01	0.63	0.30	45.73	0.45	0.00	0.12	0.02
10/01/46	12/31/46	29.60	0.63	0.01	0.62	0.29	44.80	0.44	0.00	0.12	0.02
01/01/47	03/31/47	28.98	0.62	0.01	0.61	0.29	43.86	0.43	0.00	0.12	0.02
04/01/47	06/30/47	28.37	0.61	0.01	0.60	0.28	42.93	0.43	0.00	0.11	0.01
07/01/47	09/30/47	27.75	0.59	0.01	0.58	0.28	42.00	0.42	0.00	0.11	0.01
10/01/47	12/31/47	27.13	0.58	0.01	0.57	0.27	41.06	0.41	0.00	0.11	0.01
01/01/48	03/31/48	26.51	0.57	0.01	0.56	0.26	40.13	0.40	0.00	0.11	0.01
04/01/48	06/30/48	25.90	0.55	0.01	0.54	0.26	39.20	0.39	0.00	0.10	0.01
07/01/48	09/30/48	25.29	0.54	0.01	0.53	0.25	38.27	0.38	0.00	0.10	0.01
10/01/48	12/31/48	24.67	0.53	0.01	0.52	0.25	37.33	0.37	0.00	0.10	0.01
01/01/49	03/31/49	24.05	0.52	0.01	0.51	0.24	36.39	0.36	0.00	0.10	0.01
04/01/49	06/30/49	23.44	0.50	0.01	0.49	0.23	35.47	0.35	0.00	0.10	0.01
07/01/49	09/30/49	22.82	0.49	0.01	0.48	0.23	34.53	0.34	0.00	0.09	0.01
10/01/49	12/31/49	22.20	0.48	0.01	0.47	0.22	33.59	0.34	0.00	0.09	0.01
01/01/50	03/31/50	21.58	0.46	0.01	0.46	0.22	32.66	0.33	0.00	0.09	0.01
04/01/50	06/30/50	20.97	0.45	0.01	0.44	0.21	31.73	0.32	0.00	0.09	0.01
07/01/50	09/30/50	20.35	0.44	0.01	0.43	0.20	30.80	0.31	0.00	0.08	0.01
10/01/50	12/31/50	19.73	0.43	0.01	0.42	0.20	29.86	0.30	0.00	0.08	0.01
01/01/51	03/31/51	19.12	0.41	0.01	0.41	0.19	28.93	0.29	0.00	0.08	0.01
04/01/51	06/30/51	18.50	0.40	0.01	0.39	0.19	28.00	0.28	0.00	0.08	0.01
07/01/51	09/30/51	17.89	0.39	0.01	0.38	0.18	27.06	0.27	0.00	0.07	0.01
10/01/51	12/31/51	17.27	0.37	0.01	0.37	0.17	26.13	0.26	0.00	0.07	0.01
01/01/52	03/31/52	16.65	0.36	0.01	0.35	0.17	25.19	0.25	0.00	0.07	0.01
04/01/52	06/30/52	16.04	0.35	0.01	0.34	0.16	24.26	0.24	0.00	0.07	0.01
07/01/52	09/30/52	15.42	0.34	0.01	0.33	0.16	23.33	0.24	0.00	0.06	0.01
10/01/52	12/31/52	14.80	0.32	0.01	0.32	0.15	22.39	0.23	0.00	0.06	0.01
01/01/53	03/31/53	14.18	0.31	0.01	0.30	0.14	21.46	0.22	0.00	0.06	0.00
04/01/53	06/30/53	13.57	0.30	0.01	0.29	0.14	20.53	0.21	0.00	0.06	0.00
07/01/53	09/30/53	12.95	0.28	0.01	0.28	0.13	19.60	0.20	0.00	0.05	0.00
10/01/53	12/31/53	12.33	0.27	0.00	0.27	0.13	18.66	0.19	0.00	0.05	0.00
01/01/54	03/31/54	11.72	0.26	0.00	0.25	0.12	17.73	0.18	0.00	0.05	0.00
04/01/54	06/30/54	11.10	0.25	0.00	0.24	0.11	16.80	0.17	0.00	0.05	0.00
07/01/54	09/30/54	10.49	0.23	0.00	0.23	0.11	15.86	0.16	0.00	0.05	0.00
10/01/54	12/31/54	9.87	0.22	0.00	0.22	0.10	14.92	0.15	0.00	0.04	0.00
01/01/55	03/31/55	9.25	0.21	0.00	0.20	0.10	13.99	0.14	0.00	0.04	0.00
04/01/55	06/30/55	8.64	0.19	0.00	0.19	0.09	13.06	0.14	0.00	0.04	0.00
07/01/55	09/30/55	8.02	0.18	0.00	0.18	0.08	12.13	0.13	0.00	0.04	0.00
10/01/55	12/31/55	7.40	0.17	0.00	0.16	0.08	11.19	0.12	0.00	0.03	0.00
01/01/56	03/31/56	6.78	0.15	0.00	0.15	0.07	10.26	0.11	0.00	0.03	0.00
04/01/56	06/30/56	6.17	0.14	0.00	0.14	0.07	9.33	0.10	0.00	0.03	0.00
07/01/56	09/30/56	5.55	0.13	0.00	0.13	0.06	8.40	0.09	0.00	0.03	0.00
10/01/56	12/31/56	4.93	0.12	0.00	0.11	0.05	7.46	0.08	0.00	0.02	0.00
01/01/57	03/31/57	4.32	0.10	0.00	0.10	0.05	6.52	0.07	0.00	0.02	0.00
04/01/57	06/30/57	3.70	0.09	0.00	0.09	0.04	5.60	0.06	0.00	0.02	0.00
07/01/57	09/30/57	3.09	0.08	0.00	0.08	0.04	4.66	0.05	0.00	0.02	0.00
10/01/57	12/31/57	2.47	0.06	0.00	0.06	0.03	3.72	0.05	0.00	0.01	0.00
01/01/58	03/31/58	1.85	0.05	0.00	0.05	0.02	2.79	0.04	0.00	0.01	0.00
04/01/58	06/30/58	1.24	0.04	0.00	0.04	0.02	1.87	0.03	0.00	0.01	0.00
07/01/58	09/30/58	0.70	0.03	0.00	0.03	0.01	1.06	0.02	0.00	0.00	0.00
10/01/58	12/31/58	0.30	0.01	0.00	0.01	0.01	0.45	0.01	0.00	0.00	0.00
01/01/59	03/31/59	0.08	0.01	0.00	0.01	0.00	0.11	0.00	(0.00)	0.00	0.00
04/01/59	06/30/59	0.00	0.00	0.00	0.00	0.00	(0.00)	0.00	0.00	0.00	0.00
TOTAL		9,229.37	193.16	3.53	189.62	89.54	11,437.05	110.96	1.17	12.05	(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 8.64%
 (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=3.91% and Debt Capital Share=19%, 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 07/01/22,
 where WACC is the weighted average cost of capital from Section VII-E, Exhibit 1 which is equal to 8.64%

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)												
10/01/43	12/31/43	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.44)	(0.01)	(0.43)
01/01/44	03/31/44	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.51)	(0.00)	(0.51)
04/01/44	06/30/44	0.00	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.57)	(0.00)	(0.57)
07/01/44	09/30/44	0.00	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.65)	(0.00)	(0.65)
10/01/44	12/31/44	0.00	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.73)	(0.00)	(0.72)
01/01/45	03/31/45	0.00	0.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.82)	(0.00)	(0.81)
04/01/45	06/30/45	0.00	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.89)	(0.00)	(0.89)
07/01/45	09/30/45	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
10/01/45	12/31/45	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.94)	(0.00)	(0.94)
01/01/46	03/31/46	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
04/01/46	06/30/46	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
07/01/46	09/30/46	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
10/01/46	12/31/46	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.94)	(0.00)	(0.94)
01/01/47	03/31/47	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
04/01/47	06/30/47	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
07/01/47	09/30/47	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
10/01/47	12/31/47	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.94)	(0.00)	(0.94)
01/01/48	03/31/48	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
04/01/48	06/30/48	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
07/01/48	09/30/48	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
10/01/48	12/31/48	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.94)	(0.00)	(0.94)
01/01/49	03/31/49	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
04/01/49	06/30/49	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
07/01/49	09/30/49	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
10/01/49	12/31/49	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.94)	(0.00)	(0.94)
01/01/50	03/31/50	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
04/01/50	06/30/50	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
07/01/50	09/30/50	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
10/01/50	12/31/50	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.94)	(0.00)	(0.94)
01/01/51	03/31/51	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
04/01/51	06/30/51	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
07/01/51	09/30/51	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
10/01/51	12/31/51	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.94)	(0.00)	(0.94)
01/01/52	03/31/52	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
04/01/52	06/30/52	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
07/01/52	09/30/52	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
10/01/52	12/31/52	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.94)	(0.00)	(0.94)
01/01/53	03/31/53	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
04/01/53	06/30/53	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
07/01/53	09/30/53	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
10/01/53	12/31/53	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.94)	(0.00)	(0.94)
01/01/54	03/31/54	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
04/01/54	06/30/54	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
07/01/54	09/30/54	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
10/01/54	12/31/54	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.94)	(0.00)	(0.94)
01/01/55	03/31/55	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
04/01/55	06/30/55	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
07/01/55	09/30/55	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
10/01/55	12/31/55	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.94)	(0.00)	(0.94)
01/01/56	03/31/56	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
04/01/56	06/30/56	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
07/01/56	09/30/56	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
10/01/56	12/31/56	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.94)	(0.00)	(0.94)
01/01/57	03/31/57	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
04/01/57	06/30/57	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
07/01/57	09/30/57	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
10/01/57	12/31/57	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.94)	(0.00)	(0.94)
01/01/58	03/31/58	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
04/01/58	06/30/58	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.93)	(0.00)	(0.93)
07/01/58	09/30/58	0.00	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.81)	(0.00)	(0.80)
10/01/58	12/31/58	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.61)	(0.00)	(0.61)
01/01/59	03/31/59	0.00	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.34)	(0.00)	(0.34)
04/01/59	06/30/59	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(0.11)	(0.00)	(0.11)
TOTAL		944.24	737.80	91.53	53.95	24.81	21.53	3.13	10.00	204.96	1.48	0.31	1.17

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)						
01/01/22	12/31/22	0.00	0.00	0.00	0.00	0.00	0.00
01/01/23	12/31/23	429.38	312.86	312.86	250.29	62.57	179.10
01/01/24	12/31/24	514.86	113.02	(199.83)	(159.87)	(39.97)	674.72
01/01/25	12/31/25	0.00	0.00	(113.02)	(90.42)	(22.60)	90.42
01/01/26	12/31/26	0.00	0.00	0.00	0.00	0.00	0.00
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
TOTAL		944.24	425.88	0.00	(0.00)	(0.00)	944.24

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 2023									
TIME INTERVAL FROM TO (1) (2)		IRS DISCOUNT FACTOR (3)	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)	
01/01/22	12/31/22	0.8839	0.00	76.96	76.96	0.00	68.03	68.03	14.17
01/01/23	12/31/23	0.8693	76.96	53.71	(23.25)	68.03	46.69	(21.34)	23.25
01/01/24	12/31/24	0.8588	53.71	34.77	(18.94)	46.69	29.86	(16.83)	18.94
01/01/25	12/31/25	0.8443	34.77	22.56	(12.21)	29.86	19.05	(10.81)	12.21
01/01/26	12/31/26	0.8390	22.56	15.96	(6.60)	19.05	13.39	(5.66)	6.60
01/01/27	12/31/27	0.8340	15.96	13.01	(2.95)	13.39	10.85	(2.54)	2.95
01/01/28	12/31/28	0.8376	13.01	11.59	(1.41)	10.85	9.71	(1.13)	1.41
01/01/29	12/31/29	0.8458	11.59	10.78	(0.82)	9.71	9.12	(0.59)	0.82
01/01/30	12/31/30	0.8518	10.78	10.14	(0.64)	9.12	8.64	(0.48)	0.64
01/01/31	12/31/31	0.8701	10.14	9.66	(0.48)	8.64	8.40	(0.23)	0.48
01/01/32	12/31/32	0.8818	9.66	9.30	(0.36)	8.40	8.20	(0.20)	0.36
01/01/33	12/31/33	0.8938	9.30	8.94	(0.36)	8.20	7.99	(0.21)	0.36
01/01/34	12/31/34	0.9061	8.94	8.55	(0.39)	7.99	7.75	(0.24)	0.39
01/01/35	12/31/35	0.9185	8.55	8.25	(0.30)	7.75	7.58	(0.17)	0.30
01/01/36	12/31/36	0.9312	8.25	8.02	(0.23)	7.58	7.47	(0.11)	0.23
01/01/37	12/31/37	0.9440	8.02	7.79	(0.24)	7.47	7.35	(0.12)	0.24
01/01/38	12/31/38	0.9571	7.79	7.55	(0.24)	7.35	7.23	(0.13)	0.24
01/01/39	12/31/39	0.9704	7.55	7.29	(0.26)	7.23	7.08	(0.15)	0.26
01/01/40	12/31/40	0.9835	7.29	7.02	(0.28)	7.08	6.90	(0.18)	0.28
01/01/41	12/31/41	0.9860	7.02	6.81	(0.20)	6.90	6.72	(0.18)	0.20
01/01/42	12/31/42	0.9860	6.81	6.56	(0.26)	6.72	6.46	(0.25)	0.26
01/01/43	12/31/43	0.9860	6.56	6.15	(0.41)	6.46	6.06	(0.40)	0.41
01/01/44	12/31/44	0.9860	6.15	5.68	(0.46)	6.06	5.61	(0.45)	0.46
01/01/45	12/31/45	0.9860	5.68	5.22	(0.46)	5.61	5.15	(0.45)	0.46
01/01/46	12/31/46	0.9860	5.22	4.76	(0.46)	5.15	4.70	(0.45)	0.46
01/01/47	12/31/47	0.9860	4.76	4.30	(0.46)	4.70	4.24	(0.45)	0.46
01/01/48	12/31/48	0.9860	4.30	3.84	(0.46)	4.24	3.79	(0.45)	0.46
01/01/49	12/31/49	0.9860	3.84	3.38	(0.46)	3.79	3.33	(0.45)	0.46
01/01/50	12/31/50	0.9860	3.38	2.92	(0.46)	3.33	2.88	(0.45)	0.46
01/01/51	12/31/51	0.9860	2.92	2.46	(0.46)	2.88	2.42	(0.45)	0.46
01/01/52	12/31/52	0.9860	2.46	2.00	(0.46)	2.42	1.97	(0.45)	0.46
01/01/53	12/31/53	0.9860	2.00	1.53	(0.46)	1.97	1.51	(0.45)	0.46
01/01/54	12/31/54	0.9860	1.53	1.07	(0.46)	1.51	1.06	(0.45)	0.46
01/01/55	12/31/55	0.9860	1.07	0.61	(0.46)	1.06	0.60	(0.45)	0.46
01/01/56	12/31/56	0.9860	0.61	0.15	(0.46)	0.60	0.15	(0.45)	0.46
01/01/57	12/31/57	0.9860	0.15	0.00	(0.15)	0.15	0.00	(0.15)	0.15
01/01/58	12/31/58	0.9860	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01/01/59	12/31/59	0.9860	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL			389.30	389.30	0.00	347.92	347.92	0.00	91.13

- Notes:
- (3): Discount factors specified in IRS Internal Revenue Bulletin 2021-52.
 - (4) = (5)_{t-1}
 - (5) = (10), Total - (10), cumulative
 - (6) = (5) - (4)
 - (7) = (8)_{t-1}
 - (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 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	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1)	(2)								
01/01/22	12/31/22		0.00	0.00	0.00	0.00	0.00	0.00	
01/01/23	12/31/23								
01/01/24	12/31/24	0.8839	0.00	430.06	430.06	0.00	380.13	380.13	128.43
01/01/25	12/31/25	0.8693	430.06	281.03	(149.04)	380.13	244.30	(135.83)	149.04
01/01/26	12/31/26	0.8588	281.03	180.80	(100.23)	244.30	155.26	(89.04)	100.23
01/01/27	12/31/27	0.8443	180.80	118.03	(62.77)	155.26	99.66	(55.60)	62.77
01/01/28	12/31/28	0.8390	118.03	88.19	(29.84)	99.66	73.99	(25.67)	29.84
01/01/29	12/31/29	0.8340	88.19	75.69	(12.50)	73.99	63.12	(10.87)	12.50
01/01/30	12/31/30	0.8376	75.69	68.86	(6.82)	63.12	57.68	(5.44)	6.82
01/01/31	12/31/31	0.8458	68.86	64.72	(4.14)	57.68	54.75	(2.93)	4.14
01/01/32	12/31/32	0.8518	64.72	60.91	(3.82)	54.75	51.88	(2.86)	3.82
01/01/33	12/31/33	0.8701	60.91	58.39	(2.52)	51.88	50.80	(1.08)	2.52
01/01/34	12/31/34	0.8818	58.39	56.33	(2.06)	50.80	49.67	(1.12)	2.06
01/01/35	12/31/35	0.8938	56.33	54.05	(2.28)	49.67	48.31	(1.36)	2.28
01/01/36	12/31/36	0.9061	54.05	51.63	(2.42)	48.31	46.78	(1.53)	2.42
01/01/37	12/31/37	0.9185	51.63	50.07	(1.55)	46.78	45.99	(0.78)	1.55
01/01/38	12/31/38	0.9312	50.07	48.75	(1.32)	45.99	45.40	(0.60)	1.32
01/01/39	12/31/39	0.9440	48.75	47.25	(1.50)	45.40	44.61	(0.79)	1.50
01/01/40	12/31/40	0.9571	47.25	45.81	(1.44)	44.61	43.84	(0.76)	1.44
01/01/41	12/31/41	0.9704	45.81	44.17	(1.64)	43.84	42.86	(0.98)	1.64
01/01/42	12/31/42	0.9835	44.17	42.46	(1.71)	42.86	41.76	(1.10)	1.71
01/01/43	12/31/43	0.9860	42.46	41.42	(1.04)	41.76	40.84	(0.92)	1.04
01/01/44	12/31/44	0.9860	41.42	39.58	(1.85)	40.84	39.02	(1.82)	1.85
01/01/45	12/31/45	0.9860	39.58	36.75	(2.82)	39.02	36.24	(2.78)	2.82
01/01/46	12/31/46	0.9860	36.75	33.93	(2.83)	36.24	33.45	(2.79)	2.83
01/01/47	12/31/47	0.9860	33.93	31.10	(2.83)	33.45	30.67	(2.79)	2.83
01/01/48	12/31/48	0.9860	31.10	28.27	(2.83)	30.67	27.88	(2.79)	2.83
01/01/49	12/31/49	0.9860	28.27	25.45	(2.83)	27.88	25.09	(2.79)	2.83
01/01/50	12/31/50	0.9860	25.45	22.62	(2.83)	25.09	22.30	(2.79)	2.83
01/01/51	12/31/51	0.9860	22.62	19.80	(2.83)	22.30	19.52	(2.79)	2.83
01/01/52	12/31/52	0.9860	19.80	16.97	(2.83)	19.52	16.73	(2.79)	2.83
01/01/53	12/31/53	0.9860	16.97	14.14	(2.83)	16.73	13.94	(2.79)	2.83
01/01/54	12/31/54	0.9860	14.14	11.32	(2.83)	13.94	11.16	(2.79)	2.83
01/01/55	12/31/55	0.9860	11.32	8.49	(2.83)	11.16	8.37	(2.79)	2.83
01/01/56	12/31/56	0.9860	8.49	5.66	(2.83)	8.37	5.58	(2.79)	2.83
01/01/57	12/31/57	0.9860	5.66	2.84	(2.83)	5.58	2.80	(2.79)	2.83
01/01/58	12/31/58	0.9860	2.84	0.01	(2.83)	2.80	0.01	(2.79)	2.83
01/01/59	12/31/59	0.9860	0.01	0.00	(0.01)	0.01	0.00	(0.01)	0.01
TOTAL			2,205.54	2,205.54	0.00	1,974.40	1,974.40	(0.00)	558.49

Notes:

(3): Discount factors specified in IRS Internal Revenue Bulletin 2021-52.

(4) = (5)_{t-1}

(5) = (10), Total - (10), cumulative

(6) = (5) - (4)

(7) = (8)_{t-1}

(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 2025									
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)							
1/1/2022	12/31/2022								
1/1/2023	12/31/2023		0.00	0.00	0.00	0.00	0.00	0.00	
1/1/2024	12/31/2024		0.00	0.00	0.00	0.00	0.00	0.00	
1/1/2025	12/31/2025	0.8839	0.00	59.97	59.97	0.00	53.01	53.01	28.20
1/1/2026	12/31/2026	0.8693	59.97	39.02	(20.96)	53.01	33.92	(19.09)	20.96
1/1/2027	12/31/2027	0.8588	39.02	25.19	(13.83)	33.92	21.63	(12.28)	13.83
1/1/2028	12/31/2028	0.8443	25.19	17.03	(8.16)	21.63	14.38	(7.25)	8.16
1/1/2029	12/31/2029	0.8390	17.03	13.25	(3.78)	14.38	11.12	(3.26)	3.78
1/1/2030	12/31/2030	0.8340	13.25	11.58	(1.67)	11.12	9.66	(1.46)	1.67
1/1/2031	12/31/2031	0.8376	11.58	10.65	(0.93)	9.66	8.92	(0.74)	0.93
1/1/2032	12/31/2032	0.8458	10.65	10.02	(0.64)	8.92	8.47	(0.45)	0.64
1/1/2033	12/31/2033	0.8518	10.02	9.48	(0.53)	8.47	8.08	(0.40)	0.53
1/1/2034	12/31/2034	0.8701	9.48	9.11	(0.37)	8.08	7.93	(0.15)	0.37
1/1/2035	12/31/2035	0.8818	9.11	8.77	(0.34)	7.93	7.74	(0.19)	0.34
1/1/2036	12/31/2036	0.8938	8.77	8.40	(0.37)	7.74	7.51	(0.22)	0.37
1/1/2037	12/31/2037	0.9061	8.40	8.07	(0.34)	7.51	7.31	(0.20)	0.34
1/1/2038	12/31/2038	0.9185	8.07	7.84	(0.23)	7.31	7.20	(0.11)	0.23
1/1/2039	12/31/2039	0.9312	7.84	7.62	(0.22)	7.20	7.09	(0.10)	0.22
1/1/2040	12/31/2040	0.9440	7.62	7.38	(0.23)	7.09	6.97	(0.12)	0.23
1/1/2041	12/31/2041	0.9571	7.38	7.15	(0.24)	6.97	6.84	(0.13)	0.24
1/1/2042	12/31/2042	0.9704	7.15	6.88	(0.26)	6.84	6.68	(0.16)	0.26
1/1/2043	12/31/2043	0.9835	6.88	6.65	(0.23)	6.68	6.54	(0.14)	0.23
1/1/2044	12/31/2044	0.9860	6.65	6.44	(0.21)	6.54	6.35	(0.19)	0.21
1/1/2045	12/31/2045	0.9860	6.44	6.10	(0.34)	6.35	6.01	(0.34)	0.34
1/1/2046	12/31/2046	0.9860	6.10	5.65	(0.45)	6.01	5.57	(0.44)	0.45
1/1/2047	12/31/2047	0.9860	5.65	5.21	(0.45)	5.57	5.13	(0.44)	0.45
1/1/2048	12/31/2048	0.9860	5.21	4.76	(0.45)	5.13	4.69	(0.44)	0.45
1/1/2049	12/31/2049	0.9860	4.76	4.31	(0.45)	4.69	4.25	(0.44)	0.45
1/1/2050	12/31/2050	0.9860	4.31	3.87	(0.45)	4.25	3.81	(0.44)	0.45
1/1/2051	12/31/2051	0.9860	3.87	3.42	(0.45)	3.81	3.37	(0.44)	0.45
1/1/2052	12/31/2052	0.9860	3.42	2.97	(0.45)	3.37	2.93	(0.44)	0.45
1/1/2053	12/31/2053	0.9860	2.97	2.53	(0.45)	2.93	2.49	(0.44)	0.45
1/1/2054	12/31/2054	0.9860	2.53	2.08	(0.45)	2.49	2.05	(0.44)	0.45
1/1/2055	12/31/2055	0.9860	2.08	1.64	(0.45)	2.05	1.61	(0.44)	0.45
1/1/2056	12/31/2056	0.9860	1.64	1.19	(0.45)	1.61	1.17	(0.44)	0.45
1/1/2057	12/31/2057	0.9860	1.19	0.74	(0.45)	1.17	0.73	(0.44)	0.45
1/1/2058	12/31/2058	0.9860	0.74	0.30	(0.45)	0.73	0.29	(0.44)	0.45
1/1/2059	12/31/2059	0.9860	0.30	0.00	(0.30)	0.29	0.00	(0.29)	0.30
TOTAL			325.28	325.28	0.00	291.49	291.49	0.00	88.18

Notes:

(3): Discount factors specified in IRS Internal Revenue Bulletin 2021-52.

(4) = (5)_{t-1}

(5) = (10), Total - (10), cumulative

(6) = (5) - (4)

(7) = (8)_{t-1}

(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)
01/01/22	12/31/22	0.00	0.00	0.00	0.00	0.00
01/01/23	12/31/23	14.17	68.03	82.19	56.49	138.68
01/01/24	12/31/24	151.68	358.80	510.48	132.92	643.40
01/01/25	12/31/25	196.18	(99.65)	96.53	14.49	111.02
01/01/26	12/31/26	133.40	(118.95)	14.45	1.06	15.52
01/01/27	12/31/27	83.20	(73.55)	9.65	0.00	9.65
01/01/28	12/31/28	40.95	(35.46)	5.49	0.00	5.49
01/01/29	12/31/29	17.69	(15.27)	2.43	0.00	2.43
01/01/30	12/31/30	9.31	(7.50)	1.81	0.00	1.81
01/01/31	12/31/31	5.71	(4.15)	1.56	0.00	1.56
01/01/32	12/31/32	4.93	(3.55)	1.39	0.00	1.39
01/01/33	12/31/33	3.42	(1.68)	1.74	0.00	1.74
01/01/34	12/31/34	2.79	(1.49)	1.30	0.00	1.30
01/01/35	12/31/35	3.01	(1.79)	1.21	0.00	1.21
01/01/36	12/31/36	3.09	(1.93)	1.16	0.00	1.16
01/01/37	12/31/37	2.12	(1.09)	1.02	0.00	1.02
01/01/38	12/31/38	1.79	(0.83)	0.96	0.00	0.96
01/01/39	12/31/39	1.96	(1.02)	0.94	0.00	0.94
01/01/40	12/31/40	1.93	(1.04)	0.90	0.00	0.90
01/01/41	12/31/41	2.15	(1.29)	0.86	0.00	0.86
01/01/42	12/31/42	2.18	(1.45)	0.73	0.00	0.73
01/01/43	12/31/43	1.53	(1.31)	0.22	0.00	0.22
01/01/44	12/31/44	2.46	(2.41)	0.05	0.00	0.05
01/01/45	12/31/45	3.63	(3.58)	0.05	0.00	0.05
01/01/46	12/31/46	3.73	(3.68)	0.05	0.00	0.05
01/01/47	12/31/47	3.73	(3.68)	0.05	0.00	0.05
01/01/48	12/31/48	3.73	(3.68)	0.05	0.00	0.05
01/01/49	12/31/49	3.73	(3.68)	0.05	0.00	0.05
01/01/50	12/31/50	3.73	(3.68)	0.05	0.00	0.05
01/01/51	12/31/51	3.73	(3.68)	0.05	0.00	0.05
01/01/52	12/31/52	3.73	(3.68)	0.05	0.00	0.05
01/01/53	12/31/53	3.73	(3.68)	0.05	0.00	0.05
01/01/54	12/31/54	3.73	(3.68)	0.05	0.00	0.05
01/01/55	12/31/55	3.73	(3.68)	0.05	0.00	0.05
01/01/56	12/31/56	3.73	(3.68)	0.05	0.00	0.05
01/01/57	12/31/57	3.73	(3.68)	0.05	0.00	0.05
01/01/58	12/31/58	3.42	(3.38)	0.05	0.00	0.05
01/01/59	12/31/59	0.31	(0.30)	0.00	0.00	0.00
TOTAL		737.80	0.00	737.80	204.96	942.76

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)
01/01/22	12/31/22	0.00	0.00	0.00	0.00
01/01/23	12/31/23	179.10	138.68	40.42	8.49
01/01/24	12/31/24	674.72	643.40	31.32	6.58
01/01/25	12/31/25	90.42	111.02	(20.60)	(4.33)
01/01/26	12/31/26	0.00	15.52	(15.52)	(3.26)
01/01/27	12/31/27	0.00	9.65	(9.65)	(2.03)
01/01/28	12/31/28	0.00	5.49	(5.49)	(1.15)
01/01/29	12/31/29	0.00	2.43	(2.43)	(0.51)
01/01/30	12/31/30	0.00	1.81	(1.81)	(0.38)
01/01/31	12/31/31	0.00	1.56	(1.56)	(0.33)
01/01/32	12/31/32	0.00	1.39	(1.39)	(0.29)
01/01/33	12/31/33	0.00	1.74	(1.74)	(0.36)
01/01/34	12/31/34	0.00	1.30	(1.30)	(0.27)
01/01/35	12/31/35	0.00	1.21	(1.21)	(0.25)
01/01/36	12/31/36	0.00	1.16	(1.16)	(0.24)
01/01/37	12/31/37	0.00	1.02	(1.02)	(0.21)
01/01/38	12/31/38	0.00	0.96	(0.96)	(0.20)
01/01/39	12/31/39	0.00	0.94	(0.94)	(0.20)
01/01/40	12/31/40	0.00	0.90	(0.90)	(0.19)
01/01/41	12/31/41	0.00	0.86	(0.86)	(0.18)
01/01/42	12/31/42	0.00	0.73	(0.73)	(0.15)
01/01/43	12/31/43	0.00	0.22	(0.22)	(0.05)
01/01/44	12/31/44	0.00	0.05	(0.05)	(0.01)
01/01/45	12/31/45	0.00	0.05	(0.05)	(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	0.00	(0.00)	(0.00)
TOTAL		944.24	942.76	1.48	0.31

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 2023		AY 2024		AY 2025		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)											
01/01/22	12/31/22							0.00	0.00			0.00
01/01/23	12/31/23							0.00	0.40	312.86	13.14	13.54
01/01/24	12/31/24	(21.34)	23.25					1.92	3.22	113.02	4.75	7.96
01/01/25	12/31/25	(16.83)	18.94	(135.83)	149.04			15.31	3.04	0.00	0.00	3.04
01/01/26	12/31/26	(10.81)	12.21	(89.04)	100.23	(19.09)	20.96	14.45	2.03	0.00	0.00	2.03
01/01/27	12/31/27	(5.66)	6.60	(55.60)	62.77	(12.28)	13.83	9.65	1.15	0.00	0.00	1.15
01/01/28	12/31/28	(2.54)	2.95	(25.67)	29.84	(7.25)	8.16	5.49	0.51	0.00	0.00	0.51
01/01/29	12/31/29	(1.13)	1.41	(10.87)	12.50	(3.26)	3.78	2.43	0.38	0.00	0.00	0.38
01/01/30	12/31/30	(0.59)	0.82	(5.44)	6.82	(1.46)	1.67	1.81	0.33	0.00	0.00	0.33
01/01/31	12/31/31	(0.48)	0.64	(2.93)	4.14	(0.74)	0.93	1.56	0.29	0.00	0.00	0.29
01/01/32	12/31/32	(0.23)	0.48	(2.86)	3.82	(0.45)	0.64	1.39	0.36	0.00	0.00	0.36
01/01/33	12/31/33	(0.20)	0.36	(1.08)	2.52	(0.40)	0.53	1.74	0.27	0.00	0.00	0.27
01/01/34	12/31/34	(0.21)	0.36	(1.12)	2.06	(0.15)	0.37	1.30	0.25	0.00	0.00	0.25
01/01/35	12/31/35	(0.24)	0.39	(1.36)	2.28	(0.19)	0.34	1.21	0.24	0.00	0.00	0.24
01/01/36	12/31/36	(0.17)	0.30	(1.53)	2.42	(0.22)	0.37	1.16	0.21	0.00	0.00	0.21
01/01/37	12/31/37	(0.11)	0.23	(0.78)	1.55	(0.20)	0.34	1.02	0.20	0.00	0.00	0.20
01/01/38	12/31/38	(0.12)	0.24	(0.60)	1.32	(0.11)	0.23	0.96	0.20	0.00	0.00	0.20
01/01/39	12/31/39	(0.13)	0.24	(0.79)	1.50	(0.10)	0.22	0.94	0.19	0.00	0.00	0.19
01/01/40	12/31/40	(0.15)	0.26	(0.76)	1.44	(0.12)	0.23	0.90	0.18	0.00	0.00	0.18
01/01/41	12/31/41	(0.18)	0.28	(0.98)	1.64	(0.13)	0.24	0.86	0.15	0.00	0.00	0.15
01/01/42	12/31/42	(0.18)	0.20	(1.10)	1.71	(0.16)	0.26	0.73	0.05	0.00	0.00	0.05
01/01/43	12/31/43	(0.25)	0.26	(0.92)	1.04	(0.14)	0.23	0.22	0.01	0.00	0.00	0.01
01/01/44	12/31/44	(0.40)	0.41	(1.82)	1.85	(0.19)	0.21	0.05	0.01	0.00	0.00	0.01
01/01/45	12/31/45	(0.45)	0.46	(2.78)	2.82	(0.34)	0.34	0.05	0.01	0.00	0.00	0.01
01/01/46	12/31/46	(0.45)	0.46	(2.79)	2.83	(0.44)	0.45	0.05	0.01	0.00	0.00	0.01
01/01/47	12/31/47	(0.45)	0.46	(2.79)	2.83	(0.44)	0.45	0.05	0.01	0.00	0.00	0.01
01/01/48	12/31/48	(0.45)	0.46	(2.79)	2.83	(0.44)	0.45	0.05	0.01	0.00	0.00	0.01
01/01/49	12/31/49	(0.45)	0.46	(2.79)	2.83	(0.44)	0.45	0.05	0.01	0.00	0.00	0.01
01/01/50	12/31/50	(0.45)	0.46	(2.79)	2.83	(0.44)	0.45	0.05	0.01	0.00	0.00	0.01
01/01/51	12/31/51	(0.45)	0.46	(2.79)	2.83	(0.44)	0.45	0.05	0.01	0.00	0.00	0.01
01/01/52	12/31/52	(0.45)	0.46	(2.79)	2.83	(0.44)	0.45	0.05	0.01	0.00	0.00	0.01
01/01/53	12/31/53	(0.45)	0.46	(2.79)	2.83	(0.44)	0.45	0.05	0.01	0.00	0.00	0.01
01/01/54	12/31/54	(0.45)	0.46	(2.79)	2.83	(0.44)	0.45	0.05	0.01	0.00	0.00	0.01
01/01/55	12/31/55	(0.45)	0.46	(2.79)	2.83	(0.44)	0.45	0.05	0.01	0.00	0.00	0.01
01/01/56	12/31/56	(0.45)	0.46	(2.79)	2.83	(0.44)	0.45	0.05	0.01	0.00	0.00	0.01
01/01/57	12/31/57	(0.45)	0.46	(2.79)	2.83	(0.44)	0.45	0.05	0.01	0.00	0.00	0.01
01/01/58	12/31/58	(0.15)	0.15	(2.79)	2.83	(0.44)	0.45	0.05	0.00	0.00	0.00	0.00
01/01/59	12/31/59	0.00	0.00	(0.01)	0.01	(0.29)	0.30	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)_{t-1}, 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)									
07/01/22	09/30/22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/01/22	12/31/22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01/01/23	03/31/23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/01/23	06/30/23	0.00	0.00	(5.54)	0.00	5.54	1.16	0.00	1.16	4.38
07/01/23	09/30/23	199.01	19.23	170.32	10.16	37.77	25.71	0.00	25.71	12.06
10/01/23	12/31/23	314.31	69.16	252.12	13.54	117.80	91.53	0.00	91.53	26.27
01/01/24	03/31/24	444.88	159.15	351.74	12.15	240.14	198.18	0.00	198.18	41.97
04/01/24	06/30/24	473.49	282.94	388.09	10.75	357.59	311.02	0.00	311.02	46.57
07/01/24	09/30/24	269.42	398.91	224.39	9.36	434.58	402.55	0.00	402.55	32.04
10/01/24	12/31/24	115.17	474.29	126.51	7.96	454.99	439.74	0.00	439.74	15.25
01/01/25	03/31/25	28.84	494.95	74.25	6.73	442.80	438.75	0.00	438.75	4.06
04/01/25	06/30/25	0.00	469.31	30.50	5.50	433.32	416.38	0.00	416.38	16.93
07/01/25	09/30/25	0.00	422.26	2.44	4.27	415.56	389.23	0.00	389.23	26.33
10/01/25	12/31/25	0.00	378.46	1.06	3.04	374.36	359.29	0.00	359.29	15.06
01/01/26	03/31/26	0.00	339.49	0.38	2.78	336.32	327.48	0.00	327.48	8.84
04/01/26	06/30/26	0.00	304.64	0.09	2.53	302.03	296.21	0.00	296.21	5.82
07/01/26	09/30/26	0.00	273.27	0.00	2.28	271.00	266.46	0.00	266.46	4.54
10/01/26	12/31/26	0.00	244.40	0.00	2.03	242.38	238.40	0.00	238.40	3.98
01/01/27	03/31/27	0.00	219.20	0.00	1.81	217.39	213.70	0.00	213.70	3.69
04/01/27	06/30/27	0.00	197.12	0.00	1.59	195.53	192.13	0.00	192.13	3.40
07/01/27	09/30/27	0.00	177.90	0.00	1.37	176.53	173.42	0.00	173.42	3.11
10/01/27	12/31/27	0.00	160.93	0.00	1.15	159.78	156.96	0.00	156.96	2.82
01/01/28	03/31/28	0.00	147.14	0.00	0.99	146.15	143.45	0.00	143.45	2.70
04/01/28	06/30/28	0.00	136.05	0.00	0.83	135.22	132.65	0.00	132.65	2.57
07/01/28	09/30/28	0.00	127.01	0.00	0.67	126.34	123.89	0.00	123.89	2.44
10/01/28	12/31/28	0.00	119.15	0.00	0.51	118.64	116.32	0.00	116.32	2.31
01/01/29	03/31/29	0.00	112.95	0.00	0.48	112.47	110.25	0.00	110.25	2.22
04/01/29	06/30/29	0.00	108.17	0.00	0.44	107.72	105.60	0.00	105.60	2.12
07/01/29	09/30/29	0.00	104.31	0.00	0.41	103.90	101.87	0.00	101.87	2.03
10/01/29	12/31/29	0.00	100.84	0.00	0.38	100.46	98.52	0.00	98.52	1.93
01/01/30	03/31/30	0.00	97.91	0.00	0.37	97.54	95.69	0.00	95.69	1.85
04/01/30	06/30/30	0.00	95.45	0.00	0.35	95.09	93.32	0.00	93.32	1.77
07/01/30	09/30/30	0.00	93.32	0.00	0.34	92.98	91.29	0.00	91.29	1.69
10/01/30	12/31/30	0.00	91.37	0.00	0.33	91.04	89.44	0.00	89.44	1.61
01/01/31	03/31/31	0.00	89.68	0.00	0.32	89.36	87.83	0.00	87.83	1.53
04/01/31	06/30/31	0.00	88.22	0.00	0.31	87.91	86.45	0.00	86.45	1.46
07/01/31	09/30/31	0.00	86.87	0.00	0.30	86.57	85.18	0.00	85.18	1.39
10/01/31	12/31/31	0.00	85.54	0.00	0.29	85.24	83.93	0.00	83.93	1.32
01/01/32	03/31/32	0.00	84.24	0.00	0.31	83.93	82.70	0.00	82.70	1.22
04/01/32	06/30/32	0.00	82.97	0.00	0.33	82.64	81.51	0.00	81.51	1.13
07/01/32	09/30/32	0.00	81.77	0.00	0.35	81.42	80.38	0.00	80.38	1.04
10/01/32	12/31/32	0.00	80.65	0.00	0.36	80.29	79.34	0.00	79.34	0.95
01/01/33	03/31/33	0.00	79.67	0.00	0.34	79.32	78.44	0.00	78.44	0.88
04/01/33	06/30/33	0.00	78.79	0.00	0.32	78.47	77.65	0.00	77.65	0.81
07/01/33	09/30/33	0.00	77.98	0.00	0.30	77.68	76.93	0.00	76.93	0.75
10/01/33	12/31/33	0.00	77.19	0.00	0.27	76.92	76.24	0.00	76.24	0.68
01/01/34	03/31/34	0.00	76.46	0.00	0.27	76.19	75.58	0.00	75.58	0.61
04/01/34	06/30/34	0.00	75.77	0.00	0.26	75.50	74.95	0.00	74.95	0.55
07/01/34	09/30/34	0.00	75.08	0.00	0.26	74.82	74.33	0.00	74.33	0.49
10/01/34	12/31/34	0.00	74.37	0.00	0.25	74.11	73.69	0.00	73.69	0.42
01/01/35	03/31/35	0.00	73.64	0.00	0.25	73.39	73.03	0.00	73.03	0.36
04/01/35	06/30/35	0.00	72.90	0.00	0.25	72.65	72.35	0.00	72.35	0.30
07/01/35	09/30/35	0.00	72.14	0.00	0.25	71.90	71.66	0.00	71.66	0.24
10/01/35	12/31/35	0.00	71.37	0.00	0.24	71.12	70.95	0.00	70.95	0.18
01/01/36	03/31/36	0.00	70.59	0.00	0.24	70.35	70.22	0.00	70.22	0.13
04/01/36	06/30/36	0.00	69.80	0.00	0.23	69.57	69.49	0.00	69.49	0.07
07/01/36	09/30/36	0.00	69.03	0.00	0.22	68.81	68.79	0.00	68.79	0.02
10/01/36	12/31/36	0.00	68.33	0.00	0.21	68.12	68.15	0.04	68.12	0.00
01/01/37	03/31/37	0.00	67.71	0.00	0.21	67.50	67.59	0.05	67.50	0.00
04/01/37	06/30/37	0.00	67.17	0.00	0.21	66.96	67.10	0.05	66.96	0.00
07/01/37	09/30/37	0.00	66.67	0.00	0.21	66.46	66.65	0.05	66.46	0.00
10/01/37	12/31/37	0.00	66.18	0.00	0.20	65.98	66.22	0.05	65.98	0.00
01/01/38	03/31/38	0.00	65.72	0.00	0.20	65.52	65.80	0.05	65.52	0.00
04/01/38	06/30/38	0.00	65.27	0.00	0.20	65.07	65.41	0.05	65.07	0.00
07/01/38	09/30/38	0.00	64.83	0.00	0.20	64.63	65.02	0.05	64.63	0.00
10/01/38	12/31/38	0.00	64.37	0.00	0.20	64.17	64.61	0.05	64.17	0.00
01/01/39	03/31/39	0.00	63.89	0.00	0.19	63.70	64.18	0.05	63.70	0.00
04/01/39	06/30/39	0.00	63.41	0.00	0.19	63.22	63.74	0.05	63.22	0.00
07/01/39	09/30/39	0.00	62.92	0.00	0.19	62.72	63.30	0.05	62.72	0.00
10/01/39	12/31/39	0.00	62.42	0.00	0.19	62.24	62.86	0.05	62.24	0.00
01/01/40	03/31/40	0.00	61.94	0.00	0.19	61.75	62.42	0.05	61.75	0.00
04/01/40	06/30/40	0.00	61.46	0.00	0.18	61.28	61.99	0.05	61.28	0.00
07/01/40	09/30/40	0.00	60.98	0.00	0.18	60.80	61.56	0.05	60.80	0.00
10/01/40	12/31/40	0.00	60.48	0.00	0.18	60.30	61.10	0.05	60.30	0.00
01/01/41	03/31/41	0.00	59.96	0.00	0.17	59.79	60.63	0.04	59.79	0.00
04/01/41	06/30/41	0.00	59.43	0.00	0.17	59.26	60.14	0.04	59.26	0.00
07/01/41	09/30/41	0.00	58.88	0.00	0.16	58.72	59.64	0.04	58.72	0.00
10/01/41	12/31/41	0.00	58.33	0.00	0.15	58.18	59.14	0.04	58.18	0.00
01/01/42	03/31/42	0.00	57.78	0.00	0.13	57.65	58.62	0.01	57.65	0.00
04/01/42	06/30/42	0.00	57.22	0.00	0.10	57.12	58.10	0.01	57.12	0.00
07/01/42	09/30/42	0.00	56.68	0.00	0.07	56.61	57.60	0.01	56.61	0.00

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)									
10/01/42	12/31/42	0.00	56.19	0.00	0.05	56.15	57.15	0.01	56.15	0.00
01/01/43	03/31/43	0.00	55.77	0.00	0.04	55.73	56.74	0.00	55.73	0.00
04/01/43	06/30/43	0.00	55.40	0.00	0.03	55.37	56.38	0.00	55.37	0.00
07/01/43	09/30/43	0.00	55.02	0.00	0.02	55.00	56.02	0.00	55.00	0.00
10/01/43	12/31/43	0.00	54.59	0.00	0.01	54.57	55.59	0.00	54.57	0.00
01/01/44	03/31/44	0.00	54.07	0.00	0.01	54.06	55.08	0.00	54.06	0.00
04/01/44	06/30/44	0.00	53.50	0.00	0.01	53.49	54.51	0.00	53.49	0.00
07/01/44	09/30/44	0.00	52.84	0.00	0.01	52.83	53.86	0.00	52.83	0.00
10/01/44	12/31/44	0.00	52.12	0.00	0.01	52.11	53.13	0.00	52.11	0.00
01/01/45	03/31/45	0.00	51.30	0.00	0.01	51.29	52.32	0.00	51.29	0.00
04/01/45	06/30/45	0.00	50.41	0.00	0.01	50.40	51.43	0.00	50.40	0.00
07/01/45	09/30/45	0.00	49.48	0.00	0.01	49.47	50.50	0.00	49.47	0.00
10/01/45	12/31/45	0.00	48.54	0.00	0.01	48.53	49.57	0.00	48.53	0.00
01/01/46	03/31/46	0.00	47.61	0.00	0.01	47.60	48.64	0.00	47.60	0.00
04/01/46	06/30/46	0.00	46.68	0.00	0.01	46.67	47.71	0.00	46.67	0.00
07/01/46	09/30/46	0.00	45.75	0.00	0.01	45.73	46.78	0.00	45.73	0.00
10/01/46	12/31/46	0.00	44.81	0.00	0.01	44.80	45.84	0.00	44.80	0.00
01/01/47	03/31/47	0.00	43.87	0.00	0.01	43.86	44.91	0.00	43.86	0.00
04/01/47	06/30/47	0.00	42.94	0.00	0.01	42.93	43.99	0.00	42.93	0.00
07/01/47	09/30/47	0.00	42.01	0.00	0.01	42.00	43.06	0.00	42.00	0.00
10/01/47	12/31/47	0.00	41.07	0.00	0.01	41.06	42.12	0.00	41.06	0.00
01/01/48	03/31/48	0.00	40.14	0.00	0.01	40.13	41.19	0.00	40.13	0.00
04/01/48	06/30/48	0.00	39.21	0.00	0.01	39.20	40.26	0.00	39.20	0.00
07/01/48	09/30/48	0.00	38.28	0.00	0.01	38.27	39.33	0.00	38.27	0.00
10/01/48	12/31/48	0.00	37.34	0.00	0.01	37.33	38.40	0.00	37.33	0.00
01/01/49	03/31/49	0.00	36.41	0.00	0.01	36.39	37.47	0.00	36.39	0.00
04/01/49	06/30/49	0.00	35.48	0.00	0.01	35.47	36.54	0.00	35.47	0.00
07/01/49	09/30/49	0.00	34.54	0.00	0.01	34.53	35.61	0.00	34.53	0.00
10/01/49	12/31/49	0.00	33.61	0.00	0.01	33.59	34.67	0.00	33.59	0.00
01/01/50	03/31/50	0.00	32.67	0.00	0.01	32.66	33.74	0.00	32.66	0.00
04/01/50	06/30/50	0.00	31.74	0.00	0.01	31.73	32.82	0.00	31.73	0.00
07/01/50	09/30/50	0.00	30.81	0.00	0.01	30.80	31.89	0.00	30.80	0.00
10/01/50	12/31/50	0.00	29.87	0.00	0.01	29.86	30.95	0.00	29.86	0.00
01/01/51	03/31/51	0.00	28.94	0.00	0.01	28.93	30.02	0.00	28.93	0.00
04/01/51	06/30/51	0.00	28.01	0.00	0.01	28.00	29.09	0.00	28.00	0.00
07/01/51	09/30/51	0.00	27.08	0.00	0.01	27.06	28.16	0.00	27.06	0.00
10/01/51	12/31/51	0.00	26.14	0.00	0.01	26.13	27.23	0.00	26.13	0.00
01/01/52	03/31/52	0.00	25.20	0.00	0.01	25.19	26.30	0.00	25.19	0.00
04/01/52	06/30/52	0.00	24.28	0.00	0.01	24.26	25.37	0.00	24.26	0.00
07/01/52	09/30/52	0.00	23.34	0.00	0.01	23.33	24.44	0.00	23.33	0.00
10/01/52	12/31/52	0.00	22.40	0.00	0.01	22.39	23.51	0.00	22.39	0.00
01/01/53	03/31/53	0.00	21.47	0.00	0.01	21.46	22.57	0.00	21.46	0.00
04/01/53	06/30/53	0.00	20.54	0.00	0.01	20.53	21.65	0.00	20.53	0.00
07/01/53	09/30/53	0.00	19.61	0.00	0.01	19.60	20.72	0.00	19.60	0.00
10/01/53	12/31/53	0.00	18.67	0.00	0.01	18.66	19.78	0.00	18.66	0.00
01/01/54	03/31/54	0.00	17.74	0.00	0.01	17.73	18.85	0.00	17.73	0.00
04/01/54	06/30/54	0.00	16.81	0.00	0.01	16.80	17.93	0.00	16.80	0.00
07/01/54	09/30/54	0.00	15.87	0.00	0.01	15.86	17.00	0.00	15.86	0.00
10/01/54	12/31/54	0.00	14.94	0.00	0.01	14.92	16.06	0.00	14.92	0.00
01/01/55	03/31/55	0.00	14.00	0.00	0.01	13.99	15.13	0.00	13.99	0.00
04/01/55	06/30/55	0.00	13.07	0.00	0.01	13.06	14.20	0.00	13.06	0.00
07/01/55	09/30/55	0.00	12.14	0.00	0.01	12.13	13.27	0.00	12.13	0.00
10/01/55	12/31/55	0.00	11.20	0.00	0.01	11.19	12.34	0.00	11.19	0.00
01/01/56	03/31/56	0.00	10.27	0.00	0.01	10.26	11.41	0.00	10.26	0.00
04/01/56	06/30/56	0.00	9.34	0.00	0.01	9.33	10.48	0.00	9.33	0.00
07/01/56	09/30/56	0.00	8.41	0.00	0.01	8.40	9.55	0.00	8.40	0.00
10/01/56	12/31/56	0.00	7.47	0.00	0.01	7.46	8.61	0.00	7.46	0.00
01/01/57	03/31/57	0.00	6.53	0.00	0.01	6.52	7.68	0.00	6.52	0.00
04/01/57	06/30/57	0.00	5.61	0.00	0.01	5.60	6.76	0.00	5.60	0.00
07/01/57	09/30/57	0.00	4.67	0.00	0.01	4.66	5.83	0.00	4.66	0.00
10/01/57	12/31/57	0.00	3.73	0.00	0.01	3.72	4.89	0.00	3.72	0.00
01/01/58	03/31/58	0.00	2.80	0.00	0.01	2.79	3.96	0.00	2.79	0.00
04/01/58	06/30/58	0.00	1.87	0.00	0.01	1.87	3.03	0.00	1.87	0.00
07/01/58	09/30/58	0.00	1.07	0.00	0.00	1.06	2.23	0.00	1.06	0.00
10/01/58	12/31/58	0.00	0.46	0.00	0.00	0.45	1.62	0.00	0.45	0.00
01/01/59	03/31/59	0.00	0.11	0.00	0.00	0.11	1.28	(0.00)	0.11	0.00
04/01/59	06/30/59	0.00	0.00	0.00	0.00	(0.00)	1.17	0.00	(0.00)	0.00
TOTAL		1,845.12	11,643.87	1,616.35	116.69	11,755.95	11,524.12	1.17	11,437.05	318.90

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)_{t-1}, 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)					
07/01/22	09/30/22	0.00	0.00	0.00	0.00	0.00
10/01/22	12/31/22	0.00	0.00	0.00	0.00	0.00
01/01/23	03/31/23	0.00	0.00	0.00	0.00	0.00
04/01/23	06/30/23	0.00	5.54	5.54	0.00	(5.54)
07/01/23	09/30/23	32.00	60.69	60.69	0.00	170.32
10/01/23	12/31/23	115.07	177.26	145.26	0.00	252.12
01/01/24	03/31/24	264.80	357.93	242.86	0.00	351.74
04/01/24	06/30/24	470.75	556.15	291.35	0.00	388.09
07/01/24	09/30/24	674.82	719.84	249.09	0.00	224.39
10/01/24	12/31/24	829.07	817.73	142.92	0.00	126.51
01/01/25	03/31/25	915.40	869.99	40.92	0.00	74.25
04/01/25	06/30/25	944.24	898.27	(17.13)	15.47	30.50
07/01/25	09/30/25	944.24	919.12	(25.12)	22.69	2.44
10/01/25	12/31/25	944.24	933.28	(10.96)	9.90	1.06
01/01/26	03/31/26	944.24	940.29	(3.94)	3.56	0.38
04/01/26	06/30/26	944.24	943.35	(0.89)	0.80	0.09
07/01/26	09/30/26	944.24	944.24	0.00	0.00	0.00
10/01/26	12/31/26	944.24	944.24	0.00	0.00	0.00
01/01/27	03/31/27	944.24	944.24	0.00	0.00	0.00
04/01/27	06/30/27	944.24	944.24	0.00	0.00	0.00
07/01/27	09/30/27	944.24	944.24	0.00	0.00	0.00
10/01/27	12/31/27	944.24	944.24	0.00	0.00	0.00
01/01/28	03/31/28	944.24	944.24	0.00	0.00	0.00
04/01/28	06/30/28	944.24	944.24	0.00	0.00	0.00
07/01/28	09/30/28	944.24	944.24	0.00	0.00	0.00
10/01/28	12/31/28	944.24	944.24	0.00	0.00	0.00
01/01/29	03/31/29	944.24	944.24	0.00	0.00	0.00
04/01/29	06/30/29	944.24	944.24	0.00	0.00	0.00
07/01/29	09/30/29	944.24	944.24	0.00	0.00	0.00
10/01/29	12/31/29	944.24	944.24	0.00	0.00	0.00
01/01/30	03/31/30	944.24	944.24	0.00	0.00	0.00
04/01/30	06/30/30	944.24	944.24	0.00	0.00	0.00
07/01/30	09/30/30	944.24	944.24	0.00	0.00	0.00
10/01/30	12/31/30	944.24	944.24	0.00	0.00	0.00
01/01/31	03/31/31	944.24	944.24	0.00	0.00	0.00
04/01/31	06/30/31	944.24	944.24	0.00	0.00	0.00
07/01/31	09/30/31	944.24	944.24	0.00	0.00	0.00
10/01/31	12/31/31	944.24	944.24	0.00	0.00	0.00
01/01/32	03/31/32	944.24	944.24	0.00	0.00	0.00
04/01/32	06/30/32	944.24	944.24	0.00	0.00	0.00
07/01/32	09/30/32	944.24	944.24	0.00	0.00	0.00
10/01/32	12/31/32	944.24	944.24	0.00	0.00	0.00
01/01/33	03/31/33	944.24	944.24	0.00	0.00	0.00
04/01/33	06/30/33	944.24	944.24	0.00	0.00	0.00
07/01/33	09/30/33	944.24	944.24	0.00	0.00	0.00
10/01/33	12/31/33	944.24	944.24	0.00	0.00	0.00
01/01/34	03/31/34	944.24	944.24	0.00	0.00	0.00
04/01/34	06/30/34	944.24	944.24	0.00	0.00	0.00
07/01/34	09/30/34	944.24	944.24	0.00	0.00	0.00
10/01/34	12/31/34	944.24	944.24	0.00	0.00	0.00
01/01/35	03/31/35	944.24	944.24	0.00	0.00	0.00
04/01/35	06/30/35	944.24	944.24	0.00	0.00	0.00
07/01/35	09/30/35	944.24	944.24	0.00	0.00	0.00
10/01/35	12/31/35	944.24	944.24	0.00	0.00	0.00
01/01/36	03/31/36	944.24	944.24	0.00	0.00	0.00
04/01/36	06/30/36	944.24	944.24	0.00	0.00	0.00
07/01/36	09/30/36	944.24	944.24	0.00	0.00	0.00
10/01/36	12/31/36	944.24	944.24	0.00	0.00	0.00
01/01/37	03/31/37	944.24	944.24	0.00	0.00	0.00
04/01/37	06/30/37	944.24	944.24	0.00	0.00	0.00
07/01/37	09/30/37	944.24	944.24	0.00	0.00	0.00
10/01/37	12/31/37	944.24	944.24	0.00	0.00	0.00
01/01/38	03/31/38	944.24	944.24	0.00	0.00	0.00
04/01/38	06/30/38	944.24	944.24	0.00	0.00	0.00
07/01/38	09/30/38	944.24	944.24	0.00	0.00	0.00
10/01/38	12/31/38	944.24	944.24	0.00	0.00	0.00
01/01/39	03/31/39	944.24	944.24	0.00	0.00	0.00
04/01/39	06/30/39	944.24	944.24	0.00	0.00	0.00
07/01/39	09/30/39	944.24	944.24	0.00	0.00	0.00
10/01/39	12/31/39	944.24	944.24	0.00	0.00	0.00
01/01/40	03/31/40	944.24	944.24	0.00	0.00	0.00
04/01/40	06/30/40	944.24	944.24	0.00	0.00	0.00
07/01/40	09/30/40	944.24	944.24	0.00	0.00	0.00
10/01/40	12/31/40	944.24	944.24	0.00	0.00	0.00
01/01/41	03/31/41	944.24	944.24	0.00	0.00	0.00
04/01/41	06/30/41	944.24	944.24	0.00	0.00	0.00
07/01/41	09/30/41	944.24	944.24	0.00	0.00	0.00
10/01/41	12/31/41	944.24	944.24	0.00	0.00	0.00
01/01/42	03/31/42	944.24	944.24	0.00	0.00	0.00
04/01/42	06/30/42	944.24	944.24	0.00	0.00	0.00
07/01/42	09/30/42	944.24	944.24	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)					
10/01/42	12/31/42	944.24	944.24	0.00	0.00	0.00
01/01/43	03/31/43	944.24	944.24	0.00	0.00	0.00
04/01/43	06/30/43	944.24	944.24	0.00	0.00	0.00
07/01/43	09/30/43	944.24	944.24	0.00	0.00	0.00
10/01/43	12/31/43	944.24	944.24	0.00	0.00	0.00
01/01/44	03/31/44	944.24	944.24	0.00	0.00	0.00
04/01/44	06/30/44	944.24	944.24	0.00	0.00	0.00
07/01/44	09/30/44	944.24	944.24	0.00	0.00	0.00
10/01/44	12/31/44	944.24	944.24	0.00	0.00	0.00
01/01/45	03/31/45	944.24	944.24	0.00	0.00	0.00
04/01/45	06/30/45	944.24	944.24	0.00	0.00	0.00
07/01/45	09/30/45	944.24	944.24	0.00	0.00	0.00
10/01/45	12/31/45	944.24	944.24	0.00	0.00	0.00
01/01/46	03/31/46	944.24	944.24	0.00	0.00	0.00
04/01/46	06/30/46	944.24	944.24	0.00	0.00	0.00
07/01/46	09/30/46	944.24	944.24	0.00	0.00	0.00
10/01/46	12/31/46	944.24	944.24	0.00	0.00	0.00
01/01/47	03/31/47	944.24	944.24	0.00	0.00	0.00
04/01/47	06/30/47	944.24	944.24	0.00	0.00	0.00
07/01/47	09/30/47	944.24	944.24	0.00	0.00	0.00
10/01/47	12/31/47	944.24	944.24	0.00	0.00	0.00
01/01/48	03/31/48	944.24	944.24	0.00	0.00	0.00
04/01/48	06/30/48	944.24	944.24	0.00	0.00	0.00
07/01/48	09/30/48	944.24	944.24	0.00	0.00	0.00
10/01/48	12/31/48	944.24	944.24	0.00	0.00	0.00
01/01/49	03/31/49	944.24	944.24	0.00	0.00	0.00
04/01/49	06/30/49	944.24	944.24	0.00	0.00	0.00
07/01/49	09/30/49	944.24	944.24	0.00	0.00	0.00
10/01/49	12/31/49	944.24	944.24	0.00	0.00	0.00
01/01/50	03/31/50	944.24	944.24	0.00	0.00	0.00
04/01/50	06/30/50	944.24	944.24	0.00	0.00	0.00
07/01/50	09/30/50	944.24	944.24	0.00	0.00	0.00
10/01/50	12/31/50	944.24	944.24	0.00	0.00	0.00
01/01/51	03/31/51	944.24	944.24	0.00	0.00	0.00
04/01/51	06/30/51	944.24	944.24	0.00	0.00	0.00
07/01/51	09/30/51	944.24	944.24	0.00	0.00	0.00
10/01/51	12/31/51	944.24	944.24	0.00	0.00	0.00
01/01/52	03/31/52	944.24	944.24	0.00	0.00	0.00
04/01/52	06/30/52	944.24	944.24	0.00	0.00	0.00
07/01/52	09/30/52	944.24	944.24	0.00	0.00	0.00
10/01/52	12/31/52	944.24	944.24	0.00	0.00	0.00
01/01/53	03/31/53	944.24	944.24	0.00	0.00	0.00
04/01/53	06/30/53	944.24	944.24	0.00	0.00	0.00
07/01/53	09/30/53	944.24	944.24	0.00	0.00	0.00
10/01/53	12/31/53	944.24	944.24	0.00	0.00	0.00
01/01/54	03/31/54	944.24	944.24	0.00	0.00	0.00
04/01/54	06/30/54	944.24	944.24	0.00	0.00	0.00
07/01/54	09/30/54	944.24	944.24	0.00	0.00	0.00
10/01/54	12/31/54	944.24	944.24	0.00	0.00	0.00
01/01/55	03/31/55	944.24	944.24	0.00	0.00	0.00
04/01/55	06/30/55	944.24	944.24	0.00	0.00	0.00
07/01/55	09/30/55	944.24	944.24	0.00	0.00	0.00
10/01/55	12/31/55	944.24	944.24	0.00	0.00	0.00
01/01/56	03/31/56	944.24	944.24	0.00	0.00	0.00
04/01/56	06/30/56	944.24	944.24	0.00	0.00	0.00
07/01/56	09/30/56	944.24	944.24	0.00	0.00	0.00
10/01/56	12/31/56	944.24	944.24	0.00	0.00	0.00
01/01/57	03/31/57	944.24	944.24	0.00	0.00	0.00
04/01/57	06/30/57	944.24	944.24	0.00	0.00	0.00
07/01/57	09/30/57	944.24	944.24	0.00	0.00	0.00
10/01/57	12/31/57	944.24	944.24	0.00	0.00	0.00
01/01/58	03/31/58	944.24	944.24	0.00	0.00	0.00
04/01/58	06/30/58	944.24	944.24	0.00	0.00	0.00
07/01/58	09/30/58	944.24	944.24	0.00	0.00	0.00
10/01/58	12/31/58	944.24	944.24	0.00	0.00	0.00
01/01/59	03/31/59	944.24	944.24	0.00	0.00	0.00
04/01/59	06/30/59	944.24	944.24	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)_{t-1}, 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)
07/01/22	09/30/22	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
10/01/22	12/31/22	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
01/01/23	03/31/23	0.00%	0.00%	0.0000%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
04/01/23	06/30/23	0.59%	0.00%	0.5868%	0.00%	4.08%	0.00%	0.00%	0.00%	0.59%	0.59%	0.00%
07/01/23	09/30/23	5.84%	0.78%	5.8408%	13.93%	23.89%	0.00%	24.47%	24.47%	5.84%	6.43%	0.78%
10/01/23	12/31/23	12.34%	2.03%	12.3449%	14.90%	22.45%	24.47%	21.01%	21.01%	12.34%	18.77%	2.81%
01/01/24	03/31/24	19.13%	3.66%	19.1347%	22.77%	28.88%	21.01%	29.68%	29.68%	19.13%	37.91%	6.47%
04/01/24	06/30/24	20.99%	5.03%	20.9923%	23.33%	20.70%	29.68%	24.84%	24.84%	20.99%	58.90%	11.51%
07/01/24	09/30/24	17.34%	5.89%	17.3359%	10.81%	0.00%	24.84%	0.00%	0.00%	17.34%	76.24%	17.40%
10/01/24	12/31/24	10.37%	6.12%	10.3668%	8.17%	0.00%	0.00%	0.00%	0.00%	10.37%	86.60%	23.52%
01/01/25	03/31/25	5.53%	6.34%	5.5344%	4.57%	0.00%	0.00%	0.00%	0.00%	5.53%	92.14%	29.86%
04/01/25	06/30/25	3.00%	6.53%	2.9955%	1.53%	0.00%	0.00%	0.00%	0.00%	3.00%	95.13%	36.39%
07/01/25	09/30/25	2.21%	6.38%	2.2073%	0.00%	0.00%	0.00%	0.00%	0.00%	2.21%	97.34%	42.77%
10/01/25	12/31/25	1.50%	5.94%	1.4997%	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	98.84%	48.71%
01/01/26	03/31/26	0.74%	5.28%	0.7432%	0.00%	0.00%	0.00%	0.00%	0.00%	0.74%	99.58%	53.99%
04/01/26	06/30/26	0.32%	4.72%	0.3236%	0.00%	0.00%	0.00%	0.00%	0.00%	0.32%	99.91%	58.71%
07/01/26	09/30/26	0.09%	4.25%	0.0942%	0.00%	0.00%	0.00%	0.00%	0.00%	0.09%	100.00%	62.96%
10/01/26	12/31/26	0.00%	3.91%	0.0000%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	66.87%
01/01/27	03/31/27	0.00%	3.42%	0.0000%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	70.29%
04/01/27	06/30/27	0.00%	2.99%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	73.28%
07/01/27	09/30/27	0.00%	2.60%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	75.89%
10/01/27	12/31/27	0.00%	2.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	78.19%
01/01/28	03/31/28	0.00%	1.87%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	80.06%
04/01/28	06/30/28	0.00%	1.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	81.56%
07/01/28	09/30/28	0.00%	1.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	82.79%
10/01/28	12/31/28	0.00%	1.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	83.85%
01/01/29	03/31/29	0.00%	0.84%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	84.69%
04/01/29	06/30/29	0.00%	0.65%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	85.34%
07/01/29	09/30/29	0.00%	0.52%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	85.86%
10/01/29	12/31/29	0.00%	0.47%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	86.33%
01/01/30	03/31/30	0.00%	0.40%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	86.73%
04/01/30	06/30/30	0.00%	0.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	87.06%
07/01/30	09/30/30	0.00%	0.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	87.35%
10/01/30	12/31/30	0.00%	0.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	87.62%
01/01/31	03/31/31	0.00%	0.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	87.84%
04/01/31	06/30/31	0.00%	0.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	88.04%
07/01/31	09/30/31	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	88.23%
10/01/31	12/31/31	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	88.41%
01/01/32	03/31/32	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	88.58%
04/01/32	06/30/32	0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	88.75%
07/01/32	09/30/32	0.00%	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	88.92%
10/01/32	12/31/32	0.00%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	89.07%
01/01/33	03/31/33	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	89.20%
04/01/33	06/30/33	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	89.32%
07/01/33	09/30/33	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	89.43%
10/01/33	12/31/33	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	89.54%
01/01/34	03/31/34	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	89.64%
04/01/34	06/30/34	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	89.73%
07/01/34	09/30/34	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	89.82%
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%	89.92%
01/01/35	03/31/35	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.02%
04/01/35	06/30/35	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.12%
07/01/35	09/30/35	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.22%
10/01/35	12/31/35	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.33%
01/01/36	03/31/36	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.43%
04/01/36	06/30/36	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.54%
07/01/36	09/30/36	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.64%
10/01/36	12/31/36	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.74%
01/01/37	03/31/37	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.82%
04/01/37	06/30/37	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.90%
07/01/37	09/30/37	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	90.96%
10/01/37	12/31/37	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.03%
01/01/38	03/31/38	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.09%
04/01/38	06/30/38	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.15%
07/01/38	09/30/38	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.21%
10/01/38	12/31/38	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.28%
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%	91.34%
04/01/39	06/30/39	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.41%
07/01/39	09/30/39	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.47%
10/01/39	12/31/39	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.54%
01/01/40	03/31/40	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.60%
04/01/40	06/30/40	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.67%
07/01/40	09/30/40	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.74%
10/01/40	12/31/40	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.80%
01/01/41	03/31/41	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.87%
04/01/41	06/30/41	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	91.95%
07/01/41	09/30/41	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.02%
10/01/41	12/31/41	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.09%
01/01/42	03/31/42	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.17%
04/01/42	06/30/42	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.25%
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%	92.32%
10/01/42	12/31/42	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.38%
01/01/43	03/31/43	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.44%

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)
04/01/43	06/30/43	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.49%
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%	92.54%
10/01/43	12/31/43	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.60%
01/01/44	03/31/44	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.67%
04/01/44	06/30/44	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.75%
07/01/44	09/30/44	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.84%
10/01/44	12/31/44	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	92.94%
01/01/45	03/31/45	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.05%
04/01/45	06/30/45	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.17%
07/01/45	09/30/45	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.29%
10/01/45	12/31/45	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.42%
01/01/46	03/31/46	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.55%
04/01/46	06/30/46	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.67%
07/01/46	09/30/46	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.80%
10/01/46	12/31/46	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	93.93%
01/01/47	03/31/47	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	94.05%
04/01/47	06/30/47	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	94.18%
07/01/47	09/30/47	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	94.31%
10/01/47	12/31/47	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	94.43%
01/01/48	03/31/48	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	94.56%
04/01/48	06/30/48	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	94.69%
07/01/48	09/30/48	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	94.81%
10/01/48	12/31/48	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	94.94%
01/01/49	03/31/49	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	95.07%
04/01/49	06/30/49	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	95.19%
07/01/49	09/30/49	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	95.32%
10/01/49	12/31/49	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	95.45%
01/01/50	03/31/50	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	95.57%
04/01/50	06/30/50	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	95.70%
07/01/50	09/30/50	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	95.82%
10/01/50	12/31/50	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	95.95%
01/01/51	03/31/51	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	96.08%
04/01/51	06/30/51	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	96.20%
07/01/51	09/30/51	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	96.33%
10/01/51	12/31/51	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	96.46%
01/01/52	03/31/52	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	96.58%
04/01/52	06/30/52	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	96.71%
07/01/52	09/30/52	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	96.84%
10/01/52	12/31/52	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	96.96%
01/01/53	03/31/53	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	97.09%
04/01/53	06/30/53	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	97.22%
07/01/53	09/30/53	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	97.34%
10/01/53	12/31/53	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	97.47%
01/01/54	03/31/54	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	97.60%
04/01/54	06/30/54	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	97.72%
07/01/54	09/30/54	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	97.85%
10/01/54	12/31/54	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	97.98%
01/01/55	03/31/55	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	98.10%
04/01/55	06/30/55	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	98.23%
07/01/55	09/30/55	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	98.35%
10/01/55	12/31/55	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	98.48%
01/01/56	03/31/56	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	98.61%
04/01/56	06/30/56	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	98.73%
07/01/56	09/30/56	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	98.86%
10/01/56	12/31/56	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	98.99%
01/01/57	03/31/57	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.11%
04/01/57	06/30/57	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.24%
07/01/57	09/30/57	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.37%
10/01/57	12/31/57	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.49%
01/01/58	03/31/58	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.62%
04/01/58	06/30/58	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.75%
07/01/58	09/30/58	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.86%
10/01/58	12/31/58	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.94%
01/01/59	03/31/59	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	99.98%
04/01/59	06/30/59	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)_{t-1} + 5/6 x Table C5_2, (3)_t
 (8) = Table C5_2, (3)_{t-1}
 (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)
07/01/22	09/30/22		0.00%	0.00%	0.00%	0.00%	0.00%
10/01/22	12/31/22		0.00%	0.00%	0.00%	0.00%	0.00%
01/01/23	03/31/23		0.00%	0.00%	0.00%	0.00%	0.00%
04/01/23	06/30/23		0.00%	0.00%	0.00%	0.00%	0.00%
07/01/23	09/30/23	24.47%	3.39%	3.39%	24.47%	3.39%	3.39%
10/01/23	12/31/23	21.01%	8.80%	8.80%	45.47%	12.19%	12.19%
01/01/24	03/31/24	29.68%	15.86%	15.86%	75.16%	28.04%	28.04%
04/01/24	06/30/24	24.84%	21.81%	21.81%	100.00%	49.86%	49.86%
07/01/24	09/30/24		21.61%	21.61%	100.00%	71.47%	71.47%
10/01/24	12/31/24		16.34%	16.34%	100.00%	87.80%	87.80%
01/01/25	03/31/25		9.14%	9.14%	100.00%	96.95%	96.95%
04/01/25	06/30/25		3.05%	3.05%	100.00%	100.00%	100.00%
07/01/25	09/30/25		0.00%	0.00%	100.00%	100.00%	100.00%
10/01/25	12/31/25		0.00%	0.00%	100.00%	100.00%	100.00%
01/01/26	03/31/26		0.00%	0.00%	100.00%	100.00%	100.00%
04/01/26	06/30/26		0.00%	0.00%	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%

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)
01/01/43	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%
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%
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)							
07/01/22	09/30/22	0.00	0.00	0.00	1.51	0.00	0.00	0.00
10/01/22	12/31/22	0.00	0.00	0.00	1.51	0.00	0.00	0.00
01/01/23	03/31/23	0.00	0.00	0.00	1.51	0.00	0.00	0.00
04/01/23	06/30/23	0.00	0.00	0.00	1.51	0.00	4.38	4.38
07/01/23	09/30/23	199.01	19.23	218.24	1.51	144.17	12.06	156.22
10/01/23	12/31/23	314.31	69.16	383.47	1.51	253.31	26.27	279.58
01/01/24	03/31/24	444.88	159.15	604.03	1.51	399.01	41.97	440.97
04/01/24	06/30/24	473.49	282.94	756.42	1.51	499.67	46.57	546.24
07/01/24	09/30/24	269.42	398.91	668.34	1.51	441.49	32.04	473.52
10/01/24	12/31/24	115.17	474.29	589.46	1.51	389.38	15.25	404.63
01/01/25	03/31/25	28.84	494.95	523.78	1.51	346.00	4.06	350.06
04/01/25	06/30/25	0.00	469.31	469.31	1.51	310.02	16.93	326.95
07/01/25	09/30/25	0.00	422.26	422.26	1.51	278.94	26.33	305.26
10/01/25	12/31/25	0.00	378.46	378.46	1.51	250.00	15.06	265.06
01/01/26	03/31/26	0.00	339.49	339.49	1.51	224.26	8.84	233.10
04/01/26	06/30/26	0.00	304.64	304.64	1.51	201.24	5.82	207.06
07/01/26	09/30/26	0.00	273.27	273.27	1.51	180.52	4.54	185.06
10/01/26	12/31/26	0.00	244.40	244.40	1.51	161.45	3.98	165.42
01/01/27	03/31/27	0.00	219.20	219.20	1.51	144.80	3.69	148.49
04/01/27	06/30/27	0.00	197.12	197.12	1.51	130.21	3.40	133.61
07/01/27	09/30/27	0.00	177.90	177.90	1.51	117.52	3.11	120.63
10/01/27	12/31/27	0.00	160.93	160.93	1.51	106.31	2.82	109.13
01/01/28	03/31/28	0.00	147.14	147.14	1.51	97.20	2.70	99.89
04/01/28	06/30/28	0.00	136.05	136.05	1.51	89.87	2.57	92.44
07/01/28	09/30/28	0.00	127.01	127.01	1.51	83.90	2.44	86.34
10/01/28	12/31/28	0.00	119.15	119.15	1.51	78.71	2.31	81.02
01/01/29	03/31/29	0.00	112.95	112.95	1.51	74.61	2.22	76.83
04/01/29	06/30/29	0.00	108.17	108.17	1.51	71.45	2.12	73.58
07/01/29	09/30/29	0.00	104.31	104.31	1.51	68.91	2.03	70.93
10/01/29	12/31/29	0.00	100.84	100.84	1.51	66.61	1.93	68.54
01/01/30	03/31/30	0.00	97.91	97.91	1.51	64.68	1.85	66.53
04/01/30	06/30/30	0.00	95.45	95.45	1.51	63.05	1.77	64.82
07/01/30	09/30/30	0.00	93.32	93.32	1.51	61.64	1.69	63.33
10/01/30	12/31/30	0.00	91.37	91.37	1.51	60.36	1.61	61.96
01/01/31	03/31/31	0.00	89.68	89.68	1.51	59.24	1.53	60.78
04/01/31	06/30/31	0.00	88.22	88.22	1.51	58.28	1.46	59.74
07/01/31	09/30/31	0.00	86.87	86.87	1.51	57.38	1.39	58.77
10/01/31	12/31/31	0.00	85.54	85.54	1.51	56.50	1.32	57.82
01/01/32	03/31/32	0.00	84.24	84.24	1.51	55.65	1.22	56.87
04/01/32	06/30/32	0.00	82.97	82.97	1.51	54.81	1.13	55.94
07/01/32	09/30/32	0.00	81.77	81.77	1.51	54.02	1.04	55.06
10/01/32	12/31/32	0.00	80.65	80.65	1.51	53.28	0.95	54.23
01/01/33	03/31/33	0.00	79.67	79.67	1.51	52.63	0.88	53.51
04/01/33	06/30/33	0.00	78.79	78.79	1.51	52.04	0.81	52.86
07/01/33	09/30/33	0.00	77.98	77.98	1.51	51.51	0.75	52.25
10/01/33	12/31/33	0.00	77.19	77.19	1.51	50.99	0.68	51.67
01/01/34	03/31/34	0.00	76.46	76.46	1.51	50.51	0.61	51.12
04/01/34	06/30/34	0.00	75.77	75.77	1.51	50.05	0.55	50.60
07/01/34	09/30/34	0.00	75.08	75.08	1.51	49.59	0.49	50.08
10/01/34	12/31/34	0.00	74.37	74.37	1.51	49.13	0.42	49.55
01/01/35	03/31/35	0.00	73.64	73.64	1.51	48.65	0.36	49.01
04/01/35	06/30/35	0.00	72.90	72.90	1.51	48.16	0.30	48.46
07/01/35	09/30/35	0.00	72.14	72.14	1.51	47.66	0.24	47.90
10/01/35	12/31/35	0.00	71.37	71.37	1.51	47.14	0.18	47.32
01/01/36	03/31/36	0.00	70.59	70.59	1.51	46.63	0.13	46.75
04/01/36	06/30/36	0.00	69.80	69.80	1.51	46.10	0.07	46.18
07/01/36	09/30/36	0.00	69.03	69.03	1.51	45.60	0.02	45.62
10/01/36	12/31/36	0.00	68.33	68.33	1.51	45.14	0.00	45.14
01/01/37	03/31/37	0.00	67.71	67.71	1.51	44.73	0.00	44.73
04/01/37	06/30/37	0.00	67.17	67.17	1.51	44.37	0.00	44.37
07/01/37	09/30/37	0.00	66.67	66.67	1.51	44.04	0.00	44.04
10/01/37	12/31/37	0.00	66.18	66.18	1.51	43.72	0.00	43.72
01/01/38	03/31/38	0.00	65.72	65.72	1.51	43.41	0.00	43.41
04/01/38	06/30/38	0.00	65.27	65.27	1.51	43.12	0.00	43.12
07/01/38	09/30/38	0.00	64.83	64.83	1.51	42.82	0.00	42.82
10/01/38	12/31/38	0.00	64.37	64.37	1.51	42.52	0.00	42.52
01/01/39	03/31/39	0.00	63.89	63.89	1.51	42.21	0.00	42.21
04/01/39	06/30/39	0.00	63.41	63.41	1.51	41.89	0.00	41.89
07/01/39	09/30/39	0.00	62.92	62.92	1.51	41.56	0.00	41.56
10/01/39	12/31/39	0.00	62.42	62.42	1.51	41.24	0.00	41.24
01/01/40	03/31/40	0.00	61.94	61.94	1.51	40.92	0.00	40.92
04/01/40	06/30/40	0.00	61.46	61.46	1.51	40.60	0.00	40.60
07/01/40	09/30/40	0.00	60.98	60.98	1.51	40.28	0.00	40.28
10/01/40	12/31/40	0.00	60.48	60.48	1.51	39.95	0.00	39.95
01/01/41	03/31/41	0.00	59.96	59.96	1.51	39.61	0.00	39.61
04/01/41	06/30/41	0.00	59.43	59.43	1.51	39.26	0.00	39.26
07/01/41	09/30/41	0.00	58.88	58.88	1.51	38.90	0.00	38.90
10/01/41	12/31/41	0.00	58.33	58.33	1.51	38.53	0.00	38.53
01/01/42	03/31/42	0.00	57.78	57.78	1.51	38.16	0.00	38.16
04/01/42	06/30/42	0.00	57.22	57.22	1.51	37.80	0.00	37.80
07/01/42	09/30/42	0.00	56.68	56.68	1.51	37.44	0.00	37.44
10/01/42	12/31/42	0.00	56.19	56.19	1.51	37.12	0.00	37.12

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)							
01/01/43	03/31/43	0.00	55.77	55.77	1.51	36.84	0.00	36.84
04/01/43	06/30/43	0.00	55.40	55.40	1.51	36.60	0.00	36.60
07/01/43	09/30/43	0.00	55.02	55.02	1.51	36.35	0.00	36.35
10/01/43	12/31/43	0.00	54.59	54.59	1.51	36.06	0.00	36.06
01/01/44	03/31/44	0.00	54.07	54.07	1.51	35.72	0.00	35.72
04/01/44	06/30/44	0.00	53.50	53.50	1.51	35.34	0.00	35.34
07/01/44	09/30/44	0.00	52.84	52.84	1.51	34.91	0.00	34.91
10/01/44	12/31/44	0.00	52.12	52.12	1.51	34.43	0.00	34.43
01/01/45	03/31/45	0.00	51.30	51.30	1.51	33.89	0.00	33.89
04/01/45	06/30/45	0.00	50.41	50.41	1.51	33.30	0.00	33.30
07/01/45	09/30/45	0.00	49.48	49.48	1.51	32.68	0.00	32.68
10/01/45	12/31/45	0.00	48.54	48.54	1.51	32.06	0.00	32.06
01/01/46	03/31/46	0.00	47.61	47.61	1.51	31.45	0.00	31.45
04/01/46	06/30/46	0.00	46.68	46.68	1.51	30.83	0.00	30.83
07/01/46	09/30/46	0.00	45.75	45.75	1.51	30.22	0.00	30.22
10/01/46	12/31/46	0.00	44.81	44.81	1.51	29.60	0.00	29.60
01/01/47	03/31/47	0.00	43.87	43.87	1.51	28.98	0.00	28.98
04/01/47	06/30/47	0.00	42.94	42.94	1.51	28.37	0.00	28.37
07/01/47	09/30/47	0.00	42.01	42.01	1.51	27.75	0.00	27.75
10/01/47	12/31/47	0.00	41.07	41.07	1.51	27.13	0.00	27.13
01/01/48	03/31/48	0.00	40.14	40.14	1.51	26.51	0.00	26.51
04/01/48	06/30/48	0.00	39.21	39.21	1.51	25.90	0.00	25.90
07/01/48	09/30/48	0.00	38.28	38.28	1.51	25.29	0.00	25.29
10/01/48	12/31/48	0.00	37.34	37.34	1.51	24.67	0.00	24.67
01/01/49	03/31/49	0.00	36.41	36.41	1.51	24.05	0.00	24.05
04/01/49	06/30/49	0.00	35.48	35.48	1.51	23.44	0.00	23.44
07/01/49	09/30/49	0.00	34.54	34.54	1.51	22.82	0.00	22.82
10/01/49	12/31/49	0.00	33.61	33.61	1.51	22.20	0.00	22.20
01/01/50	03/31/50	0.00	32.67	32.67	1.51	21.58	0.00	21.58
04/01/50	06/30/50	0.00	31.74	31.74	1.51	20.97	0.00	20.97
07/01/50	09/30/50	0.00	30.81	30.81	1.51	20.35	0.00	20.35
10/01/50	12/31/50	0.00	29.87	29.87	1.51	19.73	0.00	19.73
01/01/51	03/31/51	0.00	28.94	28.94	1.51	19.12	0.00	19.12
04/01/51	06/30/51	0.00	28.01	28.01	1.51	18.50	0.00	18.50
07/01/51	09/30/51	0.00	27.08	27.08	1.51	17.89	0.00	17.89
10/01/51	12/31/51	0.00	26.14	26.14	1.51	17.27	0.00	17.27
01/01/52	03/31/52	0.00	25.20	25.20	1.51	16.65	0.00	16.65
04/01/52	06/30/52	0.00	24.28	24.28	1.51	16.04	0.00	16.04
07/01/52	09/30/52	0.00	23.34	23.34	1.51	15.42	0.00	15.42
10/01/52	12/31/52	0.00	22.40	22.40	1.51	14.80	0.00	14.80
01/01/53	03/31/53	0.00	21.47	21.47	1.51	14.18	0.00	14.18
04/01/53	06/30/53	0.00	20.54	20.54	1.51	13.57	0.00	13.57
07/01/53	09/30/53	0.00	19.61	19.61	1.51	12.95	0.00	12.95
10/01/53	12/31/53	0.00	18.67	18.67	1.51	12.33	0.00	12.33
01/01/54	03/31/54	0.00	17.74	17.74	1.51	11.72	0.00	11.72
04/01/54	06/30/54	0.00	16.81	16.81	1.51	11.10	0.00	11.10
07/01/54	09/30/54	0.00	15.87	15.87	1.51	10.49	0.00	10.49
10/01/54	12/31/54	0.00	14.94	14.94	1.51	9.87	0.00	9.87
01/01/55	03/31/55	0.00	14.00	14.00	1.51	9.25	0.00	9.25
04/01/55	06/30/55	0.00	13.07	13.07	1.51	8.64	0.00	8.64
07/01/55	09/30/55	0.00	12.14	12.14	1.51	8.02	0.00	8.02
10/01/55	12/31/55	0.00	11.20	11.20	1.51	7.40	0.00	7.40
01/01/56	03/31/56	0.00	10.27	10.27	1.51	6.78	0.00	6.78
04/01/56	06/30/56	0.00	9.34	9.34	1.51	6.17	0.00	6.17
07/01/56	09/30/56	0.00	8.41	8.41	1.51	5.55	0.00	5.55
10/01/56	12/31/56	0.00	7.47	7.47	1.51	4.93	0.00	4.93
01/01/57	03/31/57	0.00	6.53	6.53	1.51	4.32	0.00	4.32
04/01/57	06/30/57	0.00	5.61	5.61	1.51	3.70	0.00	3.70
07/01/57	09/30/57	0.00	4.67	4.67	1.51	3.09	0.00	3.09
10/01/57	12/31/57	0.00	3.73	3.73	1.51	2.47	0.00	2.47
01/01/58	03/31/58	0.00	2.80	2.80	1.51	1.85	0.00	1.85
04/01/58	06/30/58	0.00	1.87	1.87	1.51	1.24	0.00	1.24
07/01/58	09/30/58	0.00	1.07	1.07	1.51	0.70	0.00	0.70
10/01/58	12/31/58	0.00	0.46	0.46	1.51	0.30	0.00	0.30
01/01/59	03/31/59	0.00	0.11	0.11	1.51	0.08	0.00	0.08
04/01/59	06/30/59	0.00	0.00	0.00	1.51	0.00	0.00	0.00
TOTAL		1,845.12	11,643.87	13,488.99		8,910.47	318.90	9,229.37

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.¹ 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.² 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

¹ Insurance operating companies typically carry no debt on their balance sheets; that is, the capital of the operating companies is all equity capital.

² 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 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 last year's filing, 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 business of workers' compensation in

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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 80 insurance groups that write workers' compensation in Massachusetts, 44 are connected to private holding companies, and the remaining 36 are owned by public companies. We use financial data for the 36 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 36 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 9.74% for bearing the risk of underwriting workers' compensation insurance, as shown below.

DCF	8.28%
CAPM	11.21%
Average	9.74%

Given these results, the WCRIBMA has used a cost of equity capital of 9.74% 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, 3.91%, is shown in Section VII-E, Exhibit 1. In calculating the debt/equity proportion, consistent with the filings since 2014, the WCRIBMA uses the book value of capital (as opposed to market value).³ For the group of 36 insurers, the share of non-equity capital in the corporate capital structure is 19%, 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 8.64%, as shown below:

$$(19\% \times 3.91\%) + (81\% \times 9.74\%) = 8.64\%$$

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.

³ The WCRIBMA believes that market value capital weights are also appropriate for estimating a weighted average cost of capital. However, in this rate filing we adopted the method suggested by the Commissioner in the 2012 decision on rates and use book value capital weights.

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

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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:

$$V_0 = D_0 \sum_{t=1}^{\infty} \left(\frac{1 + g_t}{1 + k} \right)^t = D_1 \sum_{t=1}^{\infty} \frac{(1 + g_t)^{t-1}}{(1 + k)^t}$$

$$\frac{D_1}{V_0} = \sum_{t=1}^5 \frac{(1 + g_{ST})^{t-1}}{(1 + k)^t} + (1 + g_{ST})^4 \sum_{t=6}^9 \frac{\prod_{i=1}^{t-5} (1 + g_{IT_i})}{(1 + k)^t}$$

$$+ (1 + g_{ST})^4 (1 + g_{IT_1})(1 + g_{IT_2})(1 + g_{IT_3})(1 + g_{IT_4}) \sum_{t=10}^{\infty} \frac{(1 + g_{LT})^{t-9}}{(1 + k)^t}$$

$$\frac{1}{V_0} = \left[\frac{1}{k - g_{ST}} \left(1 - \left(\frac{1 + g_{ST}}{1 + k} \right)^5 \right) + \frac{(1 + g_{ST})^4 (1 + g_{IT_1})}{(1 + k)^6} + \frac{(1 + g_{ST})^4 (1 + g_{IT_1})(1 + g_{IT_2})}{(1 + k)^7} \right.$$

$$+ \frac{(1 + g_{ST})^4 (1 + g_{IT_1})(1 + g_{IT_2})(1 + g_{IT_3})}{(1 + k)^8}$$

$$+ \frac{(1 + g_{ST})^4 (1 + g_{IT_1})(1 + g_{IT_2})(1 + g_{IT_3})(1 + g_{IT_4})}{(1 + k)^9}$$

$$\left. + \frac{(1 + g_{ST})^4 (1 + g_{IT_1})(1 + g_{IT_2})(1 + g_{IT_3})(1 + g_{IT_4})(1 + g_{LT})}{(k - g_{LT})} \frac{1}{(1 + k)^9} \right]$$

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, β 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 - 2021 a diversified portfolio of common stocks earned an annual return which averaged 9.03 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 9.03 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 36 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).⁴

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

⁴ 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 1929-2021. 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 5.94% 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 2.35%, the required rate of return (k) in this three-stage DCF model is equal to 8.28%.

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, β 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 36 publicly traded companies involved in writing workers' compensation in Massachusetts, the beta coefficient for this sample of companies ranges from 0.29 to 1.5, and using weights of each company's direct premium written, the weighted average equals 1.00. 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 2022. 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 2.25%, while the yields on 5-year and 20-year Treasuries averaged 3.23% and 3.51% 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 11.21% as shown in Section VII-E, Exhibit 3, Page

1. To illustrate this calculation, consider the results for the short term CAPM below:

$$K = r_f + (\beta \times r_d), \text{ or}$$

$$11.32\% = 2.25\% + (1.00 \times 9.03\%)$$

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 11.21% 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 9.74%, 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.⁵ 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 19% of insurer capital, while common equity accounts for 81% of capital.

Given the equity cost, as shown above, of 9.74%, and the debt cost of 3.91%, the weighted average cost of capital is 8.64%, as shown below:

$$(19\% \times 3.91\%) + (81\% \times 9.74\%) = 8.64\%$$

⁵ 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	8.28%
(2) Capital Asset Pricing Model	11.21%
(3) Equity Capital Cost	9.74%
(4) Debt Capital Cost	3.91%
(5) Capital Structure	
(a) Equity Capital Share	81%
(b) Debt Capital Share	19%
(6) Weighted Average Cost of Capital (WACC)	8.64%

Notes:

(1): Exhibit 2, Page 1

(2): Exhibit 3, Page 1

(3) = [(1) + (2)] / 2.0

(4): Average of three-horizons yields:

Short-Term = 2.4%, the average yield on 1-month Commercial Paper (line (1)' of Section VII-J, Exhibit 2, Page 3)

Intermediate-Term = 4.21%, the average yield on 5-year HQM yield (line (15) of Section VII-J, Exhibit 2, Page 3)

Long-Term = 5.11%, 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

$$V_0 = D_0 \sum_{t=1}^{\infty} \left(\frac{1 + g_t}{1 + k} \right)^t = D_1 \sum_{t=1}^{\infty} \frac{(1 + g_t)^{t-1}}{(1 + k)^t}$$

$$\frac{1}{V_0} = \sum_{t=1}^5 \frac{(1 + g_{ST})^{t-1}}{(1 + k)^t} + (1 + g_{ST})^4 \sum_{t=6}^9 \frac{\prod_{i=1}^{t-5} (1 + g_{IT_i})}{(1 + k)^t}$$

$$+ (1 + g_{ST})^4 (1 + g_{IT_1})(1 + g_{IT_2})(1 + g_{IT_3})(1 + g_{IT_4}) \sum_{t=10}^{\infty} \frac{(1 + g_{LT})^{t-9}}{(1 + k)^t}$$

	Time (t) (1)	Dividend Growth Rate (g) (2)	Discounted Dividends (3)
Stage 1	1	5.87%	
	2	5.87%	
	3	5.87%	
	4	5.87%	
	5	5.87%	4.42
Stage 2	6	5.88%	0.83
	7	5.89%	0.81
	8	5.91%	0.79
	9	5.92%	0.77
Stage 3	≥10	5.94%	34.93
(4) Total Discounted Dividends			42.54

(5) Dividend Yield Rate (D_1/V_0)

2.35%

(6) Cost of Capital (k)

8.28%

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 = $[(1.0 + g_{ST})^4 \times (1.0 + g_{IT_1})] / (1.0 + k)^6$

Stage 2, Time 7 = $[(1.0 + g_{ST})^4 \times (1.0 + g_{IT_1}) \times (1.0 + g_{IT_2})] / (1.0 + k)^7$

Stage 2, Time 8 = $[(1.0 + g_{ST})^4 \times (1.0 + g_{IT_1}) \times (1.0 + g_{IT_2}) \times (1.0 + g_{IT_3})] / (1.0 + k)^8$

Stage 2, Time 9 = $[(1.0 + g_{ST})^4 \times (1.0 + g_{IT_1}) \times (1.0 + g_{IT_2}) \times (1.0 + g_{IT_3}) \times (1.0 + g_{IT_4})] / (1.0 + k)^9$

Stage 3 = $[(1.0 + g_{ST})^4 \times (1.0 + g_{IT_1}) \times (1.0 + g_{IT_2}) \times (1.0 + g_{IT_3}) \times (1.0 + g_{IT_4}) \times (1.0 + g_{LT})] / [(k - g_{LT}) \times (1.0 + k)^9]$

(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	1,110.2	
1930	1,015.8	-8.50%
1931	950.7	-6.41%
1932	828.1	-12.90%
1933	817.8	-1.24%
1934	906.2	10.81%
1935	986.9	8.91%
1936	1,114.1	12.89%
1937	1,171.1	5.12%
1938	1,132.3	-3.31%
1939	1,223.2	8.03%
1940	1,331.1	8.82%
1941	1,566.8	17.71%
1942	1,862.8	18.89%
1943	2,179.9	17.02%
1944	2,353.2	7.95%
1945	2,330.2	-0.98%
1946	2,059.8	-11.60%
1947	2,036.2	-1.15%
1948	2,120.0	4.12%
1949	2,108.0	-0.57%
1950	2,291.1	8.69%
1951	2,475.4	8.04%
1952	2,576.7	4.09%
1953	2,697.5	4.69%
1954	2,681.9	-0.58%
1955	2,873.2	7.13%
1956	2,934.4	2.13%
1957	2,996.2	2.11%
1958	2,974.0	-0.74%
1959	3,180.2	6.93%
1960	3,262.1	2.58%
1961	3,345.7	2.56%
1962	3,550.7	6.13%
1963	3,705.3	4.35%
1964	3,918.8	5.76%
1965	4,173.4	6.50%
1966	4,448.7	6.60%
1967	4,570.7	2.74%
1968	4,795.4	4.92%
1969	4,945.2	3.12%
1970	4,954.4	0.19%
1971	5,117.6	3.29%
1972	5,386.7	5.26%
1973	5,690.9	5.65%
1974	5,660.1	-0.54%
1975	5,648.5	-0.20%
1976	5,952.8	5.39%
1977	6,228.1	4.62%
1978	6,572.8	5.53%
1979	6,780.9	3.17%
1980	6,763.5	-0.26%
1981	6,935.2	2.54%
1982	6,810.1	-1.80%

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Section VII - E
 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	7,122.3	4.58%
1984	7,637.7	7.24%
1985	7,956.2	4.17%
1986	8,231.7	3.46%
1987	8,516.4	3.46%
1988	8,872.2	4.18%
1989	9,198.0	3.67%
1990	9,371.5	1.89%
1991	9,361.3	-0.11%
1992	9,691.1	3.52%
1993	9,957.7	2.75%
1994	10,358.9	4.03%
1995	10,637.0	2.68%
1996	11,038.3	3.77%
1997	11,529.2	4.45%
1998	12,045.8	4.48%
1999	12,623.4	4.80%
2000	13,138.0	4.08%
2001	13,263.4	0.95%
2002	13,488.4	1.70%
2003	13,865.5	2.80%
2004	14,399.7	3.85%
2005	14,901.3	3.48%
2006	15,315.9	2.78%
2007	15,623.9	2.01%
2008	15,643.0	0.12%
2009	15,236.3	-2.60%
2010	15,649.0	2.71%
2011	15,891.5	1.55%
2012	16,254.0	2.28%
2013	16,553.3	1.84%
2014	16,932.1	2.29%
2015	17,390.3	2.71%
2016	17,680.3	1.67%
2017	18,076.7	2.24%
2018	18,609.1	2.95%
2019	19,036.1	2.29%
2020	18,509.1	-2.77%
2021	19,609.8	5.95%
(4) Average		3.28%
(5) Rate of Expected Inflation		2.57%
(6) Long-Term Dividend Growth Rate		5.94%

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)
2021-10	1.58	-0.95	2.53
2021-11	1.56	-1.06	2.62
2021-12	1.47	-0.99	2.46
2022-01	1.76	-0.69	2.45
2022-02	1.93	-0.52	2.45
2022-03	2.13	-0.72	2.85
2022-04	2.75	-0.14	2.89
2022-05	2.9	0.21	2.69
2022-06	3.14	0.53	2.61
2022-07	2.9	0.53	2.37
2022-08	2.9	0.39	2.51
2022-09	3.52	1.14	2.38
Average			2.57%

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 }	5.55
(a) Dividend Component	5.41
(b) Earnings Component	5.69
(2) Fundamental Analysis [= (a) + (b)]	6.19
(a) Retention to book	6.28
(b) Stock issuance factor	-0.09
(3) Short-Term Dividend Growth Rate { = [(1) + (2)] / 2.0 }	5.87

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)	2022 Shares (12)	2025 - 2027 Shares (13)	2025 - 2027 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	6.2	NA	NA	NA	NA	NA	0.00	NA	NA	NA	0.00	0.00	0.00	NA
AMERICAN FINANCIAL GROUP INC	1.9	12.00	12.50	11.00	9.50	12.00	9.00	9.40	11.38	12.50	85.00	80.00	2.10	-1.65
AMERICAN INTERNATIONAL GROUP	2.5	NA	20.50	3.00	NA	-17.00	6.50	6.20	7.55	6.50	785.00	700.00	0.80	0.56
AMERISAFE INC	2.6	NA	-24.00	NA	NA	3.50	10.00	4.82	1.30	NA	0.00	0.00	0.00	NA
AMERITRUST GROUP	6.1	NA	NA	NA	NA	NA	0.00	NA	NA	NA	0.00	0.00	0.00	NA
ARCH CAPITAL GROUP LTD	0.0	NA	NA	NA	6.00	9.50	18.00	9.93	8.58	12.00	365.00	340.00	1.35	-0.62
ARGO GROUP	3.3	19.50	14.50	3.00	NA	NA	NMF	6.23	1.50	8.50	34.50	32.00	1.07	-0.13
BERKLEY (W R) CORP	0.6	10.00	8.50	10.00	8.50	8.50	15.50	8.08	7.82	13.50	265.00	270.00	2.40	0.66
BERKSHIRE HATHAWAY	0.0	NA	NA	0.00	6.00	12.00	6.00	6.83	5.40	7.00	2200.00	2000.00	1.05	-0.12
CHUBB LTD	1.7	9.00	3.00	4.50	2.50	NA	14.50	6.70	5.40	10.00	410.00	375.00	1.65	-1.43
CINCINNATI FINANCIAL CORP	2.8	4.00	3.50	6.50	14.00	8.50	8.50	2.83	2.64	3.60	159.00	155.00	1.45	-0.29
CNA FINANCIAL CORP	3.9	NA	8.00	4.50	2.50	5.00	12.00	4.28	4.42	8.00	272.00	275.00	1.70	0.19
EMPLOYERS HOLDINGS INC	2.6	NA	5.00	NA	NA	7.00	10.00	11.02	9.12	NA	0.00	0.00	0.00	NA
EVEREST RE GROUP	2.4	11.50	13.00	4.00	2.50	-10.00	9.50	9.12	6.33	11.00	40.00	43.00	1.30	0.55
FAIRFAX FINANCIAL GROUP	2.0	NA	NA	NA	NA	NA	0.00	NA	NA	NA	0.00	0.00	0.00	NA
HANOVER INS GROUP	2.3	13.00	10.00	6.50	9.00	8.00	9.00	6.42	6.96	8.00	35.00	35.00	1.26	0.00
HARTFORD FINANCIAL	2.4	14.00	11.50	6.00	10.50	11.50	6.50	7.58	8.64	9.00	325.00	305.00	0.80	0.32
HDI/TALANX US PC GROUP	4.1	NA	NA	NA	NA	NA	0.00	NA	NA	NA	0.00	0.00	0.00	NA
INTACT US INSURANCE GROUP	2.0	NA	NA	NA	NA	NA	0.00	NA	NA	NA	0.00	0.00	0.00	NA
JAMES RIVER GROUP	0.8	NA	NA	NA	NA	NA	0.00	NA	NA	NA	0.00	0.00	0.00	NA
MARKEL CORP	0.0	NA	NA	0.00	19.00	36.00	7.00	7.13	10.05	8.50	13.50	13.00	1.32	-0.30
MS&AD US INSURANCE GROUP	5.0	NA	NA	NA	NA	NA	0.00	NA	NA	NA	0.00	0.00	0.00	NA
NATIONAL HEALTHCARE	3.3	NA	NA	NA	NA	NA	0.00	NA	NA	NA	0.00	0.00	0.00	NA
OLD REPUBLIC INTL CORP	3.8	2.00	2.50	6.00	NA	15.00	9.00	5.07	6.12	8.50	308.00	310.00	1.75	0.12
PROASSURANCE CORP	0.9	NA	NA	NA	NA	NA	27.30	6.55	5.95	NA	0.00	0.00	0.00	NA
PROGRESSIVE CORP	0.3	NA	NA	NA	NA	NA	0.00	NA	NA	NA	0.00	0.00	0.00	NA
QBE NORTH AMERICA INSURANCE GROUP	1.5	NA	NA	NA	NA	NA	0.00	NA	NA	NA	0.00	0.00	0.00	NA
RLI CORP	0.9	5.50	5.00	4.00	1.50	4.50	12.00	8.08	7.26	10.00	45.00	45.00	2.80	0.00
SAMSUNG F & M INSURANCE CO	6.3	NA	NA	NA	NA	NA	0.00	NA	NA	NA	0.00	0.00	0.00	NA
SELECTIVE INS GROUP INC	1.4	6.00	10.50	9.00	17.00	14.50	9.50	7.85	9.60	11.50	60.00	65.00	1.70	1.41
SOMPO HOLDINGS US GROUP	4.0	NA	NA	NA	NA	NA	0.00	NA	NA	NA	0.00	0.00	0.00	NA
TOKIO MARINE US PC GROUP	3.8	NA	NA	NA	NA	NA	0.00	NA	NA	NA	0.00	0.00	0.00	NA
TRAVELERS CO INC	2.2	9.00	7.00	4.00	8.00	1.50	6.50	8.54	6.88	7.50	235.00	230.00	1.50	-0.27
TREAN INSURANCE GROUP	0.0	NA	NA	NA	NA	NA	0.00	NA	NA	NA	0.00	0.00	0.00	NA
XL REINSURANCE AMERICA GROUP	6.4	NA	NA	NA	NA	NA	0.00	NA	NA	NA	0.00	0.00	0.00	NA
ZURICH INSURANCE US PC GROUP	5.3	NA	NA	NA	NA	NA	0.00	NA	NA	NA	0.00	0.00	0.00	NA
(16) Weighed Average	2.35	6.20	6.21	3.82	5.29	4.43	7.35	5.97	5.73	7.14				-0.09

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 2022)

(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:

$$D_1 = D_0 \times [1.0 + (0.5 \times \text{Dividend Growth Rate})], \quad \text{where Dividend Growth Rate} = 5.87\% \text{ from Page 4.}$$

(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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Section VII - Profit
Subsection E - Cost of Capital
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Section VII - E
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 (β) (4)	Estimated Cost of Capital (K) (5)
Short-Term	2.25	9.03	1.00	11.32
Intermediate-Term	3.23	8.04	1.00	11.31
Long-Term	3.51	7.46	1.00	11.00
Average	2.99	8.17	1.00	11.21

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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Exhibit 3
Page 2

Capital Asset Pricing Model - Beta Coefficient

<u>Companies</u>	<u>Beta Coefficients</u>
ALLIANZ US PC INSURANCE COMPANIES	1.2
AMERICAN FINANCIAL GROUP INC	1.3
AMERICAN INTERNATIONAL GROUP	1.5
AMERISAFE INC	0.8
AMERITRUST GROUP	0.9
ARCH CAPITAL GROUP LTD	1.2
ARGO GROUP	1.0
BERKLEY (W R) CORP	1.1
BERKSHIRE HATHAWAY	1.0
CHUBB LTD	1.1
CINCINNATI FINANCIAL CORP	1.1
CNA FINANCIAL CORP	1.1
EMPLOYERS HOLDINGS INC	0.7
EVEREST RE GROUP	1.0
FAIRFAX FINANCIAL GROUP	0.9
HANOVER INS GROUP	1.0
HARTFORD FINANCIAL	1.2
HDI/TALANX US PC GROUP	1.1
INTACT US INSURANCE GROUP	0.6
JAMES RIVER GROUP	0.4
MARKEL CORP	1.2
MS&AD US INSURANCE GROUP	0.6
NATIONAL HEALTHCARE	0.3
OLD REPUBLIC INTL CORP	1.2
PROASSURANCE CORP	0.7
PROGRESSIVE CORP	0.4
QBE NORTH AMERICA INSURANCE GROUP	0.9
RLI CORP	0.8
SAMSUNG F & M INSURANCE CO	0.7
SELECTIVE INS GROUP INC	0.9
SOMPO HOLDINGS US GROUP	0.5
TOKIO MARINE US PC GROUP	0.5
TRAVELERS CO INC	1.0
TREAN INSURANCE GROUP	0.4
XL REINSURANCE AMERICA GROUP	1.5
ZURICH INSURANCE US PC GROUP	0.6
Weighted Average	1.00

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 2022)

Weighted by direct premiums written.

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Section VII - Profit
Subsection E - Cost of Capital
7/1/2023

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	35,569.0	0.0	35,569.0	72,126.2	0.67	0.33
AMERICAN FINANCIAL GROUP INC	1,542.0	0.0	1,542.0	11,060.9	0.88	0.12
AMERICAN INTERNATIONAL GROUP	29,900.0	0.0	29,900.0	43,047.6	0.59	0.41
AMERISAFE INC	0.0	0.0	0.0	924.6	1.00	0.00
AMERITRUST GROUP	257,871.7	0.0	257,871.7	40,768.0	0.14	0.86
ARCH CAPITAL GROUP LTD	2,724.9	830.0	3,554.9	17,367.9	0.83	0.17
ARGO GROUP	456.0	0.0	456.0	803.9	0.64	0.36
BERKLEY (W R) CORP	2,840.3	0.0	2,840.3	17,699.0	0.86	0.14
BERKSHIRE HATHAWAY	0.0	0.0	0.0	624,647.3	1.00	0.00
CHUBB LTD	16,093.0	308.0	16,401.0	80,688.3	0.83	0.17
CINCINNATI FINANCIAL CORP	885.0	0.0	885.0	15,821.2	0.95	0.05
CNA FINANCIAL CORP	2,780.0	0.0	2,780.0	10,535.3	0.79	0.21
EMPLOYERS HOLDINGS INC	0.0	0.0	0.0	1,040.6	1.00	0.00
EVEREST RE GROUP	3,088.9	0.0	3,088.9	11,022.1	0.78	0.22
FAIRFAX FINANCIAL GROUP	8,893.7	58.2	8,951.9	16,172.0	0.64	0.36
HANOVER INS GROUP	782.0	0.0	782.0	4,738.3	0.86	0.14
HARTFORD FINANCIAL	4,945.0	0.0	4,945.0	21,932.6	0.82	0.18
HDI/TALANX US PC GROUP	7,653.0	0.0	7,653.0	10,064.3	0.57	0.43
INTACT US INSURANCE GROUP	5,867.0	0.0	5,867.0	27,153.2	0.82	0.18
JAMES RIVER GROUP	366.4	0.0	366.4	918.3	0.71	0.29
MARKEL CORP	4,502.2	0.0	4,502.2	16,049.5	0.78	0.22
MS&AD US INSURANCE GROUP	782,902.0	0.0	782,902.0	15,282.0	0.02	0.98
NATIONAL HEALTHCARE	166.7	0.0	166.7	1,071.8	0.87	0.13
OLD REPUBLIC INTL CORP	1,594.5	0.0	1,594.5	6,762.6	0.81	0.19
PROASSURANCE CORP	425.0	0.0	425.0	1,123.4	0.73	0.27
PROGRESSIVE CORP	4,898.8	0.0	4,898.8	74,138.0	0.94	0.06
QBE NORTH AMERICA INSURANCE GROUP	3,622.0	0.0	3,622.0	18,485.2	0.84	0.16
RLI CORP	199.8	0.0	199.8	5,040.9	0.96	0.04
SAMSUNG F & M INSURANCE CO	0.0	2.7	2.7	5,549.7	1.00	0.00
SELECTIVE INS GROUP INC	505.1	0.0	505.1	4,895.1	0.91	0.09
SOMPO HOLDINGS US GROUP	539,742.0	0.0	539,742.0	14,106.9	0.03	0.97
TOKIO MARINE US PC GROUP	219,795.0	0.0	219,795.0	35,379.2	0.14	0.86
TRAVELERS CO INC	7,291.0	0.0	7,291.0	38,496.9	0.84	0.16
TREAN INSURANCE GROUP	35.3	0.0	35.3	198.1	0.85	0.15
XL REINSURANCE AMERICA GROUP	61,839.0	0.0	61,839.0	57,914.0	0.48	0.52
ZURICH INSURANCE US PC GROUP	16,987.0	0.0	16,987.0	65,934.0	0.80	0.20
(8) Weighed Average					0.81	0.19

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 2022)

(5) = (outstanding shares) * (one month average share price)

One month (Aug 15, 2022 - Sep 14, 2022) 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				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
	(1)	(2)				(3)					(4) = (3) / (2)				
018555 A.I.M. Mutual Insurance Companies (G)	367	365	351	336	332	357	319	295	258	237	0.97	0.87	0.84	0.77	0.71
018674 Travelers Group (G)	59,693	56,497	53,741	51,786	50,125	23,167	21,558	20,680	20,207	19,903	0.39	0.38	0.38	0.39	0.40
000048 Hartford Insurance Group (G)	32,175	30,110	28,987	28,001	27,005	14,720	13,998	13,383	11,253	12,516	0.46	0.46	0.46	0.40	0.46
018498 Chubb INA Group (G)	44,682	40,278	35,571	34,027	30,970	18,416	17,722	17,646	18,647	17,691	0.41	0.44	0.50	0.55	0.57
000060 Liberty Mutual Insurance Companies (G)	71,673	67,355	61,714	58,715	57,222	27,679	24,051	21,803	20,951	18,704	0.39	0.36	0.35	0.36	0.33
018549 Zurich Insurance US PC Group (G)	16,539	16,269	16,495	17,696	18,429	7,708	6,958	7,406	6,873	7,272	0.47	0.43	0.45	0.39	0.39
000811 Berkshire Hathaway Insurance Group (G)	107,575	93,002	86,021	78,905	72,444	300,527	237,308	216,255	160,938	171,554	2.79	2.55	2.51	2.04	2.37
018396 Charter Insurance Group (G)	90	100	98	107	117	81	84	81	69	68	0.90	0.83	0.82	0.64	0.58
018540 American International Group (G)	35,347	35,391	38,572	42,359	49,829	19,604	18,467	17,855	17,908	22,078	0.55	0.52	0.46	0.42	0.44
000734 Old Republic Insurance Group (G)	7,008	6,858	6,621	6,593	6,438	4,598	4,079	4,120	3,713	3,766	0.66	0.59	0.62	0.56	0.58
018252 W. R. Berkley Insurance Group (G)	16,045	14,287	12,999	12,351	12,102	6,816	6,186	6,010	5,590	5,482	0.42	0.43	0.46	0.45	0.45
018533 AmTrust Group (G)	5,660	5,098	5,123	5,117	4,638	2,210	2,210	2,128	2,164	2,092	0.39	0.43	0.42	0.42	0.45
018313 CNA Insurance Companies (G)	34,835	33,334	32,312	32,209	32,250	11,315	10,704	10,775	10,392	10,700	0.32	0.32	0.33	0.32	0.33
004861 Hanover Ins Group Prop & Cas Cos (G)	7,459	6,830	6,453	6,103	5,748	2,720	2,589	2,470	2,171	2,074	0.36	0.38	0.38	0.36	0.36
018524 MEMIC Group (G)	981	949	912	904	828	527	488	470	424	439	0.54	0.51	0.52	0.47	0.53
005658 QBE North America Insurance Group (G)	4,105	3,650	3,394	3,128	2,831	1,694	1,625	1,718	1,741	1,640	0.41	0.45	0.51	0.56	0.58
018220 Arbella Insurance Group (G)	905	868	886	879	864	930	837	736	651	622	1.03	0.96	0.83	0.74	0.72
003926 Selective Insurance Group (G)	5,595	5,129	4,855	4,610	4,364	2,391	2,125	1,932	1,768	1,673	0.43	0.41	0.40	0.38	0.38
004202 Utica National Insurance Group (G)	2,274	2,121	1,968	1,849	1,764	1,410	1,257	1,139	1,021	990	0.62	0.59	0.58	0.55	0.56
003116 Fairfax Financial (USA) Group (G)	18,455	15,700	14,180	13,098	12,179	8,816	7,469	7,037	6,650	6,921	0.48	0.48	0.50	0.51	0.57
018484 Arch Insurance Group (G)	6,143	5,213	3,918	3,183	2,186	2,499	1,978	1,779	1,975	2,923	0.41	0.38	0.45	0.62	1.34
000780 Progressive Insurance Group (G)	36,561	30,255	27,304	23,748	20,028	16,415	15,536	14,043	11,970	10,092	0.45	0.51	0.51	0.50	0.50
018943 AU Holding Company Group (G)	801	727	701	665	571	1,029	975	949	899	983	1.28	1.34	1.35	1.35	1.72
000086 Sentry Insurance Group (G)	5,556	5,119	4,815	4,510	4,271	7,506	6,533	6,001	5,450	5,174	1.35	1.28	1.25	1.21	1.21
018756 Starr International Group (G)	4,400	3,998	3,554	3,033	2,792	2,828	2,379	2,187	2,024	1,875	0.64	0.60	0.62	0.67	0.67
004284 Federated Mutual Group (G)	3,830	3,398	2,948	2,636	2,345	4,410	3,975	3,778	3,404	3,307	1.15	1.17	1.28	1.29	1.41
000706 Norfolk & Dedham Group Pool (G)	325	318	310	299	272	447	406	362	316	322	1.38	1.28	1.17	1.06	1.18
018132 AmeriTrust Group (G)	1,327	1,277	1,222	1,231	1,261	679	673	633	580	564	0.51	0.53	0.52	0.47	0.45
004835 Great American P & C Insurance Group (G)	9,546	8,966	8,468	8,038	7,646	4,221	3,643	3,342	2,865	2,725	0.44	0.41	0.39	0.36	0.36
000346 EMC Insurance Companies (G)	3,473	3,182	2,898	2,795	2,669	1,737	1,566	1,575	1,662	1,713	0.50	0.49	0.54	0.59	0.64
002947 American National Prop & Cas Group (G)	1,755	1,656	1,596	1,532	1,433	1,570	1,463	1,330	1,184	1,163	0.89	0.88	0.83	0.77	0.81
000124 American Family Insurance Group (G)	13,925	12,975	12,480	11,519	10,200	9,274	7,489	7,007	7,739	8,490	0.67	0.58	0.56	0.67	0.83
018385 Service Insurance Group (G)	185	157	146	157	163	164	156	145	132	130	0.89	0.99	0.99	0.84	0.80
018733 Tokio Marine US PC Group (G)	19,886	18,192	16,934	15,617	14,682	10,312	9,351	8,923	8,635	8,041	0.52	0.51	0.53	0.55	0.55
000174 Arrow Mutual Liability Insurance Company	9	10	10	11	12	31	32	32	31	30	3.39	3.07	3.09	2.67	2.57
018468 Markel Corporation Group (G)	9,874	8,497	7,593	6,191	5,805	4,649	4,187	3,726	3,203	3,492	0.47	0.49	0.49	0.52	0.60
018602 Employers Insurance Group (G)	1,782	1,842	1,970	2,017	2,031	1,089	1,046	1,021	928	892	0.61	0.57	0.52	0.46	0.44
018717 Skyward Specialty Insurance Group (G)	681	533	509	416	388	370	342	338	264	266	0.54	0.64	0.66	0.64	0.69
018593 Group 1001 Property and Casualty Group (G)	417	266	208	223	211	198	135	173	159	144	0.47	0.51	0.83	0.71	0.68
002146 Electric Insurance Company	623	718	783	828	874	374	387	395	405	491	0.60	0.54	0.50	0.49	0.56
005696 Everest Re U.S. Group (G)	11,966	9,752	7,814	7,012	4,971	5,789	5,276	3,739	3,651	3,392	0.48	0.54	0.48	0.52	0.68
018975 Core Specialty Insurance Group (G)	1,537	1,095	1,037	877	663	932	1,045	433	379	363	0.61	0.95	0.42	0.43	0.55
000590 Merchants Insurance Group (G)	559	506	456	420	408	303	267	244	225	203	0.54	0.53	0.53	0.54	0.50
018557 XL Reinsurance America Group (G)	8,786	8,200	7,056	6,984	5,718	3,489	2,869	2,462	2,512	2,480	0.40	0.35	0.35	0.36	0.43
000246 Central Insurance Companies (G)	1,029	976	918	863	790	1,004	893	897	809	822	0.98	0.91	0.98	0.94	1.04
018878 Sampo Holdings US Group (G)	6,949	5,044	3,722	3,187	2,340	2,929	2,423	2,028	2,127	1,840	0.42	0.48	0.54	0.67	0.79
018922 Benchmark Insurance Group (G)	266	172	137	121	103	183	186	148	129	114	0.69	1.08	1.08	1.06	1.10
004294 The Cincinnati Insurance Companies (G)	9,834	9,013	8,225	7,906	7,418	7,247	5,838	5,620	4,919	5,094	0.74	0.65	0.68	0.62	0.69
004019 Argo Group (G)	2,673	2,326	2,061	1,784	1,565	1,177	1,072	1,051	1,005	993	0.44	0.46	0.51	0.56	0.63
018680 AF Group (G)	2,908	2,768	2,596	2,387	2,237	1,368	1,213	1,087	937	995	0.47	0.44	0.42	0.39	0.44
005987 Nationwide Group (G)	25,144	24,332	23,567	23,992	24,855	18,022	16,484	15,749	14,478	14,741	0.72	0.68	0.67	0.60	0.59
018923 Pharmacists Mutual Insurance Group (G)	222	215	187	167	159	177	172	176	138	131	0.80	0.80	0.94	0.82	0.83

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Leverage Ratio

Company	Loss & LAE and Unearned Premium Reserves (\$000)					Surplus (\$000)					Leverage Ratio				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
(1)	(2)					(3)					(4) = (3) / (2)				
000419 Coaction Specialty Insurance Group (G)	1,508	1,782	1,712	1,545	1,286	589	668	569	474	434	0.39	0.37	0.33	0.31	0.34
018887 Church Mutual Insurance Group (G)	1,305	1,263	1,170	1,118	947	791	743	679	619	704	0.61	0.59	0.58	0.55	0.74
018458 Intact US Insurance Group (G)	1,976	1,745	1,557	1,546	1,398	852	823	961	819	808	0.43	0.47	0.62	0.53	0.58
013103 Work First Casualty Company	42	43	40	37	31	36	25	21	18	15	0.86	0.57	0.52	0.49	0.48
018782 MS&AD US Insurance Group (G)	785	750	740	729	713	1,501	1,489	1,144	559	545	1.91	1.99	1.55	0.77	0.76
004071 Amerisure Companies (G)	1,839	1,830	1,843	1,787	1,754	1,177	1,080	1,008	984	983	0.64	0.59	0.55	0.55	0.56
003918 GuideOne Insurance Companies (G)	1,081	948	838	870	963	458	442	456	433	442	0.42	0.47	0.54	0.50	0.46
018626 James River Group (G)	684	435	432	361	297	325	286	267	242	219	0.48	0.66	0.62	0.67	0.74
012124 Premier Group Insurance Company	19	18	17	17	17	34	36	39	40	39	1.81	1.95	2.24	2.31	2.30
018429 Allianz US PC Insurance Companies (G)	6,215	5,905	6,467	5,833	6,134	2,836	2,831	2,798	3,094	2,669	0.46	0.48	0.43	0.53	0.44
002967 ICW Pool (G)	2,696	2,390	2,050	1,785	1,617	1,494	1,290	1,301	1,109	1,034	0.55	0.54	0.63	0.62	0.64
000221 Brotherhood Mutual Insurance Company	555	474	436	397	314	324	298	280	241	266	0.58	0.63	0.64	0.61	0.85
018067 American Contractors Insurance Group (G)	307	325	323	295	284	186	181	174	160	153	0.60	0.56	0.54	0.54	0.54
018559 ProAssurance Group (G)	3,314	3,214	3,024	2,668	2,682	1,453	1,421	1,488	1,778	1,906	0.44	0.44	0.49	0.67	0.71
018907 HDI/Talanx US PC Group (G)	699	728	521	252	37	280	246	227	216	188	0.40	0.34	0.44	0.86	5.13
003883 RLI Group (G)	1,985	1,779	1,636	1,522	1,363	1,241	1,122	1,030	830	865	0.63	0.63	0.63	0.55	0.63
012138 Cherokee Insurance Company	414	399	374	345	322	337	289	227	186	198	0.81	0.73	0.61	0.54	0.61
018567 IAT Insurance Group (G)	1,579	1,358	1,226	1,007	860	939	811	854	730	909	0.59	0.60	0.70	0.72	1.06
018211 AMERISAFE Insurance Group (G)	747	784	818	840	844	278	366	360	384	382	0.37	0.47	0.44	0.46	0.45
018894 WCF Insurance Group (G)	1,275	1,233	1,170	1,142	1,117	1,185	1,074	1,041	946	935	0.93	0.87	0.89	0.83	0.84
000088 State Farm Group (G)	70,138	66,417	64,820	65,737	66,649	143,205	126,077	116,308	100,887	97,134	2.04	1.90	1.79	1.53	1.46
011021 Samsung F & M Insurance Co, Ltd USB	51	63	78	108	126	80	78	73	68	58	1.57	1.24	0.94	0.63	0.46
000032 Farmers Insurance Group (G)	18,681	18,803	18,509	17,960	17,893	6,533	8,688	8,376	8,019	7,606	0.35	0.46	0.45	0.45	0.43
000766 Penn National Insurance Companies (G)	1,080	1,061	1,041	1,056	1,043	789	718	664	591	587	0.73	0.68	0.64	0.56	0.56
000964 West Bend Mutual Insurance Company	1,997	1,814	1,672	1,577	1,498	1,597	1,401	1,231	1,138	1,041	0.80	0.77	0.74	0.72	0.69
000672 National American Insurance Company	205	177	162	149	129	94	85	80	74	68	0.46	0.48	0.50	0.50	0.53
018392 The Gray Insurance Group (G)	209	209	210	186	175	201	152	133	128	119	0.96	0.73	0.63	0.69	0.68
018753 Munich-American Holding Corp Companies (G)	16,655	13,589	12,240	11,496	9,933	5,396	5,516	5,055	5,001	5,247	0.32	0.41	0.41	0.44	0.53

	2021	2020	2019	2018	2017
(5): Premium Weighted Leverage Ratio	1.42	1.50	1.49	1.63	1.52
(6): Selected Leverage Ratio					1.51

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)		
07/01/22	09/30/22	0.0%	0.0%	24.5%	0.1%	0.0%	48.9%	0.0%	0.0%	26.6%	0.0%
10/01/22	12/31/22	0.0%	0.0%	24.5%	0.0%	0.0%	48.9%	0.2%	0.0%	26.6%	0.0%
01/01/23	03/31/23	0.1%	0.0%	24.5%	0.1%	0.0%	48.9%	0.0%	0.0%	26.6%	0.0%
04/01/23	06/30/23	11.2%	11.2%	24.5%	2.7%	2.7%	48.9%	1.1%	1.0%	26.6%	4.3%
07/01/23	09/30/23	38.1%	38.1%	24.5%	34.5%	34.5%	48.9%	37.8%	37.8%	26.6%	36.3%
10/01/23	12/31/23	22.6%	22.6%	24.5%	26.0%	26.0%	48.9%	22.4%	22.4%	26.6%	24.2%
01/01/24	03/31/24	15.4%	15.4%	24.5%	20.5%	20.5%	48.9%	20.1%	20.1%	26.6%	19.1%
04/01/24	06/30/24	4.0%	4.0%	24.5%	5.7%	5.7%	48.9%	7.4%	7.5%	26.6%	5.8%
07/01/24	09/30/24	2.2%	2.2%	24.5%	1.8%	1.8%	48.9%	3.1%	3.0%	26.6%	2.2%
10/01/24	12/31/24	2.8%	2.8%	24.5%	4.0%	4.0%	48.9%	5.6%	5.6%	26.6%	4.1%
01/01/25	03/31/25	1.9%	1.9%	24.5%	2.2%	2.2%	48.9%	1.9%	1.9%	26.6%	2.0%
04/01/25	06/30/25	1.1%	1.1%	24.5%	1.2%	1.5%	48.9%	0.2%	0.5%	26.6%	1.1%
07/01/25	09/30/25	0.1%	0.7%	24.5%	0.2%	1.1%	48.9%	0.0%	0.2%	26.6%	0.8%
10/01/25	12/31/25	0.0%	0.0%	24.5%	0.1%	0.0%	48.9%	0.1%	0.0%	26.6%	0.0%
01/01/26	03/31/26	0.0%	0.0%	24.5%	0.0%	0.0%	48.9%	0.1%	0.0%	26.6%	0.0%
04/01/26	06/30/26	0.0%	0.0%	24.5%	0.0%	0.0%	48.9%	0.0%	0.0%	26.6%	0.0%
07/01/26	09/30/26	0.2%	0.0%	24.5%	0.2%	0.0%	48.9%	0.0%	0.0%	26.6%	0.0%
10/01/26	12/31/26	0.2%	0.0%	24.5%	0.4%	0.0%	48.9%	0.0%	0.0%	26.6%	0.0%
01/01/27	03/31/27	0.1%	0.0%	24.5%	0.3%	0.0%	48.9%	0.0%	0.0%	26.6%	0.0%
Total											100.0%

Notes:
 (5), (8), (11) are calculated using Unit Statistical Data for PY 2019.
 (3), (6), (9) are from the premium collection special call.
 (12) = [(4) x (5)] + [(7) x (8)] + [(10) x (11)]

VII 000090

VII 000091

Section VII - Profit
Subsection H - Expense Weights
7/1/2023

Section VII - H
Exhibit 1

Cash Flow Weights

Item of Expense Allowance (% of Standard Premium plus ARAP)	Policy Year		Weighted Average
	2018	2019	
(1) Expected Losses	60.61%	57.72%	59.89%
(2) Expected Loss Adjustment Expense (LAE):	11.06%	10.54%	10.93%
(a) Defense and Cost Containment Expense	5.12%	4.88%	5.06%
(b) Adjusting and Other Expense	5.94%	5.66%	5.87%
(3) Expected Losses + Expected LAE [= (1) + (2)]	71.67%	68.26%	70.82%
(4) Fixed Expenses	5.49%	5.46%	5.48%
(a) General Expenses	5.18%	5.16%	5.18%
(b) Miscellaneous and Other Taxes	0.30%	0.30%	0.30%
(5) Variable Expenses [= (5a) + (5b) + (5c)]	20.36%	20.36%	20.36%
(a) Total Acquisition	12.63%	12.63%	12.63%
(i) Commissions	9.15%	9.15%	9.15%
(ii) Other Acquisition	2.48%	2.48%	2.48%
(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	2.15%	2.15%	2.15%
(c) Premium Discount	5.58%	5.58%	5.58%
(6) Total Expenses [= (4) + (5)]	25.85%	25.82%	25.84%

Notes:

- (1): Policy Year 2018 and Policy Year 2019 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 0.183 where 0.183 is the LAE ratio calculated in VI-H, Exhibit 1.
- (2a), (2b): Loss Adjustment Expense split between DCC and AO is $0.463 = 0.084 / 0.183$ and $0.537 = 1 - 0.463$ where 0.084 is three year average ratio of DCC to loss from Section VI-H, Exhibit 1, line (4) and LAE ratio = 0.183 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 2018 Fixed Expenses split between General Expenses and Other Taxes based on \$34,812,779 General Expenses and \$2,019,941 Other Taxes. Policy Year 2019 General Expenses split based on \$36,518,510 General Expenses and \$2,118,912 Other Taxes. See VI-B, Exhibit 1, columns (12) & (13).
- (5a): Section VI-G, Exhibit 1.
- (5b), (5c): Section VI-A, Exhibit 1.
- Weighted average is calculated by giving weights 75% / 25% to PY 2018 / PY 2019 respectively.

VII 000092

Section VII - Profit
 Subsection I - Loss & LAE Flow
 7/1/2023

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)					
07/01/22	09/30/22	0.0000	0.0000	0.0000	0.0000	0.0000
10/01/22	12/31/22	0.0000	0.0000	0.0000	0.0000	0.0000
01/01/23	03/31/23	0.0000	0.0000	0.0000	0.0000	0.0000
04/01/23	06/30/23	0.0000	0.0000	0.0000	0.0000	0.0000
07/01/23	09/30/23	0.2500	0.0494	0.0494	0.1497	0.0577
10/01/23	12/31/23	0.2500	0.0494	0.0494	0.1497	0.0577
01/01/24	03/31/24	0.2500	0.0494	0.0494	0.1497	0.0577
04/01/24	06/30/24	0.2500	0.0494	0.0494	0.1497	0.0577
07/01/24	09/30/24	0.0000	0.0696	0.0696	0.0348	0.0667
10/01/24	12/31/24	0.0000	0.0696	0.0696	0.0348	0.0667
01/01/25	03/31/25	0.0000	0.0696	0.0696	0.0348	0.0667
04/01/25	06/30/25	0.0000	0.0696	0.0696	0.0348	0.0667
07/01/25	09/30/25	0.0000	0.0467	0.0467	0.0234	0.0448
10/01/25	12/31/25	0.0000	0.0467	0.0467	0.0234	0.0448
01/01/26	03/31/26	0.0000	0.0467	0.0467	0.0234	0.0448
04/01/26	06/30/26	0.0000	0.0467	0.0467	0.0234	0.0448
07/01/26	09/30/26	0.0000	0.0292	0.0292	0.0146	0.0280
10/01/26	12/31/26	0.0000	0.0292	0.0292	0.0146	0.0280
01/01/27	03/31/27	0.0000	0.0292	0.0292	0.0146	0.0280
04/01/27	06/30/27	0.0000	0.0292	0.0292	0.0146	0.0280
07/01/27	09/30/27	0.0000	0.0139	0.0139	0.0069	0.0133
10/01/27	12/31/27	0.0000	0.0139	0.0139	0.0069	0.0133
01/01/28	03/31/28	0.0000	0.0139	0.0139	0.0069	0.0133
04/01/28	06/30/28	0.0000	0.0139	0.0139	0.0069	0.0133
07/01/28	09/30/28	0.0000	0.0058	0.0058	0.0029	0.0056
10/01/28	12/31/28	0.0000	0.0058	0.0058	0.0029	0.0056
01/01/29	03/31/29	0.0000	0.0058	0.0058	0.0029	0.0056
04/01/29	06/30/29	0.0000	0.0058	0.0058	0.0029	0.0056
07/01/29	09/30/29	0.0000	0.0032	0.0032	0.0016	0.0030
10/01/29	12/31/29	0.0000	0.0032	0.0032	0.0016	0.0030
01/01/30	03/31/30	0.0000	0.0032	0.0032	0.0016	0.0030
04/01/30	06/30/30	0.0000	0.0032	0.0032	0.0016	0.0030
07/01/30	09/30/30	0.0000	0.0019	0.0019	0.0010	0.0018
10/01/30	12/31/30	0.0000	0.0019	0.0019	0.0010	0.0018
01/01/31	03/31/31	0.0000	0.0019	0.0019	0.0010	0.0018
04/01/31	06/30/31	0.0000	0.0019	0.0019	0.0010	0.0018
07/01/31	09/30/31	0.0000	0.0018	0.0018	0.0009	0.0017
10/01/31	12/31/31	0.0000	0.0018	0.0018	0.0009	0.0017
01/01/32	03/31/32	0.0000	0.0018	0.0018	0.0009	0.0017
04/01/32	06/30/32	0.0000	0.0018	0.0018	0.0009	0.0017
07/01/32	09/30/32	0.0000	0.0012	0.0012	0.0006	0.0011
10/01/32	12/31/32	0.0000	0.0012	0.0012	0.0006	0.0011
01/01/33	03/31/33	0.0000	0.0012	0.0012	0.0006	0.0011
04/01/33	06/30/33	0.0000	0.0012	0.0012	0.0006	0.0011
07/01/33	09/30/33	0.0000	0.0010	0.0010	0.0005	0.0009
10/01/33	12/31/33	0.0000	0.0010	0.0010	0.0005	0.0009
01/01/34	03/31/34	0.0000	0.0010	0.0010	0.0005	0.0009
04/01/34	06/30/34	0.0000	0.0010	0.0010	0.0005	0.0009
07/01/34	09/30/34	0.0000	0.0011	0.0011	0.0005	0.0010
10/01/34	12/31/34	0.0000	0.0011	0.0011	0.0005	0.0010
01/01/35	03/31/35	0.0000	0.0011	0.0011	0.0005	0.0010
04/01/35	06/30/35	0.0000	0.0011	0.0011	0.0005	0.0010
07/01/35	09/30/35	0.0000	0.0011	0.0011	0.0006	0.0011
10/01/35	12/31/35	0.0000	0.0011	0.0011	0.0006	0.0011
01/01/36	03/31/36	0.0000	0.0011	0.0011	0.0006	0.0011
04/01/36	06/30/36	0.0000	0.0011	0.0011	0.0006	0.0011
07/01/36	09/30/36	0.0000	0.0007	0.0007	0.0004	0.0007
10/01/36	12/31/36	0.0000	0.0007	0.0007	0.0004	0.0007
01/01/37	03/31/37	0.0000	0.0007	0.0007	0.0004	0.0007
04/01/37	06/30/37	0.0000	0.0007	0.0007	0.0004	0.0007
07/01/37	09/30/37	0.0000	0.0006	0.0006	0.0003	0.0006
10/01/37	12/31/37	0.0000	0.0006	0.0006	0.0003	0.0006
01/01/38	03/31/38	0.0000	0.0006	0.0006	0.0003	0.0006
04/01/38	06/30/38	0.0000	0.0006	0.0006	0.0003	0.0006
07/01/38	09/30/38	0.0000	0.0007	0.0007	0.0004	0.0007
10/01/38	12/31/38	0.0000	0.0007	0.0007	0.0004	0.0007
01/01/39	03/31/39	0.0000	0.0007	0.0007	0.0004	0.0007
04/01/39	06/30/39	0.0000	0.0007	0.0007	0.0004	0.0007
07/01/39	09/30/39	0.0000	0.0007	0.0007	0.0003	0.0006
10/01/39	12/31/39	0.0000	0.0007	0.0007	0.0003	0.0006
01/01/40	03/31/40	0.0000	0.0007	0.0007	0.0003	0.0006
04/01/40	06/30/40	0.0000	0.0007	0.0007	0.0003	0.0006
07/01/40	09/30/40	0.0000	0.0008	0.0008	0.0004	0.0007
10/01/40	12/31/40	0.0000	0.0008	0.0008	0.0004	0.0007
01/01/41	03/31/41	0.0000	0.0008	0.0008	0.0004	0.0007
04/01/41	06/30/41	0.0000	0.0008	0.0008	0.0004	0.0007
07/01/41	09/30/41	0.0000	0.0008	0.0008	0.0004	0.0008
10/01/41	12/31/41	0.0000	0.0008	0.0008	0.0004	0.0008

VII 000093

Section VII - Profit
 Subsection I - Loss & LAE Flow
 7/1/2023

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)					
01/01/42	03/31/42	0.0000	0.0008	0.0008	0.0004	0.0008
04/01/42	06/30/42	0.0000	0.0008	0.0008	0.0004	0.0008
07/01/42	09/30/42	0.0000	0.0005	0.0005	0.0002	0.0005
10/01/42	12/31/42	0.0000	0.0005	0.0005	0.0002	0.0005
01/01/43	03/31/43	0.0000	0.0005	0.0005	0.0002	0.0005
04/01/43	06/30/43	0.0000	0.0005	0.0005	0.0002	0.0005
07/01/43	09/30/43	0.0000	0.0009	0.0009	0.0004	0.0008
10/01/43	12/31/43	0.0000	0.0009	0.0009	0.0004	0.0008
01/01/44	03/31/44	0.0000	0.0009	0.0009	0.0004	0.0008
04/01/44	06/30/44	0.0000	0.0009	0.0009	0.0004	0.0008
07/01/44	09/30/44	0.0000	0.0013	0.0013	0.0007	0.0013
10/01/44	12/31/44	0.0000	0.0013	0.0013	0.0007	0.0013
01/01/45	03/31/45	0.0000	0.0013	0.0013	0.0007	0.0013
04/01/45	06/30/45	0.0000	0.0013	0.0013	0.0007	0.0013
07/01/45	09/30/45	0.0000	0.0013	0.0013	0.0007	0.0013
10/01/45	12/31/45	0.0000	0.0013	0.0013	0.0007	0.0013
01/01/46	03/31/46	0.0000	0.0013	0.0013	0.0007	0.0013
04/01/46	06/30/46	0.0000	0.0013	0.0013	0.0007	0.0013
07/01/46	09/30/46	0.0000	0.0013	0.0013	0.0007	0.0013
10/01/46	12/31/46	0.0000	0.0013	0.0013	0.0007	0.0013
01/01/47	03/31/47	0.0000	0.0013	0.0013	0.0007	0.0013
04/01/47	06/30/47	0.0000	0.0013	0.0013	0.0007	0.0013
07/01/47	09/30/47	0.0000	0.0013	0.0013	0.0007	0.0013
10/01/47	12/31/47	0.0000	0.0013	0.0013	0.0007	0.0013
01/01/48	03/31/48	0.0000	0.0013	0.0013	0.0007	0.0013
04/01/48	06/30/48	0.0000	0.0013	0.0013	0.0007	0.0013
07/01/48	09/30/48	0.0000	0.0013	0.0013	0.0007	0.0013
10/01/48	12/31/48	0.0000	0.0013	0.0013	0.0007	0.0013
01/01/49	03/31/49	0.0000	0.0013	0.0013	0.0007	0.0013
04/01/49	06/30/49	0.0000	0.0013	0.0013	0.0007	0.0013
07/01/49	09/30/49	0.0000	0.0013	0.0013	0.0007	0.0013
10/01/49	12/31/49	0.0000	0.0013	0.0013	0.0007	0.0013
01/01/50	03/31/50	0.0000	0.0013	0.0013	0.0007	0.0013
04/01/50	06/30/50	0.0000	0.0013	0.0013	0.0007	0.0013
07/01/50	09/30/50	0.0000	0.0013	0.0013	0.0007	0.0013
10/01/50	12/31/50	0.0000	0.0013	0.0013	0.0007	0.0013
01/01/51	03/31/51	0.0000	0.0013	0.0013	0.0007	0.0013
04/01/51	06/30/51	0.0000	0.0013	0.0013	0.0007	0.0013
07/01/51	09/30/51	0.0000	0.0013	0.0013	0.0007	0.0013
10/01/51	12/31/51	0.0000	0.0013	0.0013	0.0007	0.0013
01/01/52	03/31/52	0.0000	0.0013	0.0013	0.0007	0.0013
04/01/52	06/30/52	0.0000	0.0013	0.0013	0.0007	0.0013
07/01/52	09/30/52	0.0000	0.0013	0.0013	0.0007	0.0013
10/01/52	12/31/52	0.0000	0.0013	0.0013	0.0007	0.0013
01/01/53	03/31/53	0.0000	0.0013	0.0013	0.0007	0.0013
04/01/53	06/30/53	0.0000	0.0013	0.0013	0.0007	0.0013
07/01/53	09/30/53	0.0000	0.0013	0.0013	0.0007	0.0013
10/01/53	12/31/53	0.0000	0.0013	0.0013	0.0007	0.0013
01/01/54	03/31/54	0.0000	0.0013	0.0013	0.0007	0.0013
04/01/54	06/30/54	0.0000	0.0013	0.0013	0.0007	0.0013
07/01/54	09/30/54	0.0000	0.0013	0.0013	0.0007	0.0013
10/01/54	12/31/54	0.0000	0.0013	0.0013	0.0007	0.0013
01/01/55	03/31/55	0.0000	0.0013	0.0013	0.0007	0.0013
04/01/55	06/30/55	0.0000	0.0013	0.0013	0.0007	0.0013
07/01/55	09/30/55	0.0000	0.0013	0.0013	0.0007	0.0013
10/01/55	12/31/55	0.0000	0.0013	0.0013	0.0007	0.0013
01/01/56	03/31/56	0.0000	0.0013	0.0013	0.0007	0.0013
04/01/56	06/30/56	0.0000	0.0013	0.0013	0.0007	0.0013
07/01/56	09/30/56	0.0000	0.0013	0.0013	0.0007	0.0013
10/01/56	12/31/56	0.0000	0.0013	0.0013	0.0007	0.0013
01/01/57	03/31/57	0.0000	0.0013	0.0013	0.0007	0.0013
04/01/57	06/30/57	0.0000	0.0013	0.0013	0.0007	0.0013
07/01/57	09/30/57	0.0000	0.0013	0.0013	0.0007	0.0013
10/01/57	12/31/57	0.0000	0.0013	0.0013	0.0007	0.0013
01/01/58	03/31/58	0.0000	0.0013	0.0013	0.0007	0.0013
04/01/58	06/30/58	0.0000	0.0013	0.0013	0.0007	0.0013
(8) Relative Weights			1.0000	0.0845	0.0980	

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) + 0.0845 x (5) + 0.098 x (6)) / (1.000 + 0.0845 + 0.098)
- (8): DCC relative weight = 1.000 x 0.183 x 0.463; AO relative weight = 1.000 x 0.183 x 0.537
 where 0.183 is the LAE factor calculated in Section VI-H, Exhibit 1 and 0.463, 0.537 are the DCC and AO relative weights from Section VI-H, Exhibit 1.

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Section VII - Profit
 Subsection I - Loss & LAE Flow
 7/1/2023

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	7.261	13.77%	13.77%	2.991	33.43%	33.43%	19.75%
24	2.584	38.70%	24.93%	1.471	67.97%	34.53%	27.85%
36	1.629	61.38%	22.68%	1.290	77.53%	9.56%	18.69%
48	1.308	76.45%	15.06%	1.226	81.53%	4.00%	11.70%
60	1.197	83.52%	7.07%	1.196	83.61%	2.07%	5.55%
72	1.157	86.43%	2.91%	1.182	84.59%	0.98%	2.32%
84	1.138	87.86%	1.43%	1.170	85.49%	0.90%	1.27%
96	1.129	88.60%	0.74%	1.158	86.34%	0.84%	0.77%
108	1.119	89.33%	0.73%	1.149	87.01%	0.67%	0.71%
120	1.115	89.69%	0.36%	1.140	87.74%	0.73%	0.47%
132	1.112	89.94%	0.25%	1.131	88.43%	0.69%	0.38%
144	1.107	90.35%	0.42%	1.125	88.88%	0.45%	0.43%
156	1.101	90.84%	0.49%	1.120	89.25%	0.37%	0.45%
168	1.098	91.09%	0.25%	1.116	89.63%	0.38%	0.29%
180	1.097	91.16%	0.07%	1.107	90.29%	0.66%	0.25%
192	1.094	91.39%	0.23%	1.103	90.68%	0.39%	0.28%
204	1.091	91.62%	0.23%	1.098	91.03%	0.35%	0.27%
216	1.088	91.90%	0.27%	1.094	91.41%	0.38%	0.31%
228	1.085	92.13%	0.23%	1.088	91.93%	0.52%	0.32%
240	1.084	92.21%	0.08%	1.082	92.38%	0.45%	0.19%
252	1.083	92.36%	0.14%	1.073	93.19%	0.80%	0.35%
264			0.55%			0.49%	0.53%
276			0.55%			0.49%	0.53%
288			0.55%			0.49%	0.53%
300			0.55%			0.49%	0.53%
312			0.55%			0.49%	0.53%
324			0.55%			0.49%	0.53%
336			0.55%			0.49%	0.53%
348			0.55%			0.49%	0.53%
360			0.55%			0.49%	0.53%
372			0.55%			0.49%	0.53%
384			0.55%			0.49%	0.53%
396			0.55%			0.49%	0.53%
408			0.55%			0.49%	0.53%
420			0.55%			0.49%	0.53%
Total			100.00%			100.00%	100.00%

Notes:

(2), (5): Section II - E, Exhibit 1, Page 1.

(8) = (4) x 69.58% + (7) x 30.42%, where 69.58% and 30.42% 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
 7/1/2023

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	5.01%	2.25%	21.00%	1.77%
Governments	11.70%	3.28%	21.00%	2.59%
States & Territories	5.81%	2.43%	5.25%	2.30%
Special Revenue	16.04%	2.18%	5.25%	2.07%
Industrials	38.84%	4.22%	21.00%	3.33%
Common Stocks	12.82%	11.17%	14.38%	9.56%
Real Estate	0.88%	10.33%	21.00%	8.16%
Mortgage Loans	1.82%	4.84%	21.00%	3.82%
Preferred Stocks	0.38%	5.84%	13.13%	5.07%
Other Invested Assets	6.70%	9.72%	13.13%	8.44%
(6) Total	100.00%	4.91%	16.42%	4.10%
(7) Investment Expenses		0.21%	21.00%	0.17%
(8) Portfolio Rate of Return		4.70%		3.94%

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.

11.17% = average (9.03% + 2.25%, 8.04% + 3.23%, 7.46% + 3.51%)

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 = 14.02%, using CAPM three horizon methodology from Section VII-E, Exhibit 3, page 1 with beta = 1.34874317760382, 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 = 0.25×0.21

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 Assets = Tax rate for Preferred stock = $(0.50 \times 0.21) + (0.50 \times 0.25 \times 0.21)$

(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
7/1/2023

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	5.01%
Bonds:	72.39%
Governments	11.70%
States & Territories	5.81%
Special Revenue	16.04%
Industrials	38.84%
Common Stocks	12.82%
Real Estate	0.88%
Mortgage Loans	1.82%
Preferred Stocks	0.38%
Other Invested Assets	6.70%

(3) Total 100.00%

Notes:

Proportion of each asset class is from page 3. The Bond share in total is 72.39%.

This is allocated to the following subcategories:

Governments, States & Territories, Special Revenue and Industrials
by multiplying 72.39% 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)	595	0	106	0	0	7	5	713	83.48%	0.00%	14.92%	0.00%	0.00%	0.94%	0.67%
Travelers Group (G)	68,942	41	1,708	1,236	0	1,433	4,012	77,372	89.11%	0.05%	2.21%	1.60%	0.00%	1.85%	5.19%
Hartford Insurance Group (G)	30,809	292	1,086	316	3,928	1,398	5,106	42,935	71.76%	0.68%	2.53%	0.74%	9.15%	3.26%	11.89%
Chubb INA Group (G)	55,618	20	3,697	169	0	-1,123	2,410	60,791	91.49%	0.03%	6.08%	0.28%	0.00%	-1.85%	3.96%
Liberty Mutual Insurance Companies (G)	59,177	6	10,815	239	2,661	3,622	13,610	90,129	65.66%	0.01%	12.00%	0.27%	2.95%	4.02%	15.10%
Zurich Insurance US PC Group (G)	18,160	0	1,162	1,195	0	228	1,511	22,257	81.59%	0.00%	5.22%	5.37%	0.00%	1.02%	6.79%
Berkshire Hathaway Insurance Group (G)	10,029	10,920	328,018	155	1	76,781	67,263	493,168	2.03%	2.21%	66.51%	0.03%	0.00%	15.57%	13.64%
Charter Insurance Group (G)	94	0	48	0	0	22	1	165	57.27%	0.00%	29.14%	0.00%	0.00%	13.21%	0.38%
American International Group (G)	41,093	9	574	0	5,570	1,753	5,976	54,974	74.75%	0.02%	1.04%	0.00%	10.13%	3.19%	10.87%
Old Republic Insurance Group (G)	7,817	1	3,251	0	0	273	10	11,351	68.86%	0.01%	28.64%	0.00%	0.00%	2.40%	0.09%
W. R. Berkley Insurance Group (G)	13,747	235	3,278	450	53	574	2,545	20,881	65.83%	1.13%	15.70%	2.15%	0.25%	2.75%	12.19%
AmTrust Group (G)	5,891	8	169	4	0	529	407	7,008	84.07%	0.11%	2.41%	0.06%	0.00%	7.55%	5.81%
CNA Insurance Companies (G)	36,256	796	1,030	12	957	1,282	2,084	42,417	85.47%	1.88%	2.43%	0.03%	2.28%	3.02%	4.91%
Hanover Ins Group Prop & Cas Cos (G)	7,193	13	704	47	178	21	589	8,246	82.25%	0.15%	8.05%	0.53%	2.04%	6.74%	6.74%
MEMIC Group (G)	1,141	0	224	0	0	61	29	1,454	78.46%	0.00%	15.39%	0.00%	0.00%	4.18%	1.98%
QBE North America Insurance Group (G)	2,758	0	59	52	0	1,025	397	4,289	64.29%	0.00%	1.37%	1.20%	0.00%	23.89%	9.24%
Arbella Insurance Group (G)	1,385	0	249	0	0	64	3	1,700	81.43%	0.00%	14.66%	0.00%	0.00%	3.75%	0.15%
Selective Insurance Group (G)	6,179	11	204	0	114	379	435	7,321	84.40%	0.15%	2.78%	0.00%	1.55%	5.18%	5.94%
Utica National Insurance Group (G)	2,799	0	458	19	3	12	12	3,302	84.76%	0.00%	13.86%	0.56%	0.08%	0.37%	0.37%
Fairfax Financial (USA) Group (G)	4,834	351	4,673	412	1,493	10,370	2,493	24,626	19.63%	1.43%	18.98%	1.67%	6.06%	42.11%	10.12%
Arch Insurance Group (G)	9,507	14	276	0	28	1,231	261	11,317	84.00%	0.13%	2.44%	0.00%	0.25%	10.88%	2.30%
Progressive Insurance Group (G)	40,309	289	5,843	609	2	632	17	47,701	84.50%	0.61%	12.25%	1.28%	0.01%	1.33%	0.04%
AU Holding Company Group (G)	97	0	203	144	0	934	490	1,869	5.22%	0.02%	10.85%	7.70%	0.00%	50.00%	26.21%
Sentry Insurance Group (G)	8,619	0	2,298	149	0	60	1,725	12,850	67.08%	0.00%	17.88%	1.16%	0.00%	0.46%	13.42%
Starr International Group (G)	4,291	133	1,473	0	0	629	267	6,793	63.17%	1.95%	21.69%	0.00%	0.00%	9.26%	3.93%
Federated Mutual Group (G)	5,098	51	1,795	60	0	161	456	7,622	66.89%	0.67%	23.55%	0.79%	0.00%	2.12%	5.99%
Norfolk & Dedham Group Pool (G)	398	0	177	15	0	308	106	726	54.81%	0.00%	24.42%	2.06%	0.00%	4.11%	14.60%
AmeriTrust Group (G)	1,492	0	106	6	0	244	42	1,890	78.95%	0.00%	5.60%	0.32%	0.00%	12.91%	2.23%
Great American P & C Insurance Group (G)	8,530	433	452	39	677	1,718	1,727	13,576	62.83%	3.19%	3.33%	0.29%	4.99%	12.65%	12.72%
EMC Insurance Companies (G)	3,097	117	1,114	141	0	133	112	4,713	65.71%	2.48%	23.63%	3.00%	0.00%	2.82%	2.37%
American National Prop & Cas Group (G)	2,610	0	3	14	0	666	6	3,298	79.15%	0.00%	0.08%	0.41%	0.00%	20.19%	0.17%
American Family Insurance Group (G)	16,833	0	3,853	222	237	764	2,144	24,053	69.98%	0.00%	16.02%	0.92%	0.99%	3.17%	8.91%
Service Insurance Group (G)	207	10	27	0	4	34	19	301	68.73%	3.21%	8.92%	0.00%	1.44%	11.34%	6.36%
Tokio Marine US PC Group (G)	21,783	220	1,266	143	3,716	810	835	28,773	75.70%	0.77%	4.40%	0.50%	12.92%	2.82%	2.90%
Arrow Mutual Liability Insurance Company	25	0	16	0	0	3	0	44	57.00%	0.00%	35.29%	0.05%	0.00%	7.31%	0.36%
Markel Corporation Group (G)	8,743	0	3,571	13	0	1,252	557	14,135	61.85%	0.00%	25.26%	0.10%	0.00%	8.86%	3.94%
Employers Insurance Group (G)	2,256	0	319	0	0	73	39	2,688	83.95%	0.00%	11.89%	0.00%	0.00%	2.72%	1.45%
Skyward Specialty Insurance Group (G)	500	18	94	0	52	206	99	968	51.60%	1.87%	9.66%	0.00%	5.37%	21.27%	10.22%
Group 1001 Property and Casualty Group (G)	395	0	14	0	19	83	13	525	75.36%	0.00%	2.61%	0.00%	3.71%	15.76%	2.57%
Electric Insurance Company	618	0	10	17	0	20	6	670	92.20%	0.00%	1.46%	2.49%	0.00%	2.97%	0.87%
Everest Re U.S. Group (G)	12,329	265	743	0	0	1,052	2,531	16,919	72.87%	1.57%	4.39%	0.00%	0.00%	6.22%	14.96%
Core Specialty Insurance Group (G)	1,598	0	1	4	0	236	0	1,839	86.88%	0.00%	0.04%	0.24%	0.00%	12.83%	0.00%
Merchants Insurance Group (G)	652	12	70	0	0	56	0	791	82.47%	1.54%	8.82%	0.00%	0.00%	7.14%	0.04%
XL Reinsurance America Group (G)	10,771	0	0	0	161	722	1,100	12,754	84.46%	0.00%	0.00%	0.00%	1.26%	5.66%	8.63%
Central Insurance Companies (G)	1,315	2	366	36	0	151	3	1,873	70.23%	0.13%	19.54%	1.90%	0.00%	8.05%	0.15%
Sompo Holdings US Group (G)	6,648	3	122	12	0	1,877	302	8,964	74.17%	0.03%	1.36%	0.14%	0.00%	20.94%	3.37%
Benchmark Insurance Group (G)	465	0	1	6	0	100	0	573	81.29%	0.04%	0.13%	1.07%	0.00%	17.47%	0.00%
The Cincinnati Insurance Companies (G)	8,204	440	6,331	8	0	805	515	16,303	50.32%	2.70%	38.84%	0.05%	0.00%	4.94%	3.16%
Argo Group (G)	3,219	1	35	0	0	380	241	3,875	83.06%	0.02%	0.90%	0.01%	0.00%	9.80%	6.21%
AF Group (G)	2,935	0	281	104	0	300	226	3,846	76.31%	0.00%	7.31%	2.70%	0.00%	7.79%	5.89%
Nationwide Group (G)	21,260	50	7,753	371	1,985	573	6,271	38,262	55.56%	0.13%	20.26%	0.97%	5.19%	1.50%	16.39%
Pharmacists Mutual Insurance Group (G)	278	6	31	25	0	11	7	358	77.64%	1.64%	8.78%	6.84%	0.00%	3.18%	1.91%
Coaction Specialty Insurance Group (G)	1,767	1	0	0	0	77	100	1,946	90.83%	0.07%	0.00%	0.00%	0.00%	3.95%	5.15%
Church Mutual Insurance Group (G)	1,369	0	321	11	0	103	107	1,911	71.65%	0.00%	16.80%	0.59%	0.00%	5.38%	5.58%
Intact US Insurance Group (G)	1,997	0	731	0	2	179	19	2,927	68.22%	0.00%	24.98%	0.00%	0.06%	6.10%	0.63%
Work First Casualty Company	56	0	2	2	1	12	6	79	70.65%	0.00%	2.89%	1.96%	1.78%	15.20%	7.52%
MS&AD US Insurance Group (G)	1,933	0	132	18	0	115	4	2,201	87.80%	0.00%	5.99%	0.82%	0.00%	5.22%	0.18%

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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)
Amerisure Companies (G)	2,111	23	232	12	0	75	279	2,733	77.23%	0.85%	8.50%	0.43%	0.00%	2.76%	10.22%
GuideOne Insurance Companies (G)	1,063	3	18	12	81	93	76	1,347	78.96%	0.22%	1.37%	0.88%	6.01%	6.89%	5.66%
James River Group (G)	329	48	43	0	0	330	44	794	41.39%	6.00%	5.46%	0.00%	0.00%	41.59%	5.56%
Premier Group Insurance Company	52	0	0	0	0	4	0	55	93.65%	0.00%	0.00%	0.00%	0.00%	6.35%	0.00%
Allianz US PC Insurance Companies (G)	9,815	0	160	0	618	414	532	11,538	85.07%	0.00%	1.38%	0.00%	5.35%	3.58%	4.61%
ICW Pool (G)	2,548	21	940	31	10	159	42	3,752	67.92%	0.57%	25.07%	0.84%	0.25%	4.24%	1.11%
Brotherhood Mutual Insurance Company	382	0	212	44	0	59	65	762	50.06%	0.05%	27.81%	5.79%	0.00%	7.79%	8.51%
American Contractors Insurance Group (G)	351	2	65	0	0	17	99	534	65.81%	0.31%	12.12%	0.00%	0.00%	3.17%	18.60%
ProAssurance Group (G)	3,904	17	32	36	0	219	339	4,547	85.88%	0.36%	0.71%	0.79%	0.00%	4.81%	7.45%
HDI/Talanx US PC Group (G)	1,005	0	13	1	0	51	0	1,070	93.96%	0.00%	1.20%	0.05%	0.00%	4.80%	0.00%
RLI Group (G)	2,260	0	939	29	0	86	56	3,370	67.06%	0.00%	27.86%	0.86%	0.00%	2.55%	1.67%
Cherokee Insurance Company	293	81	236	0	0	1	82	694	42.26%	11.71%	34.04%	0.00%	0.00%	0.16%	11.83%
IAT Insurance Group (G)	952	53	961	0	0	324	37	2,328	40.92%	2.27%	41.28%	0.00%	0.00%	13.92%	1.61%
AMERISAFE Insurance Group (G)	854	0	50	4	0	53	0	962	88.81%	0.00%	5.20%	0.46%	0.00%	5.52%	0.00%
WCF Insurance Group (G)	1,643	0	314	89	128	130	143	2,446	67.16%	0.00%	12.83%	3.63%	5.24%	5.32%	5.83%
State Farm Group (G)	112,584	282	111,282	369	978	2,941	6,778	235,214	47.86%	0.12%	47.31%	0.16%	0.42%	1.25%	2.88%
Samsung F & M Insurance Co, Ltd USB	94	0	0	0	0	19	0	114	83.19%	0.00%	0.00%	0.00%	0.00%	16.81%	0.00%
Farmers Insurance Group (G)	22,811	28	893	596	283	443	164	25,219	90.45%	0.11%	3.54%	2.36%	1.12%	1.76%	0.65%
Penn National Insurance Companies (G)	1,400	1	217	24	0	65	0	1,707	82.01%	0.06%	12.69%	1.42%	0.00%	3.83%	0.00%
West Bend Mutual Insurance Company	2,262	20	391	53	0	96	368	3,190	70.93%	0.63%	12.24%	1.66%	0.00%	3.00%	11.55%
National American Insurance Company	217	0	32	5	0	20	10	285	76.39%	0.00%	11.22%	1.77%	0.00%	7.01%	3.61%
The Gray Insurance Group (G)	66	5	195	17	2	56	47	388	17.10%	1.30%	50.25%	4.42%	0.42%	14.44%	12.07%
Munich-American Holding Corp Companies (G)	17,483	0	204	169	0	891	932	19,680	88.84%	0.00%	1.04%	0.86%	0.00%	4.53%	4.73%

	% Bonds	% Preferred Stocks	% Common Stocks	% Real Estate	% Mortgage Loans	% Cash and Short Term Investments	% Other Invested Assets
(17): Premium Weighted Asset Distribution	72.39%	0.38%	12.82%	0.88%	1.82%	5.01%	6.70%

Notes:
 Source: A.M. Best's Global Insurance Database for all Massachusetts Workers' Compensation Group Companies, 2021 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.

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VII 000099

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	7.58%	0.76%	2.73%	5.64%
3	5.06%	2.47%	8.74%	24.27%
7	2.62%	1.98%	5.19%	19.32%
15	0.46%	2.60%	3.65%	3.04%
25	0.44%	0.22%	1.85%	1.39%
Total	16.16%	8.02%	22.16%	53.66%

As of	Term to Maturity in years	Yield Data			
		Governments	States and Territories	Special Revenue	Industrials
Jul-22	0.5	2.87%	1.26%	1.30%	3.13%
	3	3.03%	1.75%	1.60%	3.77%
	7	2.97%	2.20%	1.76%	4.21%
	15	3.13%	2.81%	2.35%	4.74%
	25	3.23%	3.03%	3.00%	4.84%
Aug-22	0.5	3.15%	1.64%	1.67%	3.26%
	3	3.23%	1.97%	1.87%	3.92%
	7	2.98%	2.12%	1.83%	4.19%
	15	3.13%	2.66%	2.37%	4.70%
	25	3.24%	2.97%	2.99%	4.79%
Sep-22	0.5	3.71%	2.33%	2.34%	3.79%
	3	3.88%	2.69%	2.62%	4.64%
	7	3.64%	2.76%	2.56%	4.90%
	15	3.67%	3.18%	2.95%	5.32%
	25	3.69%	3.51%	3.42%	5.31%
Jul-22	All	Weighted Yields			
		2.95%	2.19%	1.84%	3.95%
		3.15%	2.23%	2.01%	4.02%
		3.75%	2.85%	2.70%	4.70%
		3.28%	2.43%	2.18%	4.22%

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-22, States and Territories:

$$2.19 = (1.26 \times 0.76 + 1.75 \times 2.47 + 2.2 \times 1.98 + 2.81 \times 2.6 + 3.03 \times 0.22) / 8.02$$

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 Page 2

Calculation of Yield Data

Term to Maturity in Years	Jul-22	Aug-22	Sep-22	Formulas used to derive the yields (reference to data on page 3)
Governments				
0.5	2.87%	3.15%	3.71%	=(4)
3	3.03%	3.23%	3.88%	=(7)
7	2.97%	2.98%	3.64%	=(9)
10	2.90%	2.90%	3.52%	=(10)
20	3.35%	3.35%	3.82%	=(11)
30	3.10%	3.13%	3.56%	=(12)
States and Territories				
0.5	1.26%	1.64%	2.33%	=(4) + 9.5/9.0 x [(20) - (5)] - 0.5/9.0 x [(21) - (10)]
3	1.75%	1.97%	2.69%	=(7) + 7.0/9.0 x [(20) - (5)] + 2.0/9.0 x [(21) - (10)]
7	2.20%	2.12%	2.76%	=(9) + 1.0/3.0 x [(20) - (5)] + 2.0/3.0 x [(21) - (10)]
10	2.52%	2.34%	2.88%	=(21)
20	3.10%	2.99%	3.49%	=(11) + 0.5 x [(21) - (10)] + 0.5 x [(22) - (12)]
30	2.97%	2.96%	3.54%	=(22)
Special Revenue				
0.5	1.30%	1.67%	2.34%	=(4) + 29.5/29.0 x [(20) - (5)] - 0.5/29.0 x [(19) - (12)]
3	1.60%	1.87%	2.62%	=(7) + 27.0/29.0 x [(20) - (5)] + 2.0/29.0 x [(19) - (12)]
7	1.76%	1.83%	2.56%	=(9) + 23.0/29.0 x [(20) - (5)] + 6.0/29.0 x [(19) - (12)]
10	1.85%	1.90%	2.58%	=(10) + 20.0/29.0 x [(20) - (5)] + 9.0/29.0 x [(19) - (12)]
20	2.85%	2.85%	3.32%	=(11) + 10.0/29.0 x [(20) - (5)] + 19.0/29.0 x [(19) - (12)]
30	3.15%	3.14%	3.51%	=(19)
Industrial				
0.5	3.13%	3.26%	3.79%	=(4) + 18.0/21.0 x [(1) - (3)] + 3.0/21.0 x [(14) - (6)]
3	3.77%	3.92%	4.64%	=(7) + 2.0/3.0 x [(14) - (6)] + 1.0/3.0 x [(15) - (8)]
7	4.21%	4.19%	4.90%	=(9) + 3.0/5.0 x [(15) - (8)] + 2.0/5.0 x [(16) - (10)]
10	4.52%	4.49%	5.18%	=(16)
20	4.97%	4.92%	5.46%	=(11) + 1.0/2.0 x [(16) - (10)] + 1.0/2.0 x [(17) - (12)]
30	4.71%	4.67%	5.17%	=(17)

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Section VII - Profit
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 Exhibit 2
 Page 3

Yield Data

	Jul-22	Aug-22	Sep-22	Average
FEDERAL RESERVE STATISTICAL RELEASE				
Commercial Paper				
(1) 1-month	2.03%	2.38%	2.79%	2.40%
(1) 3-month	2.50%	2.76%	3.21%	2.82%
U.S. Govt Securities - Secondary Market				
Treasury Constant Maturities				
(2) 1-month	1.85%	2.28%	2.61%	2.25%
(3) 3-month	2.30%	2.72%	3.22%	2.75%
(4) 6-month	2.87%	3.15%	3.71%	3.24%
(5) 1-year	3.02%	3.28%	3.89%	3.40%
(6) 2-year	3.04%	3.25%	3.86%	3.38%
(7) 3-year	3.03%	3.23%	3.88%	3.38%
(8) 5-year	2.96%	3.03%	3.70%	3.23%
(9) 7-year	2.97%	2.98%	3.64%	3.20%
(10) 10-year	2.90%	2.90%	3.52%	3.11%
(11) 20-year	3.35%	3.35%	3.82%	3.51%
(12) 30-year	3.10%	3.13%	3.56%	3.26%
YAHOO				
(13) Preferred Stock	5.66%	5.44%	6.40%	5.84%
US DEPARTMENT OF THE TREASURY				
HQM Corporate Bond Yield Curve Par Yields				
(14) 2-year	3.66%	3.81%	4.50%	3.99%
(15) 5-year	3.95%	3.99%	4.69%	4.21%
(16) 10-year	4.52%	4.49%	5.18%	4.73%
(17) 30-year	4.71%	4.67%	5.17%	4.85%
VALUE LINE INVESTMENT SURVEY (Part II)				
Bond Buyer Indexes				
(18) 20-Bond Index (GOs)	3.40%	3.36%	3.77%	3.51%
(19) Calculated 30-Bond Index (= (18) x [(12) / (11)])	3.15%	3.14%	3.51%	3.27%
General Obligation Bonds (GOs)				
(20) 1-year Aaa	1.48%	1.82%	2.55%	1.95%
(21) 10-year Aaa	2.52%	2.34%	2.88%	2.58%
(22) 25/30-year Aaa	2.97%	2.96%	3.54%	3.15%
FEDERAL RESERVE ECONOMIC DATA				
(23) 15-Year Fixed Rate Mortgage	4.61%	4.56%	5.35%	4.84%

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 Pretax Return on Other Assets

Other Asset Type (1)	Allocation by Other Asset Type (2)	Investment Categories				Subtotal (7)
		Hedge Fund (3)	Private Equity (4)	Fixed Income (5)	Real Estate (6)	
Joint Venture, LLCs: Other	2.718980%	1				
Joint Venture, LLCs: Common Stock	1.319090%		1			
Joint Venture, LLCs: Real Estate	1.048790%				1	
Other Assets	0.980987%					
Noncollateral Loans	0.324292%			1		
Collateral Loans	0.152451%			1		
Joint Venture, LLCs: Fixed Income, NAIC Designation Not Assigned by SVO	0.088240%			1		
Surplus Debentures	0.087168%			1		
Non-Registered Private Funds: Bonds, NAIC Designation Not Assigned by SVO	0.062640%			1		
Nonguaranteed Federal Low-Income Housing Tax Credit	0.036039%				1	
Joint Venture, LLCs: Fixed Income, NAIC Designation Assigned by SVO	0.024482%			1		
Non-Registered Private Funds: Other Fixed Income	0.023011%			1		
Non-Registered Private Funds: Mortgage Loans	0.014641%			1		
Non-Guaranteed State Low-Income Housing Tax Credit	0.013474%				1	
Oil and Gas Production	0.007160%		1			
Joint Venture, LLCs: Mortgage Loans	0.005350%			1		
Non-Registered Private Funds: Bonds, NAIC Designation Assigned by SVO	0.005290%			1		
Mineral Rights	0.000642%		1			
Other Low-Income Housing Tax Credit	0.000083%				1	
Guaranteed Federal Low-Income Housing Tax Credit	0.000032%				1	
Transportation Equipment	0.000008%		1			
Guaranteed State Low-Income Housing Tax Credit	0.000000%				1	
Total	6.91%	2.72%	1.33%	0.79%	1.10%	5.93%

(8) Adjusted Total (remove Other Assets and Uncategorized)	3.17%	1.55%	0.92%	1.28%	6.91%
(9) Allocation by Category	45.84%	22.37%	13.28%	18.52%	100.00%

(10) Projected Return	8.52%	14.71%	4.58%	10.33%
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(11) Pretax Return on Other Assets	9.72%
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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 x (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 8/31/2022.
 $HF = 8.52\% = 11.17\% + (7.19\% - 9.84\%)$, where 11.17% is the Common Stock pretax return from Section VII-J, Exhibit 1, page 1,
7.19% is the Credit Suisse Hedge Fund average return and 9.84% 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 12/31/2021.
 $PE = 14.71\% = 11.17\% + (14.69\% - 11.15\%)$, where 11.17% is the Common Stock pretax return from Section VII-J, Exhibit 1, page 1,
14.69% is the US Private Equity Index average return from Cambridge Associates and 11.15% 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.
 $FI = 4.58\% = \text{average} (5.49\%, 3.4\%, 4.84\%)$, where 5.49%, is the three month (July-Sep 2021) average return of High Yield Corporate Bond ETF (HYG),
3.4% is the Investment Grade Corporate Bond ETF (LQD) from Yahoo Finance and 4.84% 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 = 14.02%, using CAPM three horizon methodology from Section VII-E, Exhibit 3, page 1 with beta = 1.21,
as reported in Demodaran Online for REIT sector.

(11) = Sum [(9) x (10)]

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Section VII - Profit
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Section VII - J
 Exhibit 3
 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	7.53%	0.75%	2.71%	5.60%	0.06%	16.67%
3	5.04%	2.46%	8.69%	24.12%	0.22%	40.52%
7.5	2.60%	1.97%	5.16%	19.21%	0.14%	29.09%
15	0.46%	2.58%	3.62%	3.02%	0.02%	9.70%
25	0.44%	0.22%	1.84%	1.38%	0.14%	4.02%
Total	16.07%	7.98%	22.03%	53.35%	0.58%	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	7.58%	0.76%	2.73%	5.64%	16.70%
3	5.06%	2.47%	8.74%	24.27%	40.54%
7.5	2.62%	1.98%	5.19%	19.32%	29.12%
15	0.46%	2.60%	3.65%	3.04%	9.74%
25	0.44%	0.22%	1.85%	1.39%	3.91%
Total	16.16%	8.02%	22.16%	53.66%	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)	0.72%	0.30%	0.74%	0.17%	0.00%	0.41%	1.36%	0.96%	0.70%	0.00%	4.84%	18.12%	8.52%	3.21%	1.33%
Travelers Group (G)	1.16%	1.63%	4.38%	0.13%	0.00%	0.84%	3.76%	7.13%	19.73%	0.35%	1.06%	2.63%	3.86%	10.14%	1.45%
Hartford Insurance Group (G)	0.76%	6.55%	4.71%	0.60%	0.94%	0.08%	0.33%	0.25%	0.80%	0.70%	0.82%	2.74%	2.74%	5.37%	8.81%
Chubb INA Group (G)	1.11%	2.96%	1.28%	0.77%	0.58%	1.01%	2.85%	0.15%	0.16%	0.10%	7.36%	17.79%	6.82%	2.47%	0.88%
Liberty Mutual Insurance Companies (G)	1.94%	12.78%	6.06%	0.42%	0.52%	0.42%	2.56%	5.04%	0.51%	0.42%	2.09%	7.37%	6.05%	2.66%	0.65%
Zurich Insurance US PC Group (G)	6.38%	14.67%	5.89%	2.84%	2.72%	0.21%	1.94%	1.16%	0.30%	0.37%	1.57%	6.37%	4.76%	3.24%	4.29%
Berkshire Hathaway Insurance Group (G)	92.92%	2.52%	0.04%	0.03%	0.06%	0.01%	0.02%	0.00%	0.00%	0.00%	0.05%	0.06%	0.03%	0.01%	0.00%
Charter Insurance Group (G)	0.00%	0.00%	0.58%	0.00%	0.00%	7.31%	10.16%	0.65%	1.30%	0.30%	5.80%	13.85%	2.71%	2.99%	0.05%
American International Group (G)	0.62%	5.21%	0.65%	0.27%	0.86%	0.68%	2.07%	0.47%	0.44%	0.01%	2.87%	10.26%	3.34%	2.07%	0.42%
Old Republic Insurance Group (G)	2.46%	7.21%	4.36%	0.00%	0.00%	0.27%	6.66%	0.48%	0.00%	0.00%	0.77%	5.78%	1.18%	0.00%	0.00%
W. R. Berkley Insurance Group (G)	1.22%	8.25%	0.20%	0.02%	0.00%	0.25%	2.16%	1.38%	0.38%	0.00%	3.69%	10.59%	7.10%	1.44%	0.91%
AmTrust Group (G)	1.81%	2.85%	0.46%	0.01%	0.00%	0.18%	0.21%	0.30%	0.00%	0.00%	1.91%	4.53%	1.80%	0.65%	0.05%
CNA Insurance Companies (G)	2.65%	0.65%	0.21%	0.00%	0.15%	0.63%	1.94%	2.75%	2.12%	0.77%	2.32%	7.98%	9.27%	4.26%	1.19%
Hanover Ins Group Prop & Cas Cos (G)	0.26%	1.56%	1.70%	0.25%	0.26%	0.22%	0.99%	1.78%	1.91%	0.00%	3.16%	7.01%	8.45%	5.42%	1.51%
MEMIC Group (G)	0.38%	2.69%	0.89%	0.79%	0.01%	0.22%	3.11%	3.59%	1.85%	0.44%	4.18%	12.66%	9.03%	4.27%	3.43%
QBE North America Insurance Group (G)	17.95%	2.67%	0.24%	1.42%	1.24%	0.61%	1.62%	1.02%	0.05%	0.00%	0.45%	2.00%	1.15%	0.42%	0.02%
Arbella Insurance Group (G)	0.47%	3.02%	1.07%	0.00%	0.00%	0.44%	0.99%	10.53%	0.67%	0.00%	1.46%	12.67%	16.92%	1.93%	0.00%
Selective Insurance Group (G)	0.53%	0.17%	0.59%	0.02%	0.08%	0.68%	2.33%	0.44%	0.03%	0.19%	3.33%	11.90%	9.00%	2.03%	0.40%
Utica National Insurance Group (G)	0.73%	1.63%	0.62%	0.15%	0.09%	0.07%	0.40%	0.36%	0.00%	0.00%	3.36%	12.10%	7.30%	4.05%	0.76%
Fairfax Financial (USA) Group (G)	76.17%	6.79%	0.20%	0.04%	0.01%	0.08%	0.34%	0.00%	0.00%	0.00%	0.38%	0.12%	0.02%	1.10%	0.02%
Arch Insurance Group (G)	0.58%	10.53%	8.96%	0.02%	0.00%	0.02%	0.18%	0.26%	0.00%	0.00%	0.20%	1.61%	1.59%	0.18%	0.10%
Progressive Insurance Group (G)	3.15%	26.48%	8.75%	0.00%	0.00%	0.34%	1.47%	0.92%	0.00%	0.00%	0.26%	1.00%	1.85%	0.08%	0.00%
AU Holding Company Group (G)	32.82%	13.76%	0.22%	0.01%	0.00%	0.50%	1.23%	0.90%	0.30%	0.19%	2.52%	32.41%	3.12%	2.06%	0.38%
Sentry Insurance Group (G)	1.74%	4.38%	3.93%	4.92%	1.12%	0.34%	2.07%	2.20%	0.27%	0.00%	1.38%	8.66%	10.17%	6.45%	0.86%
Starr International Group (G)	1.25%	3.58%	1.07%	0.00%	0.00%	0.97%	3.96%	0.18%	0.22%	0.00%	5.03%	7.90%	1.61%	0.03%	0.00%
Federated Mutual Group (G)	0.17%	1.03%	0.53%	0.22%	0.00%	1.65%	5.84%	3.49%	0.30%	0.00%	2.22%	10.59%	6.30%	1.99%	0.22%
Norfolk & Dedham Group Pool (G)	0.79%	1.52%	3.67%	0.01%	0.00%	0.25%	1.26%	0.00%	0.00%	0.00%	9.09%	24.46%	16.70%	3.88%	0.30%
AmeriTrust Group (G)	0.25%	0.45%	0.05%	0.00%	0.00%	0.27%	1.39%	1.78%	0.09%	0.00%	1.30%	6.09%	4.48%	0.57%	0.10%
Great American P & C Insurance Group (G)	0.49%	5.77%	0.11%	0.01%	0.02%	0.99%	0.78%	0.16%	0.13%	0.00%	3.00%	6.87%	5.98%	0.98%	1.66%
EMC Insurance Companies (G)	1.22%	2.20%	1.38%	0.12%	0.02%	0.26%	6.37%	0.79%	0.80%	0.00%	2.21%	5.58%	6.57%	27.78%	0.79%
American National Prop & Cas Group (G)	0.00%	0.53%	0.00%	0.00%	0.17%	0.62%	8.41%	5.48%	0.38%	0.00%	0.24%	2.79%	2.21%	0.36%	0.00%
American Family Insurance Group (G)	1.15%	3.97%	1.75%	0.03%	0.08%	0.62%	3.22%	3.46%	0.85%	0.00%	3.35%	12.53%	12.54%	1.36%	0.15%
Service Insurance Group (G)	3.04%	6.43%	0.78%	0.00%	0.00%	0.00%	0.08%	0.14%	0.00%	0.00%	2.44%	5.22%	1.10%	0.37%	0.05%
Tokio Marine US PC Group (G)	0.43%	1.11%	0.61%	0.75%	0.18%	0.36%	2.79%	2.39%	3.08%	0.83%	3.11%	9.57%	9.53%	7.93%	6.28%
Arrow Mutual Liability Insurance Company	17.76%	24.66%	13.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Markel Corporation Group (G)	4.53%	21.54%	4.66%	0.28%	0.00%	1.15%	14.76%	6.87%	2.82%	0.00%	2.64%	15.58%	12.55%	4.37%	0.44%
Employers Insurance Group (G)	0.33%	2.59%	1.20%	0.05%	0.23%	1.27%	4.43%	0.99%	0.00%	0.00%	3.86%	15.35%	4.80%	2.09%	0.87%
Skyward Specialty Insurance Group (G)	2.16%	10.93%	1.11%	0.48%	0.04%	0.15%	0.20%	1.47%	0.89%	0.00%	2.27%	6.70%	6.84%	4.20%	0.23%
Group 1001 Property and Casualty Group (G)	0.27%	7.30%	0.38%	0.00%	0.00%	0.88%	0.46%	1.04%	0.00%	0.00%	1.03%	1.66%	9.71%	0.15%	3.13%
Electric Insurance Company	0.69%	2.71%	0.14%	0.00%	0.00%	0.01%	0.02%	0.00%	0.00%	0.00%	0.95%	1.60%	1.40%	0.25%	0.02%
Everest Re U.S. Group (G)	3.83%	7.48%	3.75%	0.20%	0.06%	0.10%	0.19%	0.17%	0.30%	0.09%	2.84%	5.88%	2.38%	1.99%	1.78%
Core Specialty Insurance Group (G)	9.64%	3.30%	1.70%	0.53%	0.07%	0.19%	0.52%	1.15%	0.05%	0.00%	2.31%	6.04%	3.66%	1.84%	0.30%
Merchants Insurance Group (G)	1.44%	2.50%	0.62%	0.02%	0.00%	1.71%	0.89%	3.77%	2.06%	0.94%	6.35%	9.85%	7.78%	6.89%	6.13%
XL Reinsurance America Group (G)	4.43%	16.54%	3.48%	0.27%	3.32%	0.00%	0.49%	1.26%	1.31%	0.04%	1.77%	4.74%	8.07%	8.74%	1.79%

VII 000104

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)				
Central Insurance Companies (G)	1.08%	1.92%	0.75%	0.04%	1.21%	0.93%	5.61%	2.95%	1.07%	0.00%	2.43%	8.55%	7.54%	2.66%	1.39%
Sompo Holdings US Group (G)	2.35%	15.90%	2.50%	0.21%	0.02%	0.01%	0.75%	0.01%	0.00%	0.00%	2.78%	8.94%	5.73%	2.82%	0.45%
Benchmark Insurance Group (G)	2.44%	8.03%	0.60%	0.02%	0.00%	1.20%	3.09%	4.23%	1.69%	0.32%	4.53%	15.10%	13.90%	7.99%	1.19%
The Cincinnati Insurance Companies (G)	0.14%	0.62%	0.23%	0.00%	0.00%	2.66%	17.01%	8.82%	0.55%	0.07%	1.19%	10.50%	10.24%	0.88%	0.06%
Argo Group (G)	2.77%	4.41%	2.36%	0.14%	0.39%	0.27%	0.77%	0.27%	0.00%	0.00%	2.42%	6.56%	3.96%	1.64%	0.41%
AF Group (G)	3.28%	14.68%	7.67%	1.36%	5.49%	0.00%	0.00%	0.00%	0.00%	0.00%	4.16%	8.71%	5.61%	4.02%	2.54%
Nationwide Group (G)	0.30%	7.00%	4.39%	0.27%	1.94%	0.42%	1.48%	1.08%	0.33%	0.00%	1.31%	5.71%	4.35%	2.92%	0.50%
Pharmacists Mutual Insurance Group (G)	3.44%	2.21%	3.49%	0.98%	0.02%	0.21%	2.13%	4.10%	0.00%	0.00%	2.91%	13.38%	20.10%	3.51%	0.33%
Coaction Specialty Insurance Group (G)	0.39%	2.63%	0.24%	0.07%	0.01%	0.16%	0.37%	0.54%	1.04%	0.23%	1.92%	4.80%	4.47%	4.02%	1.55%
Church Mutual Insurance Group (G)	4.80%	3.56%	2.75%	0.22%	0.12%	0.45%	2.60%	4.06%	0.36%	0.00%	3.48%	12.49%	12.14%	4.32%	1.08%
Intact US Insurance Group (G)	2.43%	6.49%	9.74%	1.99%	0.52%	0.00%	0.00%	0.00%	0.00%	0.00%	0.85%	3.78%	4.25%	0.66%	0.03%
Work First Casualty Company	0.72%	3.11%	0.00%	0.00%	0.45%	0.00%	5.02%	8.44%	0.00%	0.00%	0.00%	3.73%	5.31%	1.89%	2.03%
MS&AD US Insurance Group (G)	6.01%	9.81%	4.68%	0.15%	0.00%	0.07%	1.68%	1.39%	0.05%	0.00%	1.78%	5.20%	4.16%	1.61%	0.51%
Amerisure Companies (G)	0.89%	6.39%	2.86%	0.87%	3.78%	0.00%	2.94%	1.30%	0.52%	0.00%	2.45%	8.04%	4.17%	1.71%	0.02%
GuideOne Insurance Companies (G)	2.25%	0.85%	1.33%	0.00%	0.02%	0.30%	2.82%	6.50%	1.32%	0.00%	1.08%	6.90%	5.90%	1.11%	0.01%
James River Group (G)	28.06%	4.88%	0.17%	0.02%	0.00%	0.03%	1.92%	2.95%	0.79%	0.00%	1.71%	6.60%	6.91%	3.70%	0.05%
Premier Group Insurance Company	0.90%	10.92%	18.17%	0.00%	0.00%	0.00%	3.99%	0.00%	0.00%	0.00%	2.37%	5.97%	0.69%	0.33%	0.00%
Allianz US PC Insurance Companies (G)	2.55%	11.20%	3.32%	1.20%	1.21%	0.11%	0.55%	0.06%	0.04%	0.02%	2.60%	5.42%	2.60%	1.79%	1.43%
ICW Pool (G)	9.69%	15.99%	22.85%	0.25%	0.00%	0.22%	13.15%	2.62%	1.25%	0.14%	0.07%	1.02%	0.48%	0.27%	0.10%
Brotherhood Mutual Insurance Company	0.39%	0.05%	0.54%	0.00%	0.00%	3.13%	12.75%	6.53%	0.39%	0.00%	2.55%	22.92%	24.14%	2.49%	0.00%
American Contractors Insurance Group (G)	2.45%	6.05%	0.34%	0.03%	0.00%	0.44%	2.17%	0.00%	0.00%	0.00%	4.40%	16.21%	10.27%	2.72%	0.37%
ProAssurance Group (G)	0.91%	3.58%	2.81%	0.13%	0.00%	0.13%	1.14%	1.11%	0.08%	0.00%	2.99%	9.31%	5.93%	1.41%	0.30%
HDI/Talanx US PC Group (G)	1.90%	11.26%	4.16%	0.40%	0.00%	0.00%	0.19%	0.66%	0.63%	0.08%	0.25%	0.99%	2.05%	3.17%	1.16%
RLI Group (G)	0.80%	4.73%	3.45%	1.41%	0.23%	0.57%	1.70%	0.11%	0.00%	0.00%	2.21%	6.34%	10.51%	9.19%	4.85%
Cherokee Insurance Company	0.27%	2.88%	1.94%	0.00%	0.00%	3.51%	5.55%	1.31%	0.33%	0.03%	8.25%	17.28%	10.03%	4.93%	3.18%
IAT Insurance Group (G)	2.82%	3.74%	0.16%	0.09%	0.02%	0.00%	0.04%	0.00%	0.00%	0.00%	0.18%	0.36%	0.14%	0.04%	0.00%
AMERISAFE Insurance Group (G)	1.61%	2.60%	0.67%	0.03%	0.00%	3.73%	13.57%	8.04%	1.18%	0.05%	5.77%	26.80%	19.15%	0.92%	0.55%
WCF Insurance Group (G)	2.34%	9.69%	4.20%	3.75%	0.17%	0.66%	4.02%	6.64%	4.76%	0.00%	0.53%	6.89%	9.53%	6.80%	0.00%
State Farm Group (G)	1.72%	8.85%	3.10%	0.39%	0.03%	2.48%	17.53%	10.64%	1.47%	0.03%	1.48%	12.00%	11.97%	0.79%	0.09%
Samsung F & M Insurance Co, Ltd USB	2.54%	23.67%	2.82%	0.00%	0.00%	0.02%	0.07%	0.00%	0.00%	0.00%	0.58%	2.11%	0.53%	0.00%	0.00%
Farmers Insurance Group (G)	5.30%	19.64%	1.28%	0.32%	0.05%	0.18%	1.93%	0.63%	0.91%	0.37%	4.46%	11.49%	4.89%	4.44%	3.06%
Penn National Insurance Companies (G)	0.15%	1.21%	0.05%	0.00%	0.00%	0.01%	0.53%	1.06%	0.41%	0.00%	4.71%	7.42%	6.69%	2.97%	0.85%
West Bend Mutual Insurance Company	0.09%	3.50%	5.37%	0.49%	0.91%	0.28%	1.77%	2.01%	0.14%	0.00%	2.85%	10.25%	8.82%	2.35%	0.54%
National American Insurance Company	1.50%	3.20%	2.16%	1.05%	0.05%	0.54%	1.01%	1.91%	2.87%	0.16%	3.13%	7.55%	12.11%	8.55%	0.78%
The Gray Insurance Group (G)	57.45%	0.31%	0.00%	0.00%	0.00%	0.04%	3.66%	0.00%	0.00%	0.00%	1.43%	11.11%	2.46%	0.87%	0.10%
Munich-American Holding Corp Companies (G)	2.16%	21.78%	18.13%	1.32%	9.17%	0.00%	0.01%	0.00%	0.00%	0.00%	0.59%	2.68%	1.12%	0.72%	0.37%

Notes:
 Source: A.M. Best's Global Insurance Database for all Massachusetts Workers' Compensation Group Companies, 2021 Schedule D, Part 1A.

VII 000105

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)	3.54%	26.42%	23.80%	3.54%	1.33%	0.00%	0.00%	0.00%	0.00%	0.00%
Travelers Group (G)	3.43%	15.21%	21.12%	1.66%	0.31%	0.00%	0.00%	0.00%	0.00%	0.00%
Hartford Insurance Group (G)	7.45%	26.37%	20.43%	6.26%	2.46%	0.00%	0.00%	0.03%	0.00%	0.77%
Chubb INA Group (G)	5.12%	23.92%	20.38%	2.07%	2.14%	0.00%	0.01%	0.00%	0.00%	0.08%
Liberty Mutual Insurance Companies (G)	3.94%	23.89%	18.21%	2.87%	1.58%	0.00%	0.00%	0.00%	0.00%	0.00%
Zurich Insurance US PC Group (G)	4.48%	20.36%	15.26%	2.55%	0.53%	0.00%	0.00%	0.00%	0.06%	0.04%
Berkshire Hathaway Insurance Group (G)	0.30%	0.56%	0.37%	0.17%	0.04%	0.00%	1.24%	1.55%	0.00%	0.00%
Charter Insurance Group (G)	5.34%	34.35%	14.34%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.26%
American International Group (G)	8.74%	28.11%	22.96%	4.51%	3.33%	1.02%	0.96%	0.08%	0.06%	0.00%
Old Republic Insurance Group (G)	8.30%	30.48%	30.94%	0.93%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%
W. R. Berkley Insurance Group (G)	15.01%	31.94%	11.23%	1.50%	0.27%	0.35%	1.30%	0.00%	0.00%	0.81%
AmTrust Group (G)	8.14%	43.41%	29.16%	2.41%	0.72%	0.31%	0.83%	0.26%	0.00%	0.00%
CNA Insurance Companies (G)	3.19%	18.03%	22.94%	10.05%	7.27%	0.05%	0.38%	0.66%	0.30%	0.23%
Hanover Ins Group Prop & Cas Cos (G)	2.89%	25.70%	34.40%	1.90%	0.63%	0.00%	0.00%	0.00%	0.00%	0.00%
MEMIC Group (G)	2.36%	22.85%	17.39%	4.73%	4.76%	0.00%	0.00%	0.00%	0.17%	0.18%
QBE North America Insurance Group (G)	18.72%	42.39%	6.48%	1.34%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%
Arbella Insurance Group (G)	5.69%	25.65%	18.14%	0.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Selective Insurance Group (G)	6.70%	29.31%	23.16%	5.12%	2.00%	0.03%	1.18%	0.39%	0.01%	0.38%
Utica National Insurance Group (G)	4.96%	26.91%	28.18%	4.43%	3.76%	0.00%	0.00%	0.14%	0.00%	0.00%
Fairfax Financial (USA) Group (G)	3.26%	7.30%	1.04%	0.39%	2.32%	0.00%	0.39%	0.00%	0.00%	0.03%
Arch Insurance Group (G)	14.01%	31.14%	25.79%	3.69%	0.78%	0.00%	0.36%	0.00%	0.00%	0.00%
Progressive Insurance Group (G)	11.29%	30.74%	13.57%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AU Holding Company Group (G)	1.63%	3.36%	2.59%	0.82%	0.18%	0.05%	0.75%	0.15%	0.00%	0.07%
Sentry Insurance Group (G)	6.38%	23.43%	18.51%	2.62%	0.54%	0.00%	0.00%	0.00%	0.00%	0.00%
Starr International Group (G)	5.00%	28.55%	35.82%	3.33%	0.29%	0.01%	0.66%	0.38%	0.00%	0.17%
Federated Mutual Group (G)	5.19%	25.13%	15.20%	17.87%	2.06%	0.00%	0.00%	0.00%	0.00%	0.00%
Norfolk & Dedham Group Pool (G)	5.93%	19.12%	12.83%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AmeriTrust Group (G)	11.34%	33.99%	21.51%	13.60%	2.75%	0.00%	0.00%	0.00%	0.00%	0.00%
Great American P & C Insurance Group (G)	16.44%	38.51%	10.93%	4.77%	2.26%	0.00%	0.06%	0.00%	0.00%	0.08%
EMC Insurance Companies (G)	4.79%	23.37%	13.34%	2.21%	0.06%	0.00%	0.03%	0.10%	0.00%	0.00%

VII 000106

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)				
American National Prop & Cas Group (G)	22.70%	24.22%	27.75%	3.20%	0.94%	0.00%	0.00%	0.00%	0.00%	0.00%
American Family Insurance Group (G)	6.63%	23.25%	20.04%	3.84%	1.15%	0.00%	0.00%	0.03%	0.00%	0.00%
Service Insurance Group (G)	17.39%	38.63%	22.45%	1.21%	0.03%	0.00%	0.38%	0.26%	0.00%	0.00%
Tokio Marine US PC Group (G)	2.80%	19.55%	16.10%	4.79%	6.70%	0.02%	0.65%	0.22%	0.08%	0.14%
Arrow Mutual Liability Insurance Company	11.14%	28.17%	5.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Markel Corporation Group (G)	0.49%	3.12%	3.39%	0.81%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Employers Insurance Group (G)	5.33%	28.28%	25.35%	1.76%	1.00%	0.00%	0.23%	0.00%	0.00%	0.00%
Skyward Specialty Insurance Group (G)	3.40%	38.53%	16.07%	2.37%	1.01%	0.00%	0.64%	0.20%	0.00%	0.10%
Group 1001 Property and Casualty Group (G)	2.17%	34.46%	32.49%	4.19%	0.06%	0.00%	0.12%	0.08%	0.00%	0.42%
Electric Insurance Company	5.10%	61.53%	22.64%	2.87%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%
Everest Re U.S. Group (G)	5.42%	23.85%	31.24%	2.49%	1.37%	0.00%	0.08%	4.34%	0.02%	0.16%
Core Specialty Insurance Group (G)	3.40%	36.69%	25.16%	2.27%	0.41%	0.00%	0.00%	0.14%	0.00%	0.65%
Merchants Insurance Group (G)	3.82%	22.87%	11.43%	0.65%	6.73%	0.11%	2.73%	0.71%	0.00%	0.00%
XL Reinsurance America Group (G)	3.81%	16.68%	20.65%	2.25%	0.37%	0.00%	0.00%	0.00%	0.00%	0.00%
Central Insurance Companies (G)	3.28%	24.74%	25.43%	1.31%	7.08%	0.00%	0.01%	0.03%	0.00%	0.00%
Sompo Holdings US Group (G)	7.64%	33.34%	14.37%	1.65%	0.51%	0.00%	0.01%	0.01%	0.00%	0.01%
Benchmark Insurance Group (G)	8.75%	19.12%	7.12%	0.61%	0.04%	0.00%	0.02%	0.00%	0.00%	0.00%
The Cincinnati Insurance Companies (G)	4.52%	24.43%	11.67%	6.37%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%
Argo Group (G)	6.16%	37.96%	26.75%	2.13%	0.52%	0.00%	0.00%	0.01%	0.10%	0.00%
AF Group (G)	7.56%	15.88%	10.03%	4.13%	4.88%	0.00%	0.00%	0.00%	0.00%	0.00%
Nationwide Group (G)	6.45%	32.25%	21.91%	4.79%	2.59%	0.00%	0.00%	0.00%	0.00%	0.00%
Pharmacists Mutual Insurance Group (G)	2.29%	13.30%	19.33%	5.00%	3.27%	0.00%	0.00%	0.00%	0.00%	0.00%
Coaction Specialty Insurance Group (G)	7.39%	36.59%	24.70%	5.41%	2.61%	0.00%	0.83%	0.04%	0.00%	0.00%
Church Mutual Insurance Group (G)	4.68%	22.48%	16.01%	3.42%	0.99%	0.00%	0.00%	0.00%	0.00%	0.00%
Intact US Insurance Group (G)	5.10%	31.48%	18.35%	10.61%	3.72%	0.00%	0.00%	0.00%	0.00%	0.00%
Work First Casualty Company	7.16%	25.39%	17.82%	14.86%	2.24%	0.00%	1.82%	0.00%	0.00%	0.00%
MS&AD US Insurance Group (G)	3.50%	27.19%	30.05%	1.19%	0.82%	0.00%	0.00%	0.12%	0.00%	0.00%
Amerisure Companies (G)	5.41%	30.47%	16.10%	9.10%	2.97%	0.00%	0.00%	0.00%	0.00%	0.00%
GuideOne Insurance Companies (G)	8.22%	32.87%	22.73%	4.07%	1.58%	0.00%	0.00%	0.04%	0.00%	0.11%
James River Group (G)	5.58%	14.86%	18.24%	0.25%	0.79%	0.00%	1.37%	0.00%	0.00%	1.13%

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)				
Premier Group Insurance Company	12.11%	32.37%	11.21%	0.96%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Allianz US PC Insurance Companies (G)	5.27%	30.09%	25.42%	3.10%	2.03%	0.00%	0.00%	0.00%	0.00%	0.00%
ICW Pool (G)	4.37%	14.28%	7.45%	1.59%	2.52%	0.18%	0.40%	0.28%	0.00%	0.82%
Brotherhood Mutual Insurance Company	2.26%	12.28%	9.23%	0.27%	0.03%	0.03%	0.01%	0.00%	0.00%	0.00%
American Contractors Insurance Group (G)	7.74%	29.09%	15.31%	1.82%	0.18%	0.04%	0.06%	0.11%	0.00%	0.19%
ProAssurance Group (G)	7.28%	35.30%	23.56%	3.21%	0.49%	0.00%	0.06%	0.07%	0.05%	0.12%
HDI/Talanx US PC Group (G)	3.15%	24.38%	36.15%	7.81%	0.99%	0.00%	0.16%	0.48%	0.00%	0.00%
RLI Group (G)	2.69%	23.00%	20.15%	4.58%	3.48%	0.00%	0.00%	0.00%	0.00%	0.00%
Cherokee Insurance Company	2.50%	30.04%	5.59%	1.76%	0.63%	0.00%	0.00%	0.00%	0.00%	0.00%
IAT Insurance Group (G)	21.52%	41.81%	19.71%	3.41%	5.79%	0.00%	0.18%	0.00%	0.00%	0.00%
AMERISAFE Insurance Group (G)	2.58%	10.77%	1.99%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
WCF Insurance Group (G)	5.82%	12.25%	13.91%	3.57%	4.47%	0.00%	0.00%	0.00%	0.00%	0.00%
State Farm Group (G)	1.23%	9.36%	16.37%	0.45%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
Samsung F & M Insurance Co, Ltd USB	2.80%	34.08%	28.57%	2.21%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Farmers Insurance Group (G)	3.56%	19.57%	15.89%	1.61%	0.39%	0.00%	0.00%	0.00%	0.00%	0.06%
Penn National Insurance Companies (G)	7.16%	34.72%	23.77%	5.16%	3.04%	0.07%	0.00%	0.00%	0.00%	0.00%
West Bend Mutual Insurance Company	5.69%	28.28%	23.73%	2.51%	0.41%	0.00%	0.00%	0.00%	0.00%	0.00%
National American Insurance Company	2.60%	18.01%	22.36%	9.12%	1.34%	0.00%	0.00%	0.00%	0.00%	0.00%
The Gray Insurance Group (G)	0.59%	2.43%	0.00%	19.55%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Munich-American Holding Corp Companies (G)	2.82%	24.36%	10.74%	2.75%	0.84%	0.00%	0.06%	0.00%	0.00%	0.37%

Notes:

Source: A.M. Best's Global Insurance Database for all Massachusetts Workers' Compensation Group Companies, 2021 Schedule D, Part 1A.

VII 000108

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 000109

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
Average	12.33	4.87	4.29	3.30	7.46	8.04	9.03

Notes:

Source: 2022 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 000110

Investment Expense to Invested Assets Ratio

Companies	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A.I.M. Mutual Insurance Companies (G)	0.14%	0.14%	0.14%	0.14%	0.13%	0.14%	0.15%	0.16%	0.16%	0.16%
Travelers Group (G)	0.21%	0.22%	0.22%	0.23%	0.22%	0.22%	0.23%	0.22%	0.23%	0.20%
Hartford Insurance Group (G)	0.20%	0.20%	0.24%	0.25%	0.24%	0.20%	0.19%	0.19%	0.18%	0.19%
Chubb INA Group (G)	0.15%	0.14%	0.14%	0.13%	0.13%	0.16%	0.16%	0.18%	0.17%	0.14%
Liberty Mutual Insurance Companies (G)	0.30%	0.31%	0.32%	0.30%	0.27%	0.26%	0.27%	0.27%	0.27%	0.27%
Zurich Insurance US PC Group (G)	0.41%	0.40%	0.40%	0.30%	0.25%	0.24%	0.14%	0.15%	0.09%	0.09%
Berkshire Hathaway Insurance Group (G)	0.11%	0.10%	0.11%	0.13%	0.09%	0.12%	0.12%	0.12%	0.06%	0.08%
Charter Insurance Group (G)	0.33%	0.31%	0.30%	0.28%	0.27%	0.24%	0.26%	0.25%	0.25%	0.26%
American International Group (G)	0.15%	0.17%	0.16%	0.17%	0.19%	0.15%	0.16%	0.13%	0.15%	0.16%
Old Republic Insurance Group (G)	0.06%	0.07%	0.08%	0.08%	0.07%	0.09%	0.12%	0.12%	0.13%	0.15%
W. R. Berkley Insurance Group (G)	0.20%	0.28%	0.25%	0.23%	0.25%	0.29%	0.30%	0.26%	0.26%	0.28%
AmTrust Group (G)	0.02%	0.05%	0.08%	0.11%	0.25%	0.18%	0.16%	0.16%	0.18%	0.22%
CNA Insurance Companies (G)	0.15%	0.15%	0.15%	0.14%	0.14%	0.15%	0.23%	0.20%	0.19%	0.20%
Hanover Ins Group Prop & Cas Cos (G)	0.20%	0.20%	0.20%	0.21%	0.24%	0.25%	0.26%	0.15%	0.15%	0.16%
MEMIC Group (G)	0.17%	0.18%	0.18%	0.18%	0.19%	0.19%	0.19%	0.22%	0.22%	0.23%
QBE North America Insurance Group (G)	0.24%	0.25%	0.27%	0.28%	0.29%	0.25%	0.33%	0.29%	0.29%	0.30%
Arbella Insurance Group (G)	0.09%	0.11%	0.11%	0.11%	0.11%	0.11%	0.10%	0.11%	0.24%	0.23%
Selective Insurance Group (G)	0.27%	0.23%	0.21%	0.20%	0.22%	0.18%	0.19%	0.19%	0.18%	0.20%
Utica National Insurance Group (G)	0.22%	0.23%	0.26%	0.27%	0.27%	0.26%	0.29%	0.30%	0.28%	0.30%
Fairfax Financial (USA) Group (G)	0.51%	0.47%	0.50%	0.46%	0.40%	0.62%	0.62%	0.77%	0.97%	1.10%
Arch Insurance Group (G)	0.22%	0.22%	0.22%	0.22%	0.21%	0.15%	0.14%	0.11%	0.10%	0.11%
Progressive Insurance Group (G)	0.17%	0.19%	0.23%	0.26%	0.30%	0.34%	0.38%	0.38%	0.40%	0.40%
AU Holding Company Group (G)	0.11%	0.08%	0.03%	0.03%	0.02%	0.02%	0.02%	0.02%	0.03%	0.10%
Sentry Insurance Group (G)	0.28%	0.32%	0.33%	0.29%	0.25%	0.25%	0.25%	0.25%	0.25%	0.27%
Starr International Group (G)	0.10%	0.09%	0.11%	0.12%	0.14%	0.13%	0.13%	0.11%	0.10%	0.14%
Federated Mutual Group (G)	0.23%	0.22%	0.23%	0.23%	0.21%	0.20%	0.18%	0.18%	0.20%	0.19%
Norfolk & Dedham Group Pool (G)	0.33%	0.55%	0.57%	0.63%	0.58%	0.60%	0.58%	0.61%	0.50%	0.54%
AmeriTrust Group (G)	0.25%	0.24%	0.26%	0.29%	0.12%	0.14%	0.16%	0.13%	0.12%	0.11%
Great American P & C Insurance Group (G)	0.18%	0.20%	0.28%	0.30%	0.29%	0.32%	0.32%	0.34%	0.41%	0.39%
EMC Insurance Companies (G)	0.58%	0.64%	0.82%	0.79%	0.67%	0.69%	0.63%	0.58%	0.56%	0.52%
American National Prop & Cas Group (G)	0.11%	0.11%	0.13%	0.13%	0.14%	0.15%	0.13%	0.13%	0.15%	0.13%
American Family Insurance Group (G)	0.58%	0.49%	0.56%	0.56%	0.54%	0.49%	0.48%	0.46%	0.46%	0.59%
Service Insurance Group (G)	0.49%	0.49%	0.78%	0.59%	0.38%	0.50%	0.42%	0.41%	0.39%	0.43%

VII 000111

Investment Expense to Invested Assets Ratio

Companies	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Tokio Marine US PC Group (G)	0.53%	0.45%	0.40%	0.40%	0.40%	0.29%	0.25%	0.19%	0.17%	0.16%
Arrow Mutual Liability Insurance Company	0.26%	0.35%	0.20%	0.31%	0.33%	0.31%	0.31%	0.41%	0.32%	0.31%
Markel Corporation Group (G)	0.41%	0.38%	0.43%	0.47%	0.43%	0.42%	0.43%	0.39%	0.37%	0.36%
Employers Insurance Group (G)	0.15%	0.15%	0.16%	0.10%	0.10%	0.10%	0.10%	0.10%	0.11%	0.11%
Skyward Specialty Insurance Group (G)	0.45%	0.36%	0.48%	0.66%	0.39%	0.24%	0.17%	0.13%	0.19%	0.24%
Group 1001 Property and Casualty Group (G)	0.10%	0.08%	0.08%	0.11%	0.13%	0.14%	0.72%	0.44%	0.45%	0.41%
Electric Insurance Company	0.46%	0.44%	0.42%	0.43%	0.44%	0.38%	0.38%	0.36%	0.35%	0.34%
Everest Re U.S. Group (G)	0.12%	0.13%	0.12%	0.09%	0.11%	0.10%	0.09%	0.10%	0.11%	0.09%
Core Specialty Insurance Group (G)	0.16%	0.37%	0.38%	0.20%	0.27%	0.25%	0.27%	0.30%	0.44%	0.48%
Merchants Insurance Group (G)	0.15%	0.15%	0.16%	0.15%	0.12%	0.12%	0.14%	0.14%	0.13%	0.15%
XL Reinsurance America Group (G)	0.22%	0.23%	0.25%	0.22%	0.24%	0.23%	0.25%	0.25%	0.25%	0.25%
Central Insurance Companies (G)	0.31%	0.36%	0.43%	0.38%	0.28%	0.26%	0.27%	0.28%	0.29%	0.28%
Sompo Holdings US Group (G)	0.12%	0.14%	0.10%	0.12%	0.12%	0.14%	0.17%	0.15%	0.17%	0.17%
Benchmark Insurance Group (G)	0.61%	0.84%	0.94%	0.92%	0.54%	0.64%	0.75%	0.82%	0.76%	0.68%
The Cincinnati Insurance Companies (G)	0.06%	0.06%	0.06%	0.06%	0.06%	0.05%	0.07%	0.06%	0.07%	0.06%
Argo Group (G)	0.25%	0.31%	0.42%	0.51%	0.49%	0.39%	0.41%	0.42%	0.37%	0.36%
AF Group (G)	0.19%	0.19%	0.15%	0.20%	0.12%	0.12%	0.15%	0.13%	0.12%	0.12%
Nationwide Group (G)	0.27%	0.30%	0.36%	0.37%	0.35%	0.35%	0.25%	0.35%	0.37%	0.33%
Pharmacists Mutual Insurance Group (G)	0.45%	0.58%	0.71%	0.52%	0.52%	0.45%	0.54%	0.66%	0.66%	0.61%
Coaction Specialty Insurance Group (G)	0.15%	0.12%	0.11%	0.12%	0.12%	0.14%	0.14%	0.14%	0.16%	0.13%
Church Mutual Insurance Group (G)	0.27%	0.24%	0.25%	0.27%	0.31%	0.32%	0.28%	0.29%	0.30%	0.33%
Intact US Insurance Group (G)	0.20%	0.22%	0.39%	0.32%	0.18%	0.19%	0.20%	0.38%	0.38%	0.04%
Work First Casualty Company	0.40%	0.41%	0.41%	0.48%	0.54%	0.82%	0.42%	0.44%	0.53%	0.57%
MS&AD US Insurance Group (G)	0.40%	0.36%	0.24%	0.35%	0.35%	0.41%	0.36%	0.36%	0.35%	0.35%
Amerisure Companies (G)	0.18%	0.18%	0.16%	0.14%	0.15%	0.15%	0.14%	0.16%	0.17%	0.19%
GuideOne Insurance Companies (G)	0.55%	0.65%	0.76%	0.69%	0.63%	0.56%	0.53%	0.53%	0.49%	0.55%
James River Group (G)	0.15%	0.11%	0.09%	0.30%	0.31%	0.37%	0.41%	0.39%	0.36%	0.33%
Premier Group Insurance Company	0.23%	0.22%	0.24%	0.26%	0.29%	0.29%	0.29%	0.32%	0.26%	0.31%
Allianz US PC Insurance Companies (G)	0.07%	0.07%	0.06%	0.08%	0.09%	0.09%	0.06%	0.07%	0.06%	0.06%
ICW Pool (G)	0.79%	0.68%	0.63%	0.50%	0.80%	0.65%	0.69%	0.30%	0.24%	0.37%
Brotherhood Mutual Insurance Company	0.67%	0.63%	0.69%	0.77%	0.78%	0.83%	0.90%	0.98%	0.82%	0.86%
American Contractors Insurance Group (G)	0.21%	0.22%	0.21%	0.22%	0.27%	0.29%	0.33%	0.33%	0.33%	0.44%
ProAssurance Group (G)	0.30%	0.28%	0.35%	0.32%	0.37%	0.31%	0.29%	0.35%	0.34%	0.34%

VII 000112

Investment Expense to Invested Assets Ratio

Companies	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
HDI/Talanx US PC Group (G)	0.14%	0.13%	0.15%	0.10%	0.12%	0.14%	0.11%	0.12%	0.13%	0.09%
RLI Group (G)	0.33%	0.30%	0.30%	0.30%	0.31%	0.32%	0.32%	0.33%	0.32%	0.32%
Cherokee Insurance Company	0.04%	0.06%	0.07%	0.07%	0.07%	0.07%	0.08%	0.09%	0.08%	0.11%
IAT Insurance Group (G)	0.31%	0.37%	0.30%	0.42%	0.32%	0.34%	0.39%	0.34%	0.34%	0.34%
AMERISAFE Insurance Group (G)	0.17%	0.15%	0.15%	0.14%	0.14%	0.16%	0.16%	0.19%	0.20%	0.21%
WCF Insurance Group (G)	0.29%	0.33%	0.34%	0.31%	0.31%	0.30%	0.27%	0.28%	0.26%	0.24%
State Farm Group (G)	0.11%	0.13%	0.13%	0.14%	0.15%	0.20%	0.28%	0.19%	0.24%	0.28%
Samsung F & M Insurance Co, Ltd USB	0.15%	0.13%	0.13%	0.33%	0.57%	0.18%	0.31%	0.25%	0.34%	0.39%
Farmers Insurance Group (G)	0.18%	0.19%	0.20%	0.18%	0.18%	0.14%	0.11%	0.12%	0.16%	0.15%
Penn National Insurance Companies (G)	0.49%	0.23%	0.16%	0.19%	0.18%	0.17%	0.18%	0.20%	0.21%	0.19%
West Bend Mutual Insurance Company	0.45%	0.47%	0.57%	0.55%	0.60%	0.60%	0.65%	0.72%	0.81%	0.80%
National American Insurance Company	0.60%	0.65%	0.73%	0.69%	0.71%	0.67%	0.68%	0.73%	0.76%	0.68%
The Gray Insurance Group (G)	0.35%	0.42%	0.56%	0.53%	0.53%	0.44%	0.46%	0.37%	0.11%	0.11%
Munich-American Holding Corp Companies (G)	0.22%	0.22%	0.24%	0.24%	0.25%	0.24%	0.24%	0.24%	0.17%	0.18%

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Premium Weighted Investment Expense to Asset Ratio	0.21%	0.22%	0.23%	0.22%	0.21%	0.21%	0.21%	0.21%	0.20%	0.21%

Selected Ratio	0.21%
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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 000113

Direct Premiums Written for MA Workers' Compensation Group Companies

Companies	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A.I.M. Mutual Insurance Companies (G)	141,079	141,670	158,738	155,688	158,179	156,921	149,530	144,469	138,172	122,474
Travelers Group (G)	126,925	143,085	155,681	165,699	165,917	170,238	159,479	151,076	142,948	124,857
Hartford Insurance Group (G)	120,626	107,771	122,647	116,964	115,136	106,794	100,625	95,680	93,792	92,384
Chubb INA Group (G)	88,568	91,942	95,010	93,797	88,015	85,214	70,148	62,298	56,332	43,831
Liberty Mutual Insurance Companies (G)	88,029	96,993	104,384	107,101	101,407	94,245	96,864	93,636	108,538	109,695
Zurich Insurance US PC Group (G)	73,842	70,523	60,369	61,930	60,851	63,002	61,220	53,484	43,096	39,237
Berkshire Hathaway Insurance Group (G)	63,679	62,947	70,797	70,331	64,812	63,215	54,174	41,941	28,225	27,891
Charter Insurance Group (G)	53,932	57,464	60,082	60,790	64,004	61,617	58,394	57,349	53,707	48,975
American International Group (G)	44,927	84,792	103,726	93,630	84,054	91,871	106,329	105,983	99,753	192,817
Old Republic Insurance Group (G)	37,766	35,383	29,096	25,785	26,755	21,483	19,474	21,366	20,020	13,221
W. R. Berkley Insurance Group (G)	36,010	34,183	33,269	42,470	46,425	41,191	35,083	33,183	30,140	33,958
AmTrust Group (G)	32,186	23,632	25,794	32,669	36,819	40,042	36,955	30,874	28,174	23,387
CNA Insurance Companies (G)	25,313	24,741	21,232	21,127	20,840	18,238	16,003	15,858	15,740	16,328
Hanover Ins Group Prop & Cas Cos (G)	23,006	22,909	20,803	21,394	20,360	17,429	16,309	12,945	12,871	12,258
MEMIC Group (G)	15,685	16,705	15,237	11,239	9,658	8,147	6,500	6,470	6,535	6,472
QBE North America Insurance Group (G)	14,134	9,753	4,219	4,218	6,333	5,862	3,483	2,990	2,924	1,987
Arbella Insurance Group (G)	14,040	14,155	14,180	14,367	15,091	14,935	13,905	13,389	13,312	10,894
Selective Insurance Group (G)	13,773	10,335	9,480	8,189	7,060	6,254	5,646	5,225	4,938	5,061
Utica National Insurance Group (G)	13,249	11,936	12,186	11,778	10,704	9,921	9,731	9,239	8,962	7,759
Fairfax Financial (USA) Group (G)	10,986	8,287	11,917	12,424	11,527	10,596	9,840	7,808	5,967	7,094
Arch Insurance Group (G)	9,506	9,698	6,883	6,148	5,889	6,417	4,136	5,364	5,021	4,588
Progressive Insurance Group (G)	8,569	5,922	5,560	3,499	3,560	2,387	2,337	2,074	1,341	1,493
AU Holding Company Group (G)	8,448	7,343	7,096	9,344	12,208	12,165	12,229	11,285	10,812	9,070
Sentry Insurance Group (G)	8,173	8,949	9,080	8,263	7,293	7,197	5,974	7,166	7,496	7,191
Starr International Group (G)	8,148	7,945	7,043	7,458	4,833	4,455	4,196	2,914	1,759	102
Federated Mutual Group (G)	7,916	8,170	6,820	6,117	5,898	5,082	3,335	3,071	2,381	2,182
Norfolk & Dedham Group Pool (G)	7,585	7,445	9,599	8,552	8,692	8,848	7,859	7,323	7,235	7,207
AmeriTrust Group (G)	7,474	8,928	7,021	7,717	9,674	12,187	9,267	9,227	12,037	12,170
Great American P & C Insurance Group (G)	5,783	3,050	5,850	4,819	5,786	4,303	3,896	3,493	2,674	3,247
EMC Insurance Companies (G)	5,527	5,832	6,209	6,326	4,285	4,012	3,246	1,095	593	495

VII 000114

Direct Premiums Written for MA Workers' Compensation Group Companies

Companies	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
American National Prop & Cas Group (G)	5,422	5,854	6,093	6,612	6,545	6,400	6,034	5,677	5,296	5,299
American Family Insurance Group (G)	5,041	5,194	6,214	6,426	6,652	7,607	6,649	5,855	5,874	5,970
Service Insurance Group (G)	5,021	3,157	6	0	0	0	0	0	0	0
Tokio Marine US PC Group (G)	5,020	5,798	4,928	5,089	4,708	4,273	3,783	2,686	2,518	2,395
Arrow Mutual Liability Insurance Company	4,950	5,525	6,211	6,671	5,757	5,180	5,589	5,414	5,419	4,588
Markel Corporation Group (G)	4,380	3,694	6,312	7,294	5,507	1,455	1,319	1,314	1,074	1,734
Employers Insurance Group (G)	4,324	4,285	4,757	3,125	1,583	110	0	0	0	0
Skyward Specialty Insurance Group (G)	4,236	4,263	2,208	634	195	34	41	62	11	3
Group 1001 Property and Casualty Group (G)	3,914	1,738	230	4	-3	0	0	-20	488	2,989
Electric Insurance Company	3,810	3,805	3,289	4,451	3,278	4,408	4,164	3,850	4,097	4,240
Everest Re U.S. Group (G)	3,794	5,279	3,240	1,727	1,759	616	489	799	709	422
Core Specialty Insurance Group (G)	3,150	1,044	1,135	997	641	0	0	0	0	0
Merchants Insurance Group (G)	2,790	2,767	2,709	2,603	2,602	2,345	2,058	1,946	1,560	1,460
XL Reinsurance America Group (G)	2,574	3,311	3,802	3,765	4,457	3,265	1,356	1,304	2,650	1,178
Central Insurance Companies (G)	2,569	2,422	1,856	2,116	1,914	2,029	2,334	2,006	1,819	2,009
Sompo Holdings US Group (G)	2,382	2,493	2,171	2,301	1,406	899	585	579	415	578
Benchmark Insurance Group (G)	2,168	1,350	302	26	92	31	0	0	0	0
The Cincinnati Insurance Companies (G)	2,076	1,406	619	367	252	227	294	313	279	271
Argo Group (G)	1,960	1,984	1,808	2,766	2,854	2,870	2,732	3,120	3,328	3,107
AF Group (G)	1,798	1,574	2,781	980	421	361	179	111	139	161
Nationwide Group (G)	1,743	1,348	1,564	2,072	2,462	2,506	3,402	3,282	3,222	2,304
Pharmacists Mutual Insurance Group (G)	1,670	616	549	650	573	536	342	409	364	570
Coaction Specialty Insurance Group (G)	1,605	2,170	3,646	2,976	2,056	1,681	1,047	730	387	171
Church Mutual Insurance Group (G)	1,450	1,318	1,419	1,363	1,287	1,175	1,006	925	919	806
Intact US Insurance Group (G)	1,387	1,441	1,431	1,298	1,306	1,352	1,515	1,632	1,903	226
Work First Casualty Company	1,208	1,414	1,984	1,414	900	0	0	0	0	0
MS&AD US Insurance Group (G)	681	998	1,063	1,284	1,315	2,075	1,706	1,628	1,999	1,860
Amerisure Companies (G)	642	457	503	804	708	777	1,059	550	306	494
GuideOne Insurance Companies (G)	571	386	385	477	557	509	316	59	49	51
James River Group (G)	400	394	257	126	4	0	0	0	0	0

VII 000115

Direct Premiums Written for MA Workers' Compensation Group Companies

Companies	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Premier Group Insurance Company	362	360	356	367	382	347	322	317	384	341
Allianz US PC Insurance Companies (G)	309	734	816	1,065	1,034	581	397	457	446	1,210
ICW Pool (G)	195	133	145	44	329	490	65	2	0	0
Brotherhood Mutual Insurance Company	193	178	180	139	66	36	5	0	0	0
American Contractors Insurance Group (G)	186	30	55	187	80	47	3	-10	-12	63
ProAssurance Group (G)	174	64	321	12	0	0	0	0	0	0
HDI/Talanx US PC Group (G)	150	1	1,481	2,716	5,579	8,710	6,821	5,300	4,242	2,161
RLI Group (G)	146	151	137	114	111	88	62	45	19	0
Cherokee Insurance Company	131	135	118	109	118	117	99	81	79	91
IAT Insurance Group (G)	107	-26	477	430	414	496	345	335	479	470
AMERISAFE Insurance Group (G)	93	100	176	60	103	125	45	50	111	91
WCF Insurance Group (G)	32	48	56	55	65	30	25	18	18	23
State Farm Group (G)	30	19	32	35	35	24	50	19	30	43
Samsung F & M Insurance Co, Ltd USB	25	11	12	16	36	31	42	17	14	0
Farmers Insurance Group (G)	15	-7	-267	987	2,205	2,660	2,671	3,310	1,187	41
Penn National Insurance Companies (G)	7	3	2	2	3	1	6	3	2	1
West Bend Mutual Insurance Company	6	4	0	0	0	0	0	0	0	0
National American Insurance Company	3	0	1	0	0	0	0	0	0	0
The Gray Insurance Group (G)	2	6	1	1	0	0	0	0	0	0
Munich-American Holding Corp Companies (G)	2	-23	5	92	679	134	72	698	1,636	1,151

Notes:

Source: A.M. Best's Global Insurance Database for all Massachusetts Workers' Compensation Group Companies.

VII 000116

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

Calculation of Common Stock Total Return Tax Rate

Year (1)	Income Returns (2)	Capital Appreciation Returns (3)
1989	4.03	27.25
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
Average	3.89	8.20

	Dividend	Capital Gains
(4) Weights	32.20%	67.80%
(5) Tax Rate	13.13%	14.98%
(6) Common Stock Tax Rate		14.38%

Notes:

Source: 2022 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	8.64%
(3) Marginal Tax Rate	21.00%
(4) Annual Expected Capital Gains Rate	8.20%

Year (5)	Investment Basis (6) _{t-1} 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) _{t-1} - (9) _{t-1} (7)	End of Year (7) x [1.0 + (4)] (8)				
0	1,000,000.00	1,000,000.00	1,081,956.25	389,504.25	29,504.25	6,195.89	5,944.47
1	640,000.00	692,452.00	749,202.77	269,713.00	39,313.00	8,255.73	7,290.94
2	409,600.00	479,489.77	518,786.96	186,763.30	39,307.30	8,254.53	6,710.26
3	262,144.00	332,023.65	359,235.07	129,324.62	34,952.78	7,340.08	5,492.46
4	167,772.16	229,910.44	248,753.04	89,551.09	29,153.12	6,122.15	4,216.86
5	107,374.18	159,201.95	172,249.54	62,009.83	23,355.13	4,904.58	3,109.60
6	68,719.48	110,239.71	119,274.54	42,938.83	18,199.82	3,821.96	2,230.53
7	43,980.47	76,335.70	82,591.89	29,733.08	13,900.11	2,919.02	1,568.12
8	28,147.50	52,858.81	57,190.92	20,588.73	10,455.63	2,195.68	1,085.75
9	18,014.40	36,602.19	39,601.97	14,256.71	7,771.52	1,632.02	742.85
10	11,529.22	25,345.26	27,422.46	9,872.09	5,721.57	1,201.53	503.42
11	7,378.70	17,550.38	18,988.74	6,835.95	4,179.61	877.72	338.51
12	4,722.37	12,152.79	13,148.79	4,733.56	3,033.51	637.04	226.15
13	3,022.31	8,415.23	9,104.91	3,277.77	2,189.73	459.84	150.27
14	1,934.28	5,827.14	6,304.71	2,269.70	1,573.35	330.40	99.38
15	1,237.94	4,035.01	4,365.71	1,571.66	1,126.00	236.46	65.47
16	792.28	2,794.05	3,023.04	1,088.30	803.07	168.65	42.98
17	507.06	1,934.75	2,093.31	753.59	571.05	119.92	28.13
18	324.52	1,339.72	1,449.52	521.83	405.00	85.05	18.37
19	207.69	927.69	1,003.72	361.34	286.57	60.18	11.96
20	132.92	642.38	695.03	695.03	562.11	118.04	21.60
Total					266,364.26	55,936.49	39,898.09

(13) Implied Tax Rate on Capital Gains 14.98%

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)]ⁿ - [(5) + 0.5] }
- (13) = (12) Total / (10) Total

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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	12.34%	11.36%	10.53%	9.82%	9.22%	8.70%	8.26%	7.87%	7.54%	7.24%	6.99%	6.76%
	0.15	13.34%	12.47%	11.72%	11.06%	10.49%	9.98%	9.54%	9.15%	8.80%	8.49%	8.21%	7.96%
	0.20	14.27%	13.52%	12.85%	12.26%	11.73%	11.25%	10.83%	10.44%	10.09%	9.77%	9.48%	9.22%
	0.25	15.06%	14.42%	13.84%	13.31%	12.83%	12.39%	11.99%	11.62%	11.28%	10.97%	10.68%	10.42%
	0.30	15.69%	15.14%	14.63%	14.17%	13.74%	13.34%	12.98%	12.63%	12.32%	12.02%	11.74%	11.48%
	0.35	16.17%	15.70%	15.27%	14.86%	14.48%	14.12%	13.79%	13.47%	13.18%	12.90%	12.64%	12.40%
	0.40	16.55%	16.15%	15.77%	15.41%	15.07%	14.75%	14.45%	14.17%	13.90%	13.65%	13.40%	13.17%
	0.45	16.85%	16.50%	16.17%	15.85%	15.56%	15.27%	15.00%	14.75%	14.50%	14.27%	14.05%	13.84%
	0.50	17.09%	16.78%	16.50%	16.22%	15.96%	15.71%	15.47%	15.24%	15.02%	14.80%	14.60%	14.41%
	0.55	17.29%	17.02%	16.77%	16.53%	16.30%	16.07%	15.86%	15.65%	15.45%	15.26%	15.08%	14.90%
	0.60	17.45%	17.22%	17.00%	16.79%	16.58%	16.39%	16.20%	16.01%	15.83%	15.66%	15.50%	15.34%
	0.65	17.59%	17.39%	17.20%	17.01%	16.83%	16.66%	16.49%	16.33%	16.17%	16.01%	15.86%	15.72%
	0.70	17.71%	17.54%	17.37%	17.21%	17.05%	16.89%	16.75%	16.60%	16.46%	16.32%	16.19%	16.06%

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MASSACHUSETTS WORKERS' COMPENSATION

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VIII 000001

F-CLASS RATE RECOMMENDATION

Background and Summary

The United States Longshore and Harbor Workers Compensation (USL&HW) Act is a federal law that offers benefits to longshoremen, harbor workers, and other employees engaged in loading, unloading, repairing and building a vessel while working on the vessel or any adjoining navigable waters. F-Classes were created for risks that have considerable USL&HW exposure. Since the benefit provisions for F-Classes are different than those prescribed by Massachusetts workers' compensation law, rates for these classifications are calculated separately from Massachusetts state class codes.

To allow movement toward the levels indicated by the data, while acknowledging that F-Class historical data is not fully credible due to its more limited volume, this section of the filing recommends that average rates for F-Class classifications be decreased by 9.8% for the policy period beginning July 1, 2023.

Indicated Rate Change

The ratemaking methodology used for F-Classes is similar to that used in the statewide rate indication: we compare an indicated loss, LAE, loss based assessment, and fixed expense ratio to a permissible loss, LAE, loss based assessment, and fixed expense ratio. The F-Class indication is derived using five years of Unit Statistical Data, policy years 2016-2020. Premium and losses are adjusted for the effects of trend, development, changes in benefits, and changes in rates. The resulting indicated adjusted

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loss ratio is loaded for loss adjustment expenses, loss based assessments associated with the USL&HW Act Special Fund (“Special Fund Assessment”), and fixed expenses. The expense provisions, with the exception of the Special Fund Assessment, are taken from Section I. The Special Fund Assessment is currently calculated by the NCCI as 8.8% of incurred indemnity losses covered under the USL&HW Act.

Complement of Credibility

Due to the limited amount of F-Class experience, the rate change derived from the historical experience is not fully credible. As recommended by the Attorney General’s Office in the hearing on the 2012 rate filing, the WCRIBMA has, since 2014, used a credibility-weighted formula to derive the F-Class rate revision. The credibility assigned to the historical data is calculated as:

$$Z = \text{square root (number of claims in experience base / full credibility standard)}$$

Using a full credibility standard of 4,000.¹

The complement of credibility calculation shown in Section VIII-A Exhibit 2 adjusts the current rates forward for net loss trend, accounts for changes in benefits and Special Funds Assessments since the last revision, and incorporates the expense and profit provisions used in the general rate revision.

Calculation of Adjusted Standard Earned Premium

To derive an indicated loss ratio, the premiums for policy years 2016-2020 must be projected to the level expected to prevail during the prospective effective period. This

¹ Credibility formula and full credibility standard from Attorney General Office’s advisory filing in the hearing on the 2012 rate filing page 22.

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is done by first extending the reported exposures using the currently effective rates. Since the reported exposures may be subject to further development as a consequence of delayed premium audits, premium development factors are applied. Next, factors are applied to reflect the expected impacts of experience rating, merit rating and ARAP. Note that no wage trend adjustment is made to premiums because the trend applied in the calculation of adjusted losses is net of the impact of estimated wage trend.

In Section VIII-B, each policy year's premium is adjusted to the prevailing level and then all five years are summed to a five year total. This total will be used with the five year total of adjusted losses calculated in Section VIII-C to calculate the indicated loss ratio in Section VIII-A.

Calculation of Adjusted Total Losses

Within Section VIII-C, the losses from policy years 2016-2020 are converted to the level expected to prevail during the prospective effective period. Given the differences in benefits and the applicability of the Special Fund Assessment, claims associated with the USL&HW Act and claims associated with the Massachusetts workers' compensation law are adjusted separately. Indemnity and medical loss data are also adjusted separately because of differences in loss development and trend. Losses are adjusted for changes in benefit levels, loss development to ultimate, and trend (in excess of expected wage trend). Factors are also applied for the loading of loss adjustment expenses and the Special Fund Assessment resulting in estimates of the sum of loss, LAE and loss based assessments. Note that the conversion factors used to adjust F-Class losses related to

VIII 000004

the state workers compensation law are the same ones used in the development of class rates in Section IX.

Calculation of Law Amendment Factors

Injured workers in the F-Classes can receive benefits paid under either state law or federal law. Therefore, law amendment factors for both are needed in the derivation of the conversion factors used in Section VIII-C. Law amendment factors related to the USL&HW Act are taken from Section IV–F. These factors are derived from the estimated effects of federal law amendments reported in NCCI’s Annual Statistical Bulletin. The law amendment factors related to state workers’ compensation benefits (and reflected in the conversion factors taken from Section IX) are derived in Section IV-A.

Calculation of Loss Development Factors

The reported losses used in the indication include losses paid and payable under the state workers’ compensation law and under the USL&HW Act. Since the differing benefit levels can affect development patterns, the losses related to the state workers’ compensation law are developed separately from losses related to the USL&HW Act. For USL&HW Act claims, NCCI loss development factors were utilized in Section VIII-E. For state workers’ compensation claims, the development factors are consistent with those used in Section IX.

VIII 000005

Calculation of Trend Factors

Trend factors adjust for changes in wage levels, claim frequency, and average claim size between the historical period and the prospective effective period. The trend factors used in developing the F-Class indication are consistent with the premium and loss trends selected in Section IX-B, Exhibit 3.

Calculation of Class Rates

There are 14 F-Classes in Massachusetts for which we update class pure premium relativities in a manner similar to that used in Section IX.

The Massachusetts indicated pure premiums are derived from five years of Unit Statistical loss and payroll data. This is the same loss data that underlies the F-Class indication in Subsection A. The losses are adjusted for the appropriate law level changes, development to ultimate; the proposed 18.3% loss adjustment expense factor; and the Special Federal Fund Assessment. These adjustment factors are shown in Section VIII-E.

The countrywide relativities are calculated using the same countrywide data set used in Section IX. Pitch Factors are used to adjust the countrywide data to the same law level, LAE and Special Federal Fund Assessment level as the Massachusetts indicated pure premiums. The calculation of Pitch Factors is described in Section IX-A.

The relativities underlying present rates are calculated from the pure premiums underlying the last revision, adjusted to reflect the impact of benefit changes and trend to

VIII 000006

the prospective effective period. These adjustment factors are shown on Exhibit 2 of Subsection F.

This section uses the same classical credibility method and parameters used in Section IX. The Massachusetts full credibility standards come from Section IX-D and are expected losses of \$29,750,000 and \$5,600,000 for indemnity and medical losses respectively. The countrywide full credibility standards also come from Section IX-D and correspond to countrywide claim counts of 1,150 and 1,000 for indemnity and medical losses respectively.

After the formula pure premium relativity is calculated, the proposed manual rates are calculated. Proposed manual rates are subject to swing limits of $\pm 20\%$ surrounding the targeted industry group change (see Section VIII-H). This is the method used for Massachusetts state classes, as outlined in Section IX-H.

Proposed F-Class Rates and Rating Values

Minimum Premium, Expected Loss Rates and D-Ratios are calculated using the methodology and factors from Section IX and X.

Pricing Example

Section VIII-I contains a sample rate calculation for Class 6824, Boat Building or Repairing & Drivers: US Act. Exhibit 1 of Section VIII-I details the calculation of the Massachusetts indicated pure premium relativity. Exhibit 2 of Section VIII-I details the calculation of the countrywide relativity. Exhibit 3 of Section VIII-I shows the calculation

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of the credibilities and the formula relativities. Exhibit 4 of Section VIII-I shows the derivation of the proposed average rate, manual rate and rating values.

USL&HW Coverage Percentage

The USL&HW Coverage Percentage is a factor applied to classification rates which do not anticipate operations subject to the USL&HW Act. If operations under such classifications involve some employees subject to the USL&HW Act, the manual rate and minimum premium are increased by the USL&HW Coverage Percentage for Manual Rates and the Expected Loss Rate is increased by the USL&HW Coverage Percentage for Expected Loss Rates.

The calculation of the proposed USL&HW Coverage Percentages are shown in Section VIII-J. The “Differential in Benefits” from the 7/1/2022 USL&HW Coverage Percentage is the starting point. Using the state and federal benefit level changes which have occurred since then and the projected benefit level changes from Section IV-A and IV-F, the revised differential in benefits is calculated on line (4) of Section VIII-J. The impact of the differential in benefits is then combined with the impact of the Special Fund Assessment to derive the USL&HW Coverage Percentage for Manual Rates on line (10) of Section VIII-J. The USL&HW Coverage Percentage for Expected Loss Rates does not include the impact of the Special Funds Assessment.

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Section VIII – Rate Recommendation
Subsection A – F-Class Rate Recommendation
7/1/2023

Section VIII-A
Page 8

Federal Tax Multiplier

The Federal Tax Multiplier is to be used in retrospective rating for those classes subject to the USL&HW Act. A Federal Tax Multiplier is needed to reflect the impact of the Special Fund Assessment applicable to indemnity losses paid under the USL&HW Act. This filing recommends a Federal Tax Multiplier of 1.079. The calculation is shown in Section VIII-K.

VIII 000009

Section VIII - F-Class Recommendation
Subsection A - Indicated Rate Change
7/1/2023

Section VIII-A
Exhibit 1

F-Class Rate Review Overall Indicated Rate Change

(1)	5-Year Adjusted Standard Plus ARAP Earned Premium	6,192,969
(2)	5-Year Adjusted Losses, LAE, and LBA	2,814,195
(3)	5-Year Adjusted Loss, LAE, and LBA Ratio = (2) / (1)	45.4%
(4)	Fixed Expense Ratio	5.5%
(5)	Factor to Remove the Large Deductible Contribution to the Residual Market Subsidy	0.997
(6)	Indicated Policy Year 7/1/2023 Loss, LAE, Fixed Expense Ratio = [(3) + (4)] x (5)	50.8%
(7)	Variable Expense Ratio	20.4%
(8)	Profit and Contingencies	0.1%
(9)	Permissible Loss, LAE, LBA, and Fixed Expense Ratio = 1.000 - [(7) + (8)]	79.5%
(10)	Indicated Average Rate Change = [(6) / (9)] - 1.000	-36.1%
(11)	Rate Changed based on Trended On-Level Expected Loss Ratio	-4.4%
(12)	5-Year Total Claim Count	116
(13)	Credibility of the Indicated Average Rate Change = [(12) / 4,000] ^ 0.5	17.0%
(14)	Credibility Weighted Average Rate Change = [(10) x (13)] + { (11) x [100% - (13)] }	-9.8%

Notes:

- (1): Section VIII-B, Exhibit 1.
- (2): Section VIII-C, Exhibit 1, Page 2 and 4.
- (4), (7): Section VI-A, Exhibit 1.
- (5): Section I-E, Exhibit 1, Page 1.
- (8): Section VII-A, Exhibit 1.
- (11): Exhibit 2.
- (12): Unit Statistical Data.

VIII 000010

Section VIII - F-Class Recommendation
 Subsection A - Indicated Rate Change
 7/1/2023

Section VIII-A
 Exhibit 2

F-Class Rate Review Complement of Credibility based on Trended On-Level Expected Loss Ratio

(1)	State Class Expected Loss and LAE Ratio from Prior Revision	74.2%	
(2)	Loss Adjustment Expense Ratio from Prior Revision	0.187	
(3)	Special Fund Assessment Rate as a % of Federal Indemnity Losses from Prior Revision	11.3%	
		Indemnity	Medical
(4)	Federal Indemnity/Medical Losses as % of Total Federal Losses	58.0%	42.0%
(5)	F-Class Expected Loss Ratio from Prior Revision $= (1) / \{ (4) \text{ for Indemnity } \times [1.000 + (2) + (3)] + (4) \text{ for Medical } \times [1.000 + (2)] \}$	59.2%	
(6)	Benefit Level Change Factor	1.003	1.000
(7)	Net Indemnity/Medical Trend	-3.3%	-4.3%
(8)	Years since Prior Revision	1.0	1.0
(9)	Trended On-Level Loss Ratio $= (4) \times (5) \times (6) \times [1.000 + (7)] ^ (8)$	33.3%	23.8%
(10)	Special Fund Assessment Rate as a % of Federal Indemnity Losses	8.8%	
(11)	Loss Adjustment Expense Factor	1.183	
(12)	Trended Loss, LAE and LBA Ratio $= [(9) \text{ for indemnity } \times (10)] + [(9) \text{ Total } \times (11)]$	70.5%	
(13)	Fixed Expense Ratio	5.5%	
(14)	Trended Loss, LAE and Fixed Expense Ratio $= (12) + (13)$	76.0%	
(15)	Variable Expense Ratio	20.4%	
(16)	Underwriting Profit Provision	0.1%	
(17)	Permissible Loss, LAE, LBA, and Fixed Expense Ratio $= 1.000 - [(15) + (16)]$	79.5%	
(18)	Rate Changed based on Trended On-Level Expected Loss Ratio from Prior Revision $= [(14) / (17)] - 1.000$	-4.4%	

Notes:

- (1): Section VI-J, Exhibit 1 of 7/1/2022 Stipulation.
- (2), (3), (4): Section VIII-J, Exhibit 1 of 7/1/2022 Stipulation.
- (6): Section VIII-F, Exhibit 2.
- (7): Section V-A, Exhibit 1.
- (10): Section VIII-E, Exhibit 1, Page 2.
- (11), (15), (16): Section VI-J, Exhibit 1.
- (13): Section VI-A, Exhibit 1.

VIII 000011

Section VIII - F-Class Recommendation
Subsection B - Adjusted Premium
7/1/2023

Section VIII-B
Exhibit 1

5 Year Adjusted Standard Plus ARAP Earned Premium

Policy Year (1)	Manual Premium (2)	Premium Development Factor (3)	Experience & Merit Rating Adjustment (4)	ARAP Adjustment (5)	Total Adj Standard Plus ARAP Premium (6)
2016	1,269,651	1.000	0.997	1.054	1,334,198
2017	1,131,807	1.000	0.997	1.054	1,189,453
2018	1,147,135	1.000	0.997	1.054	1,205,497
2019	1,029,570	1.000	0.997	1.054	1,082,150
2020	1,309,154	1.004	0.997	1.054	1,381,672
Total	5,887,317				6,192,969

Notes:

(2): Section VIII-F, Exhibit 1, Page 3.

(3): Section V-E, Exhibit 1.

(4): The offset for Merit Rating and Average Experience Modification from the 7/1/2022 Stipulation.

(5): The offset for ARAP from the 7/1/2022 Stipulation.

(6) = (2) x (3) x (4) x (5)

VIII 000012

Section VIII - F-Class Recommendation
Subsection C - Adjusted Losses
7/1/2023

Section VIII-C
Exhibit 1
Page 1

Calculation of Adjusted Indemnity and Medical Losses Federal Losses

(A). Unit Statistical Limited Reported Losses

Indemnity	Policy Year				
	2016	2017	2018	2019	2020
Fatal	0	200,000	0	0	0
Permanent Total	0	0	0	0	0
Permanent Partial	0	4,957	0	0	29,889
Temporary Total	297,363	112,310	91,246	223,902	115,227
Medical					
Fatal	0	0	0	0	0
Permanent Total	0	0	0	0	0
Permanent Partial	0	6,272	0	0	34,619
Temporary Total	137,240	89,218	66,408	163,393	76,016
Medical Only	28,611	17,579	8,377	11,244	13,477

(B). Unit Statistical Converted Unlimited Losses

Converted unlimited Losses are Limited Losses after the application of Primary, Excess and Secondary Conversion Factors.

Indemnity	Policy Year				
	2016	2017	2018	2019	2020
Fatal	0	183,502	0	0	0
Permanent Total	0	0	0	0	0
Permanent Partial	0	6,757	0	0	93,641
Temporary Total	407,110	170,396	148,604	462,489	363,258
Medical					
Fatal	0	17,955	0	0	0
Permanent Total	0	0	0	0	0
Permanent Partial	0	8,199	0	0	79,485
Temporary Total	193,106	138,976	100,796	324,369	170,652
Medical Only	28,563	17,613	8,608	14,908	20,713

Note:

(B): Section VIII-G.

VIII 000013

Section VIII - F-Class Recommendation
 Subsection C - Adjusted Losses
 7/1/2023

Section VIII-C
 Exhibit 1
 Page 2

Calculation of Adjusted Indemnity and Medical Losses Federal Losses

(C). Investment Income Offset Factor

The impact from this factor needs to be removed from the Federal Conversion Factors.

Indemnity	Investment Income Offset Factor
Fatal	0.695
Permanent Total	0.612
Permanent Partial	1.076
Temporary Total	1.094
Medical	
Fatal	1.000
Permanent Total	0.611
Permanent Partial	1.075
Temporary Total	1.093
Medical Only	1.000

(D). Adjusted Losses

Indemnity	Policy Year				
	2016	2017	2018	2019	2020
Fatal	0	263,986	0	0	0
Permanent Total	0	0	0	0	0
Permanent Partial	0	6,279	0	0	87,023
Temporary Total	372,021	155,709	135,796	422,626	331,948
Medical					
Fatal	0	17,955	0	0	0
Permanent Total	0	0	0	0	0
Permanent Partial	0	7,628	0	0	73,951
Temporary Total	176,659	127,139	92,211	296,742	156,117
Medical Only	28,563	17,613	8,608	14,908	20,713
Adjusted Losses, LAE, LBA	2,814,195				

Notes:

(C): Section IX-B, Exhibit 4.

(D) = (B) / (C)

VIII 000014

Section VIII - F-Class Recommendation
Subsection C - Adjusted Losses
7/1/2023

Section VIII-C
Exhibit 1
Page 3

Calculation of Adjusted Indemnity and Medical Losses State Losses

(A). Unit Statistical Limited Reported Losses

Indemnity	Policy Year				
	2016	2017	2018	2019	2020
Fatal	0	0	0	0	0
Permanent Total	0	0	0	0	0
Permanent Partial	0	0	0	0	0
Temporary Total	0	0	0	0	0
Medical					
Fatal	0	0	0	0	0
Permanent Total	0	0	0	0	0
Permanent Partial	0	0	0	0	0
Temporary Total	0	0	0	0	0
Medical Only	0	0	0	0	0

(B). Unit Statistical Converted Unlimited Losses

Unlimited Losses are Limited Losses after the application of Primary, Excess and Secondary Conversion Factors.

Indemnity	Policy Year				
	2016	2017	2018	2019	2020
Fatal	0	0	0	0	0
Permanent Total	0	0	0	0	0
Permanent Partial	0	0	0	0	0
Temporary Total	0	0	0	0	0
Medical					
Fatal	0	0	0	0	0
Permanent Total	0	0	0	0	0
Permanent Partial	0	0	0	0	0
Temporary Total	0	0	0	0	0
Medical Only	0	0	0	0	0

Notes:

(B): Section VIII-G.

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Section VIII - F-Class Recommendation
 Subsection C - Adjusted Losses
 7/1/2023

Section VIII-C
 Exhibit 1
 Page 4

Calculation of Adjusted Indemnity and Medical Losses State Losses

(C). Investment Income Offset Factor

The impact from this factor needs to be removed from the State Conversion Factors.

Indemnity	Investment Income Offset Factor
Fatal	0.695
Permanent Total	0.612
Permanent Partial	1.076
Temporary Total	1.094

Medical	
Fatal	1.000
Permanent Total	0.611
Permanent Partial	1.075
Temporary Total	1.093
Medical Only	1.000

(D). Adjusted Losses

Indemnity	Policy Year				
	2016	2017	2018	2019	2020
Fatal	0	0	0	0	0
Permanent Total	0	0	0	0	0
Permanent Partial	0	0	0	0	0
Temporary Total	0	0	0	0	0
Medical					
Fatal	0	0	0	0	0
Permanent Total	0	0	0	0	0
Permanent Partial	0	0	0	0	0
Temporary Total	0	0	0	0	0
Medical Only	0	0	0	0	0
Adjusted Losses, LAE	0				

Notes:

(C): Section IX-B, Exhibit 4.

(D) = (B) / (C)

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Section VIII - F-Class Recommendation
Subsection D - Proposed Rates
7/1/2023

Section VIII-D
Exhibit 1

Proposed Rates and Rating Values to be Effective 7/1/2023

Class Code (1)	Manual Rate (2)	Minimum Premium (3)	Loss Constant (4)	Expected Loss Rate (5)	D-Ratio (6)
6801	4.98	333	0	2.16	0.17
6824	6.31	471	0	2.63	0.19
6826	3.99	299	0	1.73	0.17
6843	11.94	500	0	4.94	0.17
6872	11.21	500	0	4.63	0.19
6874	14.79	500	0	6.11	0.17
7309	11.15	500	0	4.61	0.18
7313	15.15	500	0	6.26	0.16
7317	12.79	500	0	5.29	0.17
7327	18.86	500	0	7.80	0.17
7350	15.45	500	0	6.45	0.16
8709	4.28	309	0	1.77	0.18
8726	4.03	300	0	1.75	0.18
9077	6.47	476	0	2.91	0.21

Notes:

(2), (3): Calculated as per Section VIII-I, Exhibit 4.

(4): F-Classes have no loss constant.

(5), (6): Calculated as per Section X.

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Section VIII - F-Class Recommendation
 Subsection E - Conversion/Excess Loss Factors
 7/1/2023

Section VIII-E
 Exhibit 1
 Page 1

Calculation of Indemnity and Medical Conversion Factors Federal Losses

(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				
	2016	2017	2018	2019	2020
Fatal	1.040	1.035	1.030	1.025	1.020
Permanent Total	1.032	1.028	1.024	1.020	1.016
Permanent Partial	1.016	1.014	1.012	1.010	1.008
Temporary Total	1.032	1.028	1.024	1.020	1.016
Medical					
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				
	2016	2017	2018	2019	2020
Likely	1.088	1.113	1.281	1.481	2.325
Not Likely	1.040	1.054	1.109	1.254	1.810
Medical					
Likely	1.134	1.176	1.250	1.316	1.527
Not Likely	1.024	1.023	1.024	1.060	1.135

(C). Trend Factors

The following factors trend the MA Unit Statistical Plan losses from the reported period to the proposed effective period for new rates.

Indemnity	Policy Year				
	2016	2017	2018	2019	2020
All Injury Types	0.761	0.748	0.777	0.858	0.888
Medical					
Lost Time Medical	0.701	0.695	0.717	0.826	0.862
Medical Only	0.623	0.614	0.628	0.771	0.817

(D). Primary Conversion Factors (PCF)

Indemnity	Policy Year				
	2016	2017	2018	2019	2020
Fatal - LD	0.861	0.862	1.025	1.303	2.105
Fatal - NLD	0.823	0.816	0.887	1.103	1.639
Permanent Total	0.854	0.856	1.019	1.296	2.097
Permanent Partial - LD	0.840	0.844	1.007	1.284	2.081
Permanent Partial - NLD	0.803	0.799	0.872	1.087	1.620
Temporary Total - LD	0.854	0.856	1.019	1.296	2.097
Temporary Total - NLD	0.816	0.810	0.882	1.098	1.633
Medical					
Lost Time Medical -LD	0.795	0.817	0.896	1.087	1.316
Lost Time Medical -NLD	0.718	0.711	0.734	0.876	0.978
Medical - NLD	0.638	0.628	0.643	0.818	0.927

Notes:

- (A): Section IV-F, Exhibit 1.
- (B): NCCI.
- (C): Section IX-B, Exhibit 1, Page 1.
- (D) = (A) x (B) x (C)

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Section VIII - F-Class Recommendation
Subsection E - Conversion/Excess Loss Factors
7/1/2023

Section VIII-E
Exhibit 1
Page 2

Calculation of Indemnity and Medical Conversion Factors Federal Losses

(A). Loss Adjustment Expense Factor

The following factor is applied to include the proposed loss adjustment expense.

	Indemnity	Medical
Loss Adjustment Expense Factor	1.183	1.183

(B). Loss Based Assessments (Special Fund Assessment)

	Indemnity	Medical
Loss Based Assessments	0.088	0.000

(C). Investment Income Offset Factor

The following factor is applied to adjust for investment income.

Indemnity	Investment Income Offset Factor
Fatal	0.695
Permanent Total	0.612
Permanent Partial	1.076
Temporary Total	1.094

Medical	
Fatal	1.000
Permanent Total	0.611
Permanent Partial	1.075
Temporary Total	1.093
Medical Only	1.000

(D). Secondary Conversion Factors (SCF)

Indemnity	
Fatal	0.883
Permanent Total	0.777
Permanent Partial	1.367
Temporary Total	1.390

Medical	
Fatal	1.183
Permanent Total	0.723
Permanent Partial	1.271
Temporary Total	1.293
Medical Only	1.183

Notes:

(A): 1.000 + Loss Adjustment Expense (as a percent of losses) from Section VI-A, Exhibit 1.

(B): NCCI Tax and Assessment Directory.

(C): Section IX-B, Exhibit 4.

(D) = [(A) + (B)] x (C)

VIII 000019

Section VIII - F-Class Recommendation
 Subsection E - Conversion/Excess Loss Factors
 7/1/2023

Section VIII-E
 Exhibit 1
 Page 3

Calculation of Indemnity and Medical Conversion Factors State Losses

The MA Indicated Pure Premium Relativities are calculated from exposure and loss data for the latest available 5 policy years of Unit Statistical data.

Below are adjustment factors used to put the losses at the level proposed in this filing.

(A). Primary State Conversion Factors

Indemnity	Policy Year				
	2016	2017	2018	2019	2020
Fatal - LD	0.860	0.857	0.931	1.186	1.888
Fatal - NLD	0.834	0.830	0.906	1.133	1.615
Permanent Total	0.874	0.869	0.943	1.199	1.905
Permanent Partial - LD	0.918	0.909	0.982	1.245	1.968
Permanent Partial - NLD	0.890	0.880	0.956	1.189	1.684
Temporary Total - LD	0.850	0.848	0.923	1.177	1.875
Temporary Total - NLD	0.824	0.821	0.898	1.124	1.605
Medical					
Lost Time Medical - LD	0.626	0.615	0.635	0.753	0.850
Lost Time Medical - NLD	0.691	0.683	0.705	0.812	0.868
Medical - NLD	0.614	0.604	0.618	0.758	0.823

(B). Secondary State Conversion Factors

Indemnity	
Fatal	0.822
Permanent Total	0.724
Permanent Partial	1.273
Temporary Total	1.295
Medical	
Fatal	1.183
Permanent Total	0.723
Permanent Partial	1.272
Temporary Total	1.293
Medical Only	1.183

Notes:

(A): Section IX-B, Exhibit 1, Page 2.

(B): Section IX-B, Exhibit 1, Page 3.

Calculation of Converted Limited Losses by Indemnity Likely/Not-Likely and Medical Likely/Not-Likely
 Federal Industry Group
 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)	Not Likely (11)	
2016	Fatal	0	0	0	0	0	0	0	0	0	0
	Permanent Total	0	0	0	0	0	0	0	0	0	0
	Permanent Partial	0	0	0	0	0	0	0	0	0	0
	Temporary Total	0	297,363	0	137,240	434,603	0	242,712	0	98,578	341,290
	Medical Only	0	0	0	28,611	28,611	0	0	0	18,250	18,250
2017	Fatal	200,000	0	0	0	200,000	172,350	0	0	0	172,350
	Permanent Total	0	0	0	0	0	0	0	0	0	0
	Permanent Partial	0	4,957	0	6,272	11,229	0	3,963	0	4,457	8,420
	Temporary Total	0	112,310	0	89,218	201,528	0	91,026	0	63,396	154,422
	Medical Only	0	0	0	17,579	17,579	0	0	0	11,044	11,044
2018	Fatal	0	0	0	0	0	0	0	0	0	0
	Permanent Total	0	0	0	0	0	0	0	0	0	0
	Permanent Partial	0	0	0	0	0	0	0	0	0	0
	Temporary Total	0	91,246	0	66,408	157,654	0	80,470	0	48,727	129,197
	Medical Only	0	0	0	8,377	8,377	0	0	0	5,390	5,390
2019	Fatal	0	0	0	0	0	0	0	0	0	0
	Permanent Total	0	0	0	0	0	0	0	0	0	0
	Permanent Partial	0	0	0	0	0	0	0	0	0	0
	Temporary Total	67,794	156,108	57,205	106,188	387,295	87,893	171,368	62,196	92,993	414,450
	Medical Only	0	0	0	11,244	11,244	0	0	0	9,192	9,192
2020	Fatal	0	0	0	0	0	0	0	0	0	0
	Permanent Total	0	0	0	0	0	0	0	0	0	0
	Permanent Partial	0	29,889	0	34,619	64,508	0	48,418	0	33,870	82,288
	Temporary Total	32,168	83,059	10,750	65,266	191,243	67,459	135,600	14,150	63,853	281,062
	Medical Only	0	0	0	13,477	13,477	0	0	0	12,498	12,498
All Years, All Injury Types		299,962	774,932	67,955	584,499	1,727,348	327,702	773,557	76,346	462,248	1,639,853

Notes:

(3), (4), (5), (6): Unit Statistical Data, excluding Large Deductibles.

(8), (9), (10), (11): Limited Incurred Losses x Primary Conversion Factors from Section VIII-E, Exhibit 1, Page 1.

(12) = (8) + (9) + (10) + (11)

VIII 000020

Calculation of Converted Unlimited Losses by Indemnity Likely/Not-Likely and Medical Likely/Not-Likely
 Federal Industry Group
 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)		
2016	Fatal	0	0	0	0	0	0	0	0	0	0	193,244
2016	Permanent Total	0	0	0	0	0	0	0	0	0	0	
2016	Permanent Partial	0	0	0	0	0	0	0	0	0	0	
2016	Temporary Total	0	50,099	0	50,814	100,913	0	407,110	0	193,106	600,216	
2016	Medical Only	0	0	0	5,904	5,904	0	0	0	28,563	28,563	
2017	Fatal	35,429	0	15,184	0	50,613	183,502	0	17,955	0	201,457	171,747
2017	Permanent Total	0	0	0	0	0	0	0	0	0	0	
2017	Permanent Partial	0	980	0	1,994	2,974	0	6,757	0	8,199	14,956	
2017	Temporary Total	0	31,530	0	44,120	75,650	0	170,396	0	138,976	309,372	
2017	Medical Only	0	0	0	3,850	3,850	0	0	0	17,613	17,613	
2018	Fatal	0	0	0	0	0	0	0	0	0	0	178,290
2018	Permanent Total	0	0	0	0	0	0	0	0	0	0	
2018	Permanent Partial	0	0	0	0	0	0	0	0	0	0	
2018	Temporary Total	0	26,412	0	29,251	55,663	0	148,604	0	100,796	249,400	
2018	Medical Only	0	0	0	1,889	1,889	0	0	0	8,608	8,608	
2019	Fatal	0	0	0	0	0	0	0	0	0	0	165,984
2019	Permanent Total	0	0	0	0	0	0	0	0	0	0	
2019	Permanent Partial	0	0	0	0	0	0	0	0	0	0	
2019	Temporary Total	34,138	39,243	50,635	45,117	169,133	169,665	292,824	145,846	178,523	786,858	
2019	Medical Only	0	0	0	3,415	3,415	0	0	0	14,908	14,908	
2020	Fatal	0	0	0	0	0	0	0	0	0	0	175,170
2020	Permanent Total	0	0	0	0	0	0	0	0	0	0	
2020	Permanent Partial	0	20,077	0	28,667	48,744	0	93,641	0	79,485	173,126	
2020	Temporary Total	27,972	30,240	20,370	33,649	112,231	132,683	230,575	44,620	126,032	533,910	
2020	Medical Only	0	0	0	5,018	5,018	0	0	0	20,713	20,713	
(14)	All Years and Injury Types	97,539	198,581	86,189	253,688	635,997	485,850	1,349,907	208,421	915,522	2,959,700	884,435
(15)	Pure Premium						0.549	1.526	0.236	1.035	3.346	

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 VIII-E, Exhibit 1, Page 2.

(12) = (8) + (9) + (10) + (11)

(13): From Page 3.

(15): Pure Premium calculated as the All Years, All Injury Types Adjusted Converted Losses divided by the All Years, All Injury Types Exposure.

VIII 000021

Calculation of Manual Premium by Extension of Exposures
 Federal Industry Group
 All Classes

Class Code	Exposure By Policy Year						Current Rate	Manual Premium					
	2016	2017	2018	2019	2020	Total		2016	2017	2018	2019	2020	Total
	(2)	(3)	(4)	(5)	(6)	(7)		= (2) x (8) (9)	= (3) x (8) (10)	= (4) x (8) (11)	= (5) x (8) (12)	= (6) x (8) (13)	= (7) x (8) (14)
6801	0	0	0	0	0	0	6.01	0	0	0	0	0	0
6824	45,902	36,701	34,164	31,788	33,327	181,882	8.28	380,069	303,884	282,878	263,205	275,948	1,505,983
6826	19,475	0	3	801	1,568	21,847	4.97	96,791	0	15	3,981	7,793	108,580
6843	6,497	7,410	2,665	1,304	0	17,876	10.91	70,882	80,843	29,075	14,227	0	195,027
6872	8,885	11,081	11,281	11,492	33,308	76,047	15.28	135,763	169,318	172,374	175,598	508,946	1,161,998
6874	10	0	0	40	0	50	16.69	167	0	0	668	0	835
7309	13,523	11,775	20,845	13,002	11,471	70,616	10.27	138,881	120,929	214,078	133,531	117,807	725,226
7313	0	0	0	0	0	0	13.84	0	0	0	0	0	0
7317	4,059	3,162	655	539	884	9,299	17.32	70,302	54,766	11,345	9,335	15,311	161,059
7327	157	91	494	395	569	1,706	22.53	3,537	2,050	11,130	8,899	12,820	38,436
7350	0	0	0	0	0	0	17.07	0	0	0	0	0	0
8709	0	0	0	23	0	23	5.35	0	0	0	123	0	123
8726	94,736	101,527	108,183	106,600	94,043	505,089	3.94	373,260	400,016	426,241	420,004	370,529	1,990,051
9077	0	0	0	0	0	0	5.91	0	0	0	0	0	0
Total	193,244	171,747	178,290	165,984	175,170	884,435		1,269,651	1,131,807	1,147,135	1,029,570	1,309,154	5,887,317

Notes:
 (2) - (7): Unit Statistical Data.
 (8): Section VIII-D, Exhibit 1 of the 7/1/2022 Stipulation.

VIII 000022

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 = $(4) / [\text{Total of (4)}]$ (5)	Expected Loss and LAE Ratio (6)	Loss Based Assessment Change Factor (7)	Federal Losses as a % of Total Losses (8)	Benefit Level Change Factor (9)	Trend (10)	Pure Premium Underlying Present Rate Factor = $(3) \times (5) \times (6) \times (7) \times (9) \times (10)$ (11)
Federal	Indemnity	6.903	2.212	0.581	0.742	0.994	1.000	1.003	0.967	2.867
	Medical	6.903	1.596	0.419	0.742	0.994	1.000	1.000	0.957	2.041
	Total		3.808							

Notes:

- (3): Section VIII-H, Exhibit 1 of the 7/1/2022 Stipulation.
- (4): Section VIII-G of the 7/1/2022 Stipulation.
- (6): Section VI-J, Exhibit 1 of the 7/1/2022 Stipulation.
- (7): Change in load from Section VIII-K, Exhibit 1 and the 7/1/2022 Stipulation.
- (8): Based on ratio of Federal losses to sum of Federal and State losses from Section VIII-C, Exhibit 1, Pages 1 & 3.
- (9): Weighted average of Section IV-A, Exhibit 1 and Section IV-F, Exhibit 1, using weights from Column (8).
- (10): Section V-A, Exhibit 1.

VIII 000024

Section VIII - F-Class Recommendation
 Subsection F - Proposed Pure Premium Relativities
 7/1/2023

Section VIII-F
 Exhibit 3

Calculation of Pure Premiums Underlying Present Rate Federal Industry Group

Class Code	Adopted Relativities		Pure Premiums Underlying Present Rate		
	Indemnity	Medical	Indemnity	Medical	Total = (4) + (5)
(1)	(2)	(3)	(4)	(5)	(6)
6801	1.065	0.632	3.054	1.290	4.344
6824	1.144	1.318	3.280	2.689	5.970
6826	0.826	0.600	2.367	1.225	3.593
6843	2.579	1.860	7.393	3.796	11.189
6872	2.485	2.044	7.125	4.172	11.297
6874	2.948	1.898	8.452	3.875	12.327
7309	1.672	1.285	4.793	2.623	7.416
7313	14.607	2.781	41.877	5.675	47.553
7317	2.784	2.218	7.981	4.527	12.508
7327	3.672	2.813	10.528	5.741	16.269
7350	3.115	1.673	8.930	3.415	12.345
8709	0.861	0.686	2.468	1.401	3.869
8726	0.538	0.636	1.543	1.298	2.841
9077	0.859	1.796	2.464	3.666	6.130

Notes:

(2), (3): Section VIII-H, Exhibit 2 of the 7/1/2022 Stipulation.

(4), (5) = (2), (3) x Pure Premium Underlying Present Rate Factors from Exhibit 2.

VIII 00025

Section VIII - F-Class Recommendation
 Subsection G - Class Relativities
 7/1/2023

Section VIII - G
 Exhibit 1

Calculation of Class Relativities

Class(es): 6801 BOAT BUILDING - WOOD - NOC & DRIVERS: US ACT									Effective: 7/1/2023			Federal Class Codes		
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)			
2016	0	0	0	0	0	0	0	0	0.000	0.000	0.000			
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			
MA Total:	0	0	0	0	0	0	0	0	.	.	.			

	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:	0.424	0.410	0.834
(16) Countrywide Indicated Relativity:	0.193	0.333	.
(17) Countrywide Credibility:	0.120	0.130	.
(18) Countrywide Lost-Time Claims:	6.000	.	.
(19) Pure Premium Underlying Present Rate:	3.054	1.290	4.344
(20) Relativity to Underlying Present Rate:	1.066	0.636	.
(21) Credibility to Underlying Relativity:	0.880	0.870	.
(22) Industry Group Converted Pure Premium:	2.076	1.271	3.346
(23) Formula Relativity:	0.961	0.597	.
(24) Balanced Formula Relativity:	0.970	0.586	0.824

Class(es): 6824 BOAT BUILDING OR REPAIRING & DRIVERS: US ACT									Effective: 7/1/2023			Federal Class Codes		
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)			
2016	45.902	0	5	0	3.187	0	17.826	21.013	0.069	0.388	0.458			
2017	36.701	0	7	0	46.537	0	53.043	99.580	1.268	1.445	2.713			
2018	34.164	0	9	0	24.261	0	14.810	39.071	0.710	0.433	1.144			
2019	31.788	0	4	0	167.177	0	43.358	210.535	5.259	1.364	6.623			
2020	33.327	0	4	0	98.451	0	65.912	164.363	2.954	1.978	4.932			
MA Total:	181.882	0	29	0	339.614	0	194.948	534.562	1.867	1.072	2.939			

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.900	0.843	.
(14) Massachusetts Credibility:	0.210	0.380	.
(15) Countrywide Pure Premium:	1.890	1.519	3.409
(16) Countrywide Indicated Relativity:	0.858	1.234	.
(17) Countrywide Credibility:	0.310	0.310	.
(18) Countrywide Lost-Time Claims:	64.000	.	.
(19) Pure Premium Underlying Present Rate:	3.280	2.689	5.970
(20) Relativity to Underlying Present Rate:	1.145	1.326	.
(21) Credibility to Underlying Relativity:	0.480	0.310	.
(22) Industry Group Converted Pure Premium:	2.076	1.271	3.346
(23) Formula Relativity:	1.005	1.114	.
(24) Balanced Formula Relativity:	1.013	1.095	1.044

VIII 000026

Section VIII - F-Class Recommendation
 Subsection G - Class Relativities
 7/1/2023

Section VIII - G
 Exhibit 2

Calculation of Class Relativities

Class(es): 6826 MARINA & DRIVERS: US ACT		Effective: 7/1/2023							Federal Class Codes		
		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)
2016	19,475	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	3	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	801	0	1	0	0	0	2,805	2,805	0.000	3.503	3.503
2020	1,568	0	1	0	4,469	0	13,717	18,186	2,850	8,750	11,600
MA Total:	21,847	0	2	0	4,469	0	16,522	20,991	0.205	0.756	0.961

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.099	0.595	.
(14) Massachusetts Credibility:	0.080	0.120	.
(15) Countrywide Pure Premium:	1.115	0.548	1.663
(16) Countrywide Indicated Relativity:	0.506	0.445	.
(17) Countrywide Credibility:	0.170	0.180	.
(18) Countrywide Lost-Time Claims:	13.000	.	.
(19) Pure Premium Underlying Present Rate:	2.367	1.225	3.593
(20) Relativity to Underlying Present Rate:	0.827	0.604	.
(21) Credibility to Underlying Relativity:	0.750	0.700	.
(22) Industry Group Converted Pure Premium:	2.076	1.271	3.346
(23) Formula Relativity:	0.714	0.574	.
(24) Balanced Formula Relativity:	0.720	0.564	0.661

Class(es): 6843 SHIP BUILDING-IRON OR STEEL-NOC & DRIVERS: US ACT		Effective: 7/1/2023							Federal Class Codes		
		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)
2016	6,497	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	7,410	0	3	0	0	0	631	631	0.000	0.085	0.085
2018	2,665	0	2	0	84,514	0	29,913	114,427	31,716	11,226	42,942
2019	1,304	0	1	0	0	0	824	824	0.000	0.631	0.631
2020	0	0	0	0	0	0	0	0	0.000	0.000	0.000
MA Total:	17,876	0	6	0	84,514	0	31,367	115,881	4,728	1,755	6,482

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.278	1.381	.
(14) Massachusetts Credibility:	0.110	0.170	.
(15) Countrywide Pure Premium:	7.378	3.666	11.044
(16) Countrywide Indicated Relativity:	3.351	2.978	.
(17) Countrywide Credibility:	0.370	0.400	.
(18) Countrywide Lost-Time Claims:	99.000	.	.
(19) Pure Premium Underlying Present Rate:	7.393	3.796	11.189
(20) Relativity to Underlying Present Rate:	2.582	1.871	.
(21) Credibility to Underlying Relativity:	0.520	0.430	.
(22) Industry Group Converted Pure Premium:	2.076	1.271	3.346
(23) Formula Relativity:	2.833	2.230	.
(24) Balanced Formula Relativity:	2.858	2.192	2.605

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Section VIII - F-Class Recommendation
 Subsection G - Class Relativities
 7/1/2023

Section VIII - G
 Exhibit 3

Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Federal Class Codes			
6872 SHIP REPAIR CONVERSION- ALL OP & DR: US ACT												
		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)	
2016	8,885	0	1	0	588	0	799	1,387	0.066	0.090	0.156	
2017	11,081	0	2	0	111,588	0	88,538	200,126	10.071	7.990	18.061	
2018	11,281	0	1	0	0	0	678	678	0.000	0.060	0.060	
2019	11,492	0	4	0	0	0	2,206	2,206	0.000	0.192	0.192	
2020	33,308	0	5	0	93,641	0	87,705	181,345	2.811	2.633	5.445	
MA Total:	76,046	0	13	0	205,817	0	179,926	385,743	2.706	2.366	5.072	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.304	1.862	.
(14) Massachusetts Credibility:	0.200	0.320	.
(15) Countrywide Pure Premium:	2.792	2.614	5.405
(16) Countrywide Indicated Relativity:	1.268	2.123	.
(17) Countrywide Credibility:	0.400	0.340	.
(18) Countrywide Lost-Time Claims:	168.00	.	.
(19) Pure Premium Underlying Present Rate:	7.125	4.172	11.297
(20) Relativity to Underlying Present Rate:	2.488	2.057	.
(21) Credibility to Underlying Relativity:	0.400	0.340	.
(22) Industry Group Converted Pure Premium:	2.076	1.271	3.346
(23) Formula Relativity:	1.763	2.017	.
(24) Balanced Formula Relativity:	1.778	1.982	1.856

Class(es):		Effective: 7/1/2023							Federal Class Codes			
6874 PAINTING: SHIP HULLS - US ACT												
		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)	
2016	10	0	0	0	0	0	0	0	0.000	0.000	0.000	
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	40	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	
MA Total:	50	0	0	0	0	0	0	0	0.000	0.000	0.000	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.010	0.020	.
(15) Countrywide Pure Premium:	4.171	2.976	7.147
(16) Countrywide Indicated Relativity:	1.895	2.417	.
(17) Countrywide Credibility:	0.170	0.180	.
(18) Countrywide Lost-Time Claims:	13.000	.	.
(19) Pure Premium Underlying Present Rate:	8.452	3.875	12.327
(20) Relativity to Underlying Present Rate:	2.951	1.910	.
(21) Credibility to Underlying Relativity:	0.820	0.800	.
(22) Industry Group Converted Pure Premium:	2.076	1.271	3.346
(23) Formula Relativity:	2.742	1.963	.
(24) Balanced Formula Relativity:	2.766	1.929	2.448

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 Subsection G - Class Relativities
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Section VIII - G
 Exhibit 4

Calculation of Class Relativities

Class(es): 7309 STEVEDORING: NOC - US ACT		Effective: 7/1/2023							Federal Class Codes		
		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)
2016	13.523	0	1	0	634	0	1,381	2,015	0.047	0.102	0.149
2017	11.775	0	1	0	0	0	537	537	0.000	0.046	0.046
2018	20.845	0	1	0	0	0	61	61	0.000	0.003	0.003
2019	13.002	1	1	151.170	0	139,898	1,235	292,303	11.627	10.855	22.481
2020	11.471	1	0	132,683	0	44,620	0	177,303	11.567	3.890	15.457
MA Total:	70,616	2	4	283,853	634	184,518	3,213	472,218	4.029	2,658	6.687

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.941	2.092	.
(14) Massachusetts Credibility:	0.170	0.260	.
(15) Countrywide Pure Premium:	4.811	2.406	7.216
(16) Countrywide Indicated Relativity:	2.185	1.954	.
(17) Countrywide Credibility:	0.370	0.370	.
(18) Countrywide Lost-Time Claims:	95.000	.	.
(19) Pure Premium Underlying Present Rate:	4.793	2.623	7.416
(20) Relativity to Underlying Present Rate:	1.674	1.293	.
(21) Credibility to Underlying Relativity:	0.460	0.370	.
(22) Industry Group Converted Pure Premium:	2.076	1.271	3.346
(23) Formula Relativity:	1.908	1.745	.
(24) Balanced Formula Relativity:	1.925	1.715	1.845

Class(es): 7313 COAL DOCK OPERATION & STEVEDORING: US ACT		Effective: 7/1/2023							Federal Class Codes		
		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)
2016	0	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	0	0	0	0	0	0	0	0	0	0	0

	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:	3.235	16.133	19.367
(16) Countrywide Indicated Relativity:	1.469	13.103	.
(17) Countrywide Credibility:	0.230	0.240	.
(18) Countrywide Lost-Time Claims:	28.000	.	.
(19) Pure Premium Underlying Present Rate:	41.877	5.675	47.553
(20) Relativity to Underlying Present Rate:	14.623	2.798	.
(21) Credibility to Underlying Relativity:	0.770	0.760	.
(22) Industry Group Converted Pure Premium:	2.076	1.271	3.346
(23) Formula Relativity:	11.598	5.271	.
(24) Balanced Formula Relativity:	11.698	5.179	9.223

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 Subsection G - Class Relativities
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Section VIII - G
 Exhibit 5

Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Federal Class Codes		
7317 STEVEDORING: BY HAND OR HAND TRUCKS: US ACT											
		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)
2016	4,059	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	3,162	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	655	0	1	0	2,855	0	3,422	6,277	4,361	5,227	9,588
2019	539	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	884	0	0	0	0	0	0	0	0.000	0.000	0.000
MA Total:	9,298	0	1	0	2,855	0	3,422	6,277	0.307	0.368	0.675

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.148	0.290	.
(14) Massachusetts Credibility:	0.090	0.140	.
(15) Countrywide Pure Premium:	4.402	2.247	6.649
(16) Countrywide Indicated Relativity:	2.000	1.825	.
(17) Countrywide Credibility:	0.320	0.340	.
(18) Countrywide Lost-Time Claims:	65.000	.	.
(19) Pure Premium Underlying Present Rate:	7.981	4.527	12.508
(20) Relativity to Underlying Present Rate:	2.787	2.232	.
(21) Credibility to Underlying Relativity:	0.590	0.520	.
(22) Industry Group Converted Pure Premium:	2.076	1.271	3.346
(23) Formula Relativity:	2.297	1.821	.
(24) Balanced Formula Relativity:	2.317	1.790	2.117

Class(es):		Effective: 7/1/2023							Federal Class Codes		
7327 STEVEDORING: CONTAINERIZED FREIGHT & DRIVERS: US ACT											
		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)
2016	157	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	91	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	494	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	395	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	569	0	0	0	0	0	0	0	0.000	0.000	0.000
MA Total:	1,706	0	0	0	0	0	0	0	0.000	0.000	0.000

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.050	0.080	.
(15) Countrywide Pure Premium:	9.617	0.641	10.258
(16) Countrywide Indicated Relativity:	4.368	0.521	.
(17) Countrywide Credibility:	0.080	0.080	.
(18) Countrywide Lost-Time Claims:	2.000	.	.
(19) Pure Premium Underlying Present Rate:	10.528	5.741	16.269
(20) Relativity to Underlying Present Rate:	3.676	2.830	.
(21) Credibility to Underlying Relativity:	0.870	0.840	.
(22) Industry Group Converted Pure Premium:	2.076	1.271	3.346
(23) Formula Relativity:	3.548	2.419	.
(24) Balanced Formula Relativity:	3.578	2.377	3.122

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Section VIII - G
 Exhibit 6

Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Federal Class Codes		
7350 FREIGHT HANDLING NOC: US ACT											
		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)
2016	0	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	0	0	0	0	0	0	0	0	.	.	.

	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:	6.472	2.236	8.708
(16) Countrywide Indicated Relativity:	2.939	1.816	.
(17) Countrywide Credibility:	0.340	0.350	.
(18) Countrywide Lost-Time Claims:	75.000	.	.
(19) Pure Premium Underlying Present Rate:	8.930	3.415	12.345
(20) Relativity to Underlying Present Rate:	3.118	1.684	.
(21) Credibility to Underlying Relativity:	0.660	0.650	.
(22) Industry Group Converted Pure Premium:	2.076	1.271	3.346
(23) Formula Relativity:	3.057	1.730	.
(24) Balanced Formula Relativity:	3.084	1.700	2.558

Class(es):		Effective: 7/1/2023							Federal Class Codes		
8709 STEVEDORING:TALLIERS & CHECKING CLERKS: US ACT											
		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)
2016	0	0	0	0	0	0	0	0	0.000	0.000	0.000
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	23	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
MA Total:	23	0	0	0	0	0	0	0	0.000	0.000	0.000

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.010	0.010	.
(15) Countrywide Pure Premium:	0.294	0.474	0.769
(16) Countrywide Indicated Relativity:	0.134	0.385	.
(17) Countrywide Credibility:	0.140	0.140	.
(18) Countrywide Lost-Time Claims:	8.000	.	.
(19) Pure Premium Underlying Present Rate:	2.468	1.401	3.869
(20) Relativity to Underlying Present Rate:	0.862	0.691	.
(21) Credibility to Underlying Relativity:	0.850	0.850	.
(22) Industry Group Converted Pure Premium:	2.076	1.271	3.346
(23) Formula Relativity:	0.751	0.641	.
(24) Balanced Formula Relativity:	0.758	0.630	0.709

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Section VIII - G
 Exhibit 7

Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Federal Class Codes		
8726 STEAMSHIP LINE OR AGENCY-PORT EMP: SPRVSR, CAPTNS, ENGRS, STWR											
		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)
2016	94.736	0	14	0	402.701	0	201.663	604.364	4.251	2.129	6.379
2017	101.527	1	12	183.502	19.027	17.955	22.040	242.524	1.995	0.394	2.389
2018	108.183	0	14	0	36.974	0	60.519	97.494	0.342	0.559	0.901
2019	106.600	1	10	18.495	125.646	5.947	143.005	293.093	1.352	1.397	2.749
2020	94.043	0	7	0	127.655	0	58.897	186.552	1.357	0.626	1.984
MA Total:	505.089	2	57	201.997	712.004	23.902	486.123	1,424.027	1.810	1.010	2.819

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.872	0.795	.
(14) Massachusetts Credibility:	0.230	0.420	.
(15) Countrywide Pure Premium:	1.659	0.682	2.340
(16) Countrywide Indicated Relativity:	0.753	0.554	.
(17) Countrywide Credibility:	0.190	0.200	.
(18) Countrywide Lost-Time Claims:	18.000	.	.
(19) Pure Premium Underlying Present Rate:	1.543	1.298	2.841
(20) Relativity to Underlying Present Rate:	0.539	0.640	.
(21) Credibility to Underlying Relativity:	0.580	0.380	.
(22) Industry Group Converted Pure Premium:	2.076	1.271	3.346
(23) Formula Relativity:	0.656	0.688	.
(24) Balanced Formula Relativity:	0.662	0.676	0.667

Class(es):		Effective: 7/1/2023							Federal Class Codes		
9077 UNITED STATES ARMED SERVICE RISK-ALL EMPLOYEES & 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)
2016	0	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	0	0	0	0	0	0	0	0			

	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:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	0.860	1.807	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	2.464	3.666	6.130
(20) Relativity to Underlying Present Rate:	0.860	1.807	.
(21) Credibility to Underlying Relativity:	1.000	1.000	.
(22) Industry Group Converted Pure Premium:	2.076	1.271	3.346
(23) Formula Relativity:	0.860	1.807	.
(24) Balanced Formula Relativity:	0.868	1.776	1.213

VIII 000032

Section VIII - F-Class Recommendation
Subsection H - Proposed Rates
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Section VIII-H
Exhibit 1

Calculation of Federal Industry Group Rate Change and Limits

(1) Industry Group Differential	1.000
(2) Experience and Benefit Level Change - Overall	-9.8%
(3) Target Rate Change = (1) x [1.000 + (2)] - 1.000	-9.8%
(4) Maximum Rate Change = (3) + 20.0%	10.2%
(5) Minimum Rate Change = (3) - 20.0%	-29.8%
(6) Present Average Rate	6.954
(7) Uncapped Rate Level Factor = [1.000 + (3)] x (6)	6.273
(8) Capped Rate Level Factor	6.354

In addition, the WCRIBMA is limiting the increase in average rates for any class to \$15 and no average rate shall exceed \$90 per \$100 of payroll.

Notes:

- (1): Federal Industry Group is the only group being evaluated.
- (2): Selected Rate Change, from Section VIII-A, Exhibit 1.
- (6): Rates by class consistent with the 7/1/22 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.

VIII 000033

Section VIII - F-Class Recommendation
Subsection H - Proposed Rates
7/1/2023

Section VIII-H
Exhibit 2

Calculation of Average Uncapped Rates

Class Code	Balanced Formula Relativity			Uncapped Rate Level Factor	Proposed Average Uncapped Rate = (4) x (5)
	Indemnity	Medical	Total		
(1)	(2)	(3)	(4)	(5)	(6)
6801	0.970	0.586	0.824	6.273	5.17
6824	1.013	1.095	1.044	6.273	6.55
6826	0.720	0.564	0.661	6.273	4.15
6843	2.858	2.192	2.605	6.273	16.34
6872	1.778	1.982	1.856	6.273	11.64
6874	2.766	1.929	2.448	6.273	15.36
7309	1.925	1.715	1.845	6.273	11.57
7313	11.698	5.179	9.223	6.273	57.85
7317	2.317	1.790	2.117	6.273	13.28
7327	3.578	2.377	3.122	6.273	19.58
7350	3.084	1.700	2.558	6.273	16.05
8709	0.758	0.630	0.709	6.273	4.45
8726	0.662	0.676	0.667	6.273	4.18
9077	0.868	1.776	1.213	6.273	7.61

Notes:

(2), (3), (4): Section VIII-G.

(5): Exhibit 1.

VIII 000034

Section VIII - F-Class Recommendation
Subsection H - Proposed Rates
7/1/2023

Section VIII-H
Exhibit 3

Comparison of Average Rates

Class Code (1)	Present Average Capped Rate (2)	Proposed Average Uncapped Rate (3)	Proposed Average Capped Rate (4)
6801	6.28	5.17	5.24
6824	8.65	6.55	6.63
6826	5.20	4.15	4.20
6843	11.40	16.34	12.56
6872	15.97	11.64	11.79
6874	17.44	15.36	15.55
7309	10.73	11.57	11.72
7313	14.46	57.85	15.93
7317	18.10	13.28	13.45
7327	23.54	19.58	19.84
7350	17.84	16.05	16.25
8709	5.59	4.45	4.51
8726	4.12	4.18	4.24
9077	6.18	7.61	6.81

Notes:

(2): Section VIII-H, Exhibit 3 of the 7/1/2022 Stipulation.

(3): Exhibit 2.

(4) = Total Balanced Formula Relativity (Section VIII-G) x Capped Rate Level Factor Subject to maximum and minimum caps (Exhibit 1).

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Section VIII - F-Class Recommendation
Subsection H - Proposed Rates
7/1/2023

Section VIII-H
Exhibit 4

Summary of Proposed Premium Change

Industry Group (1)	Present Premium (2)	Proposed Premium (3)	Proposed Change (4)	Target Change (5)	Capped Rate Level Factor (6)
Federal	6,150,739	5,547,966	-9.8%	-9.8%	6.35

Notes:

(2): Exposure x Present Average Rates, from Exhibit 3.

(3): Exposure x Proposed Average Rates, from Exhibit 3.

(4) = [(3) - (2)] / (2)

(5), (6): Exhibit 1.

VIII 000036

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Subsection H - Proposed Rates
7/1/2023

Section VIII-H
Exhibit 5

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)
Federal	Indemnity	6.273	2.076	0.620	0.738	2.870
	Medical	6.273	1.271	0.380	0.738	1.757
	Total		3.346			

Notes:

(3): Section VIII - H, Exhibit 1.

(4): Section VIII - F, Exhibit 1, Page 2.

(6): Section VI - J, Exhibit 1.

VIII 000037

Pricing Example for Class 6824
 Boat Building Or Repairing & Drivers: Us Act

Calculation of MA Indicated Relativity:

		(A). Federal Benefits - 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	2016	0	0	0	0	0	0	2,252	
	2017	0	0	0	0	4,957	0	28,304	
	2018	0	0	0	0	0	0	15,864	
	2019	0	0	0	0	0	0	87,822	
	2020	0	0	0	0	0	0	34,776	
Medical	2016	0	0	0	0	0	0	2,322	14,360
	2017	0	0	0	0	6,272	0	27,059	8,028
	2018	0	0	0	0	0	0	8,345	2,121
	2019	0	0	0	0	0	0	18,992	812
	2020	0	0	0	0	0	0	33,277	802

		(B). Federal Benefits Primary Conversion Factors (Section VIII-E, Exhibit 1, Page 1)							
Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only	
	LD	NLD		LD	NLD	LD	NLD		
Indemnity	2016	0.861	0.823	0.854	0.840	0.803	0.854	0.816	
	2017	0.862	0.816	0.856	0.844	0.799	0.856	0.810	
	2018	1.025	0.887	1.019	1.007	0.872	1.019	0.882	
	2019	1.303	1.103	1.296	1.284	1.087	1.296	1.098	
	2020	2.105	1.639	2.097	2.081	1.620	2.097	1.633	
Medical	2016	0.795	0.718	0.795	0.795	0.718	0.795	0.718	0.638
	2017	0.817	0.711	0.817	0.817	0.711	0.817	0.711	0.628
	2018	0.896	0.734	0.896	0.896	0.734	0.896	0.734	0.643
	2019	1.087	0.876	1.087	1.087	0.876	1.087	0.876	0.818
	2020	1.316	0.978	1.316	1.316	0.978	1.316	0.978	0.927

		(C). Federal Converted Limited Losses [(A) x (B)]							
Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only	
	LD	NLD		LD	NLD	LD	NLD		
Indemnity	2016	0	0	0	0	0	0	1,838	
	2017	0	0	0	0	3,963	0	22,940	
	2018	0	0	0	0	0	0	13,990	
	2019	0	0	0	0	0	0	96,407	
	2020	0	0	0	0	0	0	56,774	
Medical	2016	0	0	0	0	0	0	1,668	9,160
	2017	0	0	0	0	4,457	0	19,227	5,044
	2018	0	0	0	0	0	0	6,123	1,365
	2019	0	0	0	0	0	0	16,632	664
	2020	0	0	0	0	0	0	32,557	744

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Pricing Example for Class 6824
 Boat Building Or Repairing & Drivers: Us Act

Calculation of MA Indicated Relativity (cont.):

(D). Federal 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	2016	0	0	0	0	0	0	649	
	2017	0	0	0	0	1,400	0	8,102	
	2018	0	0	0	0	0	0	4,941	
	2019	0	0	0	0	0	0	34,049	
	2020	0	0	0	0	0	0	20,052	
Medical	2016	0	0	0	0	0	0	589	3,235
	2017	0	0	0	0	1,574	0	6,791	1,781
	2018	0	0	0	0	0	0	2,163	482
	2019	0	0	0	0	0	0	5,874	234
	2020	0	0	0	0	0	0	11,498	263

(E). Federal Adjusted Excess Losses									
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2016	0	0	0	0	0	0	454	
	2017	0	0	0	0	980	0	5,671	
	2018	0	0	0	0	0	0	3,459	
	2019	0	0	0	0	0	0	23,834	
	2020	0	0	0	0	0	0	14,036	
Medical	2016	0	0	0	0	0	0	784	3,235
	2017	0	0	0	0	1,994	0	9,221	1,781
	2018	0	0	0	0	0	0	3,645	482
	2019	0	0	0	0	0	0	16,089	234
	2020	0	0	0	0	0	0	17,514	263

(F). Federal Secondary Conversion Factors					
	Fatal	Permanent Total	Permanent Partial	Temporary Total	Medical Only
Indemnity	0.883	0.777	1.367	1.390	
Medical	1.183	0.723	1.271	1.293	1.183

(G). Federal Converted Unlimited Losses									
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2016	0	0	0	0	0	0	3,187	
	2017	0	0	0	0	6,757	0	39,780	
	2018	0	0	0	0	0	0	24,261	
	2019	0	0	0	0	0	0	167,177	
	2020	0	0	0	0	0	0	98,451	
Medical	2016	0	0	0	0	0	0	3,169	14,657
	2017	0	0	0	0	8,199	0	36,773	8,071
	2018	0	0	0	0	0	0	12,626	2,184
	2019	0	0	0	0	0	0	42,295	1,062
	2020	0	0	0	0	0	0	64,722	1,190

(H). Total Federal Converted Unlimited Losses				
Policy Year	Indemnity		Medical	
	LD	NLD	LD	NLD
2016	0	3,187	0	17,826
2017	0	46,537	0	53,043
2018	0	24,261	0	14,810
2019	0	167,177	0	43,358
2020	0	98,451	0	65,912
Total	0	339,614	0	194,948

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 VIII-E, Exhibit 1, Page 2.

(G) = [(C) + (E)] x (F)

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Pricing Example for Class 6824
 Boat Building Or Repairing & Drivers: Us Act

Calculation of MA Indicated Relativity (cont.):

		(D). State 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	2016	0	0	0	0	0	0	0	
	2017	0	0	0	0	0	0	0	
	2018	0	0	0	0	0	0	0	
	2019	0	0	0	0	0	0	0	
	2020	0	0	0	0	0	0	0	
Medical	2016	0	0	0	0	0	0	0	0
	2017	0	0	0	0	0	0	0	0
	2018	0	0	0	0	0	0	0	0
	2019	0	0	0	0	0	0	0	0
	2020	0	0	0	0	0	0	0	0

		(E). State Adjusted Excess Losses							
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2016	0	0	0	0	0	0	0	
	2017	0	0	0	0	0	0	0	
	2018	0	0	0	0	0	0	0	
	2019	0	0	0	0	0	0	0	
	2020	0	0	0	0	0	0	0	
Medical	2016	0	0	0	0	0	0	0	0
	2017	0	0	0	0	0	0	0	0
	2018	0	0	0	0	0	0	0	0
	2019	0	0	0	0	0	0	0	0
	2020	0	0	0	0	0	0	0	0

		(F). State Secondary Conversion Factors				
		Fatal	Permanent Total	Permanent Partial	Temporary Total	Medical Only
Indemnity		0.822	0.724	1.273	1.295	
Medical		1.183	0.723	1.272	1.293	1.183

		(G). State Converted Unlimited Losses							
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2016	0	0	0	0	0	0	0	
	2017	0	0	0	0	0	0	0	
	2018	0	0	0	0	0	0	0	
	2019	0	0	0	0	0	0	0	
	2020	0	0	0	0	0	0	0	
Medical	2016	0	0	0	0	0	0	0	0
	2017	0	0	0	0	0	0	0	0
	2018	0	0	0	0	0	0	0	0
	2019	0	0	0	0	0	0	0	0
	2020	0	0	0	0	0	0	0	0

		(H). Total State Converted Unlimited Losses			
Policy Year	Indemnity		Medical		
	LD	NLD	LD	NLD	
2016	0	0	0	0	
2017	0	0	0	0	
2018	0	0	0	0	
2019	0	0	0	0	
2020	0	0	0	0	
Total	0	0	0	0	

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)

VIII 000041

Section VIII - F-Class Recommendation
Subsection I - Pricing Example
7/1/2023

Section VIII-I
Exhibit 1
Page 5

Pricing Example for Class 6824 Boat Building Or Repairing & Drivers: Us Act

Calculation of MA Indicated Relativity (cont.):

Exposure, Converted Unlimited Losses (Both Federal & State)			
Policy Year (1)	Exposure (2)	Indemnity (3)	Medical (4)
2016	45,902	3,187	17,826
2017	36,701	46,537	53,043
2018	34,164	24,261	14,810
2019	31,788	167,177	43,358
2020	33,327	98,451	65,912
Total	181,882	339,614	194,948
(5)	Indicated Pure Premium	1.867	1.072
(6)	Federal Class Codes Industry Group Pure Premium	2.076	1.271
(7)	MA Indicated Relativity	0.900	0.843

Notes:

(2): Unit Statistical Data, excluding Large Deductibles

(3), (4): Converted Unlimited Losses from Pages 2 & 4.

(5): Totals of (3) and (4), divided by Total of (2), respectively.

(6): Section VIII-F, Exhibit 1, Page 2.

(7) = (5) / (6)

VIII 000042

Pricing Example for Class 6824
 Boat Building Or Repairing & Drivers: Us Act

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	1,243	3,760	19,756	10,777	1	1	4,048,429
Arizona	2	0	0	0	0	0	0	5,704
Arkansas	3	0	0	0	0	0	0	57,955
Colorado	5	0	0	0	0	0	0	0
Connecticut	6	105,956	32,566	134,179	45,409	1	1	1,249,557
D.C.	8	0	0	0	0	0	0	0
Florida	9	19,545	81,546	4,686	292,353	1	10	13,163,018
Georgia	10	0	0	0	0	0	0	446,663
Idaho	11	0	0	0	0	0	0	1,506
Illinois	12	0	0	0	0	0	0	716,579
Indiana	13	0	0	0	0	0	0	6,672
Iowa	14	0	137,847	0	142,608	0	3	1,174,545
Kansas	15	0	0	0	0	0	0	0
Kentucky	16	0	0	0	784	0	0	764,009
Louisiana	17	0	5,086	0	95,462	0	1	5,133,165
Maine	18	72,427	24,163	145,442	93,192	1	6	13,928,917
Maryland	19	0	0	0	5,465	0	0	802,585
Michigan	21	0	0	0	0	0	0	0
Minnesota	22	0	0	0	0	0	0	0
Mississippi	23	3,595	189,612	19,102	531,681	1	7	20,537,732
Missouri	24	0	0	0	0	0	0	0
Montana	25	0	0	0	0	0	0	0
Nebraska	26	0	0	0	0	0	0	819
Nevada	27	0	0	0	0	0	0	167,372
New Hampshire	28	0	23,364	0	78,825	0	1	1,783,444
New Mexico	30	0	0	0	0	0	0	0
North Carolina	32	0	49,763	0	69,483	0	1	8,953,017
Oklahoma	35	14,098	0	2,980	0	1	0	500,468
Oregon	36	3,543	34,942	1,597	81,375	1	6	8,269,543
Rhode Island	38	0	35,738	0	37,278	0	2	4,588,610
South Carolina	39	4	193,278	1	131,830	1	2	1,468,961
South Dakota	40	0	0	0	0	0	0	0
Tennessee	41	0	0	0	832	0	0	506,796
Utah	43	0	0	0	0	0	0	0
Vermont	44	0	0	0	0	0	0	0
Virginia	45	0	0	0	5,153	0	0	11,223,383
West Virginia	47	0	0	0	0	0	0	0
Wisconsin	48	0	0	0	0	0	0	0
Hawaii	52	0	48,861	0	36,827	0	1	2,130,189
Alaska	54	77,849	49,695	127,322	298,323	1	13	11,520,709
Total		298,260	910,221	455,065	1,957,657	9	55	113,150,347

Notes:

(3) - (9): Data are total for three policy years. The two older years displayed in Section IX-D, Exhibit 3 at earlier reports and the previous year at third report (example: Alabama 5/2017 - 4/2018 @ First Report, 5/2016 - 4/2017 @ Second Report, 5/2015 - 4/2016 @ Third Report)

(7), (8): Used in calculating countrywide credibilities.

VIII 000043

Pricing Example for Class 6824
 Boat Building Or Repairing & Drivers: Us Act

Calculation of Countrywide Relativity

State (1)	State Code (2)	Federal Class Codes Pitch Factors		Pure Premiums, on MA Level		Total (7)
		Indemnity (3)	Medical (4)	Indemnity (5)	Medical (6)	
Alabama	1	2.761	1.093	0.341	0.824	
Arizona	2	0.000	0.000	0.000	0.000	
Arkansas	3	14.058	1.398	0.000	0.000	
Colorado	5	0.000	0.000	0.000	0.000	
Connecticut	6	0.570	0.256	6.323	3.679	
D.C.	8	17.728	18.947	0.000	0.000	
Florida	9	1.930	0.556	1.482	1.254	
Georgia	10	2.343	0.756	0.000	0.000	
Idaho	11	0.000	0.000	0.000	0.000	
Illinois	12	1.082	0.641	0.000	0.000	
Indiana	13	12.715	1.358	0.000	0.000	
Iowa	14	0.389	0.241	4.563	2.931	
Kansas	15	0.000	0.000	0.000	0.000	
Kentucky	16	16.093	5.177	0.000	0.531	
Louisiana	17	1.397	0.920	0.138	1.710	
Maine	18	3.185	0.851	2.209	1.459	
Maryland	19	2.444	1.664	0.000	1.133	
Michigan	21	0.000	0.000	0.000	0.000	
Minnesota	22	0.000	0.000	0.000	0.000	
Mississippi	23	2.880	0.871	2.709	2.335	
Missouri	24	4.532	4.077	0.000	0.000	
Montana	25	0.000	0.000	0.000	0.000	
Nebraska	26	0.000	0.000	0.000	0.000	
Nevada	27	0.000	0.000	0.000	0.000	
New Hampshire	28	1.444	0.259	1.892	1.147	
New Mexico	30	0.000	0.000	0.000	0.000	
North Carolina	32	4.400	2.426	2.446	1.883	
Oklahoma	35	1.165	1.976	3.281	1.177	
Oregon	36	3.977	1.935	1.851	1.942	
Rhode Island	38	0.245	0.639	0.191	0.519	
South Carolina	39	0.622	0.507	8.185	4.549	
South Dakota	40	0.000	0.000	0.000	0.000	
Tennessee	41	3.127	1.395	0.000	0.229	
Utah	43	0.000	0.000	0.000	0.000	
Vermont	44	0.000	0.511	0.000	0.000	
Virginia	45	1.200	1.882	0.000	0.086	
West Virginia	47	0.000	46.612	0.000	0.000	
Wisconsin	48	0.000	0.000	0.000	0.000	
Hawaii	52	0.222	0.043	0.509	0.075	
Alaska	54	2.849	0.464	3.154	1.714	
(8) ge of (5), (6) weighted by Payroll from Page 1, respectively				1.890	1.519	3.409
(9) CW Federal Class Codes Pure Premium				2.202	1.231	3.433
(10) CW Relativity = (8) / (9)				0.858	1.234	0.993
(11) CW Relativity, balanced to unity				0.858	1.234	

Notes:

- (3), (4) = (MA Total Federal Class Code Limited Losses) / [(Federal Class Code Pure Premium by State) x (MA Total Federal Class Code Exposure)].
- (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 Federal Class Codes Exposure
- (11): Relativities balanced to unity (weighted by MA exposure) over Federal Class Codes Industry Group.

VIII 000044

Section VIII - F-Class Recommendation
 Subsection I - Pricing Example
 7/1/2023

Section VIII-I
 Exhibit 3

Pricing Example for Class 6824 Boat Building Or Repairing & Drivers: Us Act

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
0.900	0.843
0.858	1.234
1.145	1.326

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 5)]
- (8) Full Credibility Standards
- (9) MA Credibility
 = Minimum of {100%, [(7) / (8)]^{0.4}}

Injury Type	
Indemnity	Medical
1.144	1.318
2.867	2.041
3.280	2.689
596,600	489,154
29,750,000	5,600,000
21%	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)]^{0.4}, 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
64	64
1,150	1,000
31%	31%
48%	31%
1.005	1.114
0.991	1.018

- (16) Balanced Formula Relativity

Injury Type		
Indemnity	Medical	Total
1.013	1.095	1.044

Notes:

- (1): Exhibit 1, Page 5.
- (2): Exhibit 2, Page 2.
- (3): Relativity of (6) to Industry Group average, using 5 year Schedule Z exposure as weights.
- (4): Section VIII-F, Exhibit 3.
- (5): Section VIII-F, Exhibit 2.
- (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.

VIII 000045

Section VIII - F-Class Recommendation
Subsection I - Pricing Example
7/1/2023

Section VIII-I
Exhibit 4

Pricing Example for Class 6824 Boat Building Or Repairing & Drivers: Us Act

Calculation of Proposed Average Rate and Proposed Manual Rate:

(1) Present Average Rate	8.65
(2) Total Balanced Formula Relativity	1.044
(3) Capped Rate Level Factor	6.354
(4) Maximum Average Rate	9.53
(5) Minimum Average Rate	6.07
(6) Proposed Average Capped Rate = (2) x (3), Subject to Caps (4), (5)	6.63
(7) Offset for Merit Rating	0.997
(8) Offset for ARAP	1.055
(9) Offset for Construction Classification Premium Adjustment Program	1.000
(10) Provision for Insolvency Fund Assessment Recoupment	0.0000
(11) Proposed Manual Rate = { (6) / [(7) x (8) x (9)] } x { 1.000 / [1.000 - (10)] }	6.31
(12) Minimum Premium	471
(13) Loss Constant	0
(14) Expected Loss Rate	2.63
(15) D-Ratio	0.19

Notes:

(1): Section VIII-H, Exhibit 3.

(2): Exhibit 3.

(3): Section VIII-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 6824 is in the Federal Class Codes Industry Group.

(4): Multiple caps apply including the maximum increase for any class within the industry group, a maximum absolute dollar change of \$15, and a maximum absolute average rate of \$90.

(5): Based on the minimum decrease for any class within the industry group.

(7), (8), (9), (10): Section IX - K, Exhibit 1. Class 6824 is not eligible for the Construction Credit program.

(12) = { [(11) x 35.0] + (13) + Expense Constant } subject to a maximum of \$500

Where Expense Constant = 159 if (11) x 35 + (13) < 200,
= 250 if (11) x 35 + (13) >= 200 and < 1000
or = 338 if (11) x 35 + (13) >= 1000.

(13): No loss constant for Federal classes.

(14) = (6) x Ratio of Experience Rating ELR to Average Rate, from Section X-C, Exhibit 1.

Class 6824 is in Hazard Group F.

(15): See text of Section X for an explanation of the calculation of D-Ratios.

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Section VIII - F-Class Recommendation
Subsection J - U.S.L.H. & H.W. Coverage Percentage
7/1/2023

Section VIII-J
Exhibit 1

Calculation of USLH & HW Compensation Coverage Percentage

(1)	Benefits Differential Underlying Current USLH & HW Coverage Percentage	1.148
(2)	State Benefit Level Adjustments Since Last Approval	1.027
(3)	Federal Benefit Level Adjustments Since Last Approval	1.002
(4)	Revised Benefits Differential = (1) x [(3) / (2)]	1.120
(5)	Federal Indemnity Losses as % of Total Federal Losses	62.2%
(6)	Expected Loss Ratio for State Classes	62.4%
(7)	Fixed Expense Ratio	5.5%
(8)	Special Fund Assessment Rate as % of Federal Indemnity Losses	0.088
(9)	Loss Adjustment Expense Factor (Applies to Losses)	1.183
(10)	USLH & HW Coverage Percentage for Manual Rates	1.160
(11)	USLH & HW Coverage Percentage for Expected Loss Rates	1.111

Notes:

(1): Section VIII-J, Exhibit 1 of 7/1/2022 Stipulation.

(2): Total Benefit Level Changes from Prior Effective Period to Prospective Period from Section IV-A, Exhibit 1.

(3): Total Benefit Level Changes from Prior Effective Period to Prospective Period from Section IV-F, Exhibit 1.

(5): Based on ratio of indemnity losses to total losses from Section VIII-C, Exhibit 1, Page 1.

(6): Section VI-J, Exhibit 1.

(7): Average of Fixed Expense Ratios for 2 PYs from Section VI-B, Exhibit 1.

(8): NCCI's Tax & Assessment Directory.

(9): Section VIII-E, Exhibit 1, Page 2.

(10) = { [(6) x (4) x (9)] + [(6) x (4) x (5) x (8)] + (7) } / { [(6) x (9)] + (7) }

(11) = { [(6) x (4) x (9)] + (7) } / { [(6) x (9)] + (7) }

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Section VIII - F-Class Recommendation
Subsection K - Federal Tax Multiplier
7/1/2023

Section VIII-K
Exhibit 1

Calculation of Federal Tax Multiplier

(1)	State Tax Multiplier	1.041
(2)	Loading for Taxes and Residual Market Subsidy = $1.0 - [1.0 / (1)]$	4.0%
(3)	Expected Loss Ratio (no LAE)	61.1%
(4)	Federal Special Funds Assessment	8.8%
(5)	Federal Indemnity Losses as % of Total Losses	62.2%
(6)	Loading for Federal Funds Assessment = $(3) \times (4) \times (5)$	3.3%
(7)	Federal Tax Multiplier = $1.0 / [1.0 - (2) - (6)]$	1.079

Notes:

(1), (3): Section XII-A, Exhibit 3.

(4): NCCI Tax and Assessment Directory.

(5): Based on ratio of federal indemnity losses to state and federal total losses from Section VIII-C, Exhibit 1, Pages 1 and 3.

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 rate separately for each code. In aggregating risks, it is desirable to balance stability and responsiveness and derive 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; and 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 reflect

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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 2016 through 2020.

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 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.

IX 000004

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 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.

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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 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 higher expected losses 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

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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 calculated as the product of the claim count standard and the average claim cost. We use NCCI's credibility standards. The average claim costs have been updated in Section IX - D, Exhibit 1, Page 2 of this filing.

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

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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 is not more than 100%.
3. Countrywide credibilities cannot be greater than 50% and are limited to $\frac{1}{2}$ of (1.0 - Massachusetts credibility).

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

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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) that consequently require an iterative process of adjusting capped average rates to balance to the required industry group change, apply 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 if 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 the 2016, 2018, 2020, and 2022 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

IX 000010

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.

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 1.055.

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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.

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 should be 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 and we have calculated an offset to the eligible classes to assure

IX 000012

revenue neutrality. Section IX - K, Exhibit 4 shows the derivation our selection of the 3.7% offset to be applied to the eligible classes.

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 included in this filing is intended to recoup prior year assessments as provided in G.L. c. 175D, § 13.

The Fund does not maintain segregated accounts by line of business and consequently workers' compensation insurers may be assessed by the Fund for expenses related to the insolvency of non-workers' compensation carriers. The Fund assessment base is the total written premium for all lines covered by the Fund, and an individual carrier's assessment is a function of its written premium for all lines covered by the Fund. Therefore, we must first estimate the proportion of the total Fund assessment that is attributable to workers' compensation. This is done by dividing the Massachusetts workers' compensation Statutory Page 14 written premium by the total premium assessment base of the Fund. The assessment applicable to workers' compensation is the product of this ratio and the total Fund assessment. The resulting estimated workers' compensation assessment is then adjusted to reflect the impact of the time value of money, premium taxes, and commissions.

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Section IX - Classification Pricing
Subsection A - Summary
7/1/2023

Section IX - A
Page 13

This net assessment is divided by the expected written premium in the prospective period to arrive at the factor to load the assessment.

The Fund has not assessed carriers since the last rate revision. The Board of Directors of the Fund at its October 27, 2022 meeting reviewed the financial position of the Fund and voted to not have an assessment or refund of assessment in 2022. The loading in the 7/1/2022 rates was 0.0056 and was intended to apply to policies effective during the 7/1/2022 to 6/30/2023 policy period. Since this filing is for rates proposed effective 7/1/2023, there is no unanticipated impact of the 0.0056 loading beyond the 7/1/2022 to 6/30/2023 policy period. The proposed factor is a loading of 0.0 (Section IX-K, Exhibit 5, Page 1).

Pricing Example

Section IX - L 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 2, page 2 shows the calculation of the CW indicated pure premium and relativity. On Exhibit 3, we calculate the credibilities and formula relativity. The derivation of the proposed manual rate is shown on Exhibit 4.

Special Classes

The following classes are special situations where the rates and rating values are calculated using a methodology other than that detailed above.

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Section IX - Classification Pricing
Subsection A - Summary
7/1/2023

Section IX - A
Page 14

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.

6811, 6854, 6882, 6884: State Act Classes comparable to F-Class Codes

- Established 1/1/1990.
- The manual rates for 6811, 6854, 6882, and 6884 are set at 86.23¹% of the manual rates of F-Class Codes 6801 [Boat Building Wood NOC-US Act], 6843 [Ship Building Iron or Steel-NOC-US Act], 6872 [Ship Repair or Conversion-US Act] and 6874 [Painting Ship Hulls-US Act], respectively.
- The ELRs for 6811, 6854, 6882, and 6884 are set at 89.98%² of the ELRs of F-Class Codes 6801 [Boat Building Wood NOC-US Act], 6843 [Ship Building Iron or Steel-NOC-US Act], 6872 [Ship Repair or Conversion-US Act] and 6874 [Painting Ship Hulls-US Act], respectively.
- See Circular Letter No. 1519, released 1/3/1990.

¹ 86.23% = 1.0 / Proposed USLH&HW Coverage Percentage for Manual Rates. Coverage Percentage from Section VIII – J, Exhibit 1.

² 89.98% = 1.0 / Proposed USLH&HW Coverage Percentage for ELRs. Coverage Percentage from Section VIII – J, Exhibit 1.

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Code 9044 - Casino Gambling – Hotel - All Employees & Clerical, Salespersons,

Drivers

- Approved Effective 2/1/2016.
- The rate and rating values for 9044 are assigned 90% of the rate and rating values of Class 9052 – Hotel: All Other Employees & Salespersons, Drivers.
- See Circular Letter No. 2270, released 12/2/2015.

Code 9062 - Casino Gambling - All Employees & Clerical, Salespersons, Drivers

- Approved Effective 2/1/2016.
- The rate and rating values for 9062 are assigned the rate and rating values of Class 9061 – Club NOC & Clerical.
- See Circular Letter No. 2270, released 12/2/2015.

IX 000016

MASSACHUSETTS WORKERS COMPENSATION AND EMPLOYERS LIABILITY INSURANCE MANUAL **RATES**

Draft *Proposed Effective July 1, 2023* Page RA-1

RATES

LEGEND

- | | |
|--|---|
| (a) Rate for each individual risk must be obtained by Home Office from the MA Bureau.
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.
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	2.15	254.	20.	1924	2.21	236.	--	2501	1.84	223.	--	3082D	3.39	278.	--
0008	1.97	248.	20.	1925	4.92	331.	--	2503	0.87	189.	--	3085D	3.44	279.	--
0016	2.84	278.	20.	2003	2.85	259.	--	2570	2.75	255.	--	3110	5.87	455.	--
0034	2.18	255.	20.	2014	3.20	271.	--	2576	1.70	219.	--	3111	1.93	227.	--
0035	1.34	226.	20.	2021	2.39	243.	--	2585	2.49	246.	--	3113	1.42	209.	--
0036	2.18	255.	20.	2039	3.59	285.	--	2586	1.85	224.	--	3114	2.13	234.	--
0042	2.88	280.	20.	2041	1.99	229.	--	2587	1.75	240.	20.	3118	1.12	198.	--
0046	2.34	261.	20.	2070	2.89	260.	--	2623	3.54	283.	--	3119	0.80	187.	--
0050	3.93	347.	50.	2081	2.62	251.	--	2651	1.09	197.	--	3120	1.00	194.	--
0059D	0.21	.	.	2089	2.20	236.	--	2660	1.59	215.	--	3122	1.75	220.	--
0065D	0.10	.	.	2095	2.47	245.	--	2683	1.71	219.	--	3127	1.31	205.	--
0066D	0.08	.	.	2101	2.20	236.	--	2688	1.68	218.	--	3131	1.14	199.	--
0067D	0.08	.	.	2105	(a)	(a)	(a)	2702	13.97	500.	20.	3132	1.70	219.	--
0079	2.22	257.	20.	2111	1.84	223.	--	2710	5.01	334.	--	3145	1.16	200.	--
0083	2.77	276.	20.	2114	2.20	236.	--	2731	2.43	244.	--	3146	1.64	216.	--
0106	7.51	500.	20.	2115	4.76	326.	--	2747	4.50	317.	--	3169	1.83	223.	--
0113	2.18	255.	20.	2121	1.16	200.	--	2790	1.81	222.	--	3179	0.91	191.	--
0170	2.18	255.	20.	2130	1.30	205.	--	2802	2.97	263.	--	3180	1.95	227.	--
0771b	0.42	.	.	2131	2.58	249.	--	2835	1.62	216.	--	3188	1.70	219.	--
0908	76.00	140.	--	2143	1.68	218.	--	2836	2.11	233.	--	3200	1.90	226.	--
0909	187.00	251.	--	2150	3.05	266.	--	2841	2.60	250.	--	3220	1.87	224.	--
0912	374.00	438.	--	2156	2.69	253.	--	2883	2.47	245.	--	3223	(a)	(a)	(a)
0913	153.00	217.	--	2157	3.45	280.	--	2923	0.99	194.	--	3255	1.66	217.	--
0917	1.90	246.	20.	2172	1.42	209.	--	2942	1.29	204.	--	3257	2.04	230.	--
0918	0.36	192.	20.	2211	4.54	318.	--	3018	2.01	229.	--	3270	1.48	211.	--
1430	3.26	273.	--	2220	2.45	245.	--	3022	2.82	258.	--	3300	2.88	260.	--
1438	2.90	261.	--	2260	4.12	303.	--	3027	2.52	247.	--	3305	(a)	(a)	(a)
1463	10.00	500.	--	2288	3.21	271.	--	3028	2.50	247.	--	3315	2.46	245.	--
1624D	3.71	309.	20.	2305	2.02	230.	--	3030	4.17	305.	--	3336	1.96	228.	--
1655	2.32	260.	20.	2362	1.77	221.	--	3040	4.85	329.	--	3365	3.78	341.	50.
1701	2.23	237.	--	2380	1.38	207.	--	3041	2.20	236.	--	3372	1.85	224.	--
1710D	3.71	309.	20.	2402	1.78	221.	--	3042	2.80	257.	--	3373	3.09	267.	--
1747	1.86	224.	--	2413	2.32	240.	--	3066	1.96	228.	--	3381	1.42	209.	--
1748	3.04	265.	--	2416	2.26	238.	--	3076	2.17	235.	--	3383	1.11	198.	--
1853	1.04	195.	--	2417	1.34	206.	--	3081D	3.39	278.	--	3385	0.74	185.	--

Non-Ratable Code and Rate to be used with the following classifications:

b. 4771

IX 000017

Section IX - Classification Pricing
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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
3400	1.83	223.	--	4150	0.60	180.	--	4771c	2.81	272.	--	5507	4.08	352.	50.
3507	2.23	237.	--	4239	2.26	238.	--	4777	2.26	238.	--	5508D	4.08	352.	50.
3515	2.02	230.	--	4243	2.16	235.	--	4825	0.31	170.	--	5509	5.14	480.	50.
3558	0.58	179.	--	4244	2.62	251.	--	4828	0.84	188.	--	5538	3.31	325.	50.
3571	0.50	177.	--	4250	1.88	225.	--	4829	0.84	188.	--	5545	41.01	500.	50.
3574	1.33	206.	--	4251	2.16	235.	--	4902	1.29	204.	--	5547	9.15	500.	50.
3612	1.13	199.	--	4273	2.40	243.	--	4923	0.50	177.	--	5606	1.05	246.	50.
3620	2.63	251.	--	4279	2.08	232.	--	5020	3.82	343.	50.	5610	4.72	465.	50.
3629	1.33	206.	--	4283	1.55	213.	--	5022	7.56	500.	50.	5645	5.74	500.	50.
3632	1.33	206.	--	4299	1.43	209.	--	5037	10.41	500.	50.	5701	13.63	500.	50.
3634	1.45	210.	--	4304	4.45	315.	--	5040	19.39	500.	50.	5703	7.55	500.	50.
3635	1.73	220.	--	4307	1.15	199.	--	5057	15.53	500.	50.	5705	8.82	500.	50.
3638	1.33	206.	--	4308	1.75	220.	--	5059	21.92	500.	50.	6003	5.32	486.	50.
3642	1.01	194.	--	4351	0.79	187.	--	5102	5.50	493.	50.	6005	4.08	352.	50.
3643	1.50	212.	--	4352	0.85	189.	--	5146	5.57	495.	50.	6204	5.01	475.	50.
3647	1.82	223.	--	4360	0.50	177.	--	5160	2.82	308.	50.	6217	3.76	341.	50.
3648	0.87	189.	--	4361	0.46	195.	20.	5183	2.86	309.	50.	6229	3.79	342.	50.
3681	0.49	176.	--	4362	0.38	192.	20.	5188	3.16	320.	50.	6233	1.70	269.	50.
3685	0.41	173.	--	4410	2.29	239.	--	5190	1.97	278.	50.	6251D	3.63	336.	50.
3724	3.65	337.	50.	4432	0.67	182.	--	5191	0.59	200.	20.	6252D	3.97	348.	50.
3726	4.03	350.	50.	4439	4.45	315.	--	5192	2.31	260.	20.	6306	7.99	500.	50.
3807	1.83	223.	--	4452	2.52	247.	--	5213	7.58	500.	50.	6319	2.13	284.	50.
3808	2.63	251.	--	4459	2.11	233.	--	5215	4.34	452.	50.	6325	2.35	291.	50.
3821	4.13	324.	20.	4470	1.52	212.	--	5221	5.73	500.	50.	6400	3.97	348.	50.
3826	2.93	262.	--	4484	1.84	223.	--	5222	7.26	500.	50.	6504	2.20	236.	--
3830	1.33	206.	--	4493	1.73	220.	--	5223	3.11	318.	50.	6702M	(a)	.	--
3841	1.50	212.	--	4511	0.25	188.	20.	5348	3.69	338.	50.	6703M	(a)	.	--
4000	5.01	354.	20.	4512	0.07	181.	20.	5402	4.83	469.	50.	6704M	(a)	.	--
4021	2.57	249.	--	4557	1.61	215.	--	5403	7.21	500.	50.	6801F	4.98	333.	--
4024	2.99	264.	--	4558	1.54	213.	--	5437	2.98	313.	50.	6811	4.29	329.	20.
4034	5.87	455.	--	4583	2.26	238.	--	5443	2.52	297.	50.	6824F	6.31	471.	--
4036	1.49	211.	--	4611	0.66	182.	--	5445	5.03	476.	50.	6826F	3.99	299.	--
4038	1.96	228.	--	4635	3.99	299.	--	5462	5.11	479.	50.	6834	2.00	249.	20.
4053	2.39	243.	--	4653	1.74	220.	--	5472	7.09	500.	50.	6836	2.34	261.	20.
4062	1.82	223.	--	4665	8.49	500.	--	5473	9.22	500.	50.	6843F	11.94	500.	--
4112	0.26	168.	--	4692	0.43	174.	--	5474	3.91	346.	50.	6854	10.29	500.	20.
4113	2.39	243.	--	4693	0.65	182.	--	5478	3.62	336.	50.	6872F	11.21	500.	--
4114	2.70	254.	--	4720	1.47	210.	--	5479	4.52	458.	50.	6874F	14.79	500.	--
4130	3.19	271.	--	4740	0.62	181.	--	5480	3.74	340.	50.	6882	9.66	500.	20.
4133	1.55	213.	--	4741	2.29	239.	--	5506	4.49	457.	50.	6884	12.75	500.	20.

For Non-Ratable portion of Rate, refer to:

c 0771

IX 000018

Section IX - Classification Pricing
 Subsection A - Summary
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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	1.73	240.	20.	8232	3.93	317.	20.	8829	2.17	255.	20.
7024M	2.35	.	--	7515	2.29	259.	20.	8233	4.60	340.	20.	8831	0.80	207.	20.
7038M	3.55	.	--	7520	2.71	274.	20.	8235	3.48	301.	20.	8832	0.22	187.	20.
7046M	5.06	.	--	7538	3.78	341.	50.	8263	3.99	319.	20.	8833	0.96	213.	20.
7047M	2.95	.	--	7539	1.20	221.	20.	8264	3.83	313.	20.	8835	1.40	228.	20.
7050M	5.57	.	--	7580	2.63	271.	20.	8265	4.60	340.	20.	8837	(a)	(a)	(a)
7090M	4.44	.	--	7590	5.16	451.	20.	8279	3.08	287.	20.	8868	0.64	201.	20.
7098M	5.95	.	--	7600	3.84	313.	20.	8291	3.42	299.	20.	8901	0.05	181.	20.
7099M	7.46	.	--	7601	3.48	331.	50.	8292	2.88	280.	20.	9014	1.77	241.	20.
7133	(a)	(a)	(a)	7610	0.32	190.	20.	8293	5.53	464.	20.	9015	2.42	264.	20.
7151M	8.26	.	--	7704	3.57	304.	20.	8350	5.83	474.	20.	9016	1.22	222.	20.
7152M	12.95	.	--	7720	1.36	227.	20.	8380	2.06	251.	20.	9019	2.46	265.	20.
7153M	10.33	.	--	7855	3.33	326.	50.	8381	1.10	218.	20.	9033	2.15	254.	20.
7219	6.30	491.	20.	8001	1.49	231.	20.	8385	3.12	288.	20.	9040	2.42	264.	20.
7230	7.85	500.	20.	8002	1.56	234.	20.	8392	1.28	224.	20.	9044	1.15	219.	20.
7231	9.62	500.	20.	8006	0.86	209.	20.	8393	1.09	217.	20.	9052	1.28	224.	20.
7309F	11.15	500.	--	8008	0.62	201.	20.	8500	4.60	340.	20.	9058	1.26	223.	20.
7313F	15.15	500.	--	8010	1.22	222.	20.	8601	0.18	185.	20.	9060	0.84	208.	20.
7317F	12.79	500.	--	8013	0.27	188.	20.	8709F	4.28	309.	--	9061	0.78	206.	20.
7327F	18.86	500.	--	8017	0.84	208.	20.	8710	1.98	248.	20.	9062	0.78	206.	20.
7333M	7.53	.	--	8018	3.17	290.	20.	8719	1.98	248.	20.	9063	0.49	196.	20.
7335M	8.85	.	--	8021	2.91	281.	20.	8720	0.68	203.	20.	9077F	6.47	476.	--
7337M	11.10	.	--	8031	1.33	226.	20.	8721	0.15	184.	20.	9079	0.78	206.	20.
7350F	15.45	500.	--	8032	1.08	217.	20.	8726F	4.03	300.	--	9089	0.52	197.	20.
7360	3.91	316.	20.	8033	1.20	221.	20.	8734M	0.44	.	--	9093	0.77	206.	20.
7370	3.95	317.	20.	8034	2.33	261.	20.	8737M	0.35	.	--	9101	3.22	292.	20.
7380	5.64	467.	20.	8039	1.33	226.	20.	8738M	0.55	.	--	9102	2.11	253.	20.
7382	3.09	287.	20.	8044	2.27	258.	20.	8742	0.09	182.	20.	9154	1.56	234.	20.
7394M	9.68	.	--	8046	2.06	251.	20.	8745	4.34	331.	20.	9156	1.53	233.	20.
7395M	12.37	.	--	8048	1.97	248.	20.	8747	0.62	201.	20.	9178	10.61	500.	20.
7398M	15.51	.	--	8058	1.98	248.	20.	8748	0.46	195.	20.	9179	38.71	500.	20.
7403	2.63	271.	20.	8103	2.39	263.	20.	8800	0.79	207.	20.	9180	3.57	304.	20.
7405d	0.87	220.	20.	8105	7.58	500.	20.	8803	0.04	180.	20.	9182	2.28	259.	20.
7420	9.40	500.	20.	8106	3.76	311.	20.	8805M	0.18	.	--	9186	3.57	304.	20.
7421	0.90	211.	20.	8107	2.03	250.	20.	8810	0.05	181.	20.	9220	3.06	286.	20.
7422	0.90	211.	20.	8111	2.28	259.	20.	8814M	0.14	.	--	9402	3.54	303.	20.
7425	2.48	266.	20.	8203	4.19	326.	20.	8815M	0.23	.	--	9403	10.54	500.	20.
7431e	0.68	211.	20.	8204	4.04	320.	20.	8820	0.05	181.	20.	9410	3.02	285.	20.
7445f	0.29	.	.	8215	2.48	266.	20.	8824	1.77	241.	20.	9501	1.74	220.	--
7453g	0.22	.	.	8227	5.10	479.	50.	8826	1.30	225.	20.	9505	1.74	220.	--

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 000019

Section IX - Classification Pricing
 Subsection A - Summary
 7/1/2023

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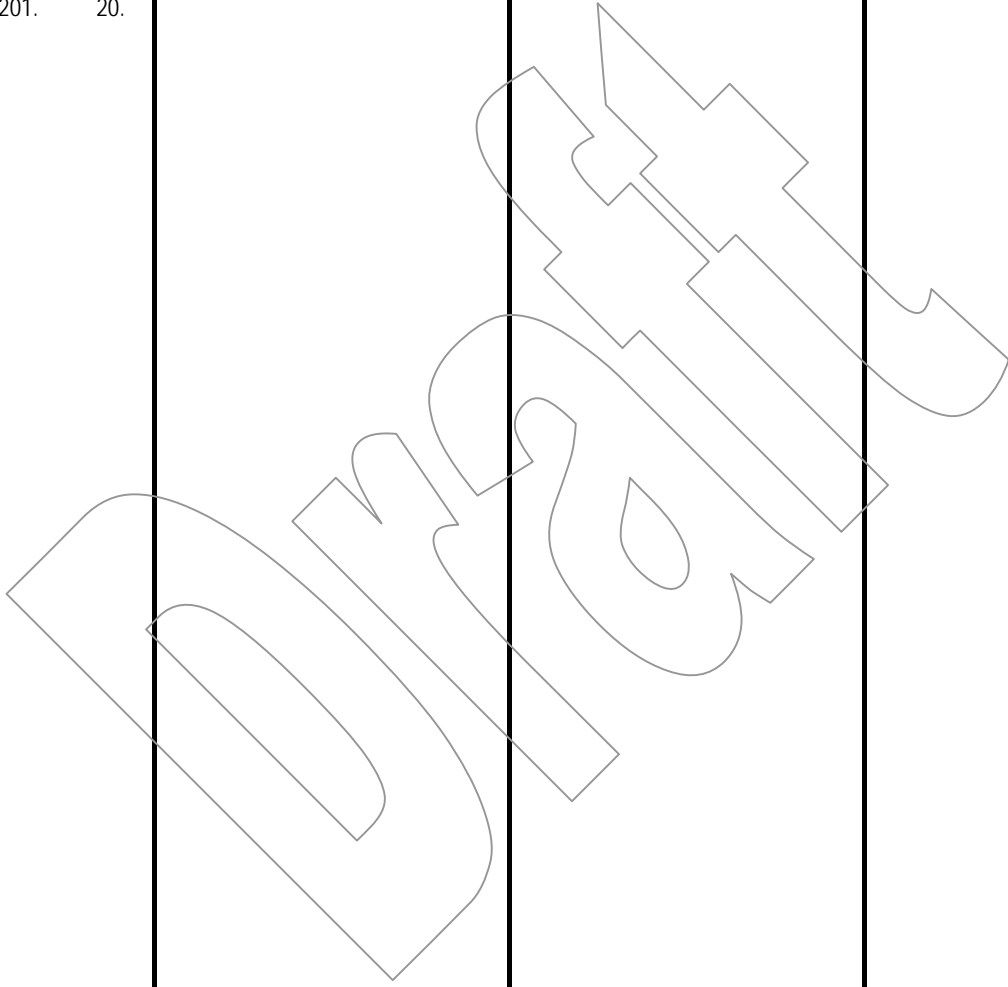
**MASSACHUSETTS WORKERS COMPENSATION
 AND EMPLOYERS LIABILITY INSURANCE MANUAL**

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	2.02	250.	20.												
9521	2.99	264.	--												
9522	1.50	212.	--												
9533	15.56	500.	50.												
9534	4.93	473.	50.												
9549	3.14	319.	50.												
9552	4.62	462.	50.												
9586	0.26	188.	20.												
9620	0.64	201.	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	1.580	0.901	0.690	0.738	0.805
	Medical	1.580	0.404	0.310	0.738	0.361
	Total		1.305			
Construction	Indemnity	3.996	2.343	0.709	0.738	2.091
	Medical	3.996	0.961	0.291	0.738	0.858
	Total		3.304			
Office and Clerical	Indemnity	0.113	0.063	0.674	0.738	0.056
	Medical	0.113	0.030	0.326	0.738	0.027
	Total		0.093			
Goods and Services	Indemnity	1.340	0.758	0.685	0.738	0.677
	Medical	1.340	0.349	0.315	0.738	0.312
	Total		1.108			
Miscellaneous	Indemnity	4.360	2.548	0.701	0.738	2.257
	Medical	4.360	1.084	0.299	0.738	0.961
	Total		3.632			

Notes:

- (3): Section IX - H, Exhibit 1.
- (4): Section IX - C, Exhibits 1-5, Page 2.
- (6): Section VI - J, Exhibit 1.

IX 000020

IX 000021

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				
	2016	2017	2018	2019	2020
Fatal	1.073	1.066	1.059	1.052	1.043
Permanent Total	1.089	1.081	1.072	1.063	1.053
Permanent Partial	1.144	1.131	1.117	1.104	1.088
Temporary Total	1.060	1.055	1.049	1.044	1.036
Medical					
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				
	2016	2017	2018	2019	2020
Likely	1.055	1.074	1.132	1.314	2.037
Not Likely	1.022	1.040	1.102	1.255	1.743
Medical					
Likely	0.892	0.886	0.886	0.911	0.986
Not Likely	0.985	0.983	0.984	0.982	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				
	2016	2017	2018	2019	2020
All Injury Types	0.761	0.748	0.777	0.858	0.888
Medical					
Lost Time Medical	0.701	0.695	0.717	0.826	0.862
Medical Only	0.623	0.614	0.628	0.771	0.817

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

IX 000022

Section IX - Classification Pricing
Subsection B - Conversion/Excess Loss Factors
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Section IX - B
Exhibit 1
Page 2

Calculation of Indemnity and Medical Conversion Factors

(D). Primary Conversion Factors (PCF)

Indemnity	Policy Year				
	2016	2017	2018	2019	2020
Fatal - LD	0.860	0.857	0.931	1.186	1.888
Fatal - NLD	0.834	0.830	0.906	1.133	1.615
Permanent Total	0.874	0.869	0.943	1.199	1.905
Permanent Partial - LD	0.918	0.909	0.982	1.245	1.968
Permanent Partial - NLD	0.890	0.880	0.956	1.189	1.684
Temporary Total - LD	0.850	0.848	0.923	1.177	1.875
Temporary Total - NLD	0.824	0.821	0.898	1.124	1.605
Medical					
Lost Time Medical -LD	0.626	0.615	0.635	0.753	0.850
Lost Time Medical -NLD	0.691	0.683	0.705	0.812	0.868
Medical - NLD	0.614	0.604	0.618	0.758	0.823

Notes:

(D) = (A) x (B) x (C), Page 1.

IX 000023

Section IX - Classification Pricing
Subsection B - Conversion/Excess Loss Factors
7/1/2023

Section IX - B
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	1.183	1.183

(B). Investment Income Offset Factor

The following factor is applied to adjust for investment income.

	Investment Income Offset Factor
Indemnity	
Fatal	0.695
Permanent Total	0.612
Permanent Partial	1.076
Temporary Total	1.094
Medical	
Fatal	1.000
Permanent Total	0.611
Permanent Partial	1.075
Temporary Total	1.093
Medical Only	1.000

(C). Secondary Conversion Factors

The factors above are combined multiplicatively, resulting in the following conversion factors.

Indemnity	
Fatal	0.822
Permanent Total	0.724
Permanent Partial	1.273
Temporary Total	1.295
Medical	
Fatal	1.183
Permanent Total	0.723
Permanent Partial	1.272
Temporary Total	1.293
Medical Only	1.183

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 000024

Section IX - Classification Pricing
 Subsection B - Conversion/Excess Loss Factors
 7/1/2023

Section IX - B
 Exhibit 2
 Page 1

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		1.551	1.160	1.054	1.019	1.006	1.004	1.001	1.002	1.002
Cumulative		1.961	1.264	1.090	1.034	1.015	1.009	1.006	1.004	1.002
		<u>(2) Medical Losses</u>								
5Yr Weighted Average		1.082	1.028	1.000	0.993	0.991	0.992	0.998	0.991	0.993
Cumulative		1.068	0.987	0.960	0.959	0.966	0.974	0.982	0.984	0.993
		<u>(3) Claim Counts</u>								
2Yr Weighted Average		1.026	1.008	1.004	1.002	1.001	1.000	1.001	1.000	1.000
Cumulative		1.041	1.015	1.007	1.003	1.001	1.000	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		1.389	1.139	1.059	1.018	1.009	1.000	1.003	1.001	1.001
Cumulative		1.728	1.244	1.092	1.031	1.014	1.005	1.005	1.002	1.001
		<u>(5) Medical Losses</u>								
5Yr Weighted Average		1.025	0.999	1.001	0.997	0.999	0.999	1.001	0.998	0.999
Cumulative		1.018	0.993	0.995	0.994	0.996	0.998	0.999	0.997	0.999
		<u>(6) Claim Counts</u>								
2Yr Weighted Average		1.015	1.004	1.002	1.001	1.001	1.000	1.000	1.000	1.000
Cumulative		1.024	1.009	1.005	1.003	1.001	1.001	1.001	1.000	1.000

Notes:

(1), (2), (3): Page 2.

(4), (5), (6): Page 3.

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Section IX - Classification Pricing
 Subsection B - Conversion/Excess Loss Factors
 7/1/2023

Section IX - B
 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		
2015	77,303,547	116,058,435	1.501	47,591,026	50,697,016	1.065	1,533	1,550	1.011
2016	73,193,163	111,558,314	1.524	44,930,201	48,364,307	1.076	1,478	1,503	1.017
2017	72,908,913	114,367,311	1.569	45,744,067	49,531,200	1.083	1,477	1,504	1.018
2018	75,245,608	117,203,270	1.558	45,683,835	49,165,555	1.076	1,483	1,528	1.030
2019	67,287,440	108,372,009	1.611	39,939,187	44,506,884	1.114	1,281	1,308	1.021
	5yr Weighted Average		1.551	5yr Weighted Average		1.082	2yr Weighted Average		1.026
	30	42		30	42		30	42	
2014	129,042,226	148,005,131	1.147	58,668,295	59,464,848	1.014	1,739	1,745	1.003
2015	121,882,703	139,177,725	1.142	52,290,919	54,819,548	1.048	1,596	1,618	1.014
2016	119,513,413	135,606,433	1.135	51,897,567	54,331,270	1.047	1,565	1,572	1.004
2017	125,611,427	148,362,980	1.181	52,610,404	54,195,193	1.030	1,583	1,595	1.008
2018	124,263,425	148,472,974	1.195	51,320,327	51,529,586	1.004	1,585	1,598	1.008
	5yr Weighted Average		1.160	5yr Weighted Average		1.028	2yr Weighted Average		1.008
	42	54		42	54		42	54	
2013	128,464,512	136,267,088	1.061	49,535,353	49,235,296	0.994	1,667	1,674	1.004
2014	154,801,350	162,340,869	1.049	61,761,586	61,563,037	0.997	1,779	1,790	1.006
2015	146,266,076	153,581,015	1.050	57,032,141	57,466,070	1.008	1,653	1,666	1.008
2016	144,690,281	152,422,862	1.053	56,889,889	56,892,924	1.000	1,616	1,619	1.002
2017	156,899,608	166,055,746	1.058	56,950,041	57,140,694	1.003	1,642	1,651	1.005
	5yr Weighted Average		1.054	5yr Weighted Average		1.000	2yr Weighted Average		1.004
	54	66		54	66		54	66	
2012	147,322,614	150,628,939	1.022	57,362,514	57,167,837	0.997	1,741	1,745	1.002
2013	142,938,420	143,932,153	1.007	50,951,186	51,250,664	1.006	1,698	1,703	1.003
2014	170,110,998	171,919,454	1.011	63,445,839	62,961,778	0.992	1,824	1,826	1.001
2015	162,013,601	163,722,571	1.011	59,916,142	57,994,462	0.968	1,697	1,702	1.003
2016	162,640,003	169,438,918	1.042	59,631,333	59,978,053	1.006	1,658	1,660	1.001
	5yr Weighted Average		1.019	5yr Weighted Average		0.993	2yr Weighted Average		1.002
	66	78		66	78		66	78	
2011	149,329,006	150,750,040	1.010	59,682,000	61,213,070	1.026	1,774	1,779	1.003
2012	157,177,910	158,442,616	1.008	58,810,937	56,073,492	0.953	1,770	1,771	1.001
2013	146,755,327	146,696,192	1.000	52,321,525	51,524,703	0.985	1,719	1,718	0.999
2014	175,635,436	176,196,733	1.003	64,110,585	64,317,423	1.003	1,846	1,843	0.998
2015	167,681,274	168,954,755	1.008	59,279,931	58,473,309	0.986	1,718	1,723	1.003
	5yr Weighted Average		1.006	5yr Weighted Average		0.991	2yr Weighted Average		1.001
	78	90		78	90		78	90	
2010	135,865,364	135,811,786	1.000	53,309,903	53,565,219	1.005	1,821	1,823	1.001
2011	152,266,644	153,227,342	1.006	61,499,327	60,389,287	0.982	1,785	1,782	0.998
2012	159,498,949	159,425,974	1.000	56,344,200	56,422,170	1.001	1,775	1,776	1.001
2013	147,788,473	148,933,868	1.008	51,702,156	51,205,683	0.990	1,722	1,723	1.001
2014	177,539,876	178,587,729	1.006	64,764,577	63,808,610	0.985	1,848	1,846	0.999
	5yr Weighted Average		1.004	5yr Weighted Average		0.992	2yr Weighted Average		1.000
	90	102		90	102		90	102	
2009	139,082,347	139,127,415	1.000	53,957,497	53,611,739	0.994	1,606	1,604	0.999
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	159,331,561	159,491,234	1.001	56,367,197	57,117,611	1.013	1,776	1,777	1.001
2013	149,423,883	149,514,456	1.001	51,673,815	51,969,505	1.006	1,726	1,728	1.001
	5yr Weighted Average		1.001	5yr Weighted Average		0.998	2yr Weighted Average		1.001
	102	114		102	114		102	114	
2008	138,950,462	139,328,204	1.003	52,583,369	52,082,398	0.990	1,728	1,731	1.002
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	159,491,234	159,978,543	1.003	57,117,611	56,517,549	0.989	1,777	1,775	0.999
	5yr Weighted Average		1.002	5yr Weighted Average		0.991	2yr Weighted Average		1.000
	114	126		114	126		114	126	
2007	154,002,727	154,130,843	1.001	60,393,949	59,952,045	0.993	2,019	2,017	0.999
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
	5yr Weighted Average		1.002	5yr Weighted Average		0.993	2yr Weighted Average		1.000

Note:
 Unit Statistical Data, excluding Large Deductibles.

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Calculation of Not-Likely to Develop Development Factors

Policy Year	Not-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			
2015	161,816,137	216,952,149	1.341	137,270,650	140,324,119	1.022	13,329	13,531	1.015	
2016	160,194,962	219,431,951	1.370	140,562,316	144,011,610	1.025	13,161	13,354	1.015	
2017	175,506,681	245,069,437	1.396	147,685,765	149,778,236	1.014	13,798	14,043	1.018	
2018	176,156,644	246,693,469	1.400	149,876,323	154,646,677	1.032	13,433	13,640	1.015	
2019	171,860,276	246,445,619	1.434	131,558,958	135,999,856	1.034	12,065	12,246	1.015	
	5yr Weighted Average		1.389	5yr Weighted Average		1.025	2yr Weighted Average		1.015	
	30	42		30	42		30	42		
2014	198,735,744	224,093,983	1.128	137,686,737	138,186,348	1.004	13,343	13,422	1.006	
2015	211,127,881	236,438,362	1.120	138,730,216	139,046,411	1.002	13,485	13,541	1.004	
2016	211,476,852	238,681,746	1.129	140,478,350	140,469,954	1.000	13,292	13,370	1.006	
2017	233,825,320	266,650,099	1.140	146,699,033	145,776,856	0.994	13,964	14,031	1.005	
2018	239,633,315	281,492,989	1.175	152,491,904	151,764,219	0.995	13,583	13,637	1.004	
	5yr Weighted Average		1.139	5yr Weighted Average		0.999	2yr Weighted Average		1.004	
	42	54		42	54		42	54		
2013	203,268,089	213,683,290	1.051	132,038,269	132,614,079	1.004	13,095	13,138	1.003	
2014	217,297,764	227,841,100	1.049	135,889,610	136,247,232	1.003	13,388	13,416	1.002	
2015	229,350,011	242,299,862	1.056	136,833,818	136,886,571	1.000	13,506	13,533	1.002	
2016	229,597,898	243,934,406	1.062	137,911,335	137,529,752	0.997	13,326	13,351	1.002	
2017	258,113,471	276,787,328	1.072	143,022,008	142,974,877	1.000	13,984	14,009	1.002	
	5yr Weighted Average		1.059	5yr Weighted Average		1.001	2yr Weighted Average		1.002	
	54	66		54	66		54	66		
2012	194,877,399	200,005,935	1.026	125,996,604	123,975,350	0.984	12,828	12,849	1.002	
2013	207,011,957	211,139,424	1.020	130,898,190	131,212,215	1.002	13,114	13,130	1.001	
2014	220,070,972	223,816,447	1.017	134,364,429	134,839,430	1.004	13,382	13,398	1.001	
2015	233,867,275	237,145,811	1.014	134,436,500	134,272,932	0.999	13,502	13,524	1.002	
2016	233,717,265	236,580,761	1.012	134,791,343	134,464,358	0.998	13,312	13,327	1.001	
	5yr Weighted Average		1.018	5yr Weighted Average		0.997	2yr Weighted Average		1.001	
	66	78		66	78		66	78		
2011	204,892,576	205,790,648	1.004	126,761,432	126,200,170	0.996	13,095	13,103	1.001	
2012	193,456,964	195,938,243	1.013	122,332,250	122,156,601	0.999	12,824	12,826	1.000	
2013	208,316,250	209,807,550	1.007	130,141,354	129,941,388	0.998	13,114	13,119	1.000	
2014	220,100,465	222,591,208	1.011	133,690,623	134,020,685	1.002	13,378	13,390	1.001	
2015	232,866,114	234,579,012	1.007	132,808,457	132,595,392	0.998	13,507	13,513	1.000	
	5yr Weighted Average		1.009	5yr Weighted Average		0.999	2yr Weighted Average		1.001	
	78	90		78	90		78	90		
2010	193,878,483	193,191,523	0.996	122,967,268	122,753,340	0.998	13,004	13,006	1.000	
2011	204,274,044	205,234,308	1.005	125,913,913	125,935,958	1.000	13,097	13,100	1.000	
2012	194,881,910	194,619,638	0.999	121,885,893	121,878,997	1.000	12,822	12,827	1.000	
2013	208,715,269	208,813,075	1.000	129,763,935	129,209,879	0.996	13,115	13,114	1.000	
2014	221,248,065	221,424,820	1.001	133,573,531	133,760,426	1.001	13,385	13,386	1.000	
	5yr Weighted Average		1.000	5yr Weighted Average		0.999	2yr Weighted Average		1.000	
	90	102		90	102		90	102		
2009	174,780,219	174,972,871	1.001	116,637,132	116,741,194	1.001	11,733	11,737	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	121,933,970	122,549,235	1.005	12,827	12,832	1.000	
2013	208,323,059	209,523,602	1.006	128,741,748	128,300,605	0.997	13,111	13,118	1.001	
	5yr Weighted Average		1.003	5yr Weighted Average		1.001	2yr Weighted Average		1.000	
	102	114		102	114		102	114		
2008	183,851,185	184,177,810	1.002	114,908,632	115,152,372	1.002	12,654	12,658	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	122,549,235	121,918,745	0.995	12,832	12,833	1.000	
	5yr Weighted Average		1.001	5yr Weighted Average		0.998	2yr Weighted Average		1.000	
	114	126		114	126		114	126		
2007	175,638,522	176,056,330	1.002	118,748,284	118,649,937	0.999	13,742	13,748	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	
	5yr Weighted Average		1.001	5yr Weighted Average		0.999	2yr Weighted Average		1.000	

Note:
 Unit Statistical Data, excluding Large Deductibles.

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Section IX - Classification Pricing
 Subsection B - Conversion/Excess Loss Factors
 7/1/2023

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						
2016	1,349.36	31,608	11,496	914	161.88	295.95
2017	1,395.56	32,459	11,726	948	165.76	299.48
2018	1,445.94	33,510	12,182	982	160.24	292.60
2019	1,544.09	35,127	12,242	976	147.69	256.31

(2) Trend to PY 2019						
2016	1.144	1.111	1.065	1.067	0.912	0.866
2017	1.106	1.082	1.044	1.029	0.891	0.856
2018	1.068	1.048	1.005	0.993	0.922	0.876
2019	1.000	1.000	1.000	1.000	1.000	1.000

(3) Projected Trend from PY 2019 to Prospective Effective Period						
Selected Annual Trend	4.3%	3.0%	2.1%	2.9%	-2.1%	-4.3%
Trend Factor	1.208	1.141	1.098	1.135	0.909	0.821

(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
2016	1.383	1.268	1.169	1.212	0.830	0.711
2017	1.337	1.234	1.146	1.169	0.810	0.703
2018	1.290	1.196	1.103	1.128	0.838	0.719
2019	1.208	1.141	1.098	1.135	0.909	0.821
2020	1.159	1.108	1.075	1.104	0.929	0.858

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 2019

(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 2019 to midpoint of policy effective period 7/1/2023 - 6/29/2024, which is 4.5 years.

(4) = (2) x (3) for PY2016-2019, (1+Annual Trend Factor)^3.5 for PY2020

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Section IX - Classification Pricing
Subsection B - Conversion/Excess Loss Factors
7/1/2023

Section IX - B
Exhibit 4

Calculation of Investment Income Offset Factor

Indemnity

Injury Type (1)	Loss Flow Discounted at 2.75% Post-Chapter 398 (2)	Injury Type Weights At Ultimate (3)	Investment Income Offset Factor (4)
Fatal	0.608	1.80%	0.695
Permanent Total	0.536	10.75%	0.612
Permanent Partial	0.942	36.82%	1.076
Temporary Total	0.958	20.37%	1.094
Total Indemnity			0.875

Medical

Injury Type (5)	Loss Flow Discounted at 2.75% Post-Chapter 398 (6)	Injury Type Weights At Ultimate (7)	Investment Income Offset Factor (8)
Fatal	0.608	0.16%	1.000
Permanent Total	0.536	4.71%	0.611
Permanent Partial	0.942	10.65%	1.075
Temporary Total	0.958	11.12%	1.093
Medical Only		3.62%	1.000
Total Medical			0.876

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) [3.28% x (1.000 - 16.42%)] = 2.75%

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

(4) = (2) / 0.875, which is the weighted average of (2) and (3).

(7): Section IV - E, Exhibit 2, Page 2.

(8) = (6) / 0.876, 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
7/1/2023

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	0.114	1.129
B	0.131	1.151
C	0.162	1.193
D	0.205	1.258
E	0.227	1.294
F	0.261	1.353
G	0.372	1.592

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				
		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)	
2016	Fatal	18,706	432,322	25,420	0	476,448	16,093	360,570	15,903	0	392,566
	Permanent Total	8,000,954	0	1,776,377	0	9,777,331	6,989,266	0	1,111,340	0	8,100,606
	Permanent Partial	6,057,850	18,352,664	2,565,234	6,244,935	33,220,683	5,559,505	16,327,897	1,604,866	4,316,367	27,808,635
	Temporary Total	3,984,299	13,316,965	1,843,149	8,611,692	27,756,105	3,388,587	10,979,574	1,153,114	5,952,218	21,473,493
	Medical Only	0	0	0	2,970,686	2,970,686	0	0	0	1,823,362	1,823,362
2017	Fatal	0	667,222	0	30,870	698,092	0	553,464	0	21,073	574,537
	Permanent Total	6,444,265	0	1,226,641	0	7,670,906	5,597,069	0	754,811	0	6,351,880
	Permanent Partial	6,921,983	16,926,801	2,614,123	5,284,361	31,747,268	6,290,855	14,897,732	1,608,595	3,607,289	26,404,471
	Temporary Total	4,187,232	12,280,234	1,730,620	7,709,359	25,907,445	3,549,671	10,081,702	1,064,934	5,262,677	19,958,984
	Medical Only	0	0	0	3,099,949	3,099,949	0	0	0	1,871,060	1,871,060
2018	Fatal	3,467	183,404	1,280	6,711	194,862	3,228	166,113	813	4,730	174,884
	Permanent Total	3,564,143	0	1,042,424	0	4,606,567	3,360,203	0	662,040	0	4,022,243
	Permanent Partial	6,568,721	14,852,609	2,424,262	6,035,970	29,881,562	6,453,401	14,194,588	1,539,640	4,254,110	26,441,739
	Temporary Total	5,842,014	17,342,930	2,732,536	9,730,492	35,647,972	5,390,343	15,566,409	1,735,423	6,857,984	29,550,159
	Medical Only	0	0	0	3,212,171	3,212,171	0	0	0	1,985,274	1,985,274
2019	Fatal	0	981,065	0	18,935	1,000,000	0	1,111,559	0	15,369	1,126,928
	Permanent Total	1,212,765	0	604,104	0	1,816,869	1,454,349	0	454,878	0	1,909,227
	Permanent Partial	5,767,206	10,875,471	2,517,365	3,833,225	22,993,267	7,178,136	12,932,054	1,895,526	3,111,246	25,116,962
	Temporary Total	6,026,764	15,511,630	2,363,151	9,679,464	33,581,009	7,092,147	17,439,106	1,779,406	7,856,359	34,167,018
	Medical Only	0	0	0	2,612,905	2,612,905	0	0	0	1,979,737	1,979,737
2020	Fatal	0	0	0	0	0	0	0	0	0	0
	Permanent Total	0	0	0	0	0	0	0	0	0	0
	Permanent Partial	1,688,216	5,579,149	602,650	3,490,405	11,360,420	3,323,246	9,397,849	512,314	3,030,246	16,263,655
	Temporary Total	4,918,591	12,204,178	2,937,920	9,491,360	29,552,049	9,223,530	19,583,534	2,497,534	8,240,063	39,544,661
	Medical Only	0	0	0	2,373,638	2,373,638	0	0	0	1,953,313	1,953,313
(13) All Years, All Injury Types		71,207,176	139,506,644	27,007,256	84,437,128	322,158,204	74,869,629	143,592,151	18,391,137	62,142,477	298,995,394

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
 (9) = (4) x Primary Conversion Factors from Section IX - B, Exhibit 1
 (10) = (5) x Primary Conversion Factors from Section IX - B, Exhibit 1
 (11) = (6) x Primary Conversion Factors from Section IX - B, Exhibit 1
 (12) = (8) + (9) + (10) + (11)

IX 000030

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)	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)		
2016	Fatal	2,664	38,049	4,317	16,307	61,337	15,424	327,794	23,921	19,291	386,430	64,224,299
	Permanent Total	1,012,179	0	649,446	0	1,661,625	5,791,391	0	1,273,023	0	7,064,414	
	Permanent Partial	836,899	2,271,709	729,744	1,871,374	5,709,726	8,142,346	23,676,496	2,968,542	7,867,941	42,655,325	
	Temporary Total	456,203	1,556,874	419,454	1,876,901	4,309,432	4,977,399	16,229,469	2,033,549	10,124,138	33,364,555	
	Medical Only	0	0	0	368,359	368,359	0	0	0	2,592,805	2,592,805	
2017	Fatal	0	70,607	0	33,574	104,181	0	513,190	0	64,647	577,837	63,708,440
	Permanent Total	822,385	0	504,366	0	1,326,751	4,646,357	0	910,367	0	5,556,724	
	Permanent Partial	892,677	2,160,056	738,428	1,675,200	5,466,361	9,144,325	21,713,827	2,984,327	6,716,881	40,559,360	
	Temporary Total	474,289	1,420,551	407,279	1,649,070	3,951,189	5,209,349	14,890,618	1,903,775	8,937,848	30,941,590	
	Medical Only	0	0	0	373,983	373,983	0	0	0	2,655,886	2,655,886	
2018	Fatal	583	22,783	459	10,679	34,504	3,134	155,335	1,505	18,228	178,202	66,164,869
	Permanent Total	497,378	0	345,826	0	843,204	2,792,091	0	728,672	0	3,520,763	
	Permanent Partial	950,818	2,061,967	738,440	1,811,492	5,562,717	9,425,251	20,693,892	2,896,663	7,712,637	40,728,443	
	Temporary Total	806,563	2,110,398	727,837	2,311,893	5,956,691	8,022,408	22,884,090	3,185,338	11,857,924	45,949,760	
	Medical Only	0	0	0	405,000	405,000	0	0	0	2,827,693	2,827,693	
2019	Fatal	0	188,774	0	85,344	274,118	0	1,069,298	0	119,143	1,188,441	73,817,599
	Permanent Total	259,466	0	240,867	0	500,333	1,240,448	0	503,014	0	1,743,462	
	Permanent Partial	1,077,290	1,832,077	857,746	1,439,855	5,206,968	10,508,801	18,794,102	3,500,888	5,786,893	38,590,684	
	Temporary Total	999,778	2,386,167	793,729	2,582,218	6,761,892	10,475,668	25,665,457	3,327,420	13,498,529	52,967,074	
	Medical Only	0	0	0	399,381	399,381	0	0	0	2,814,496	2,814,496	
2020	Fatal	0	0	0	0	0	0	0	0	0	0	74,202,724
	Permanent Total	0	0	0	0	0	0	0	0	0	0	
	Permanent Partial	536,937	1,369,252	349,048	1,274,244	3,529,481	4,913,846	13,706,055	1,095,254	5,473,318	25,188,473	
	Temporary Total	1,241,065	2,829,481	1,013,603	2,941,872	8,026,021	13,547,284	29,015,503	4,540,387	14,459,794	61,562,968	
	Medical Only	0	0	0	394,794	394,794	0	0	0	2,777,810	2,777,810	
(14) All Years, All Injury Types		10,867,174	20,318,745	8,520,589	21,521,540	61,228,048	98,855,522	209,335,126	31,876,645	106,325,902	446,393,195	342,117,930
(15) Pure Premium							0.289	0.612	0.093	0.311	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 000031

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)
2016	Fatal	309,094	4,123,319	0	191,573	4,623,986	265,925	3,438,973	0	132,411	3,837,309
	Permanent Total	23,413,385	0	7,820,111	0	31,233,496	20,452,859	0	4,892,430	0	25,345,289
	Permanent Partial	25,628,436	47,269,761	7,679,398	12,219,435	92,797,030	23,520,131	42,054,702	4,804,397	8,445,814	78,825,044
	Temporary Total	9,616,960	27,142,868	3,579,141	15,731,226	56,070,195	8,179,081	22,378,756	2,239,188	10,873,089	43,670,114
	Medical Only	0	0	0	3,777,480	3,777,480	0	0	0	2,318,560	2,318,560
2017	Fatal	391,730	3,272,001	329,443	346,645	4,339,819	335,536	2,714,139	202,722	236,632	3,489,029
	Permanent Total	21,274,931	0	7,206,735	0	28,481,666	18,478,020	0	4,434,650	0	22,912,670
	Permanent Partial	27,773,607	49,982,745	9,199,154	13,115,740	100,071,246	25,241,283	43,991,156	5,660,681	8,953,261	83,846,381
	Temporary Total	11,873,139	36,705,825	4,248,149	17,539,625	70,366,738	10,065,298	30,134,376	2,614,090	11,973,159	54,786,923
	Medical Only	0	0	0	3,807,904	3,807,904	0	0	0	2,298,365	2,298,365
2018	Fatal	710,606	2,019,572	1,295	103,102	2,834,575	661,626	1,829,174	822	72,666	2,564,288
	Permanent Total	16,853,972	0	7,047,469	0	23,901,441	15,889,589	0	4,475,821	0	20,365,410
	Permanent Partial	21,326,370	47,368,822	7,273,099	14,241,446	90,209,737	20,951,966	45,270,220	4,619,118	10,037,273	80,878,577
	Temporary Total	13,836,343	36,121,650	5,434,331	18,408,650	73,800,974	12,766,595	32,421,533	3,451,323	12,974,289	61,613,740
	Medical Only	0	0	0	4,064,104	4,064,104	0	0	0	2,511,809	2,511,809
2019	Fatal	0	2,995,379	0	188,490	3,183,869	0	3,393,803	0	152,988	3,546,791
	Permanent Total	6,072,279	0	2,863,978	0	8,936,257	7,281,881	0	2,156,518	0	9,438,399
	Permanent Partial	19,717,448	42,500,394	8,209,810	15,729,351	86,157,003	24,541,265	50,537,343	6,181,823	12,766,764	94,027,195
	Temporary Total	11,774,745	37,642,144	3,660,295	19,159,371	72,236,555	13,856,230	42,319,558	2,756,129	15,550,748	74,482,665
	Medical Only	0	0	0	3,621,148	3,621,148	0	0	0	2,743,659	2,743,659
2020	Fatal	0	971,538	0	246,053	1,217,591	0	1,569,282	0	213,615	1,782,897
	Permanent Total	1,102,067	0	747,425	0	1,849,492	2,099,550	0	635,388	0	2,734,938
	Permanent Partial	7,784,918	19,339,186	4,630,057	10,081,803	41,835,964	15,324,578	32,576,073	3,936,023	8,752,664	60,589,338
	Temporary Total	9,713,725	33,933,338	6,077,972	22,484,632	72,209,667	18,215,548	54,451,409	5,166,901	19,520,362	97,354,220
	Medical Only	0	0	0	3,113,307	3,113,307	0	0	0	2,562,001	2,562,001
(13) All Years, All Injury Types		229,173,755	391,388,542	86,007,862	178,171,085	884,741,244	238,126,961	409,080,497	58,228,024	133,090,129	838,525,611

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
 (9) = (4) x Primary Conversion Factors from Section IX - B, Exhibit 1
 (10) = (5) x Primary Conversion Factors from Section IX - B, Exhibit 1
 (11) = (6) x Primary Conversion Factors from Section IX - B, Exhibit 1
 (12) = (8) + (9) + (10) + (11)

IX 000032

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)	
2016	Fatal	61,848	994,053	26,506	489,958	1,572,365	269,536	3,645,394	31,357	736,263	4,682,550	73,948,291
	Permanent Total	5,228,674	0	4,068,833	0	9,297,507	18,588,117	0	6,478,866	0	25,066,983	
	Permanent Partial	5,769,060	10,482,808	4,169,036	7,597,057	28,017,961	37,283,876	66,877,983	11,410,052	20,399,104	135,971,015	
	Temporary Total	2,015,868	5,512,896	1,638,055	6,209,766	15,376,585	13,198,205	36,108,053	5,013,813	22,090,503	76,410,574	
	Medical Only	0	0	0	785,973	785,973	0	0	0	3,672,662	3,672,662	
2017	Fatal	82,953	675,243	107,149	369,245	1,234,590	344,135	2,787,178	366,577	716,753	4,214,643	79,820,430
	Permanent Total	4,585,576	0	3,529,384	0	8,114,960	16,693,273	0	5,757,883	0	22,451,156	
	Permanent Partial	6,441,113	11,196,503	4,871,464	8,060,002	30,569,082	40,330,323	70,251,507	13,392,012	21,632,993	145,606,835	
	Temporary Total	2,387,166	7,314,817	1,912,711	7,218,141	18,832,835	16,120,745	48,481,079	5,853,782	24,817,015	95,272,621	
	Medical Only	0	0	0	776,544	776,544	0	0	0	3,637,617	3,637,617	
2018	Fatal	156,977	602,839	67,533	281,762	1,109,111	673,158	1,999,909	80,864	419,288	3,173,219	86,135,831
	Permanent Total	4,142,130	0	3,521,442	0	7,663,572	14,498,821	0	5,781,908	0	20,280,729	
	Permanent Partial	5,375,758	11,276,376	4,020,818	8,513,066	29,186,018	33,514,056	71,981,376	10,985,997	23,587,442	140,068,871	
	Temporary Total	3,043,096	7,952,313	2,468,920	7,945,890	21,410,219	20,466,954	52,267,285	7,655,696	27,052,695	107,442,630	
	Medical Only	0	0	0	857,848	857,848	0	0	0	3,986,304	3,986,304	
2019	Fatal	0	919,323	0	446,176	1,365,499	0	3,546,797	0	708,812	4,255,609	88,514,911
	Permanent Total	2,004,209	0	1,672,844	0	3,677,053	6,721,208	0	2,768,575	0	9,489,783	
	Permanent Partial	6,122,812	12,663,300	4,891,877	10,027,755	33,705,744	39,034,047	80,451,690	14,080,620	28,984,075	162,550,432	
	Temporary Total	3,305,075	10,091,616	2,365,368	9,775,656	25,537,715	22,216,729	67,850,603	6,622,807	32,750,556	129,440,695	
	Medical Only	0	0	0	930,384	930,384	0	0	0	4,346,393	4,346,393	
2020	Fatal	0	351,020	0	213,426	564,446	0	1,579,115	0	505,189	2,084,304	91,558,220
	Permanent Total	526,943	0	522,594	0	1,049,537	1,901,038	0	837,205	0	2,738,243	
	Permanent Partial	3,873,681	8,597,082	3,142,614	6,940,669	22,554,046	24,438,555	52,411,648	9,000,749	19,954,654	105,805,606	
	Temporary Total	4,692,906	13,485,818	3,878,670	12,778,467	34,835,861	29,656,890	87,950,364	11,697,179	41,766,869	171,071,302	
	Medical Only	0	0	0	887,800	887,800	0	0	0	4,081,114	4,081,114	
(14) All Years, All Injury Types		59,815,845	102,116,007	46,875,818	91,105,585	299,913,255	335,949,666	648,189,981	117,815,942	285,846,301	1,387,801,890	419,977,683
(15) Pure Premium							0.800	1.543	0.281	0.681	3.304	

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 000033

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)	
2016	Fatal	0	961,837	0	1	961,838	0	802,201	0	1	802,202
	Permanent Total	4,892,461	0	2,150,036	0	7,042,497	4,273,829	0	1,345,109	0	5,618,938
	Permanent Partial	8,392,392	13,913,357	1,988,892	4,431,219	28,725,860	7,701,997	12,378,359	1,244,294	3,062,764	24,387,414
	Temporary Total	7,767,797	11,475,296	3,476,243	8,774,506	31,493,842	6,606,395	9,461,154	2,174,813	6,064,752	24,307,114
	Medical Only	0	0	0	5,716,296	5,716,296	0	0	0	3,508,575	3,508,575
2017	Fatal	0	696,628	0	24,402	721,030	0	577,856	0	16,657	594,513
	Permanent Total	5,018,578	0	1,372,942	0	6,391,520	4,358,810	0	844,837	0	5,203,647
	Permanent Partial	6,596,379	13,042,159	2,019,200	4,104,586	25,762,324	5,994,939	11,478,755	1,242,510	2,801,933	21,518,137
	Temporary Total	8,584,816	13,413,266	3,054,535	10,109,270	35,161,887	7,277,665	11,011,887	1,879,602	6,900,940	27,070,094
	Medical Only	0	0	0	6,576,719	6,576,719	0	0	0	3,969,560	3,969,560
2018	Fatal	502,211	480,426	7,141	19,574	1,009,352	467,595	435,133	4,535	13,796	921,059
	Permanent Total	3,477,437	0	1,118,764	0	4,596,201	3,278,458	0	710,523	0	3,988,981
	Permanent Partial	8,974,906	11,928,442	2,746,711	3,844,098	27,494,157	8,817,343	11,399,971	1,744,426	2,709,294	24,671,034
	Temporary Total	9,372,762	13,519,302	2,794,812	10,023,389	35,710,265	8,648,113	12,134,454	1,774,975	7,064,415	29,621,957
	Medical Only	0	0	0	6,946,195	6,946,195	0	0	0	4,293,077	4,293,077
2019	Fatal	369,368	6,100	21,500	15,631	412,599	438,047	6,911	16,189	12,687	473,834
	Permanent Total	453,894	0	125,639	0	579,533	544,310	0	94,604	0	638,914
	Permanent Partial	7,886,726	10,571,001	2,504,965	3,361,971	24,324,663	9,816,190	12,570,008	1,886,189	2,728,752	27,001,139
	Temporary Total	6,451,766	13,177,384	2,833,434	9,268,969	31,731,553	7,592,279	14,814,807	2,133,519	7,523,180	32,063,785
	Medical Only	0	0	0	5,101,888	5,101,888	0	0	0	3,865,581	3,865,581
2020	Fatal	0	743,519	0	12,547	756,066	0	1,200,974	0	10,893	1,211,867
	Permanent Total	0	0	0	0	0	0	0	0	0	0
	Permanent Partial	2,161,523	4,252,634	811,586	2,229,164	9,454,907	4,254,948	7,163,390	689,931	1,935,281	14,043,550
	Temporary Total	4,774,141	10,291,327	2,922,120	7,872,750	25,860,338	8,952,652	16,514,063	2,484,102	6,834,842	34,785,659
	Medical Only	0	0	0	3,532,415	3,532,415	0	0	0	2,906,893	2,906,893
(13) All Years, All Injury Types		85,677,157	118,472,678	29,948,520	91,965,590	326,063,945	89,023,570	121,949,923	20,270,158	66,223,873	297,467,524

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
 (9) = (4) x Primary Conversion Factors from Section IX - B, Exhibit 1
 (10) = (5) x Primary Conversion Factors from Section IX - B, Exhibit 1
 (11) = (6) x Primary Conversion Factors from Section IX - B, Exhibit 1
 (12) = (8) + (9) + (10) + (11)

IX 000034

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)	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)		
2016	Fatal	0	146,471	0	62,773	209,244	0	780,118	0	74,262	854,380	851,822,705
	Permanent Total	564,074	0	488,175	0	1,052,249	3,501,641	0	1,325,439	0	4,827,080	
	Permanent Partial	1,013,326	1,759,235	665,088	1,391,511	4,829,160	11,094,230	17,996,547	2,427,849	5,663,776	37,182,402	
	Temporary Total	918,439	1,329,031	816,359	1,741,146	4,804,975	9,741,521	13,968,788	3,868,000	10,094,110	37,672,419	
	Medical Only	0	0	0	690,806	690,806	0	0	0	4,967,868	4,967,868	
2017	Fatal	0	104,305	0	48,997	153,302	0	560,959	0	77,670	638,629	895,347,247
	Permanent Total	566,902	0	393,424	0	960,326	3,565,197	0	895,245	0	4,460,442	
	Permanent Partial	805,754	1,447,637	583,209	1,134,968	3,971,568	8,656,989	16,454,738	2,321,469	5,005,915	32,439,111	
	Temporary Total	993,053	1,512,953	794,784	1,977,509	5,278,299	10,707,130	16,214,442	3,458,352	11,481,067	41,860,991	
	Medical Only	0	0	0	781,351	781,351	0	0	0	5,620,327	5,620,327	
2018	Fatal	95,976	58,883	42,009	27,903	224,771	463,439	406,243	55,062	49,329	974,073	937,521,659
	Permanent Total	454,446	0	334,903	0	789,349	2,701,850	0	755,828	0	3,457,678	
	Permanent Partial	1,264,901	1,558,498	883,406	1,190,473	4,897,278	12,834,261	16,495,571	3,341,385	4,958,698	37,629,915	
	Temporary Total	1,219,437	1,650,213	873,233	2,068,729	5,811,612	12,774,361	17,845,392	3,424,500	11,810,424	45,854,677	
	Medical Only	0	0	0	831,239	831,239	0	0	0	6,062,066	6,062,066	
2019	Fatal	46,224	729	22,251	2,225	71,429	398,229	6,283	45,474	17,641	467,627	1,006,752,586
	Permanent Total	64,339	0	43,559	0	107,898	440,536	0	99,890	0	540,426	
	Permanent Partial	1,342,109	1,753,611	972,457	1,333,948	5,402,125	14,204,033	18,233,348	3,634,874	5,165,873	41,238,128	
	Temporary Total	1,090,716	2,083,130	879,144	2,398,635	6,451,625	11,240,857	21,875,778	3,895,792	12,830,284	49,842,711	
	Medical Only	0	0	0	746,706	746,706	0	0	0	5,456,336	5,456,336	
2020	Fatal	0	180,294	0	80,075	260,369	0	1,135,852	0	107,615	1,243,467	1,047,520,036
	Permanent Total	0	0	0	0	0	0	0	0	0	0	
	Permanent Partial	544,210	1,022,338	358,907	890,527	2,815,982	6,109,121	10,420,078	1,333,636	3,593,119	21,455,954	
	Temporary Total	1,232,637	2,169,616	1,016,597	2,229,897	6,648,747	13,185,699	24,187,569	4,526,890	11,721,967	53,622,125	
	Medical Only	0	0	0	554,550	554,550	0	0	0	4,094,887	4,094,887	
(14) All Years, All Injury Types		12,216,543	16,776,944	9,167,505	20,183,968	58,344,960	121,619,094	176,581,706	35,409,685	108,853,234	442,463,719	4,738,964,232
(15) Pure Premium							0.026	0.037	0.007	0.023	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 000035

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)	
2016	Fatal	0	1,929,164	0	177,977	2,107,141	0	1,608,981	0	123,014	1,731,995
	Permanent Total	12,449,241	0	3,067,194	0	15,516,435	10,875,086	0	1,918,902	0	12,793,988
	Permanent Partial	20,349,681	35,523,497	6,438,411	13,041,056	75,352,645	18,675,629	31,604,351	4,028,009	9,013,701	63,321,690
	Temporary Total	13,227,100	31,344,612	6,259,072	24,679,395	75,510,179	11,249,451	25,862,437	3,915,810	17,058,466	58,086,164
	Medical Only	0	0	0	9,628,823	9,628,823	0	0	0	5,910,025	5,910,025
2017	Fatal	340,612	1,011,514	0	803	1,352,929	291,751	839,055	0	548	1,131,354
	Permanent Total	13,743,094	0	5,331,667	0	19,074,761	11,936,356	0	3,280,831	0	15,217,187
	Permanent Partial	19,804,431	41,033,279	6,701,850	13,942,697	81,482,257	17,998,715	36,114,490	4,123,970	9,517,771	67,754,946
	Temporary Total	15,282,845	40,914,413	6,826,110	26,861,853	89,885,221	12,955,831	33,589,499	4,200,433	18,336,837	69,082,600
	Medical Only	0	0	0	10,195,431	10,195,431	0	0	0	6,153,733	6,153,733
2018	Fatal	0	1,109,353	0	195,137	1,304,490	0	1,004,767	0	137,531	1,142,298
	Permanent Total	7,056,110	0	1,923,720	0	8,979,830	6,652,360	0	1,221,747	0	7,874,107
	Permanent Partial	21,096,899	40,644,028	5,786,809	14,115,821	81,643,557	20,726,523	38,843,357	3,675,181	9,948,733	73,193,794
	Temporary Total	17,380,775	43,105,191	6,315,996	27,030,745	93,832,707	16,036,992	38,689,715	4,011,265	19,051,083	77,789,055
	Medical Only	0	0	0	9,923,553	9,923,553	0	0	0	6,133,225	6,133,225
2019	Fatal	492,264	1,799,144	7,736	433,885	2,733,029	583,794	2,038,453	5,825	352,164	2,980,236
	Permanent Total	1,808,112	0	806,403	0	2,614,515	2,168,289	0	607,205	0	2,775,494
	Permanent Partial	15,954,695	32,548,747	6,125,853	12,075,023	66,704,318	19,857,965	38,703,811	4,612,646	9,800,720	72,975,142
	Temporary Total	14,762,691	37,590,388	7,372,961	23,578,107	83,304,147	17,372,372	42,261,372	5,551,693	19,137,225	84,322,662
	Medical Only	0	0	0	9,010,093	9,010,093	0	0	0	6,826,737	6,826,737
2020	Fatal	0	1,462,739	0	161,205	1,623,944	0	2,362,698	0	139,952	2,502,650
	Permanent Total	100,355	0	409,765	0	510,120	191,187	0	348,342	0	539,529
	Permanent Partial	7,243,062	14,483,613	2,711,908	7,281,035	31,719,618	14,257,935	24,397,056	2,305,400	6,321,137	47,281,528
	Temporary Total	13,447,522	29,137,009	8,651,719	23,320,363	74,556,613	25,217,309	46,754,940	7,354,849	20,245,914	99,573,012
	Medical Only	0	0	0	6,728,201	6,728,201	0	0	0	5,536,767	5,536,767
(13) All Years, All Injury Types		194,539,489	353,636,691	74,737,174	232,381,203	855,294,557	207,047,545	364,674,982	51,162,108	169,745,283	792,629,918

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
 (9) = (4) x Primary Conversion Factors from Section IX - B, Exhibit 1
 (10) = (5) x Primary Conversion Factors from Section IX - B, Exhibit 1
 (11) = (6) x Primary Conversion Factors from Section IX - B, Exhibit 1
 (12) = (8) + (9) + (10) + (11)

IX 000036

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			Converted Unlimited Losses					Exposure (13)
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Total (7)	Likely (8)	Not-Likely (9)	Likely (10)	Not-Likely (11)	Total (12)	
2016	Fatal	0	236,912	0	128,782	365,694	0	1,517,927	0	297,875	1,815,802	194,555,759
	Permanent Total	1,790,417	0	1,234,554	0	3,024,971	9,167,204	0	2,279,904	0	11,447,108	
	Permanent Partial	2,739,942	4,330,352	2,004,803	3,605,016	12,680,113	27,261,098	45,743,325	7,670,944	16,045,165	96,720,532	
	Temporary Total	1,513,582	3,459,670	1,389,611	4,779,878	11,142,741	16,522,802	37,959,894	6,860,646	28,240,011	89,583,353	
	Medical Only	0	0	0	1,100,059	1,100,059	0	0	0	8,292,929	8,292,929	
2017	Fatal	53,888	132,202	23,095	56,787	265,972	284,228	798,690	27,321	67,828	1,178,067	206,507,959
	Permanent Total	1,769,121	0	1,482,716	0	3,251,837	9,919,931	0	3,443,977	0	13,363,908	
	Permanent Partial	2,548,451	5,075,139	1,913,758	4,082,219	13,619,567	26,155,655	52,432,619	7,677,195	17,292,890	103,558,359	
	Temporary Total	1,728,230	4,530,262	1,579,364	5,491,806	13,329,662	19,009,733	49,349,186	7,474,080	30,813,743	106,646,742	
	Medical Only	0	0	0	1,143,780	1,143,780	0	0	0	8,632,959	8,632,959	
2018	Fatal	0	117,724	0	71,518	189,242	0	923,054	0	247,305	1,170,359	217,240,368
	Permanent Total	918,536	0	638,587	0	1,557,123	5,479,762	0	1,344,996	0	6,824,758	
	Permanent Partial	2,987,583	5,484,467	2,008,207	4,314,337	14,794,594	30,187,033	56,427,407	7,226,637	18,136,022	111,977,099	
	Temporary Total	2,220,761	5,378,977	1,733,016	6,051,007	15,383,761	23,636,172	57,050,570	7,428,153	32,460,486	120,575,381	
	Medical Only	0	0	0	1,134,413	1,134,413	0	0	0	8,597,616	8,597,616	
2019	Fatal	61,604	303,227	27,280	220,579	612,690	530,728	1,925,625	39,163	677,555	3,173,071	226,719,893
	Permanent Total	312,698	0	253,291	0	565,989	1,795,721	0	622,126	0	2,417,847	
	Permanent Partial	2,769,505	5,474,606	2,129,681	4,314,827	14,688,619	28,803,793	56,237,217	8,573,118	17,948,440	111,562,568	
	Temporary Total	2,359,681	5,620,910	2,122,268	6,108,680	16,211,539	25,544,776	61,987,577	9,923,496	32,646,459	130,102,308	
	Medical Only	0	0	0	1,284,339	1,284,339	0	0	0	9,595,403	9,595,403	
2020	Fatal	0	394,004	0	199,163	593,167	0	2,266,909	0	401,174	2,668,083	225,289,265
	Permanent Total	21,473	0	62,116	0	83,589	153,922	0	296,756	0	450,678	
	Permanent Partial	2,178,150	3,523,015	1,452,981	2,834,678	9,988,824	20,922,427	35,541,045	4,778,921	11,641,957	72,884,350	
	Temporary Total	3,457,425	6,598,532	2,903,327	6,874,489	19,833,773	37,121,816	69,070,486	13,265,245	35,070,445	154,527,992	
	Medical Only	0	0	0	1,055,050	1,055,050	0	0	0	7,798,120	7,798,120	
(14) All Years, All Injury Types		29,431,047	50,659,999	22,958,655	54,851,407	157,901,108	282,496,801	529,231,531	88,932,678	284,904,382	1,185,565,392	1,070,313,245
(15) Pure Premium							0.264	0.494	0.083	0.266	1.108	

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 000037

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)	
2016	Fatal	0	557,162	0	2,188	559,350	0	464,690	0	1,512	466,202
	Permanent Total	4,398,335	0	3,047,813	0	7,446,148	3,842,183	0	1,906,778	0	5,748,961
	Permanent Partial	10,102,676	13,498,072	3,260,463	5,777,499	32,638,710	9,271,586	12,008,891	2,039,816	3,993,284	27,313,577
	Temporary Total	10,982,109	15,879,121	4,935,954	9,370,430	41,167,614	9,340,120	13,092,020	3,088,039	6,476,642	31,996,821
	Medical Only	0	0	0	2,774,469	2,774,469	0	0	0	1,702,927	1,702,927
2017	Fatal	248,172	656,556	4,697	1,024	910,449	212,572	544,616	2,890	699	760,777
	Permanent Total	7,613,498	0	1,945,743	0	9,559,241	6,612,589	0	1,197,309	0	7,809,898
	Permanent Partial	9,769,566	15,017,404	2,311,508	4,587,339	31,685,817	8,878,803	13,217,220	1,422,382	3,131,477	26,649,882
	Temporary Total	10,392,752	20,315,030	3,178,566	9,780,496	43,666,844	8,810,319	16,678,027	1,955,924	6,676,507	34,120,777
	Medical Only	0	0	0	3,091,870	3,091,870	0	0	0	1,866,183	1,866,183
2018	Fatal	200,000	1,170,718	208	4,282	1,375,208	186,215	1,060,347	132	3,018	1,249,712
	Permanent Total	3,348,746	0	1,817,504	0	5,166,250	3,157,131	0	1,154,290	0	4,311,421
	Permanent Partial	11,877,144	18,233,183	3,262,325	6,450,983	39,823,635	11,668,630	17,425,390	2,071,890	4,546,608	35,712,518
	Temporary Total	9,061,605	20,247,625	3,716,782	10,041,549	43,067,561	8,361,013	18,173,562	2,360,514	7,077,214	35,972,303
	Medical Only	0	0	0	2,959,567	2,959,567	0	0	0	1,829,152	1,829,152
2019	Fatal	0	512,514	0	4,829	517,343	0	580,685	0	3,919	584,604
	Permanent Total	1,480,668	0	536,690	0	2,017,358	1,775,618	0	404,117	0	2,179,735
	Permanent Partial	7,556,542	13,719,716	2,372,495	5,660,013	29,308,766	9,405,228	16,314,155	1,786,442	4,593,962	32,099,787
	Temporary Total	8,495,851	17,682,852	3,034,933	8,248,560	37,462,196	9,997,708	19,880,124	2,285,244	6,694,963	38,858,039
	Medical Only	0	0	0	2,652,743	2,652,743	0	0	0	2,009,921	2,009,921
2020	Fatal	0	505,287	0	56,616	561,903	0	816,168	0	49,152	865,320
	Permanent Total	434,245	0	353,963	0	788,208	827,281	0	300,905	0	1,128,186
	Permanent Partial	2,760,480	5,951,411	1,573,128	3,724,188	14,009,207	5,433,993	10,024,909	1,337,320	3,233,208	20,029,430
	Temporary Total	6,606,492	15,828,306	4,101,914	9,946,023	36,482,735	12,388,747	25,399,021	3,487,048	8,634,785	49,909,601
	Medical Only	0	0	0	2,695,812	2,695,812	0	0	0	2,218,436	2,218,436
(13) All Years, All Injury Types		105,328,881	159,774,957	39,454,686	87,830,480	392,389,004	110,169,736	165,679,825	26,801,040	64,743,569	367,394,170

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
 (9) = (4) x Primary Conversion Factors from Section IX - B, Exhibit 1
 (10) = (5) x Primary Conversion Factors from Section IX - B, Exhibit 1
 (11) = (6) x Primary Conversion Factors from Section IX - B, Exhibit 1
 (12) = (8) + (9) + (10) + (11)

IX 000038

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)	Indemnity		Adjusted Excess Losses Medical		Total (7)	Indemnity		Converted Unlimited Losses Medical		Exposure (13)	
		Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)		Likely (8)	Not-Likely (9)	Likely (10)	Not-Likely (11)		Total (12)
2016	Fatal	0	82,633	0	35,706	118,339	0	450,078	0	44,030	494,108	31,909,394
	Permanent Total	821,129	0	941,274	0	1,762,403	3,375,273	0	2,059,101	0	5,434,374	
	Permanent Partial	1,790,267	2,388,208	1,354,290	2,167,424	7,700,189	14,081,262	18,326,885	4,315,731	7,833,569	44,557,447	
	Temporary Total	1,883,668	2,589,885	1,716,240	2,871,614	9,061,407	14,530,122	20,301,525	6,212,600	12,088,593	53,132,840	
	Medical Only	0	0	0	394,034	394,034	0	0	0	2,480,705	2,480,705	
2017	Fatal	52,553	153,753	23,544	66,100	295,950	218,019	574,288	31,271	79,023	902,601	33,816,326
	Permanent Total	1,307,090	0	911,665	0	2,218,755	5,732,209	0	1,524,758	0	7,256,967	
	Permanent Partial	1,782,297	2,595,305	1,181,111	1,997,679	7,556,392	13,571,119	20,128,662	3,310,437	6,521,912	43,532,130	
	Temporary Total	1,826,538	3,325,181	1,351,701	3,304,403	9,807,823	13,770,292	25,895,809	4,277,219	12,906,702	56,850,022	
	Medical Only	0	0	0	431,851	431,851	0	0	0	2,718,575	2,718,575	
2018	Fatal	46,037	262,145	19,777	113,414	441,373	190,987	1,087,521	23,552	137,739	1,439,799	32,126,520
	Permanent Total	607,297	0	568,467	0	1,175,764	2,724,667	0	1,245,529	0	3,970,196	
	Permanent Partial	2,241,841	3,522,132	1,541,683	2,815,102	10,120,758	17,707,429	26,665,292	4,594,792	9,360,687	58,328,200	
	Temporary Total	1,684,266	3,617,695	1,374,235	3,630,019	10,306,215	13,004,445	28,210,586	4,829,550	13,845,940	59,890,521	
	Medical Only	0	0	0	438,366	438,366	0	0	0	2,682,475	2,682,475	
2019	Fatal	0	120,072	0	52,727	172,799	0	576,251	0	67,013	643,264	32,419,507
	Permanent Total	404,863	0	311,812	0	716,675	1,578,218	0	517,606	0	2,095,824	
	Permanent Partial	1,840,919	3,357,260	1,304,547	2,786,288	9,289,014	14,315,860	25,040,861	3,930,307	9,384,261	52,671,289	
	Temporary Total	1,932,417	3,966,936	1,466,722	3,596,798	10,962,873	15,444,533	30,871,993	4,851,814	13,308,676	64,477,016	
	Medical Only	0	0	0	471,002	471,002	0	0	0	2,934,932	2,934,932	
2020	Fatal	0	201,778	0	103,836	305,614	0	837,084	0	180,984	1,018,068	31,423,939
	Permanent Total	111,950	0	106,149	0	218,099	679,809	0	294,294	0	974,103	
	Permanent Partial	1,007,866	1,931,871	811,200	1,877,170	5,628,107	8,200,208	15,220,465	2,731,924	6,498,035	32,650,632	
	Temporary Total	2,436,860	5,070,213	2,039,193	4,610,708	14,156,974	19,192,975	39,444,945	7,146,197	17,128,261	82,912,378	
	Medical Only	0	0	0	527,877	527,877	0	0	0	3,248,889	3,248,889	
(14) All Years, All Injury Types		21,777,858	33,185,067	17,023,610	32,292,118	104,278,653	158,317,427	253,632,245	51,896,682	123,451,001	587,297,355	161,695,687
(15) Pure Premium							0.979	1.569	0.321	0.763	3.632	

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)	
2016	Fatal	327,800	8,003,804	25,420	371,739	8,728,763	282,018	6,675,415	15,903	256,938	7,230,274
	Permanent Total	53,154,376	0	17,861,531	0	71,015,907	46,433,223	0	11,174,559	0	57,607,782
	Permanent Partial	70,531,035	128,557,351	21,932,398	41,714,144	262,734,928	64,728,848	114,374,200	13,721,382	28,831,930	221,656,360
	Temporary Total	45,578,265	99,158,862	20,093,559	67,167,249	231,997,935	38,763,634	81,773,941	12,570,964	46,425,167	179,533,706
	Medical Only	0	0	0	24,867,754	24,867,754	0	0	0	15,263,449	15,263,449
2017	Fatal	980,514	6,303,921	334,140	403,744	8,022,319	839,859	5,229,130	205,612	275,609	6,550,210
	Permanent Total	54,094,366	0	17,083,728	0	71,178,094	46,982,844	0	10,512,438	0	57,495,282
	Permanent Partial	70,865,966	136,002,388	22,845,835	41,034,723	270,748,912	64,404,595	119,699,353	14,058,138	28,011,731	226,173,817
	Temporary Total	50,320,784	123,628,768	19,037,980	72,000,603	264,988,135	42,658,784	101,495,491	11,714,983	49,150,120	205,019,378
	Medical Only	0	0	0	26,771,873	26,771,873	0	0	0	16,158,901	16,158,901
2018	Fatal	1,416,284	4,963,473	9,924	328,806	6,718,487	1,318,664	4,495,534	6,302	231,741	6,052,241
	Permanent Total	34,300,408	0	12,949,881	0	47,250,289	32,337,741	0	8,224,421	0	40,562,162
	Permanent Partial	69,844,040	133,027,084	21,493,206	44,688,318	269,052,648	68,617,863	127,133,526	13,650,255	31,496,018	240,897,662
	Temporary Total	55,493,499	130,336,698	20,994,457	75,234,825	282,059,479	51,203,056	116,985,673	13,333,500	53,024,985	234,547,214
	Medical Only	0	0	0	27,105,590	27,105,590	0	0	0	16,752,537	16,752,537
2019	Fatal	861,632	6,294,202	29,236	661,770	7,846,840	1,021,841	7,131,411	22,014	537,127	8,712,393
	Permanent Total	11,027,718	0	4,936,814	0	15,964,532	13,224,447	0	3,717,322	0	16,941,769
	Permanent Partial	56,882,617	110,215,329	21,730,488	40,659,583	229,488,017	70,798,784	131,057,371	16,362,626	33,001,444	251,220,225
	Temporary Total	47,511,817	121,604,398	19,264,774	69,934,471	258,315,460	55,910,736	136,714,967	14,505,991	56,762,475	263,894,169
	Medical Only	0	0	0	22,998,777	22,998,777	0	0	0	17,425,635	17,425,635
2020	Fatal	0	3,683,083	0	476,421	4,159,504	0	5,949,122	0	413,612	6,362,734
	Permanent Total	1,636,667	0	1,511,153	0	3,147,820	3,118,018	0	1,284,635	0	4,402,653
	Permanent Partial	21,638,199	49,605,993	10,329,329	26,806,595	108,380,116	42,594,700	83,559,277	8,780,988	23,272,536	158,207,501
	Temporary Total	39,460,471	101,394,158	24,691,645	73,115,128	238,661,402	73,997,786	162,702,967	20,990,434	63,475,966	321,167,153
	Medical Only	0	0	0	18,443,373	18,443,373	0	0	0	15,177,410	15,177,410
(13)	All Years, All Injury Types	685,926,458	1,162,779,512	257,155,498	674,785,486	2,780,646,954	719,237,441	1,204,977,378	174,852,467	495,945,331	2,595,012,617

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)	
2016	Fatal	64,512	1,498,118	30,823	733,526	2,326,979	284,960	6,721,311	55,278	1,171,721	8,233,270	1,216,460,447
	Permanent Total	9,416,473	0	7,382,282	0	16,798,755	40,423,626	0	13,416,333	0	53,839,959	
	Permanent Partial	12,149,494	21,232,312	8,922,961	16,632,382	58,937,149	97,862,812	172,621,236	28,793,118	57,809,555	357,086,721	
	Temporary Total	6,787,760	14,448,356	5,979,719	17,479,305	44,695,140	58,970,049	124,567,729	23,988,608	82,637,355	290,163,741	
	Medical Only	0	0	0	3,339,231	3,339,231	0	0	0	22,006,969	22,006,969	
2017	Fatal	189,394	1,136,110	153,788	574,703	2,053,995	846,382	5,234,305	425,169	1,005,921	7,511,777	1,279,200,402
	Permanent Total	9,051,074	0	6,821,555	0	15,872,629	40,556,967	0	12,532,230	0	53,089,197	
	Permanent Partial	12,470,292	22,474,640	9,287,970	16,950,068	61,182,970	97,858,411	180,981,353	29,685,440	57,170,591	365,695,795	
	Temporary Total	7,409,276	18,103,764	6,045,839	19,640,929	51,199,808	64,817,249	154,831,134	22,967,208	88,956,375	331,571,966	
	Medical Only	0	0	0	3,507,509	3,507,509	0	0	0	23,265,364	23,265,364	
2018	Fatal	299,573	1,064,374	129,778	505,276	1,999,001	1,330,718	4,572,062	160,983	871,889	6,935,652	1,339,189,247
	Permanent Total	6,619,787	0	5,409,225	0	12,029,012	28,197,191	0	9,856,933	0	38,054,124	
	Permanent Partial	12,820,901	23,903,440	9,192,554	18,644,470	64,561,365	103,668,030	192,263,538	29,045,474	63,755,486	388,732,528	
	Temporary Total	8,974,123	20,709,596	7,177,241	22,007,538	58,868,498	77,904,340	178,257,923	26,523,237	97,027,469	379,712,969	
	Medical Only	0	0	0	3,666,866	3,666,866	0	0	0	24,156,154	24,156,154	
2019	Fatal	107,828	1,532,125	49,531	807,051	2,496,535	928,957	7,124,254	84,637	1,590,164	9,728,012	1,428,224,497
	Permanent Total	3,045,575	0	2,522,373	0	5,567,948	11,776,131	0	4,511,211	0	16,287,342	
	Permanent Partial	13,152,635	25,080,854	10,156,308	19,902,673	68,292,470	106,866,534	198,757,218	33,719,807	67,269,542	406,613,101	
	Temporary Total	9,687,667	24,148,759	7,627,231	24,461,987	65,925,644	84,922,563	208,251,408	28,621,329	105,034,504	426,829,804	
	Medical Only	0	0	0	3,831,812	3,831,812	0	0	0	25,147,560	25,147,560	
2020	Fatal	0	1,127,096	0	596,500	1,723,596	0	5,818,960	0	1,194,962	7,013,922	1,469,994,184
	Permanent Total	660,366	0	690,859	0	1,351,225	2,734,769	0	1,428,255	0	4,163,024	
	Permanent Partial	8,140,844	16,443,558	6,114,750	13,817,288	44,516,440	64,584,157	127,299,291	18,940,484	47,161,083	257,985,015	
	Temporary Total	13,060,893	30,153,660	10,851,390	29,435,433	83,501,376	112,704,664	249,668,867	41,175,898	120,147,336	523,696,765	
	Medical Only	0	0	0	3,420,071	3,420,071	0	0	0	22,000,820	22,000,820	
(14) All Years, All Injury Types		134,108,467	223,056,762	104,546,177	219,954,618	681,666,024	997,238,510	1,816,970,589	325,931,632	909,380,820	4,049,521,551	6,733,068,777
(15) Pure Premium							0.148	0.270	0.048	0.135	0.601	

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.

IX 000041

IX 000042

Section IX - Classification Pricing
Subsection D - Credibility/Countrywide Data
7/1/2023

Section IX - D
Exhibit 1
Page 1

MA Full Credibility Standard and Partial Credibility

		Indemnity	Medical
(1)	Average Claim Cost	35,000	14,000
(2)	Claims	850	400
(3)	Full Credibility Standard =(1) x (2)	29,750,000	5,600,000

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 000043

Selection of Average Massachusetts Claim Costs

Policy Year 2020

	Injury Type				
	Fatal	Permanent Total	Permanent Partial	Temporary Total	Medical Only
	Indemnity				
(1) Losses Developed to Ultimate	10,162,386	6,553,768	142,469,093	280,679,605	
(2) On-Level Factor	1.043	1.053	1.088	1.036	
(3) On-Level Ultimate Losses = (1) x (2)	10,601,863	6,900,501	154,998,104	290,896,568	
	Medical				
(4) Losses Developed to Ultimate	673,795	6,550,206	47,070,993	116,057,660	19,173,177
(5) On-Level Factor	1.000	1.000	1.000	1.000	1.000
(6) On-Level Ultimate Losses = (4) x (5)	673,795	6,550,206	47,070,993	116,057,660	19,173,177
	Claim Count				
(7) Claim Count Developed to Fifth Report	21	9	1,181	11,928	
Summary:			Indemnity		
(8) Ultimate Losses			463,397,036		
(9) Ultimate Claim Count			13,138		
(10) Average Claim Cost = (8) / (9)			35,271		
(11) Selected Average Claim Cost			35,000		
			Medical		
(12) Ultimate Losses			189,525,831		
(13) Ultimate Claim Count			13,138		
(14) Average Claim Cost = (12) / (13)			14,426		
(15) Selected Average Claim Cost			14,000		

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)

IX 000044

Section IX - Classification Pricing
 Subsection D - Credibility/Countrywide Data
 7/1/2023

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	3.278	0.572
		Construction	2	3.046	0.520
		Office and Clerical	3	1.434	0.304
		Goods and Services	9	2.590	0.441
		Miscellaneous	0	2.191	0.446
Arizona	2	Manufacturing	1	4.233	0.598
		Construction	2	3.445	0.551
		Office and Clerical	3	2.073	0.395
		Goods and Services	9	3.680	0.572
		Miscellaneous	0	3.661	0.721
Arkansas	3	Manufacturing	1	3.244	0.945
		Construction	2	4.430	1.095
		Office and Clerical	3	3.085	0.704
		Goods and Services	9	3.979	1.199
		Miscellaneous	0	4.756	1.248
Colorado	5	Manufacturing	1	1.927	0.588
		Construction	2	2.295	0.719
		Office and Clerical	3	1.961	0.560
		Goods and Services	9	1.877	0.574
		Miscellaneous	0	2.365	0.798
Connecticut	6	Manufacturing	1	1.096	0.494
		Construction	2	1.057	0.477
		Office and Clerical	3	0.611	0.369
		Goods and Services	9	0.942	0.454
		Miscellaneous	0	1.164	0.565
D.C.	8	Manufacturing	1	0.500	0.217
		Construction	2	1.907	0.969
		Office and Clerical	3	0.524	0.551
		Goods and Services	9	1.642	1.056
		Miscellaneous	0	0.654	0.501
Florida	9	Manufacturing	1	2.095	0.473
		Construction	2	2.028	0.416
		Office and Clerical	3	1.179	0.282
		Goods and Services	9	1.789	0.408
		Miscellaneous	0	2.159	0.591
Georgia	10	Manufacturing	1	1.697	0.765
		Construction	2	0.871	0.439
		Office and Clerical	3	1.330	0.614
		Goods and Services	9	1.354	0.649
		Miscellaneous	0	1.751	0.852
Idaho	11	Manufacturing	1	1.619	0.445
		Construction	2	1.503	0.459
		Office and Clerical	3	1.135	0.274
		Goods and Services	9	1.335	0.375
		Miscellaneous	0	1.909	0.623

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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)
Illinois	12	Manufacturing	1	1.148	0.457
		Construction	2	1.000	0.479
		Office and Clerical	3	0.730	0.418
		Goods and Services	9	1.233	0.487
		Miscellaneous	0	1.226	0.575
Indiana	13	Manufacturing	1	4.050	0.641
		Construction	2	5.083	0.919
		Office and Clerical	3	1.659	0.327
		Goods and Services	9	3.821	0.630
		Miscellaneous	0	4.132	0.874
Iowa	14	Manufacturing	1	1.579	0.374
		Construction	2	2.006	0.509
		Office and Clerical	3	1.059	0.258
		Goods and Services	9	1.603	0.427
		Miscellaneous	0	2.135	0.615
Kansas	15	Manufacturing	1	2.538	0.540
		Construction	2	2.970	0.688
		Office and Clerical	3	1.514	0.381
		Goods and Services	9	2.592	0.566
		Miscellaneous	0	3.499	0.881
Kentucky	16	Manufacturing	1	2.316	0.963
		Construction	2	2.637	0.956
		Office and Clerical	3	1.129	0.455
		Goods and Services	9	2.250	0.898
		Miscellaneous	0	2.473	1.008
Louisiana	17	Manufacturing	1	2.004	0.556
		Construction	2	1.737	0.520
		Office and Clerical	3	0.566	0.239
		Goods and Services	9	1.763	0.508
		Miscellaneous	0	1.669	0.516
Maine	18	Manufacturing	1	1.257	0.457
		Construction	2	1.339	0.519
		Office and Clerical	3	0.801	0.225
		Goods and Services	9	1.209	0.423
		Miscellaneous	0	1.282	0.682
Maryland	19	Manufacturing	1	1.994	0.952
		Construction	2	2.219	0.831
		Office and Clerical	3	1.130	0.551
		Goods and Services	9	1.972	0.899
		Miscellaneous	0	1.947	0.986
Michigan	21	Manufacturing	1	3.052	0.940
		Construction	2	3.390	1.317
		Office and Clerical	3	1.323	0.491
		Goods and Services	9	2.847	0.921
		Miscellaneous	0	3.260	1.350
Minnesota	22	Manufacturing	1	1.645	0.703
		Construction	2	2.068	0.872
		Office and Clerical	3	1.245	0.566
		Goods and Services	9	1.778	0.709
		Miscellaneous	0	2.011	0.947

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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	1.644	0.530
		Construction	2	2.435	0.707
		Office and Clerical	3	0.886	0.207
		Goods and Services	9	1.870	0.681
		Miscellaneous	0	2.408	0.896
Missouri	24	Manufacturing	1	1.509	0.455
		Construction	2	1.882	0.536
		Office and Clerical	3	1.042	0.347
		Goods and Services	9	1.496	0.407
		Miscellaneous	0	1.606	0.507
Montana	25	Manufacturing	1	1.341	0.392
		Construction	2	1.857	0.469
		Office and Clerical	3	1.350	0.244
		Goods and Services	9	1.769	0.441
		Miscellaneous	0	2.249	0.580
Nebraska	26	Manufacturing	1	1.674	0.445
		Construction	2	2.225	0.632
		Office and Clerical	3	1.327	0.352
		Goods and Services	9	1.940	0.530
		Miscellaneous	0	2.227	0.654
Nevada	27	Manufacturing	1	0.704	0.434
		Construction	2	1.482	0.664
		Office and Clerical	3	0.560	0.311
		Goods and Services	9	1.482	0.648
		Miscellaneous	0	1.299	0.697
New Hampshire	28	Manufacturing	1	1.880	0.416
		Construction	2	1.813	0.493
		Office and Clerical	3	1.463	0.407
		Goods and Services	9	1.599	0.390
		Miscellaneous	0	2.025	0.639
New Mexico	30	Manufacturing	1	1.344	0.359
		Construction	2	1.833	0.576
		Office and Clerical	3	0.841	0.223
		Goods and Services	9	1.583	0.506
		Miscellaneous	0	1.725	0.541
North Carolina	32	Manufacturing	1	1.980	1.019
		Construction	2	1.592	0.732
		Office and Clerical	3	0.825	0.473
		Goods and Services	9	1.708	0.837
		Miscellaneous	0	1.587	0.919
Oklahoma	35	Manufacturing	1	1.528	0.616
		Construction	2	1.547	0.628
		Office and Clerical	3	0.524	0.295
		Goods and Services	9	1.288	0.561
		Miscellaneous	0	1.952	0.752
Oregon	36	Manufacturing	1	2.260	0.807
		Construction	2	2.321	0.922
		Office and Clerical	3	1.761	0.575
		Goods and Services	9	1.871	0.715
		Miscellaneous	0	2.400	1.084

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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	0.734	0.818
		Construction	2	1.290	1.245
		Office and Clerical	3	0.540	0.553
		Goods and Services	9	0.720	0.699
		Miscellaneous	0	1.028	0.955
South Carolina	39	Manufacturing	1	1.015	0.595
		Construction	2	1.105	0.610
		Office and Clerical	3	0.595	0.411
		Goods and Services	9	1.149	0.698
		Miscellaneous	0	1.227	0.813
South Dakota	40	Manufacturing	1	2.906	0.422
		Construction	2	2.591	0.537
		Office and Clerical	3	0.981	0.282
		Goods and Services	9	2.540	0.571
		Miscellaneous	0	3.759	0.819
Tennessee	41	Manufacturing	1	2.877	0.720
		Construction	2	3.393	0.683
		Office and Clerical	3	1.291	0.429
		Goods and Services	9	3.105	0.760
		Miscellaneous	0	3.381	0.958
Utah	43	Manufacturing	1	6.370	0.988
		Construction	2	4.103	0.708
		Office and Clerical	3	3.569	0.673
		Goods and Services	9	4.642	0.747
		Miscellaneous	0	4.229	1.029
Vermont	44	Manufacturing	1	1.293	0.530
		Construction	2	1.330	0.474
		Office and Clerical	3	0.627	0.244
		Goods and Services	9	0.986	0.426
		Miscellaneous	0	0.947	0.494
Virginia	45	Manufacturing	1	2.135	0.772
		Construction	2	3.577	0.730
		Office and Clerical	3	3.406	0.741
		Goods and Services	9	3.275	0.699
		Miscellaneous	0	3.895	0.957
West Virginia	47	Manufacturing	1	3.035	0.912
		Construction	2	4.394	1.385
		Office and Clerical	3	1.739	0.529
		Goods and Services	9	2.844	0.947
		Miscellaneous	0	4.710	1.757
Wisconsin	48	Manufacturing	1	2.233	0.402
		Construction	2	1.962	0.417
		Office and Clerical	3	1.031	0.207
		Goods and Services	9	1.761	0.356
		Miscellaneous	0	1.986	0.450
Hawaii	52	Manufacturing	1	0.680	0.232
		Construction	2	1.413	0.545
		Office and Clerical	3	0.269	0.118
		Goods and Services	9	0.803	0.333
		Miscellaneous	0	0.834	0.357

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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)
Alaska	54	Manufacturing	1	1.944	0.359
		Construction	2	2.643	0.487
		Office and Clerical	3	1.032	0.163
		Goods and Services	9	2.917	0.426
		Miscellaneous	0	4.554	0.755

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
 7/1/2023

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	5/1/2018	- 4/30/2019	5/1/2017	- 4/30/2018	5/1/2016	- 4/30/2017
Arizona	2	3/1/2018	- 2/28/2019	3/1/2017	- 2/28/2018	3/1/2016	- 2/28/2017
Arkansas	3	2/1/2019	- 1/31/2020	2/1/2018	- 1/31/2019	2/1/2017	- 1/31/2018
Colorado	5	3/1/2018	- 2/28/2019	3/1/2017	- 2/28/2018	3/1/2016	- 2/28/2017
Connecticut	6	8/1/2018	- 7/31/2019	8/1/2017	- 7/31/2018	8/1/2016	- 7/31/2017
D.C.	8	2/1/2018	- 1/31/2019	2/1/2017	- 1/31/2018	2/1/2016	- 1/31/2017
Florida	9	1/1/2018	- 12/31/2018	1/1/2017	- 12/31/2017	1/1/2016	- 12/31/2016
Georgia	10	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018	7/1/2016	- 6/30/2017
Idaho	11	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018	7/1/2016	- 6/30/2017
Illinois	12	4/1/2018	- 3/31/2019	4/1/2017	- 3/31/2018	4/1/2016	- 3/31/2017
Indiana	13	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018	7/1/2016	- 6/30/2017
Iowa	14	3/1/2018	- 2/28/2019	3/1/2017	- 2/28/2018	3/1/2016	- 2/28/2017
Kansas	15	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018	7/1/2016	- 6/30/2017
Kentucky	16	5/1/2018	- 4/30/2019	5/1/2017	- 4/30/2018	5/1/2016	- 4/30/2017
Louisiana	17	9/1/2018	- 8/31/2019	9/1/2017	- 8/31/2018	9/1/2016	- 8/31/2017
Maine	18	6/1/2018	- 5/31/2019	6/1/2017	- 5/31/2018	6/1/2016	- 5/31/2017
Maryland	19	4/1/2018	- 3/31/2019	4/1/2017	- 3/31/2018	4/1/2016	- 3/31/2017
Michigan	21	4/1/2019	- 3/31/2020	4/1/2018	- 3/31/2019	4/1/2017	- 3/31/2018
Minnesota	22	1/1/2019	- 12/31/2019	1/1/2018	- 12/31/2018	1/1/2017	- 12/31/2017
Mississippi	23	9/1/2018	- 8/31/2019	9/1/2017	- 8/31/2018	9/1/2016	- 8/31/2017
Missouri	24	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018	7/1/2016	- 6/30/2017
Montana	25	1/1/2019	- 12/31/2019	1/1/2018	- 12/31/2018	1/1/2017	- 12/31/2017
Nebraska	26	8/1/2018	- 7/31/2019	8/1/2017	- 7/31/2018	8/1/2016	- 7/31/2017
Nevada	27	1/1/2018	- 12/31/2018	1/1/2017	- 12/31/2017	1/1/2016	- 12/31/2016
New Hampshire	28	4/1/2018	- 3/31/2019	4/1/2017	- 3/31/2018	4/1/2016	- 3/31/2017
New Mexico	30	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018	7/1/2016	- 6/30/2017
North Carolina	32	1/1/2018	- 12/31/2018	1/1/2017	- 12/31/2017	1/1/2016	- 12/31/2016
Oklahoma	35	6/1/2018	- 5/31/2019	6/1/2017	- 5/31/2018	6/1/2016	- 5/31/2017
Oregon	36	1/1/2018	- 12/31/2018	1/1/2017	- 12/31/2017	1/1/2016	- 12/31/2016
Rhode Island	38	1/1/2018	- 12/31/2018	1/1/2017	- 12/31/2017	1/1/2016	- 12/31/2016
South Carolina	39	5/1/2018	- 4/30/2019	5/1/2017	- 4/30/2018	5/1/2016	- 4/30/2017
South Dakota	40	1/1/2019	- 12/31/2019	1/1/2018	- 12/31/2018	1/1/2017	- 12/31/2017
Tennessee	41	6/1/2018	- 5/31/2019	6/1/2017	- 5/31/2018	6/1/2016	- 5/31/2017
Utah	43	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018	7/1/2016	- 6/30/2017
Vermont	44	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018	7/1/2016	- 6/30/2017
Virginia	45	2/1/2018	- 1/31/2019	2/1/2017	- 1/31/2018	2/1/2016	- 1/31/2017
West Virginia	47	7/1/2018	- 6/30/2019	7/1/2017	- 6/30/2018	7/1/2016	- 6/30/2017
Wisconsin	48	1/1/2019	- 12/31/2019	1/1/2018	- 12/31/2018	1/1/2017	- 12/31/2017
Hawaii	52	6/1/2018	- 5/31/2019	6/1/2017	- 5/31/2018	6/1/2016	- 5/31/2017
Alaska	54	4/1/2018	- 3/31/2019	4/1/2017	- 3/31/2018	4/1/2016	- 3/31/2017

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	1.672	0.919	0.656	0.742	1.040	0.967	0.818
	Medical	1.672	0.482	0.344	0.742	1.000	0.957	0.408
	Total		1.401					
Construction	Indemnity	4.241	2.428	0.685	0.742	1.040	0.967	2.165
	Medical	4.241	1.118	0.315	0.742	1.000	0.957	0.949
	Total		3.546					
Office and Clerical	Indemnity	0.124	0.065	0.625	0.742	1.040	0.967	0.058
	Medical	0.124	0.039	0.375	0.742	1.000	0.957	0.033
	Total		0.104					
Goods and Services	Indemnity	1.426	0.765	0.643	0.742	1.040	0.967	0.684
	Medical	1.426	0.425	0.357	0.742	1.000	0.957	0.362
	Total		1.190					
Miscellaneous	Indemnity	4.041	2.226	0.659	0.742	1.040	0.967	1.986
	Medical	4.041	1.151	0.341	0.742	1.000	0.957	0.978
	Total		3.377					

Notes:

(3): Section IX - H, Exhibit 1 of 7/1/2022 Stipulation.

(4): Section IX - G of 07/01/2022 Stipulation.

(6): Section VI - J, Exhibit 1 of 7/1/2022 Stipulation.

(7): Section IV - A, Exhibit 1.

(8): Net Indemnity and Medical Trends from Section V - A, Exhibit 1.

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Section IX - Classification Pricing
 Subsection F - Underlying Pure Premiums
 7/1/2023

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	1.969	1.926	1.611	0.786	2.397
1438	1.839	1.653	1.504	0.674	2.178
1463	6.023	8.765	4.927	3.576	8.503
1701	1.224	1.163	1.001	0.474	1.476
1747	1.298	1.498	1.062	0.611	1.673
1748	1.489	2.170	1.218	0.885	2.104
1853	0.803	0.453	0.657	0.185	0.842
1924	1.189	1.199	0.972	0.489	1.461
1925	1.926	12.474	1.575	5.090	6.665
2003	2.041	1.763	1.670	0.719	2.389
2014	2.135	2.036	1.747	0.831	2.577
2021	1.397	1.463	1.142	0.597	1.739
2039	2.012	1.932	1.646	0.788	2.434
2041	1.290	1.118	1.055	0.456	1.511
2070	1.876	1.583	1.535	0.646	2.180
2081	1.241	1.741	1.015	0.710	1.726
2089	1.487	1.261	1.216	0.515	1.731
2095	1.503	1.286	1.230	0.525	1.754
2101	1.487	1.261	1.216	0.515	1.731
2111	1.142	1.195	0.934	0.488	1.422
2114	1.487	1.261	1.216	0.515	1.731
2115	3.560	2.805	2.912	1.144	4.056
2121	0.759	0.777	0.621	0.317	0.938
2130	0.776	0.804	0.634	0.328	0.962
2131	1.563	1.689	1.279	0.689	1.968
2143	1.545	1.091	1.264	0.445	1.708
2150	1.954	2.045	1.598	0.834	2.432
2156	1.917	2.046	1.568	0.835	2.403
2157	2.387	1.931	1.952	0.788	2.740
2172	1.021	0.753	0.836	0.307	1.143
2211	3.042	3.019	2.488	1.232	3.720
2220	1.296	1.466	1.060	0.598	1.658
2260	2.940	2.368	2.405	0.966	3.371
2288	2.034	1.968	1.664	0.803	2.467
2305	1.478	1.428	1.209	0.583	1.792
2362	0.911	1.189	0.745	0.485	1.230
2380	0.860	0.921	0.704	0.376	1.079
2402	1.156	1.249	0.946	0.509	1.455
2413	1.778	1.883	1.454	0.768	2.222
2416	1.142	1.356	0.934	0.553	1.488
2417	1.002	0.695	0.820	0.284	1.103
2501	1.185	1.112	0.969	0.454	1.423
2503	0.652	0.438	0.533	0.179	0.712
2570	1.930	1.558	1.579	0.636	2.214
2576	1.094	1.229	0.895	0.501	1.396
2585	1.436	1.537	1.174	0.627	1.802
2586	1.102	1.181	0.902	0.482	1.384
2623	2.501	2.586	2.046	1.055	3.100

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Section IX - Classification Pricing
 Subsection F - Underlying Pure Premiums
 7/1/2023

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	0.779	0.913	0.637	0.373	1.010
2660	1.066	1.192	0.872	0.486	1.358
2683	1.103	1.317	0.903	0.537	1.440
2688	0.905	1.025	0.740	0.418	1.158
2710	3.302	3.397	2.701	1.386	4.087
2731	1.439	1.725	1.177	0.704	1.881
2747	2.991	2.744	2.446	1.120	3.566
2790	1.210	1.068	0.990	0.436	1.426
2802	1.947	1.964	1.593	0.801	2.394
2835	1.010	0.854	0.826	0.349	1.175
2836	1.421	1.153	1.162	0.470	1.632
2841	1.771	2.360	1.449	0.963	2.412
2883	1.789	1.619	1.464	0.661	2.124
2923	0.764	0.771	0.625	0.315	0.940
2942	0.861	0.898	0.705	0.366	1.071
3018	1.337	1.225	1.093	0.500	1.593
3022	1.733	1.945	1.418	0.794	2.211
3027	1.299	1.509	1.063	0.616	1.678
3028	1.370	1.500	1.121	0.612	1.733
3030	2.546	2.793	2.083	1.139	3.222
3040	3.188	2.285	2.608	0.932	3.540
3041	1.507	1.287	1.233	0.525	1.758
3042	1.982	2.021	1.621	0.824	2.446
3066	1.245	1.251	1.019	0.511	1.529
3076	1.176	1.150	0.962	0.469	1.431
3081	2.448	2.749	2.002	1.121	3.124
3082	2.448	2.749	2.002	1.121	3.124
3085	2.423	2.587	1.982	1.056	3.037
3110	4.927	4.100	4.030	1.673	5.703
3111	1.144	1.017	0.936	0.415	1.351
3113	0.889	0.930	0.727	0.379	1.107
3114	1.555	1.438	1.272	0.587	1.859
3118	0.872	0.805	0.713	0.328	1.042
3119	0.547	0.580	0.447	0.237	0.684
3120	0.708	0.556	0.579	0.227	0.806
3122	1.179	1.235	0.965	0.504	1.469
3127	1.247	1.154	1.020	0.471	1.491
3131	0.620	0.786	0.507	0.321	0.828
3132	1.170	1.378	0.957	0.562	1.519
3145	0.848	0.867	0.694	0.354	1.047
3146	1.080	1.208	0.884	0.493	1.377
3169	1.197	1.740	0.979	0.710	1.689
3179	0.612	0.533	0.501	0.217	0.718
3180	1.376	1.161	1.126	0.474	1.599
3188	1.289	1.213	1.054	0.495	1.549
3200	1.133	1.163	0.927	0.474	1.401
3220	1.522	1.568	1.245	0.640	1.884
3255	1.006	1.012	0.823	0.413	1.236

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Section IX - Classification Pricing
 Subsection F - Underlying Pure Premiums
 7/1/2023

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	1.189	1.478	0.972	0.603	1.575
3270	1.148	1.173	0.939	0.478	1.417
3300	1.437	2.141	1.175	0.873	2.049
3315	1.603	1.487	1.311	0.607	1.917
3336	1.529	1.236	1.251	0.504	1.755
3372	1.107	1.106	0.906	0.451	1.357
3373	2.095	1.613	1.714	0.658	2.371
3381	1.015	0.935	0.830	0.382	1.212
3383	0.798	0.835	0.653	0.341	0.994
3385	0.423	0.418	0.346	0.170	0.516
3400	1.197	1.740	0.979	0.710	1.689
3507	1.511	1.343	1.236	0.548	1.784
3515	1.434	1.379	1.173	0.563	1.736
3558	0.332	0.532	0.272	0.217	0.489
3571	0.355	0.315	0.291	0.129	0.419
3574	0.881	0.859	0.721	0.350	1.071
3612	0.680	0.694	0.556	0.283	0.840
3620	1.932	1.886	1.580	0.769	2.349
3629	0.881	0.859	0.721	0.350	1.071
3632	0.881	0.859	0.721	0.350	1.071
3634	0.825	0.695	0.675	0.283	0.958
3635	1.137	1.803	0.930	0.736	1.666
3638	0.881	0.859	0.721	0.350	1.071
3642	0.548	0.534	0.449	0.218	0.666
3643	0.840	0.783	0.687	0.319	1.007
3647	1.255	1.189	1.027	0.485	1.512
3648	0.598	0.684	0.489	0.279	0.768
3681	0.327	0.319	0.267	0.130	0.398
3685	0.315	0.284	0.258	0.116	0.374
3807	1.197	1.740	0.979	0.710	1.689
3808	1.700	1.825	1.390	0.745	2.135
3826	2.065	2.809	1.690	1.146	2.836
3830	0.881	0.859	0.721	0.350	1.071
3841	1.017	0.935	0.832	0.381	1.214
4021	1.651	1.785	1.351	0.728	2.079
4024	2.098	2.013	1.716	0.821	2.537
4034	3.087	3.358	2.525	1.370	3.895
4036	0.980	1.035	0.801	0.422	1.224
4038	1.584	0.975	1.296	0.398	1.694
4053	1.278	1.307	1.045	0.533	1.578
4062	1.057	0.963	0.864	0.393	1.257
4112	0.189	0.221	0.155	0.090	0.245
4113	1.278	1.307	1.045	0.533	1.578
4114	1.564	1.255	1.279	0.512	1.792
4130	1.870	1.916	1.529	0.782	2.311
4133	0.845	0.813	0.691	0.332	1.022
4150	0.533	0.375	0.436	0.153	0.589
4239	1.356	1.280	1.110	0.522	1.632

IX 000054

Section IX - Classification Pricing
 Subsection F - Underlying Pure Premiums
 7/1/2023

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	1.505	1.304	1.231	0.532	1.763
4244	1.588	1.546	1.299	0.631	1.930
4250	1.156	1.165	0.945	0.475	1.421
4251	1.284	0.939	1.051	0.383	1.434
4273	1.696	1.536	1.388	0.627	2.014
4279	1.208	1.167	0.988	0.476	1.465
4283	0.833	0.685	0.682	0.279	0.961
4299	0.929	0.945	0.760	0.386	1.145
4304	2.296	2.596	1.878	1.059	2.937
4307	0.837	0.896	0.684	0.366	1.050
4308	1.506	0.377	1.232	0.154	1.386
4351	0.476	0.459	0.389	0.187	0.577
4352	0.653	0.565	0.535	0.231	0.765
4360	0.332	0.293	0.272	0.120	0.391
4410	1.484	2.018	1.214	0.823	2.037
4432	0.335	0.427	0.274	0.174	0.448
4439	2.932	3.945	2.398	1.610	4.008
4452	1.474	1.263	1.206	0.515	1.721
4459	1.528	1.555	1.250	0.634	1.884
4470	1.090	1.006	0.892	0.410	1.302
4484	1.030	1.224	0.842	0.499	1.342
4493	1.008	1.027	0.825	0.419	1.244
4557	1.061	0.770	0.868	0.314	1.182
4558	0.805	0.880	0.658	0.359	1.017
4583	1.338	1.367	1.094	0.558	1.652
4611	0.458	0.433	0.375	0.177	0.552
4635	2.263	3.349	1.851	1.367	3.217
4653	1.117	0.903	0.914	0.368	1.282
4665	6.332	4.676	5.180	1.908	7.088
4692	0.286	0.257	0.234	0.105	0.339
4693	0.413	0.464	0.338	0.189	0.527
4720	0.849	0.885	0.695	0.361	1.056
4740	0.417	0.368	0.341	0.150	0.491
4741	1.409	1.297	1.152	0.529	1.682
4771	1.399	0.983	1.145	0.401	1.546
4777	1.338	1.367	1.094	0.558	1.652
4825	0.238	0.198	0.194	0.081	0.275
4828	0.477	0.467	0.390	0.190	0.580
4829	0.477	0.467	0.390	0.190	0.580
4902	0.861	0.898	0.705	0.366	1.071
4923	0.332	0.293	0.272	0.120	0.391
6504	1.487	1.261	1.216	0.515	1.731
9501	1.118	1.063	0.915	0.434	1.348
9505	1.118	1.063	0.915	0.434	1.348
9521	1.660	1.527	1.358	0.623	1.981
9522	0.897	0.798	0.734	0.325	1.059

IX 000055

Section IX - Classification Pricing
Subsection F - Underlying Pure Premiums
7/1/2023

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 7/1/2022 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 = 0.818, Medical = 0.408).

IX 000056

Section IX - Classification Pricing
 Subsection F - Underlying Pure Premiums
 7/1/2023

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	0.897	0.921	1.941	0.874	2.815
3365	0.886	1.206	1.919	1.144	3.063
3724	0.950	0.963	2.057	0.914	2.971
3726	0.816	0.587	1.767	0.557	2.324
5020	0.971	0.765	2.103	0.726	2.828
5022	2.221	2.011	4.808	1.908	6.716
5037	3.408	3.169	7.378	3.007	10.385
5040	4.637	4.122	10.038	3.912	13.950
5057	3.251	5.551	7.037	5.268	12.306
5059	5.824	7.505	12.608	7.122	19.730
5102	1.452	1.119	3.145	1.062	4.207
5146	1.486	1.355	3.217	1.286	4.503
5160	0.644	0.583	1.395	0.553	1.948
5183	0.688	0.630	1.489	0.598	2.087
5188	0.887	0.713	1.919	0.677	2.596
5190	0.496	0.545	1.073	0.517	1.590
5213	2.506	2.253	5.425	2.138	7.563
5215	0.909	0.890	1.968	0.845	2.812
5221	1.476	1.273	3.195	1.208	4.404
5222	2.210	1.414	4.785	1.342	6.127
5223	0.897	0.823	1.942	0.781	2.723
5348	1.132	0.825	2.450	0.783	3.233
5402	1.454	1.297	3.147	1.231	4.378
5403	2.002	1.755	4.334	1.666	6.000
5437	0.804	0.753	1.742	0.715	2.456
5443	0.783	0.721	1.695	0.684	2.379
5445	1.469	1.144	3.181	1.085	4.267
5462	1.275	0.995	2.761	0.945	3.706
5472	1.781	1.381	3.855	1.311	5.166
5473	1.933	1.909	4.185	1.812	5.997
5474	0.874	0.858	1.893	0.814	2.707
5478	0.808	0.618	1.750	0.587	2.336
5479	1.166	1.191	2.524	1.130	3.653
5480	1.063	0.837	2.302	0.794	3.096
5506	1.292	1.170	2.797	1.110	3.908
5507	1.245	1.027	2.696	0.975	3.671
5508	0.897	0.921	1.941	0.874	2.815
5509	1.181	1.576	2.557	1.495	4.053
5538	0.875	0.916	1.894	0.869	2.763
5545	9.187	13.673	19.889	12.976	32.865
5547	2.226	2.691	4.819	2.554	7.372
5606	0.258	0.305	0.559	0.289	0.849
5610	1.072	0.785	2.321	0.745	3.066
5645	1.296	1.736	2.806	1.648	4.454
5701	4.119	4.887	8.917	4.638	13.555
5703	2.469	2.239	5.345	2.125	7.469
5705	2.080	1.868	4.502	1.773	6.275
6003	1.736	1.420	3.758	1.347	5.106

IX 000057

Section IX - Classification Pricing
Subsection F - Underlying Pure Premiums
7/1/2023

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	0.897	0.921	1.941	0.874	2.815
6204	1.165	1.061	2.522	1.007	3.529
6217	0.987	0.835	2.137	0.792	2.929
6229	0.833	0.825	1.804	0.783	2.587
6233	0.495	0.367	1.072	0.348	1.420
6251	1.020	0.731	2.209	0.693	2.902
6252	0.929	0.691	2.011	0.656	2.668
6306	1.998	1.661	4.325	1.577	5.902
6319	0.615	0.539	1.332	0.511	1.843
6325	0.563	0.534	1.219	0.507	1.725
6400	0.972	1.157	2.104	1.098	3.202
7538	1.185	1.160	2.565	1.101	3.666
7601	1.063	1.225	2.302	1.163	3.465
7855	0.735	0.599	1.592	0.568	2.160
8227	1.014	1.388	2.196	1.317	3.513
9533	3.679	3.142	7.965	2.982	10.947
9534	1.225	0.981	2.651	0.931	3.582
9549	0.940	0.678	2.035	0.643	2.678
9552	1.364	1.777	2.953	1.686	4.639

Notes:

(2), (3): Section IX - I, Exhibit 1 of 7/1/2022 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 = 2.165, Medical = 0.949).

IX 000058

Section IX - Classification Pricing
Subsection F - Underlying Pure Premiums
7/1/2023

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	3.970	4.728	0.230	0.156	0.386
7610	4.820	3.139	0.280	0.104	0.383
8601	1.499	1.380	0.087	0.046	0.132
8721	1.445	1.413	0.084	0.047	0.130
8742	0.691	0.797	0.040	0.026	0.066
8748	5.309	4.242	0.308	0.140	0.448
8800	7.654	6.623	0.444	0.219	0.662
8803	0.333	0.334	0.019	0.011	0.030
8810	0.451	0.493	0.026	0.016	0.042
8820	0.514	0.470	0.030	0.016	0.045
8832	2.137	1.859	0.124	0.061	0.185
8833	8.768	6.608	0.509	0.218	0.727
8868	5.232	5.550	0.303	0.183	0.487
8901	0.451	0.493	0.026	0.016	0.042
9156	12.748	17.821	0.739	0.588	1.327

Notes:

(2), (3): Section IX - I, Exhibit 1 of 7/1/2022 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 = 0.058, Medical = 0.033).

IX 000059

Section IX - Classification Pricing
 Subsection F - Underlying Pure Premiums
 7/1/2023

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	1.569	1.498	1.073	0.542	1.615
0008	1.432	1.653	0.979	0.598	1.578
0016	2.182	2.194	1.492	0.794	2.286
0034	1.735	2.152	1.187	0.779	1.966
0035	1.008	1.080	0.689	0.391	1.080
0036	1.735	2.152	1.187	0.779	1.966
0042	2.019	2.260	1.381	0.818	2.199
0046	1.771	2.672	1.211	0.967	2.178
0079	1.297	1.720	0.887	0.623	1.510
0083	2.262	2.236	1.547	0.810	2.357
0113	1.735	2.152	1.187	0.779	1.966
0170	1.735	2.152	1.187	0.779	1.966
0908	112.447	95.933	76.914	34.728	111.642
0909	183.486	335.063	125.504	121.293	246.797
0912	183.486	335.063	125.504	121.293	246.797
0913	112.447	95.933	76.914	34.728	111.642
0917	1.566	1.310	1.071	0.474	1.545
0918	0.322	0.187	0.220	0.068	0.288
2587	1.384	1.113	0.947	0.403	1.350
3821	3.006	3.265	2.056	1.182	3.238
4362	0.317	0.289	0.217	0.105	0.322
4511	0.211	0.192	0.144	0.069	0.214
4512	0.059	0.057	0.040	0.021	0.061
5191	0.491	0.483	0.336	0.175	0.510
5192	1.773	1.711	1.213	0.619	1.832
8001	0.964	1.223	0.659	0.443	1.102
8002	1.020	1.799	0.697	0.651	1.349
8006	0.691	0.873	0.472	0.316	0.789
8008	0.472	0.533	0.323	0.193	0.516
8010	1.013	1.111	0.693	0.402	1.095
8013	0.206	0.280	0.141	0.102	0.242
8017	0.580	0.693	0.397	0.251	0.648
8018	2.470	1.995	1.689	0.722	2.412
8021	2.298	1.933	1.572	0.700	2.271
8031	1.043	1.085	0.713	0.393	1.106
8032	0.798	0.867	0.546	0.314	0.860
8033	0.931	0.864	0.637	0.313	0.950
8034	2.136	1.450	1.461	0.525	1.986
8039	0.773	0.984	0.529	0.356	0.885
8044	1.737	1.745	1.188	0.632	1.820
8046	1.284	1.656	0.878	0.599	1.478
8048	1.530	1.584	1.046	0.574	1.620
8058	1.242	1.813	0.849	0.656	1.506
8103	1.634	1.789	1.117	0.648	1.765
8105	13.388	8.073	9.158	2.923	12.080
8106	3.168	3.489	2.167	1.263	3.430

IX 000060

Section IX - Classification Pricing
 Subsection F - Underlying Pure Premiums
 7/1/2023

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	1.908	1.953	1.305	0.707	2.012
8111	1.591	1.958	1.088	0.709	1.797
8203	4.014	3.664	2.745	1.326	4.072
8204	4.301	5.010	2.942	1.814	4.755
8215	1.981	2.137	1.355	0.774	2.129
8232	3.496	3.480	2.392	1.260	3.651
8233	3.387	3.713	2.316	1.344	3.660
8235	2.529	2.655	1.730	0.961	2.691
8263	3.351	3.256	2.292	1.179	3.470
8264	3.073	3.296	2.102	1.193	3.295
8265	3.387	3.713	2.316	1.344	3.660
8279	2.134	2.848	1.460	1.031	2.491
8291	2.012	2.472	1.376	0.895	2.271
8292	2.192	2.029	1.499	0.735	2.234
8293	4.916	4.781	3.363	1.731	5.093
8350	4.642	3.688	3.175	1.335	4.510
8380	1.680	1.572	1.149	0.569	1.718
8381	0.989	1.218	0.676	0.441	1.117
8385	2.439	2.261	1.668	0.819	2.487
8392	0.960	1.329	0.657	0.481	1.138
8393	0.859	0.645	0.587	0.234	0.821
8500	3.387	3.713	2.316	1.344	3.660
8710	1.845	1.433	1.262	0.519	1.781
8719	1.845	1.433	1.262	0.519	1.781
8720	0.544	0.504	0.372	0.182	0.554
8745	3.590	4.603	2.456	1.666	4.122
8747	0.521	0.345	0.356	0.125	0.481
8824	1.371	1.374	0.938	0.497	1.435
8826	0.981	0.971	0.671	0.352	1.023
8829	1.595	1.318	1.091	0.477	1.568
8831	0.468	1.014	0.320	0.367	0.687
8835	1.228	0.936	0.840	0.339	1.179
9014	1.318	1.284	0.901	0.465	1.366
9015	1.929	1.834	1.319	0.664	1.983
9016	0.929	1.417	0.635	0.513	1.148
9033	1.625	1.345	1.112	0.487	1.599
9040	1.961	1.980	1.341	0.717	2.058
9052	0.952	0.891	0.651	0.323	0.974
9058	0.925	0.947	0.632	0.343	0.975
9060	0.546	0.811	0.374	0.294	0.667
9061	0.595	0.734	0.407	0.266	0.673
9063	0.321	0.498	0.220	0.180	0.400
9079	0.587	0.702	0.401	0.254	0.655
9089	0.412	0.511	0.282	0.185	0.467
9093	0.604	0.868	0.413	0.314	0.727
9101	2.273	2.549	1.555	0.923	2.478

IX 000061

Section IX - Classification Pricing
Subsection F - Underlying Pure Premiums
7/1/2023

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)
9220	2.366	2.366	1.619	0.856	2.475
9410	2.675	2.963	1.830	1.073	2.902
9519	1.698	1.410	1.162	0.511	1.672
9586	0.221	0.179	0.151	0.065	0.216
9620	0.446	0.510	0.305	0.185	0.490

Notes:

(2), (3): Section IX - I, Exhibit 1 of 7/1/2022 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 = 0.684, Medical = 0.362).

IX 000062

Section IX - Classification Pricing
 Subsection F - Underlying Pure Premiums
 7/1/2023

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	1.944	2.576	3.860	2.519	6.379
1624	0.814	0.962	1.617	0.940	2.557
1655	0.504	0.473	1.001	0.463	1.464
1710	0.814	0.962	1.617	0.940	2.557
2702	2.681	3.402	5.324	3.327	8.651
4000	1.259	1.291	2.500	1.263	3.763
6834	0.446	0.592	0.885	0.579	1.464
6836	0.567	0.864	1.126	0.845	1.972
7219	1.787	1.587	3.548	1.552	5.100
7230	2.078	1.740	4.127	1.702	5.829
7231	2.666	2.551	5.294	2.495	7.790
7360	0.991	0.887	1.969	0.868	2.836
7370	0.813	0.966	1.614	0.945	2.558
7380	1.366	1.329	2.714	1.300	4.013
7382	0.859	0.845	1.706	0.827	2.532
7403	0.718	0.871	1.426	0.852	2.278
7405	0.276	0.241	0.549	0.236	0.785
7420	4.194	6.941	8.330	6.789	15.119
7421	0.272	0.194	0.541	0.190	0.731
7422	0.272	0.194	0.541	0.190	0.731
7425	0.637	0.510	1.265	0.499	1.764
7431	0.272	0.194	0.541	0.190	0.731
7502	0.393	0.357	0.781	0.349	1.130
7515	0.539	1.814	1.071	1.774	2.846
7520	0.645	0.693	1.280	0.678	1.959
7539	0.300	0.376	0.597	0.368	0.964
7580	0.809	0.675	1.607	0.660	2.267
7590	1.416	1.895	2.812	1.853	4.665
7600	0.913	0.698	1.814	0.683	2.497
7704	0.897	1.196	1.782	1.170	2.952
7720	0.319	0.367	0.633	0.359	0.991
9019	0.615	0.612	1.222	0.598	1.821
9102	0.425	0.535	0.845	0.524	1.368
9154	0.312	0.424	0.620	0.414	1.035
9178	1.413	6.136	2.807	6.001	8.808
9179	7.895	19.997	15.679	19.557	35.236
9180	0.786	1.481	1.561	1.448	3.009
9182	0.524	0.928	1.040	0.907	1.947
9186	0.786	1.481	1.561	1.448	3.009
9402	0.915	0.822	1.818	0.804	2.622
9403	2.287	2.089	4.542	2.043	6.585

Notes:

(2), (3): Section IX - I, Exhibit 1 of 7/1/2022 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 = 1.986, Medical = 0.978).

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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
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0050	FARM MACHINERY OPERATION-BY CONTRACTOR & DRIVERS		0050	Section IX - G, Exhibit 4
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0909	DOMESTIC WORKERS-OUTSIDE-OCCASIONAL-INCL OCCASNL PRIV CHAUFF		0909	Section IX - G, Exhibit 7
0912	DOMESTIC WORKERS-OUTSIDE-INCL PRIVATE CHAUFFERS		0909	Section IX - G, Exhibit 7
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0917	DOMESTIC SERVICE CONTRACTOR-INSIDE		0917	Section IX - G, Exhibit 7
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1624	QUARRY NOC & DRIVERS		1624	Section IX - G, Exhibit 10
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1710	STONE CRUSHING & DRIVERS		1624	Section IX - G, Exhibit 10
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2790	PATTERN MAKING NOC		2790	Section IX - G, Exhibit 37	
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3027	ROLLING MILL NOC & DRIVERS		3027	Section IX - G, Exhibit 42	
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3082	FOUNDRY-STEEL CASTINGS		3081	Section IX - G, Exhibit 46	
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5509	STREET OR ROAD MAINTENANCE BY COUNTY OR MUNICIPAL EMP & DR	5509	Section IX - G, Exhibit 117
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 Subsection G - Class Relativities
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Section IX - G
 Exhibit 1

Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	119,731	2	28	67,703	4,787	54,333	31,222	158,044	0.605	0.715	1.320
2017	133,117	0	28	0	13,338	0	27,215	40,553	0.100	0.204	0.305
2018	133,342	0	14	0	61,894	0	34,099	95,992	0.464	0.256	0.720
2019	154,502	2	18	77,345	264,616	442,752	136,456	921,170	2.213	3.749	5.962
2020	160,754	0	13	0	56,707	0	73,954	130,661	0.353	0.460	0.813
MA Total:	701,445	4	101	145,049	401,341	497,085	302,946	1,346,420	0.779	1.141	1.919

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.027	3.265	.
(14) Massachusetts Credibility:	0.230	0.340	.
(15) Countrywide Pure Premium:	1.192	0.667	1.859
(16) Countrywide Indicated Relativity:	1.569	1.889	.
(17) Countrywide Credibility:	0.390	0.330	.
(18) Countrywide Lost-Time Claims:	1551.0	.	.
(19) Pure Premium Underlying Present Rate:	1.073	0.542	1.615
(20) Relativity to Underlying Present Rate:	1.597	1.525	.
(21) Credibility to Underlying Relativity:	0.380	0.330	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.455	2.237	.
(24) Balanced Formula Relativity:	1.437	2.227	1.686

Class(es):		Effective: 7/1/2023							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)
2016	460,969	2	65	92,477	336,425	24,843	420,591	874,335	0.930	0.966	1.897
2017	540,655	1	59	13,937	681,312	36,858	228,071	960,178	1.286	0.490	1.776
2018	569,896	1	66	135,641	85,186	33,161	142,872	396,860	0.387	0.309	0.696
2019	496,522	0	62	0	23,700	0	61,401	85,101	0.048	0.124	0.171
2020	549,644	2	73	259,133	480,238	148,274	307,667	1,195,312	1.345	0.830	2.175
MA Total:	2,617,686	6	325	501,188	1,606,860	243,136	1,160,601	3,511,786	0.805	0.536	1.342

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.062	1.535	.
(14) Massachusetts Credibility:	0.380	0.600	.
(15) Countrywide Pure Premium:	1.550	0.790	2.339
(16) Countrywide Indicated Relativity:	2.039	2.238	.
(17) Countrywide Credibility:	0.310	0.200	.
(18) Countrywide Lost-Time Claims:	4610.0	.	.
(19) Pure Premium Underlying Present Rate:	0.979	0.598	1.578
(20) Relativity to Underlying Present Rate:	1.457	1.683	.
(21) Credibility to Underlying Relativity:	0.310	0.200	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.487	1.705	.
(24) Balanced Formula Relativity:	1.468	1.698	1.541

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 Subsection G - Class Relativities
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Section IX - G
 Exhibit 2

Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	73,234	1	8	61,121	739	9,373	4,536	75,769	0.845	0.190	1.035
2017	76,542	0	5	0	26,003	0	47,815	73,818	0.340	0.625	0.964
2018	83,745	1	6	140,009	77,783	18,236	22,391	258,419	2.601	0.485	3.086
2019	87,336	0	15	0	113,809	0	75,243	189,052	1.303	0.862	2.165
2020	81,382	1	6	38,070	39,731	64,995	68,386	211,183	0.956	1.639	2.595
MA Total:	402,238	3	40	239,200	258,064	92,605	218,371	808,240	1.236	0.773	2.009

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.630	2.213	.
(14) Massachusetts Credibility:	0.210	0.320	.
(15) Countrywide Pure Premium:	1.734	1.087	2.820
(16) Countrywide Indicated Relativity:	2.282	3.080	.
(17) Countrywide Credibility:	0.400	0.340	.
(18) Countrywide Lost-Time Claims:	737.00	.	.
(19) Pure Premium Underlying Present Rate:	1.492	0.794	2.286
(20) Relativity to Underlying Present Rate:	2.221	2.234	.
(21) Credibility to Underlying Relativity:	0.390	0.340	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	2.121	2.515	.
(24) Balanced Formula Relativity:	2.094	2.504	2.223

Class(es):		Effective: 7/1/2023							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)
2016	104,089	1	16	27,126	1,312	11,384	21,007	60,830	0.273	0.311	0.584
2017	102,311	0	19	0	67,412	0	43,734	111,146	0.659	0.427	1.086
2018	115,173	0	21	0	13,122	0	57,288	70,410	0.114	0.497	0.611
2019	104,744	0	12	0	18,019	0	35,512	53,531	0.172	0.339	0.511
2020	109,500	1	9	60,184	64,007	25,634	36,510	186,334	1.134	0.568	1.702
MA Total:	535,816	2	77	87,310	163,873	37,018	194,050	482,250	0.469	0.431	0.900

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.618	1.235	.
(14) Massachusetts Credibility:	0.210	0.350	.
(15) Countrywide Pure Premium:	1.635	0.753	2.389
(16) Countrywide Indicated Relativity:	2.152	2.135	.
(17) Countrywide Credibility:	0.400	0.330	.
(18) Countrywide Lost-Time Claims:	3680.0	.	.
(19) Pure Premium Underlying Present Rate:	1.187	0.779	1.966
(20) Relativity to Underlying Present Rate:	1.767	2.191	.
(21) Credibility to Underlying Relativity:	0.390	0.320	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.680	1.838	.
(24) Balanced Formula Relativity:	1.658	1.830	1.712

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Section IX - Classification Pricing
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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	415,202	1	40	4,089	233,869	6,258	123,613	367,830	0.573	0.313	0.886
2017	485,829	0	43	0	60,923	0	75,989	136,912	0.125	0.156	0.282
2018	802,660	3	82	135,888	524,152	60,906	212,816	933,761	0.822	0.341	1.163
2019	1,340,097	6	83	544,420	231,192	73,655	229,746	1,079,013	0.579	0.226	0.805
2020	1,361,801	7	110	563,013	1,226,493	350,247	351,046	2,490,799	1.314	0.515	1.829
MA Total:	4,405,590	17	358	1,247,409	2,276,630	491,066	993,210	5,008,315	0.800	0.337	1.137

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.055	0.965	.
(14) Massachusetts Credibility:	0.400	0.620	.
(15) Countrywide Pure Premium:	0.818	0.490	1.308
(16) Countrywide Indicated Relativity:	1.076	1.390	.
(17) Countrywide Credibility:	0.300	0.190	.
(18) Countrywide Lost-Time Claims:	1548.0	.	.
(19) Pure Premium Underlying Present Rate:	0.689	0.391	1.080
(20) Relativity to Underlying Present Rate:	1.026	1.100	.
(21) Credibility to Underlying Relativity:	0.300	0.190	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.052	1.071	.
(24) Balanced Formula Relativity:	1.039	1.066	1.048

Class(es):		Effective: 7/1/2023							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)
2016	5,990,018	27	713	3,322,720	4,305,708	1,343,532	3,901,311	12,873,271	1.274	0.876	2.149
2017	6,384,453	39	718	5,546,143	5,716,435	1,574,915	4,063,964	16,901,458	1.764	0.883	2.647
2018	6,960,546	38	785	4,207,509	6,464,020	977,515	3,976,278	15,625,322	1.533	0.712	2.245
2019	7,098,608	27	723	3,290,306	9,194,616	1,719,803	5,071,763	19,276,489	1.759	0.957	2.716
2020	7,506,887	28	628	4,962,816	8,571,287	2,152,833	5,221,546	20,908,482	1.803	0.982	2.785
MA Total:	33,940,512	159	3,567	21,329,494	34,252,067	7,768,597	22,234,862	85,585,021	1.638	0.884	2.522

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.159	2.531	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	2.388	1.050	3.438
(16) Countrywide Indicated Relativity:	3.142	2.975	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	7464.0	.	.
(19) Pure Premium Underlying Present Rate:	1.381	0.818	2.199
(20) Relativity to Underlying Present Rate:	2.055	2.301	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	2.159	2.531	.
(24) Balanced Formula Relativity:	2.132	2.520	2.254

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)	
2016	144,205	2	17	280,849	66,394	148,302	86,118	581,663	2,408	1,626	4,034	
2017	168,314	2	24	255,409	236,005	274,544	171,358	937,316	2,920	2,649	5,569	
2018	192,482	0	23	0	41,212	0	23,195	64,408	0,214	0,121	0,335	
2019	238,472	2	19	295,331	5,739	104,383	20,312	425,764	1,262	0,523	1,785	
2020	246,062	0	17	0	139,407	0	64,925	204,332	0,567	0,264	0,830	
MA Total:	989,534	6	100	831,589	488,757	527,229	365,908	2,213,483	1,334	0,903	2,237	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.759	2.584	.
(14) Massachusetts Credibility:	0.280	0.490	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	1.783	2.691	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	1.211	0.967	2.178
(20) Relativity to Underlying Present Rate:	1.803	2.721	.
(21) Credibility to Underlying Relativity:	0.720	0.510	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.791	2.654	.
(24) Balanced Formula Relativity:	1.768	2.642	2.043

Class(es):		Effective: 7/1/2023							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)	
2016	17,940	0	0	0	0	0	0	0	0.000	0.000	0.000	
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	4	0	15,069	0	65,321	80,390	0,592	2,567	3,159	
2020	30,169	0	3	0	125,894	0	86,902	212,796	4,173	2,881	7,054	
MA Total:	106,082	0	7	0	140,963	0	152,223	293,186	1,329	1,435	2,764	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.567	1.493	.
(14) Massachusetts Credibility:	0.140	0.190	.
(15) Countrywide Pure Premium:	2.701	1.232	3.933
(16) Countrywide Indicated Relativity:	1.161	1.293	.
(17) Countrywide Credibility:	0.430	0.410	.
(18) Countrywide Lost-Time Claims:	759.00	.	.
(19) Pure Premium Underlying Present Rate:	1.941	0.874	2.815
(20) Relativity to Underlying Present Rate:	0.896	0.920	.
(21) Credibility to Underlying Relativity:	0.430	0.400	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.964	1.182	.
(24) Balanced Formula Relativity:	0.975	1.184	1.036

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	162,612	0	18	0	94,636	0	56,845	151,481	0.582	0.350	0.932
2017	155,835	0	13	0	76,934	0	94,439	171,373	0.494	0.606	1.100
2018	174,134	2	11	196,856	60,641	104,051	47,916	409,465	1.479	0.873	2.351
2019	179,496	1	22	452	67,278	594	123,514	191,837	0.377	0.691	1.069
2020	190,428	1	5	1,464,821	62,071	128,049	26,895	1,681,836	8.018	0.814	8.832
MA Total:	862,506	4	69	1,662,128	361,561	232,694	349,609	2,605,992	2.346	0.675	3.021

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.094	1.933	.
(14) Massachusetts Credibility:	0.230	0.390	.
(15) Countrywide Pure Premium:	1.074	0.527	1.601
(16) Countrywide Indicated Relativity:	1.414	1.493	.
(17) Countrywide Credibility:	0.390	0.310	.
(18) Countrywide Lost-Time Claims:	258.00	.	.
(19) Pure Premium Underlying Present Rate:	0.887	0.623	1.510
(20) Relativity to Underlying Present Rate:	1.320	1.751	.
(21) Credibility to Underlying Relativity:	0.380	0.300	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.765	1.742	.
(24) Balanced Formula Relativity:	1.742	1.734	1.740

Class(es):		Effective: 7/1/2023							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)
2016	55,705	0	10	0	502	0	21,938	22,440	0.009	0.394	0.403
2017	76,331	1	4	107,425	1,913	23,593	5,937	138,867	1.432	0.387	1.819
2018	71,854	0	9	0	9,079	0	46,580	55,659	0.126	0.648	0.775
2019	70,008	0	5	0	4,873	0	10,266	15,139	0.070	0.147	0.216
2020	72,118	1	10	17,339	33,424	10,377	40,376	101,516	0.704	0.704	1.408
MA Total:	346,015	2	38	124,764	49,790	33,970	125,098	333,621	0.504	0.460	0.964

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.665	1.316	.
(14) Massachusetts Credibility:	0.200	0.300	.
(15) Countrywide Pure Premium:	2.085	1.090	3.175
(16) Countrywide Indicated Relativity:	2.744	3.089	.
(17) Countrywide Credibility:	0.400	0.350	.
(18) Countrywide Lost-Time Claims:	2773.0	.	.
(19) Pure Premium Underlying Present Rate:	1.547	0.810	2.357
(20) Relativity to Underlying Present Rate:	2.303	2.277	.
(21) Credibility to Underlying Relativity:	0.400	0.350	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	2.152	2.273	.
(24) Balanced Formula Relativity:	2.124	2.263	2.168

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	464.682	5	96	937.489	748.049	536.099	665.386	2,887.023	3.627	2.586	6.213
2017	584.233	3	95	518.790	1,028.230	376.940	803.058	2,727.018	2.648	2.020	4.668
2018	661.181	5	113	573.276	2,573.006	538.244	1,333.430	5,017.957	4.759	2.831	7.589
2019	640.423	5	81	352.622	2,667.653	193.185	1,469.002	4,682.461	4.716	2.595	7.312
2020	796.030	3	127	603.763	1,671.023	394.075	1,771.360	4,440.222	2.858	2.720	5.578
MA Total:	3,146,550	21	512	2,985,940	8,687,962	2,038,543	6,042,235	19,754,680	3.710	2.568	6.278

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.456	2.368	.
(14) Massachusetts Credibility:	0.700	1.000	.
(15) Countrywide Pure Premium:	4.421	2.266	6.687
(16) Countrywide Indicated Relativity:	1.816	2.230	.
(17) Countrywide Credibility:	0.150	0.000	.
(18) Countrywide Lost-Time Claims:	3187.0	.	.
(19) Pure Premium Underlying Present Rate:	3.860	2.519	6.379
(20) Relativity to Underlying Present Rate:	1.874	2.477	.
(21) Credibility to Underlying Relativity:	0.150	0.000	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	1.573	2.368	.
(24) Balanced Formula Relativity:	1.570	2.376	1.810

Class(es):		Effective: 7/1/2023							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)
2016	3.528	2	14	76.766	227.804	15.258	157.570	477.398	86.320	48.982	135.30
2017	3.513	1	16	564	22.913	1.259	49.987	74.724	6.684	14.590	21.273
2018	3.478	1	18	237.746	117.273	91.585	71.262	517.866	102.08	46.823	148.90
2019	3.419	1	20	110.360	514.843	17.768	169.490	812.460	182.84	54.764	237.61
2020	4.146	2	16	292.209	46.389	69.782	107.212	515.592	81.660	42.686	124.35
MA Total:	18,085	7	84	717.645	929,221	195,652	555,522	2,398,040	91.064	41.537	132.60

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	120.07	118.92	.
(14) Massachusetts Credibility:	0.310	0.440	.
(15) Countrywide Pure Premium:	157.38	62.637	220.02
(16) Countrywide Indicated Relativity:	126.35	107.79	.
(17) Countrywide Credibility:	0.350	0.280	.
(18) Countrywide Lost-Time Claims:	455.00	.	.
(19) Pure Premium Underlying Present Rate:	85.811	38.745	124.56
(20) Relativity to Underlying Present Rate:	127.72	108.99	.
(21) Credibility to Underlying Relativity:	0.340	0.280	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	124.87	113.02	.
(24) Balanced Formula Relativity:	123.27	112.53	119.89

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Calculation of Class Relativities

Class(es): 0909 DOMESTIC WORKERS-OUTSIDE-OCCASIONAL-INCL OCCASNL PRIV CHAUFF										Effective: 7/1/2023		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)		
2016	342	1	3	2,040	1,685	12,999	3,011	19,735	10,892	46,812	57,704		
2017	299	0	2	0	0	0	23,709	23,709	0,000	79,332	79,332		
2018	294	0	4	0	272	0	7,510	7,782	0,926	25,521	26,447		
2019	285	1	7	163,368	445,094	47,887	132,040	788,389	2138.7	632.43	2771.1		
2020	298	1	2	64,130	0	77,257	1,426	142,813	215.45	264.35	479.80		
MA Total:	1,517	3	18	229,538	447,051	138,143	167,695	982,427	445.93	201.57	647.51		

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	587.99	577.11	.
(14) Massachusetts Credibility:	0.140	0.270	.
(15) Countrywide Pure Premium:	121.50	73.403	194.90
(16) Countrywide Indicated Relativity:	217.25	396.71	.
(17) Countrywide Credibility:	0.130	0.140	.
(18) Countrywide Lost-Time Claims:	7.000	.	.
(19) Pure Premium Underlying Present Rate:	147.54	142.59	290.14
(20) Relativity to Underlying Present Rate:	219.60	401.10	.
(21) Credibility to Underlying Relativity:	0.730	0.590	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	270.87	448.01	.
(24) Balanced Formula Relativity:	267.40	446.06	323.74

Class(es): 0917 DOMESTIC SERVICE CONTRACTOR-INSIDE										Effective: 7/1/2023		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)		
2016	446,741	2	59	105,241	239,327	16,651	110,882	472,101	0.771	0.285	1.057		
2017	497,224	3	39	201,503	167,411	58,293	78,062	505,270	0.742	0.274	1.016		
2018	637,963	3	52	229,546	470,480	48,506	204,662	953,194	1.097	0.397	1.494		
2019	689,412	3	46	113,978	517,029	42,154	287,935	961,096	0.915	0.479	1.394		
2020	642,763	2	26	220,095	363,521	32,566	194,097	810,279	0.908	0.353	1.261		
MA Total:	2,914,104	13	222	870,362	1,757,769	198,169	875,638	3,701,939	0.902	0.368	1.270		

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.189	1.055	.
(14) Massachusetts Credibility:	0.410	0.570	.
(15) Countrywide Pure Premium:	1.583	0.773	2.355
(16) Countrywide Indicated Relativity:	2.083	2.189	.
(17) Countrywide Credibility:	0.300	0.220	.
(18) Countrywide Lost-Time Claims:	908.00	.	.
(19) Pure Premium Underlying Present Rate:	1.071	0.474	1.545
(20) Relativity to Underlying Present Rate:	1.594	1.334	.
(21) Credibility to Underlying Relativity:	0.290	0.210	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.575	1.363	.
(24) Balanced Formula Relativity:	1.555	1.357	1.492

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	6,494,666	7	78	471,814	641,299	89,213	189,193	1,391,519	0.171	0.043	0.214
2017	8,654,614	13	82	563,056	1,431,179	105,935	602,174	2,702,344	0.230	0.082	0.312
2018	8,914,428	10	94	897,371	1,457,889	111,223	410,694	2,877,176	0.264	0.059	0.323
2019	11,801,439	6	78	190,835	1,525,321	95,098	477,639	2,288,893	0.145	0.049	0.194
2020	12,357,848	6	62	1,245,870	1,489,487	180,919	434,174	3,350,450	0.221	0.050	0.271
MA Total:	48,222,995	42	394	3,368,944	6,545,175	582,389	2,113,874	12,610,382	0.206	0.056	0.262

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.271	0.160	.
(14) Massachusetts Credibility:	0.660	0.810	.
(15) Countrywide Pure Premium:	0.423	0.115	0.538
(16) Countrywide Indicated Relativity:	0.557	0.326	.
(17) Countrywide Credibility:	0.170	0.100	.
(18) Countrywide Lost-Time Claims:	82,000	.	.
(19) Pure Premium Underlying Present Rate:	0.220	0.068	0.288
(20) Relativity to Underlying Present Rate:	0.328	0.190	.
(21) Credibility to Underlying Relativity:	0.170	0.090	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.329	0.179	.
(24) Balanced Formula Relativity:	0.325	0.179	0.279

Class(es):		Effective: 7/1/2023							Manufacturing		
1430 SMELTING, SINTERING OR REFINING-LEAD & 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)
2016	0	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	0	0	0	0	0	0	0	0	0.000	0.000	0.000

	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:	1.483	0.602	2.086
(16) Countrywide Indicated Relativity:	1.825	1.666	.
(17) Countrywide Credibility:	0.260	0.280	.
(18) Countrywide Lost-Time Claims:	40,000	.	.
(19) Pure Premium Underlying Present Rate:	1.611	0.786	2.397
(20) Relativity to Underlying Present Rate:	2.001	1.961	.
(21) Credibility to Underlying Relativity:	0.740	0.720	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.955	1.878	.
(24) Balanced Formula Relativity:	1.959	1.888	1.937

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	128,957	0	13	0	5,619	0	25,804	31,424	0.044	0.200	0.244
2017	144,211	0	16	0	87,852	0	62,761	150,613	0.609	0.435	1.044
2018	156,408	0	23	0	80,702	0	86,298	167,001	0.516	0.552	1.068
2019	161,796	1	24	115,513	56,742	14,772	74,366	261,393	1.065	0.551	1.616
2020	150,356	0	13	0	214,893	0	116,681	331,573	1.429	0.776	2.205
MA Total:	741,728	1	89	115,513	445,808	14,772	365,910	942,003	0.757	0.513	1.270

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.840	1.271	.
(14) Massachusetts Credibility:	0.270	0.380	.
(15) Countrywide Pure Premium:	2.395	0.855	3.250
(16) Countrywide Indicated Relativity:	2.946	2.364	.
(17) Countrywide Credibility:	0.370	0.310	.
(18) Countrywide Lost-Time Claims:	585.00	.	.
(19) Pure Premium Underlying Present Rate:	1.504	0.674	2.178
(20) Relativity to Underlying Present Rate:	1.869	1.682	.
(21) Credibility to Underlying Relativity:	0.360	0.310	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.990	1.737	.
(24) Balanced Formula Relativity:	1.994	1.746	1.917

Class(es):		Effective: 7/1/2023							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)
2016	89,008	2	24	507,777	403,418	543,677	304,053	1,758,925	10.237	9.524	19.761
2017	103,477	2	21	112,561	278,788	32,003	91,107	514,459	3.782	1.190	4.972
2018	97,814	0	26	0	285,553	0	326,116	611,669	2.919	3.334	6.253
2019	87,512	1	18	252,939	209,438	70,048	432,092	964,516	5.284	5.738	11.021
2020	100,811	0	16	0	300,508	0	294,461	594,968	2.981	2.921	5.902
MA Total:	478,622	5	105	873,277	1,477,704	645,728	1,447,829	4,444,538	4.912	4.374	9.286

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	5.453	10.828	.
(14) Massachusetts Credibility:	0.360	0.620	.
(15) Countrywide Pure Premium:	3.780	1.525	5.304
(16) Countrywide Indicated Relativity:	4.650	4.217	.
(17) Countrywide Credibility:	0.320	0.190	.
(18) Countrywide Lost-Time Claims:	636.00	.	.
(19) Pure Premium Underlying Present Rate:	4.927	3.576	8.503
(20) Relativity to Underlying Present Rate:	6.121	8.921	.
(21) Credibility to Underlying Relativity:	0.320	0.190	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	5.410	9.210	.
(24) Balanced Formula Relativity:	5.421	9.255	6.608

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Calculation of Class Relativities

Class(es): 1624 QUARRY NOC & DRIVERS		Effective: 7/1/2023							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)
2016	496,311	2	63	620,924	889,482	152,546	489,775	2,152,727	3,043	1,294	4,337
2017	514,950	3	69	249,716	593,583	49,441	285,541	1,178,282	1,638	0,651	2,288
2018	557,496	1	66	60,575	1,192,475	93,363	465,655	1,812,068	2,248	1,003	3,250
2019	542,962	0	53	0	2,214,438	0	893,100	3,107,537	4,078	1,645	5,723
2020	474,653	0	37	0	913,572	0	421,010	1,334,582	1,925	0,887	2,812
MA Total:	2,586,372	6	288	931,215	5,803,550	295,350	2,555,080	9,585,195	2,604	1,102	3,706

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.022	1.016	.
(14) Massachusetts Credibility:	0.460	0.720	.
(15) Countrywide Pure Premium:	1.663	0.739	2.402
(16) Countrywide Indicated Relativity:	0.683	0.727	.
(17) Countrywide Credibility:	0.270	0.140	.
(18) Countrywide Lost-Time Claims:	1127.0	.	.
(19) Pure Premium Underlying Present Rate:	1.617	0.940	2.557
(20) Relativity to Underlying Present Rate:	0.785	0.925	.
(21) Credibility to Underlying Relativity:	0.270	0.140	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.867	0.963	.
(24) Balanced Formula Relativity:	0.865	0.966	0.895

Class(es): 1655 LIME MFG-QUARRY-SURFACE & DRIVERS		Effective: 7/1/2023							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)
2016	3,319	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	5,799	0	0	0	0	0	0	0	0.000	0.000	0.000

	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:	3.569	0.939	4.508
(16) Countrywide Indicated Relativity:	1.466	0.924	.
(17) Countrywide Credibility:	0.120	0.130	.
(18) Countrywide Lost-Time Claims:	6.000	.	.
(19) Pure Premium Underlying Present Rate:	1.001	0.463	1.464
(20) Relativity to Underlying Present Rate:	0.486	0.455	.
(21) Credibility to Underlying Relativity:	0.850	0.820	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.589	0.493	.
(24) Balanced Formula Relativity:	0.588	0.495	0.560

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Calculation of Class Relativities

Class(es): 1701 CEMENT MFG		Effective: 7/1/2023							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)
2016	1,876	0	0	0	0	0	0	0	0.000	0.000	0.000
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	179,369	0	27,299	0	206,668	215.69	32,827	248.52
2020	791	0	0	0	0	0	0	0	0.000	0.000	0.000
MA Total:	4,630	1	0	179,369	0	27,299	0	206,668	38.741	5.896	44.637

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	43.005	14.596	.
(14) Massachusetts Credibility:	0.030	0.040	.
(15) Countrywide Pure Premium:	1.093	0.528	1.621
(16) Countrywide Indicated Relativity:	1.344	1.462	.
(17) Countrywide Credibility:	0.490	0.480	.
(18) Countrywide Lost-Time Claims:	407.00	.	.
(19) Pure Premium Underlying Present Rate:	1.001	0.474	1.476
(20) Relativity to Underlying Present Rate:	1.244	1.183	.
(21) Credibility to Underlying Relativity:	0.480	0.480	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	2.546	1.853	.
(24) Balanced Formula Relativity:	2.551	1.863	2.338

Class(es): 1747 EMERY WORKS & DRIVERS		Effective: 7/1/2023							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)
2016	46,528	0	9	0	12,256	0	13,012	25,268	0.263	0.280	0.543
2017	52,458	0	3	0	500	0	797	1,297	0.010	0.015	0.025
2018	53,351	0	3	0	7,417	0	1,071	8,488	0.139	0.020	0.159
2019	50,873	0	5	0	10,406	0	4,407	14,813	0.205	0.087	0.291
2020	47,836	0	3	0	503	0	10,850	11,353	0.011	0.227	0.237
MA Total:	251,046	0	23	0	31,082	0	30,137	61,219	0.124	0.120	0.244

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.137	0.297	.
(14) Massachusetts Credibility:	0.150	0.240	.
(15) Countrywide Pure Premium:	1.483	0.371	1.854
(16) Countrywide Indicated Relativity:	1.825	1.026	.
(17) Countrywide Credibility:	0.300	0.320	.
(18) Countrywide Lost-Time Claims:	57.000	.	.
(19) Pure Premium Underlying Present Rate:	1.062	0.611	1.673
(20) Relativity to Underlying Present Rate:	1.319	1.525	.
(21) Credibility to Underlying Relativity:	0.550	0.440	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.293	1.071	.
(24) Balanced Formula Relativity:	1.296	1.076	1.228

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Manufacturing		
1748 ABRASIVE WHEEL 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)
2016	43,459	1	8	411,530	2,961	77,430	14,304	506,225	9,538	2,111	11,648
2017	50,469	0	12	0	19,545	0	12,591	32,135	0,387	0,249	0,637
2018	51,014	0	7	0	0	0	5,241	5,241	0,000	0,103	0,103
2019	43,574	0	11	0	128,010	0	83,111	211,121	2,938	1,907	4,845
2020	39,284	0	6	0	14,518	0	11,120	25,638	0,370	0,283	0,653
MA Total:	227,800	1	44	411,530	165,033	77,430	126,367	780,360	2,531	0,895	3,426

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.810	2.215	.
(14) Massachusetts Credibility:	0.150	0.260	.
(15) Countrywide Pure Premium:	1.588	0.946	2.534
(16) Countrywide Indicated Relativity:	1.954	2.616	.
(17) Countrywide Credibility:	0.320	0.340	.
(18) Countrywide Lost-Time Claims:	65,000	.	.
(19) Pure Premium Underlying Present Rate:	1.218	0.885	2.104
(20) Relativity to Underlying Present Rate:	1.513	2.209	.
(21) Credibility to Underlying Relativity:	0.530	0.400	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.849	2.349	.
(24) Balanced Formula Relativity:	1.853	2.361	2,010

Class(es):		Effective: 7/1/2023							Manufacturing		
1853 MICA GOODS MFG & MICA PREPARING											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2016	840	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	5,389	0	0	0	0	0	0	0	0.000	0.000	0.000

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.030	0.030	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	0.807	0.456	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.657	0.185	0.842
(20) Relativity to Underlying Present Rate:	0.816	0.461	.
(21) Credibility to Underlying Relativity:	0.970	0.970	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.791	0.447	.
(24) Balanced Formula Relativity:	0.793	0.450	0.687

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	149,172	1	19	84,595	443,550	8,157	147,577	683,880	3,541	1,044	4,585
2017	126,667	0	22	0	27,898	0	47,945	75,844	0,220	0,379	0,599
2018	138,111	1	16	186,352	527,997	28,639	126,181	869,169	5,172	1,121	6,293
2019	146,824	1	31	225,664	479,093	12,460	117,786	835,003	4,800	0,887	5,687
2020	135,249	2	15	178,507	148,287	96,479	182,952	606,225	2,416	2,066	4,482
MA Total:	696,024	5	103	675,118	1,626,826	145,736	622,441	3,070,121	3,307	1,104	4,411

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.671	2.732	.
(14) Massachusetts Credibility:	0.220	0.330	.
(15) Countrywide Pure Premium:	1.026	0.476	1.501
(16) Countrywide Indicated Relativity:	1.262	1.316	.
(17) Countrywide Credibility:	0.390	0.340	.
(18) Countrywide Lost-Time Claims:	551.00	.	.
(19) Pure Premium Underlying Present Rate:	0.972	0.489	1.461
(20) Relativity to Underlying Present Rate:	1.208	1.220	.
(21) Credibility to Underlying Relativity:	0.390	0.330	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.771	1.752	.
(24) Balanced Formula Relativity:	1.774	1.760	1.770

Class(es):		Effective: 7/1/2023							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)
2016	185	0	1	0	238	0	551	789	1,286	2,973	4,259
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
MA Total:	1,473	0	1	0	238	0	551	789	0.162	0.374	0.536

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.179	0.926	.
(14) Massachusetts Credibility:	0.020	0.070	.
(15) Countrywide Pure Premium:	1.186	0.624	1.811
(16) Countrywide Indicated Relativity:	1.459	1.727	.
(17) Countrywide Credibility:	0.490	0.470	.
(18) Countrywide Lost-Time Claims:	593.00	.	.
(19) Pure Premium Underlying Present Rate:	1.575	5.090	6.665
(20) Relativity to Underlying Present Rate:	1.957	12.697	.
(21) Credibility to Underlying Relativity:	0.490	0.460	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.678	6.717	.
(24) Balanced Formula Relativity:	1.681	6.751	3.250

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	2,279,377	10	291	915,425	3,119,679	207,625	1,086,529	5,329,258	1,770	0,568	2,338
2017	2,509,327	15	333	1,584,758	2,640,424	292,849	1,148,519	5,666,550	1,684	0,574	2,258
2018	2,686,597	14	345	1,588,172	3,150,058	526,952	1,346,278	6,611,460	1,764	0,697	2,461
2019	2,793,134	12	294	1,781,532	3,783,517	455,384	1,545,837	7,566,270	1,992	0,716	2,709
2020	2,803,756	7	259	1,054,134	3,779,459	265,660	1,814,308	6,913,561	1,724	0,742	2,466
MA Total:	13,072,191	58	1,522	6,924,020	16,473,136	1,748,470	6,941,471	32,087,098	1,790	0,665	2,455

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.987	1.646	.
(14) Massachusetts Credibility:	0.880	1.000	.
(15) Countrywide Pure Premium:	1.517	0.632	2,149
(16) Countrywide Indicated Relativity:	1.867	1.748	.
(17) Countrywide Credibility:	0.060	0.000	.
(18) Countrywide Lost-Time Claims:	6371.0	.	.
(19) Pure Premium Underlying Present Rate:	1.670	0.719	2,389
(20) Relativity to Underlying Present Rate:	2.075	1.795	.
(21) Credibility to Underlying Relativity:	0.060	0.000	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1,305
(23) Formula Relativity:	1.985	1.646	.
(24) Balanced Formula Relativity:	1.989	1.654	1,885

Class(es):		Effective: 7/1/2023							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)
2016	2,168	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	12,837	0	0	0	0	0	0	0	0.000	0.000	0.000

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.060	0.080	.
(15) Countrywide Pure Premium:	1.900	0.891	2,791
(16) Countrywide Indicated Relativity:	2.337	2.465	.
(17) Countrywide Credibility:	0.470	0.460	.
(18) Countrywide Lost-Time Claims:	1221.0	.	.
(19) Pure Premium Underlying Present Rate:	1.747	0.831	2,577
(20) Relativity to Underlying Present Rate:	2.170	2.072	.
(21) Credibility to Underlying Relativity:	0.470	0.460	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1,305
(23) Formula Relativity:	2.118	2.087	.
(24) Balanced Formula Relativity:	2.123	2.097	2,115

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	4.223	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	15.288	0	0	0	0	0	0	0	0.000	0.000	0.000

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.050	0.080	.
(15) Countrywide Pure Premium:	1.481	0.755	2.235
(16) Countrywide Indicated Relativity:	1.821	2.087	.
(17) Countrywide Credibility:	0.480	0.460	.
(18) Countrywide Lost-Time Claims:	305.00	.	.
(19) Pure Premium Underlying Present Rate:	1.142	0.597	1.739
(20) Relativity to Underlying Present Rate:	1.419	1.489	.
(21) Credibility to Underlying Relativity:	0.470	0.460	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.541	1.645	.
(24) Balanced Formula Relativity:	1.544	1.653	1.578

Class(es):		Effective: 7/1/2023							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)
2016	132.001	2	22	461.404	260.110	125.500	94.048	941.063	5.466	1.663	7.129
2017	59.707	1	7	1	2.366	0	3.841	6.209	0.040	0.064	0.104
2018	59.489	0	42	0	62.458	0	121.086	183.544	1.050	2.035	3.085
2019	60.515	1	14	49.746	460.949	7.430	135.950	654.076	8.439	2.369	10.809
2020	47.479	1	11	120.496	38.224	20.631	16.280	195.632	3.343	0.777	4.120
MA Total:	359.190	5	96	631.647	824.108	153.562	371.205	1,980.523	4.053	1.461	5.514

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.499	3.617	.
(14) Massachusetts Credibility:	0.210	0.300	.
(15) Countrywide Pure Premium:	1.255	0.632	1.887
(16) Countrywide Indicated Relativity:	1.545	1.748	.
(17) Countrywide Credibility:	0.400	0.350	.
(18) Countrywide Lost-Time Claims:	447.00	.	.
(19) Pure Premium Underlying Present Rate:	1.646	0.788	2.434
(20) Relativity to Underlying Present Rate:	2.044	1.966	.
(21) Credibility to Underlying Relativity:	0.390	0.350	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	2.360	2.385	.
(24) Balanced Formula Relativity:	2.365	2.397	2.375

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Section IX - Classification Pricing
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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Manufacturing		
2041 CONFECTION 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)
2016	217,288	0	17	0	227,779	0	142,719	370,498	1,048	0,657	1,705
2017	175,099	0	21	0	21,666	0	37,674	59,341	0,124	0,215	0,339
2018	103,393	0	7	0	16,853	0	10,010	26,863	0,163	0,097	0,260
2019	102,657	1	10	363,571	84,365	23,026	18,176	489,138	4,363	0,401	4,765
2020	105,420	0	12	0	56,186	0	29,358	85,543	0,533	0,278	0,811
MA Total:	703,856	1	67	363,571	406,848	23,026	237,937	1,031,383	1,095	0,371	1,465

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.215	0.918	.
(14) Massachusetts Credibility:	0.230	0.320	.
(15) Countrywide Pure Premium:	1.252	0.502	1.754
(16) Countrywide Indicated Relativity:	1.541	1.389	.
(17) Countrywide Credibility:	0.390	0.340	.
(18) Countrywide Lost-Time Claims:	977.00	.	.
(19) Pure Premium Underlying Present Rate:	1.055	0.456	1.511
(20) Relativity to Underlying Present Rate:	1.311	1.138	.
(21) Credibility to Underlying Relativity:	0.380	0.340	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.379	1.153	.
(24) Balanced Formula Relativity:	1.381	1.158	1.312

Class(es):		Effective: 7/1/2023							Manufacturing		
2070 CREAMERY OR DAIRY & 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)
2016	148,130	0	13	0	161,295	0	51,741	213,037	1,089	0,349	1,438
2017	150,023	1	14	782	52,827	382	51,780	105,771	0,357	0,348	0,705
2018	151,559	1	17	13,932	47,211	4,730	37,695	103,567	0,403	0,280	0,683
2019	177,540	0	18	0	531,070	0	148,827	679,897	2,991	0,838	3,830
2020	74,369	0	9	0	444,367	0	62,717	507,084	5,975	0,843	6,818
MA Total:	701,621	2	71	14,714	1,236,770	5,112	352,760	1,609,356	1,784	0,510	2,294

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.980	1.263	.
(14) Massachusetts Credibility:	0.270	0.370	.
(15) Countrywide Pure Premium:	1.846	0.667	2.513
(16) Countrywide Indicated Relativity:	2.271	1.846	.
(17) Countrywide Credibility:	0.370	0.320	.
(18) Countrywide Lost-Time Claims:	3369.0	.	.
(19) Pure Premium Underlying Present Rate:	1.535	0.646	2.180
(20) Relativity to Underlying Present Rate:	1.906	1.611	.
(21) Credibility to Underlying Relativity:	0.360	0.310	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	2.061	1.557	.
(24) Balanced Formula Relativity:	2.065	1.565	1.910

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Calculation of Class Relativities

Class(es): 2081 BUTCHERING		Effective: 7/1/2023							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)
2016	25,569	0	5	0	5,608	0	8,002	13,610	0.219	0.313	0.532
2017	27,808	0	16	0	19,535	0	26,889	46,424	0.703	0.967	1.669
2018	32,556	1	19	21,283	20,232	8,492	50,795	100,802	1.275	1.821	3.096
2019	34,604	0	30	0	49,282	0	46,649	95,932	1.424	1.348	2.772
2020	38,315	0	16	0	258,296	0	122,573	380,869	6.741	3.199	9.940
MA Total:	158,852	1	86	21,283	352,953	8,492	254,908	637,637	2.356	1.658	4.014

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.615	4.105	.
(14) Massachusetts Credibility:	0.120	0.210	.
(15) Countrywide Pure Premium:	1.312	0.588	1.900
(16) Countrywide Indicated Relativity:	1.614	1.627	.
(17) Countrywide Credibility:	0.440	0.400	.
(18) Countrywide Lost-Time Claims:	1287.0	.	.
(19) Pure Premium Underlying Present Rate:	1.015	0.710	1.726
(20) Relativity to Underlying Present Rate:	1.261	1.772	.
(21) Credibility to Underlying Relativity:	0.440	0.390	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.579	2.204	.
(24) Balanced Formula Relativity:	1.582	2.215	1.778

Class(es): 2089 PACKING HOUSE- ALL OPERATIONS		Effective: 7/1/2023							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)
2016	1,732,079	5	244	459,979	900,548	155,643	529,869	2,046,039	0.785	0.396	1.181
2017	1,971,416	9	270	694,685	2,135,635	140,454	862,668	3,833,442	1.436	0.509	1.945
2018	2,112,369	6	332	783,924	2,508,635	359,317	905,847	4,557,723	1.559	0.599	2.158
2019	2,234,854	5	289	410,809	2,642,633	87,693	1,550,175	4,691,310	1.366	0.733	2.099
2020	2,307,065	8	272	850,598	2,658,701	218,668	902,191	4,630,159	1.521	0.486	2.007
MA Total:	10,357,784	33	1,407	3,199,996	10,846,151	961,775	4,750,750	19,758,672	1.356	0.552	1.908

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.505	1.365	.
(14) Massachusetts Credibility:	0.710	0.980	.
(15) Countrywide Pure Premium:	1.101	0.523	1.623
(16) Countrywide Indicated Relativity:	1.354	1.446	.
(17) Countrywide Credibility:	0.150	0.010	.
(18) Countrywide Lost-Time Claims:	11135	.	.
(19) Pure Premium Underlying Present Rate:	1.216	0.515	1.731
(20) Relativity to Underlying Present Rate:	1.511	1.284	.
(21) Credibility to Underlying Relativity:	0.140	0.010	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.483	1.365	.
(24) Balanced Formula Relativity:	1.486	1.372	1.451

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	473.075	2	71	118.845	267.041	39.688	120.911	546.485	0.816	0.339	1.155
2017	493.673	2	78	249.757	570.650	88.481	210.352	1,119.239	1.662	0.605	2.267
2018	573.447	2	79	92.148	235.491	43.564	168.507	539.711	0.571	0.370	0.941
2019	629.056	4	47	1,122.179	555.432	299.804	174.632	2,152.046	2.667	0.754	3.421
2020	684.394	3	77	296.065	878.001	87.253	361.308	1,622.627	1.715	0.655	2.371
MA Total:	2,853.645	13	352	1,878,992	2,506,615	558,789	1,035,711	5,980,108	1.537	0.559	2.096

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.706	1.383	.
(14) Massachusetts Credibility:	0.430	0.590	.
(15) Countrywide Pure Premium:	1.464	0.720	2.184
(16) Countrywide Indicated Relativity:	1.801	1.992	.
(17) Countrywide Credibility:	0.290	0.210	.
(18) Countrywide Lost-Time Claims:	3592.0	.	.
(19) Pure Premium Underlying Present Rate:	1.230	0.525	1.754
(20) Relativity to Underlying Present Rate:	1.527	1.309	.
(21) Credibility to Underlying Relativity:	0.280	0.200	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.684	1.496	.
(24) Balanced Formula Relativity:	1.687	1.504	1.630

Class(es):		Effective: 7/1/2023							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)
2016	10.683	0	2	0	17.199	0	8.144	25.343	1.610	0.762	2.372
2017	4.054	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	17.365	0	4	0	1.277	0	2.918	4.195	0.074	0.168	0.242
2019	8.847	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	8.934	1	1	26.256	0	19.858	476	46.590	2.939	2.276	5.215
MA Total:	49.883	1	7	26.256	18.476	19.858	11.538	76.128	0.897	0.629	1.526

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.995	1.558	.
(14) Massachusetts Credibility:	0.080	0.110	.
(15) Countrywide Pure Premium:	0.995	0.473	1.467
(16) Countrywide Indicated Relativity:	1.224	1.308	.
(17) Countrywide Credibility:	0.460	0.450	.
(18) Countrywide Lost-Time Claims:	1059.0	.	.
(19) Pure Premium Underlying Present Rate:	0.934	0.488	1.422
(20) Relativity to Underlying Present Rate:	1.161	1.217	.
(21) Credibility to Underlying Relativity:	0.460	0.440	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.176	1.295	.
(24) Balanced Formula Relativity:	1.179	1.302	1.217

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Manufacturing		
2115 SEAFOOD 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)
2016	69,585	0	21	0	59,123	0	82,061	141,184	0.850	1,179	2,029
2017	71,351	0	18	0	14,576	0	24,923	39,499	0.204	0,349	0,554
2018	63,005	1	13	11,642	86,065	850	175,033	273,591	1.551	2,792	4,342
2019	55,376	0	10	0	41,926	0	14,957	56,882	0.757	0,270	1,027
2020	72,737	0	8	0	276,440	0	211,002	487,441	3.801	2,901	6,701
MA Total:	332,055	1	70	11,642	478,130	850	507,975	998,597	1.475	1,532	3,007

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.637	3.793	.
(14) Massachusetts Credibility:	0.250	0.340	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	3.577	2.823	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	2.912	1.144	4.056
(20) Relativity to Underlying Present Rate:	3.617	2.855	.
(21) Credibility to Underlying Relativity:	0.750	0.660	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	3.122	3.174	.
(24) Balanced Formula Relativity:	3.129	3.190	3.148

Class(es):		Effective: 7/1/2023							Manufacturing		
2121 BREWERY & 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)
2016	211,012	0	45	0	467,431	0	235,273	702,704	2.215	1,115	3,330
2017	307,327	1	38	38,796	21,944	9,769	36,589	107,098	0.198	0,151	0,348
2018	348,508	0	39	0	31,422	0	47,312	78,735	0.090	0,136	0,226
2019	365,484	1	33	131,639	32,342	11,367	73,219	248,567	0.449	0,231	0,680
2020	396,756	0	35	0	172,098	0	171,722	343,820	0.434	0,433	0,867
MA Total:	1,629,087	2	190	170,435	725,238	21,136	564,116	1,480,924	0.550	0,359	0,909

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.610	0.889	.
(14) Massachusetts Credibility:	0.260	0.390	.
(15) Countrywide Pure Premium:	0.650	0.267	0.917
(16) Countrywide Indicated Relativity:	0.800	0.737	.
(17) Countrywide Credibility:	0.370	0.310	.
(18) Countrywide Lost-Time Claims:	628.00	.	.
(19) Pure Premium Underlying Present Rate:	0.621	0.317	0.938
(20) Relativity to Underlying Present Rate:	0.772	0.791	.
(21) Credibility to Underlying Relativity:	0.370	0.300	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.740	0.813	.
(24) Balanced Formula Relativity:	0.742	0.817	0.765

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Manufacturing		
2130 SPIRITUOUS LIQUOR DISTILLERY											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2016	9.836	0	1	0	0	0	697	697	0.000	0.071	0.071
2017	9.182	0	1	0	0	0	775	775	0.000	0.084	0.084
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
MA Total:	63,048	0	2	0	0	0	1,472	1,472	0.000	0.023	0.023

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.058	.
(14) Massachusetts Credibility:	0.070	0.110	.
(15) Countrywide Pure Premium:	0.837	0.410	1.246
(16) Countrywide Indicated Relativity:	1.030	1.133	.
(17) Countrywide Credibility:	0.470	0.450	.
(18) Countrywide Lost-Time Claims:	316.00	.	.
(19) Pure Premium Underlying Present Rate:	0.634	0.328	0.962
(20) Relativity to Underlying Present Rate:	0.788	0.818	.
(21) Credibility to Underlying Relativity:	0.460	0.440	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.846	0.876	.
(24) Balanced Formula Relativity:	0.848	0.880	0.858

Class(es):		Effective: 7/1/2023							Manufacturing		
2131 SPIRITUOUS LIQUOR BOTTLING											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2016	58.005	0	26	0	370.752	0	91.951	462.703	6.392	1.585	7.977
2017	64.821	0	19	0	19.128	0	44.557	63.684	0.295	0.687	0.982
2018	62.202	0	25	0	343.073	0	206.161	549.234	5.515	3.314	8.830
2019	67.918	0	26	0	126.014	0	99.209	225.222	1.855	1.461	3.316
2020	68.574	0	13	0	67.603	0	24.447	92.051	0.986	0.357	1.342
MA Total:	321,521	0	109	0	926,570	0	466,325	1,392,895	2.882	1.450	4.332

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.199	3.590	.
(14) Massachusetts Credibility:	0.180	0.270	.
(15) Countrywide Pure Premium:	0.707	0.352	1.059
(16) Countrywide Indicated Relativity:	0.870	0.972	.
(17) Countrywide Credibility:	0.410	0.370	.
(18) Countrywide Lost-Time Claims:	170.00	.	.
(19) Pure Premium Underlying Present Rate:	1.279	0.689	1.968
(20) Relativity to Underlying Present Rate:	1.588	1.719	.
(21) Credibility to Underlying Relativity:	0.410	0.360	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.584	1.948	.
(24) Balanced Formula Relativity:	1.587	1.958	1.702

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Calculation of Class Relativities

Class(es): 2143 FRUIT JUICE MFG		Effective: 7/1/2023							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)
2016	62,149	0	11	0	7,627	0	5,987	13,615	0.123	0.096	0.219
2017	71,010	1	8	200,254	6,589	10,225	2,261	219,329	2.913	0.176	3.089
2018	74,426	0	15	0	23,381	0	15,376	38,757	0.314	0.207	0.521
2019	77,662	1	9	120,989	5,381	21,751	11,205	159,325	1.627	0.424	2.052
2020	79,910	0	6	0	28,602	0	41,210	69,812	0.358	0.516	0.874
MA Total:	365,157	2	49	321,243	71,580	31,976	76,039	500,837	1.076	0.296	1.372

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.194	0.732	.
(14) Massachusetts Credibility:	0.190	0.240	.
(15) Countrywide Pure Premium:	0.627	0.358	0.985
(16) Countrywide Indicated Relativity:	0.771	0.991	.
(17) Countrywide Credibility:	0.410	0.380	.
(18) Countrywide Lost-Time Claims:	299.00	.	.
(19) Pure Premium Underlying Present Rate:	1.264	0.445	1.708
(20) Relativity to Underlying Present Rate:	1.570	1.110	.
(21) Credibility to Underlying Relativity:	0.400	0.380	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.171	0.974	.
(24) Balanced Formula Relativity:	1.173	0.979	1.113

Class(es): 2150 ICE MFG		Effective: 7/1/2023							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)
2016	11,932	0	2	0	0	0	1,220	1,220	0.000	0.102	0.102
2017	11,783	0	3	0	83,478	0	57,176	140,655	7.084	4.852	11.937
2018	11,938	0	2	0	0	0	995	995	0.000	0.083	0.083
2019	14,688	0	4	0	20,642	0	9,362	30,004	1.405	0.637	2.043
2020	20,209	0	4	0	476	0	2,936	3,413	0.024	0.145	0.169
MA Total:	70,550	0	15	0	104,597	0	71,689	176,286	1.483	1.016	2.499

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.646	2.515	.
(14) Massachusetts Credibility:	0.110	0.160	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	1.963	2.058	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	1.598	0.834	2.432
(20) Relativity to Underlying Present Rate:	1.985	2.081	.
(21) Credibility to Underlying Relativity:	0.890	0.840	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.948	2.151	.
(24) Balanced Formula Relativity:	1.952	2.162	2.017

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Calculation of Class Relativities

Class(es): 2156 BOTTLING-NOT CARBONATED LIQUIDS OR SPIRIT LIQRS & RTE SUP,DR									Effective: 7/1/2023 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)
2016	92,127	1	9	87,297	41,464	23,066	43,314	195,141	1,398	0,721	2,118
2017	113,880	0	10	0	106,740	0	86,733	193,473	0,937	0,762	1,699
2018	115,290	0	17	0	18,580	0	29,001	47,581	0,161	0,252	0,413
2019	99,504	0	7	0	27,190	0	76,209	103,400	0,273	0,766	1,039
2020	86,058	1	7	74,287	85,940	23,985	27,760	211,972	1,862	0,601	2,463
MA Total:	506,858	2	50	161,584	279,914	47,051	263,017	751,566	0,871	0,612	1,483

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.967	1.514	.
(14) Massachusetts Credibility:	0.230	0.360	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	1.927	2.059	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	1.568	0.835	2.403
(20) Relativity to Underlying Present Rate:	1.948	2.083	.
(21) Credibility to Underlying Relativity:	0.770	0.640	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.722	1.878	.
(24) Balanced Formula Relativity:	1.726	1.887	1.776

Class(es): 2157 BOTTLING NOC & ROUTE SUPERVISORS, DRIVERS									Effective: 7/1/2023 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)
2016	362,709	1	95	123,639	759,524	22,057	266,052	1,171,272	2,435	0,794	3,229
2017	404,074	2	119	417,552	560,868	141,666	260,869	1,380,956	2,421	0,996	3,418
2018	480,417	1	143	316,458	1,109,458	89,389	395,690	1,910,996	2,968	1,010	3,978
2019	522,875	2	117	439,312	339,942	90,527	147,430	1,017,212	1,490	0,455	1,945
2020	577,516	1	88	464,075	765,350	48,247	214,690	1,492,361	2,129	0,455	2,584
MA Total:	2,347,592	7	562	1,761,036	3,535,142	391,887	1,284,732	6,972,797	2,256	0,714	2,970

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.504	1.768	.
(14) Massachusetts Credibility:	0.470	0.640	.
(15) Countrywide Pure Premium:	2.001	0.688	2.689
(16) Countrywide Indicated Relativity:	2.462	1.903	.
(17) Countrywide Credibility:	0.270	0.180	.
(18) Countrywide Lost-Time Claims:	5885.0	.	.
(19) Pure Premium Underlying Present Rate:	1.952	0.788	2.740
(20) Relativity to Underlying Present Rate:	2.425	1.965	.
(21) Credibility to Underlying Relativity:	0.260	0.180	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	2.472	1.828	.
(24) Balanced Formula Relativity:	2.477	1.837	2.279

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Calculation of Class Relativities

Class(es): 2172 CIGARETTE MFG		Effective: 7/1/2023							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)
2016	0	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	0	0	0	0	0	0	0	0	.	.	.

	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:	0.714	0.356	1.070
(16) Countrywide Indicated Relativity:	0.879	0.985	.
(17) Countrywide Credibility:	0.500	0.500	.
(18) Countrywide Lost-Time Claims:	244.00	.	.
(19) Pure Premium Underlying Present Rate:	0.836	0.307	1.143
(20) Relativity to Underlying Present Rate:	1.038	0.766	.
(21) Credibility to Underlying Relativity:	0.500	0.500	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.958	0.876	.
(24) Balanced Formula Relativity:	0.960	0.880	0.935

Class(es): 2211 COTTON BATTING,WADDING OR WASTE MFG		Effective: 7/1/2023							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)
2016	0	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	4,294	0	0	0	0	0	0	0	0.000	0.000	0.000

	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:	2.395	1.389	3.785
(16) Countrywide Indicated Relativity:	2.947	3.843	.
(17) Countrywide Credibility:	0.310	0.330	.
(18) Countrywide Lost-Time Claims:	61.000	.	.
(19) Pure Premium Underlying Present Rate:	2.488	1.232	3.720
(20) Relativity to Underlying Present Rate:	3.091	3.073	.
(21) Credibility to Underlying Relativity:	0.650	0.610	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	2.923	3.143	.
(24) Balanced Formula Relativity:	2.929	3.159	3.000

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Manufacturing		
2220 YARN OR THREAD MFG-COTTON											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2016	128,515	2	24	218,759	124,075	52,779	33,432	429,045	2,668	0,671	3,338
2017	106,153	0	21	0	322,595	0	88,551	411,146	3,039	0,834	3,873
2018	103,224	1	23	92,290	270,371	14,346	274,993	652,000	3,513	2,803	6,316
2019	108,799	0	21	0	274,654	0	95,495	370,150	2,524	0,878	3,402
2020	81,537	1	24	186,910	142,208	40,495	53,182	422,795	4,036	1,149	5,185
MA Total:	528,229	4	113	497,959	1,133,903	107,620	545,653	2,285,135	3,089	1,237	4,326

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.429	3.061	.
(14) Massachusetts Credibility:	0.200	0.320	.
(15) Countrywide Pure Premium:	0.957	0.467	1.423
(16) Countrywide Indicated Relativity:	1.177	1.291	.
(17) Countrywide Credibility:	0.400	0.340	.
(18) Countrywide Lost-Time Claims:	860.00	.	.
(19) Pure Premium Underlying Present Rate:	1.060	0.598	1.658
(20) Relativity to Underlying Present Rate:	1.317	1.492	.
(21) Credibility to Underlying Relativity:	0.400	0.340	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.684	1.926	.
(24) Balanced Formula Relativity:	1.687	1.935	1.764

Class(es):		Effective: 7/1/2023							Manufacturing		
2260 WOOL COMBING OR SCOURING											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2016	522	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	1,380	0	0	0	0	0	0	0	0.000	0.000	0.000

	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:	2.955	2.383	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	2.405	0.966	3.371
(20) Relativity to Underlying Present Rate:	2.988	2.410	.
(21) Credibility to Underlying Relativity:	0.970	0.960	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	2.899	2.313	.
(24) Balanced Formula Relativity:	2.904	2.325	2.725

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Calculation of Class Relativities

Class(es): 2288 FELTING MFG		Effective: 7/1/2023							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)
2016	68,868	0	9	0	337,967	0	143,462	481,429	4,907	2,083	6,991
2017	31,564	0	7	0	76,661	0	37,143	113,804	2,429	1,177	3,606
2018	26,418	0	5	0	1,061	0	3,252	4,313	0,040	0,123	0,163
2019	28,437	0	6	0	100	0	2,368	2,468	0,004	0,083	0,087
2020	28,958	0	9	0	9,855	0	8,327	18,181	0,340	0,288	0,628
MA Total:	184,244	0	36	0	425,643	0	194,552	620,195	2,310	1,056	3,366

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.565	2.614	.
(14) Massachusetts Credibility:	0.160	0.230	.
(15) Countrywide Pure Premium:	1.531	0.798	2.328
(16) Countrywide Indicated Relativity:	1.883	2.206	.
(17) Countrywide Credibility:	0.420	0.390	.
(18) Countrywide Lost-Time Claims:	173.00	.	.
(19) Pure Premium Underlying Present Rate:	1.664	0.803	2.467
(20) Relativity to Underlying Present Rate:	2.067	2.003	.
(21) Credibility to Underlying Relativity:	0.420	0.380	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	2.069	2.223	.
(24) Balanced Formula Relativity:	2.074	2.234	2.123

Class(es): 2305 TEXTILE FIBER MFG-SYNTHETIC		Effective: 7/1/2023							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)
2016	5,945	0	1	0	0	0	61	61	0.000	0.010	0.010
2017	4,509	0	3	0	5,001	0	5,573	10,574	1.109	1.236	2.345
2018	5,438	0	6	0	605	0	2,621	3,226	0.111	0.482	0.593
2019	2,204	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	6,148	0	5	0	13,019	0	5,880	18,900	2.118	0.956	3.074
MA Total:	24,243	0	15	0	18,625	0	14,136	32,761	0.768	0.583	1.351

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.853	1.443	.
(14) Massachusetts Credibility:	0.060	0.090	.
(15) Countrywide Pure Premium:	0.968	0.447	1.415
(16) Countrywide Indicated Relativity:	1.190	1.237	.
(17) Countrywide Credibility:	0.470	0.460	.
(18) Countrywide Lost-Time Claims:	696.00	.	.
(19) Pure Premium Underlying Present Rate:	1.209	0.583	1.792
(20) Relativity to Underlying Present Rate:	1.502	1.454	.
(21) Credibility to Underlying Relativity:	0.470	0.450	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.316	1.353	.
(24) Balanced Formula Relativity:	1.319	1.360	1.332

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Calculation of Class Relativities

Class(es): 2362 KNIT GOODS MFG NOC		Effective: 7/1/2023							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)
2016	10,080	0	6	0	6,642	0	11,237	17,879	0.659	1.115	1.774
2017	21,300	0	1	0	0	0	501	501	0.000	0.024	0.024
2018	16,826	0	6	0	0	0	1,470	1,470	0.000	0.087	0.087
2019	17,513	0	3	0	4,114	0	6,305	10,420	0.235	0.360	0.595
2020	20,390	0	2	0	9,639	0	4,962	14,601	0.473	0.243	0.716
MA Total:	86,109	0	18	0	20,395	0	24,476	44,871	0.237	0.284	0.521

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.263	0.704	.
(14) Massachusetts Credibility:	0.090	0.140	.
(15) Countrywide Pure Premium:	1.171	0.620	1.790
(16) Countrywide Indicated Relativity:	1.440	1.714	.
(17) Countrywide Credibility:	0.460	0.430	.
(18) Countrywide Lost-Time Claims:	164.00	.	.
(19) Pure Premium Underlying Present Rate:	0.745	0.485	1.230
(20) Relativity to Underlying Present Rate:	0.926	1.210	.
(21) Credibility to Underlying Relativity:	0.450	0.430	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.103	1.356	.
(24) Balanced Formula Relativity:	1.105	1.363	1.185

Class(es): 2380 WEBBING MFG		Effective: 7/1/2023							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)
2016	62,937	0	6	0	4,198	0	5,872	10,070	0.067	0.093	0.160
2017	56,467	0	5	0	2,974	0	4,670	7,645	0.053	0.083	0.135
2018	45,089	0	2	0	183	0	1,167	1,351	0.004	0.026	0.030
2019	48,144	0	7	0	27,251	0	35,938	63,189	0.566	0.746	1.313
2020	43,435	0	5	0	19,945	0	84,215	104,160	0.459	1.939	2.398
MA Total:	256,072	0	25	0	54,552	0	131,862	186,414	0.213	0.515	0.728

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.236	1.275	.
(14) Massachusetts Credibility:	0.130	0.200	.
(15) Countrywide Pure Premium:	0.794	0.398	1.191
(16) Countrywide Indicated Relativity:	0.977	1.099	.
(17) Countrywide Credibility:	0.440	0.400	.
(18) Countrywide Lost-Time Claims:	200.00	.	.
(19) Pure Premium Underlying Present Rate:	0.704	0.376	1.079
(20) Relativity to Underlying Present Rate:	0.874	0.938	.
(21) Credibility to Underlying Relativity:	0.430	0.400	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.836	1.070	.
(24) Balanced Formula Relativity:	0.838	1.075	0.911

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Manufacturing		
2402 CARPET OR RUG 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)
2016	10,548	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	9,820	0	1	0	0	0	476	476	0.000	0.048	0.048
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
MA Total:	51,082	0	1	0	0	0	476	476	0.000	0.009	0.009

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.023	.
(14) Massachusetts Credibility:	0.080	0.120	.
(15) Countrywide Pure Premium:	1.056	0.558	1.614
(16) Countrywide Indicated Relativity:	1.299	1.545	.
(17) Countrywide Credibility:	0.460	0.440	.
(18) Countrywide Lost-Time Claims:	505.00	.	.
(19) Pure Premium Underlying Present Rate:	0.946	0.509	1.455
(20) Relativity to Underlying Present Rate:	1.175	1.271	.
(21) Credibility to Underlying Relativity:	0.460	0.440	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.138	1.242	.
(24) Balanced Formula Relativity:	1.140	1.248	1.174

Class(es):		Effective: 7/1/2023							Manufacturing		
2413 TEXTILE - BLEACHING, DYEING, MERCERZNG, FINISH											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2016	248,924	1	26	181,876	376,788	13,412	144,863	716,940	2,244	0.636	2,880
2017	113,159	0	16	0	141,381	0	56,334	197,715	1,249	0.498	1,747
2018	85,106	1	7	186,981	20,701	84,666	17,299	309,646	2,440	1.198	3,638
2019	73,247	0	4	0	62,811	0	34,346	97,157	0,858	0,469	1,326
2020	73,197	0	14	0	78,645	0	43,009	121,654	1,074	0,588	1,662
MA Total:	593,633	2	67	368,857	680,326	98,078	295,851	1,443,112	1,767	0,664	2,431

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.962	1.643	.
(14) Massachusetts Credibility:	0.240	0.370	.
(15) Countrywide Pure Premium:	0.755	0.426	1.181
(16) Countrywide Indicated Relativity:	0.928	1.178	.
(17) Countrywide Credibility:	0.380	0.320	.
(18) Countrywide Lost-Time Claims:	223.00	.	.
(19) Pure Premium Underlying Present Rate:	1.454	0.768	2.222
(20) Relativity to Underlying Present Rate:	1.806	1.916	.
(21) Credibility to Underlying Relativity:	0.380	0.310	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.510	1.579	.
(24) Balanced Formula Relativity:	1.513	1.587	1.536

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	16.949	0	3	0	15.977	0	5.182	21.159	0.943	0.306	1.248
2017	20.981	0	7	0	0	0	4.847	4.847	0.000	0.231	0.231
2018	23.058	0	6	0	2.868	0	7.150	10.018	0.124	0.310	0.434
2019	19.271	1	9	98.848	104.665	29.467	30.266	263.245	10.561	3.100	13.660
2020	26.499	1	4	55.942	0	36.386	1.895	94.222	2.111	1.445	3.556
MA Total:	106.757	2	29	154.790	123.510	65.852	49.341	393.493	2.607	1.079	3.686

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.894	2.671	.
(14) Massachusetts Credibility:	0.100	0.160	.
(15) Countrywide Pure Premium:	1.841	0.828	2.669
(16) Countrywide Indicated Relativity:	2.265	2.290	.
(17) Countrywide Credibility:	0.250	0.270	.
(18) Countrywide Lost-Time Claims:	37.000	.	.
(19) Pure Premium Underlying Present Rate:	0.934	0.553	1.488
(20) Relativity to Underlying Present Rate:	1.161	1.380	.
(21) Credibility to Underlying Relativity:	0.650	0.570	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.610	1.832	.
(24) Balanced Formula Relativity:	1.613	1.841	1.684

Class(es):		Effective: 7/1/2023							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)
2016	18.910	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	49.786	0	0	0	0	0	0	0	0.000	0.000	0.000

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.070	0.090	.
(15) Countrywide Pure Premium:	0.631	0.291	0.923
(16) Countrywide Indicated Relativity:	0.777	0.806	.
(17) Countrywide Credibility:	0.260	0.270	.
(18) Countrywide Lost-Time Claims:	39.000	.	.
(19) Pure Premium Underlying Present Rate:	0.820	0.284	1.103
(20) Relativity to Underlying Present Rate:	1.018	0.708	.
(21) Credibility to Underlying Relativity:	0.670	0.640	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.884	0.671	.
(24) Balanced Formula Relativity:	0.886	0.674	0.820

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Calculation of Class Relativities

Class(es): 2501 CLOTHING MFG		Effective: 7/1/2023							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)
2016	951.077	5	103	603.132	742.687	166.071	336.301	1,848.190	1.415	0.528	1.943
2017	969.529	1	100	74.118	526.634	12.890	241.592	855.234	0.620	0.262	0.882
2018	962.981	1	82	7.156	1,020.121	8.925	633.572	1,669.774	1.067	0.667	1.734
2019	1,013.461	5	78	768.151	780.229	189.242	273.868	2,011.490	1.528	0.457	1.985
2020	1,021.493	1	62	300.712	410.273	528.126	205.083	1,444.194	0.696	0.718	1.414
MA Total:	4,918.541	13	425	1,753.269	3,479.944	905.254	1,690.416	7,828.883	1.064	0.528	1.592

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.181	1.306	.
(14) Massachusetts Credibility:	0.480	0.690	.
(15) Countrywide Pure Premium:	0.961	0.463	1.424
(16) Countrywide Indicated Relativity:	1.182	1.281	.
(17) Countrywide Credibility:	0.260	0.160	.
(18) Countrywide Lost-Time Claims:	2534.0	.	.
(19) Pure Premium Underlying Present Rate:	0.969	0.454	1.423
(20) Relativity to Underlying Present Rate:	1.204	1.132	.
(21) Credibility to Underlying Relativity:	0.260	0.150	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.187	1.276	.
(24) Balanced Formula Relativity:	1.190	1.283	1.218

Class(es): 2503 DRESSMAKING OR TAILORING-CUSTOM EXCLUSIVELY		Effective: 7/1/2023							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)
2016	49.561	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	41.958	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	36.099	0	1	0	0	0	877	877	0.000	0.024	0.024
2019	28.816	0	1	0	47.949	0	104.939	152.888	1.664	3.642	5.306
2020	23.296	0	0	0	0	0	0	0	0.000	0.000	0.000
MA Total:	179.729	0	2	0	47.949	0	105.816	153.765	0.267	0.589	0.856

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.296	1.457	.
(14) Massachusetts Credibility:	0.100	0.130	.
(15) Countrywide Pure Premium:	0.336	0.159	0.496
(16) Countrywide Indicated Relativity:	0.414	0.441	.
(17) Countrywide Credibility:	0.230	0.240	.
(18) Countrywide Lost-Time Claims:	29.000	.	.
(19) Pure Premium Underlying Present Rate:	0.533	0.179	0.712
(20) Relativity to Underlying Present Rate:	0.663	0.446	.
(21) Credibility to Underlying Relativity:	0.670	0.630	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.569	0.576	.
(24) Balanced Formula Relativity:	0.570	0.579	0.573

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	40,003	0	1	0	0	0	110	110	0.000	0.003	0.003
2017	44,344	1	8	202,796	6,227	10,231	10,487	229,742	4,714	0.467	5,181
2018	51,633	0	5	0	31,210	0	18,645	49,855	0.604	0.361	0.966
2019	28,959	0	3	0	624	0	3,795	4,420	0.022	0.131	0.153
2020	36,801	0	3	0	203,600	0	37,726	241,326	5,533	1.025	6,558
MA Total:	201,740	1	20	202,796	241,662	10,231	70,764	525,453	2.203	0.401	2.605

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.446	0.994	.
(14) Massachusetts Credibility:	0.160	0.220	.
(15) Countrywide Pure Premium:	1.312	0.643	1.954
(16) Countrywide Indicated Relativity:	1.614	1.777	.
(17) Countrywide Credibility:	0.420	0.390	.
(18) Countrywide Lost-Time Claims:	386.00	.	.
(19) Pure Premium Underlying Present Rate:	1.579	0.636	2,214
(20) Relativity to Underlying Present Rate:	1.961	1.586	.
(21) Credibility to Underlying Relativity:	0.420	0.390	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1,305
(23) Formula Relativity:	1.893	1.530	.
(24) Balanced Formula Relativity:	1.897	1.538	1,785

Class(es):		Effective: 7/1/2023							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)
2016	130,560	0	14	0	18,198	0	21,867	40,065	0.139	0.167	0.307
2017	128,065	2	14	126,979	245,307	25,775	47,720	445,781	2,907	0.574	3,481
2018	127,202	0	12	0	11,221	0	27,966	39,187	0.088	0.220	0.308
2019	137,926	0	11	0	6,946	0	5,650	12,596	0.050	0.041	0.091
2020	133,939	0	6	0	21,726	0	41,286	63,012	0.162	0.308	0.470
MA Total:	657,692	2	57	126,979	303,398	25,775	144,489	600,640	0.654	0.259	0.913

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.726	0.641	.
(14) Massachusetts Credibility:	0.210	0.320	.
(15) Countrywide Pure Premium:	1.559	0.696	2,254
(16) Countrywide Indicated Relativity:	1.918	1.924	.
(17) Countrywide Credibility:	0.100	0.110	.
(18) Countrywide Lost-Time Claims:	4,000	.	.
(19) Pure Premium Underlying Present Rate:	0.895	0.501	1,396
(20) Relativity to Underlying Present Rate:	1.112	1.251	.
(21) Credibility to Underlying Relativity:	0.690	0.570	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1,305
(23) Formula Relativity:	1.111	1.130	.
(24) Balanced Formula Relativity:	1.114	1.135	1,120

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	884.918	3	119	284.908	711.097	141.397	320.411	1,457.814	1.126	0.522	1.647
2017	847.139	5	120	628.025	805.299	209.795	446.625	2,089.744	1.692	0.775	2.467
2018	814.325	2	116	144.870	1,404.392	14.531	402.563	1,966.356	1.903	0.512	2.415
2019	779.985	3	114	358.394	1,215.739	94.602	451.414	2,120.150	2.018	0.700	2.718
2020	706.122	2	53	200.189	408.327	115.622	222.413	946.551	0.862	0.479	1.340
MA Total:	4,032.489	15	522	1,616.387	4,544.855	575.947	1,843.426	8,580.615	1.528	0.600	2.128

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.696	1.485	.
(14) Massachusetts Credibility:	0.480	0.730	.
(15) Countrywide Pure Premium:	1.522	0.671	2.194
(16) Countrywide Indicated Relativity:	1.873	1.857	.
(17) Countrywide Credibility:	0.260	0.140	.
(18) Countrywide Lost-Time Claims:	3447.0	.	.
(19) Pure Premium Underlying Present Rate:	1.174	0.627	1.802
(20) Relativity to Underlying Present Rate:	1.459	1.564	.
(21) Credibility to Underlying Relativity:	0.260	0.130	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.680	1.548	.
(24) Balanced Formula Relativity:	1.684	1.555	1.644

Class(es):		Effective: 7/1/2023							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)
2016	538.000	3	41	345.003	1,109.822	27.250	690.510	2,172.586	2.704	1.334	4.038
2017	491.949	1	21	2.172	148.126	929	30.054	181.281	0.306	0.063	0.368
2018	446.396	0	24	0	264.308	0	143.217	407.524	0.592	0.321	0.913
2019	392.200	1	21	65.880	275.722	34.298	66.882	442.783	0.871	0.258	1.129
2020	284.355	1	12	48.839	87.444	14.300	129.974	280.557	0.479	0.507	0.987
MA Total:	2,152.900	6	119	461.895	1,885.422	76.777	1,060.637	3,484.731	1.090	0.528	1.619

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.210	1.308	.
(14) Massachusetts Credibility:	0.340	0.510	.
(15) Countrywide Pure Premium:	0.936	0.561	1.497
(16) Countrywide Indicated Relativity:	1.152	1.551	.
(17) Countrywide Credibility:	0.330	0.250	.
(18) Countrywide Lost-Time Claims:	224.00	.	.
(19) Pure Premium Underlying Present Rate:	0.902	0.482	1.384
(20) Relativity to Underlying Present Rate:	1.120	1.202	.
(21) Credibility to Underlying Relativity:	0.330	0.240	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.161	1.343	.
(24) Balanced Formula Relativity:	1.164	1.350	1.221

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	50,527	0	5	0	2,421	0	3,897	6,319	0.048	0.077	0.125
2017	37,788	0	1	0	0	0	1,058	1,058	0.000	0.028	0.028
2018	63,628	0	5	0	4,463	0	5,242	9,705	0.070	0.082	0.153
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
MA Total:	199,927	0	11	0	6,884	0	10,198	17,082	0.034	0.051	0.085

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.045	0.146	.
(14) Massachusetts Credibility:	0.130	0.180	.
(15) Countrywide Pure Premium:	1.713	0.702	2,416
(16) Countrywide Indicated Relativity:	2.255	1.990	.
(17) Countrywide Credibility:	0.280	0.290	.
(18) Countrywide Lost-Time Claims:	46.000	.	.
(19) Pure Premium Underlying Present Rate:	0.947	0.403	1,350
(20) Relativity to Underlying Present Rate:	1.409	1.133	.
(21) Credibility to Underlying Relativity:	0.590	0.530	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1,108
(23) Formula Relativity:	1.469	1.204	.
(24) Balanced Formula Relativity:	1.450	1.199	1,371

Class(es):		Effective: 7/1/2023							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)
2016	168	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	1,071	0	0	0	0	0	0	0	0.000	0.000	0.000

	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:	1.484	0.865	2,349
(16) Countrywide Indicated Relativity:	1.826	2.391	.
(17) Countrywide Credibility:	0.310	0.330	.
(18) Countrywide Lost-Time Claims:	64.000	.	.
(19) Pure Premium Underlying Present Rate:	2.046	1.055	3,100
(20) Relativity to Underlying Present Rate:	2.541	2.632	.
(21) Credibility to Underlying Relativity:	0.670	0.640	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1,305
(23) Formula Relativity:	2.269	2.473	.
(24) Balanced Formula Relativity:	2.273	2.486	2,339

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Calculation of Class Relativities

Class(es): 2651 SHOE STOCK MFG		Effective: 7/1/2023							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)
2016	55,673	0	2	0	5,602	0	12,084	17,685	0.101	0.217	0.318
2017	47,248	0	5	0	9,953	0	4,228	14,181	0.211	0.089	0.300
2018	47,245	0	4	0	936	0	5,566	6,502	0.020	0.118	0.138
2019	57,896	0	8	0	20,988	0	9,737	30,724	0.363	0.168	0.531
2020	33,351	1	1	123,037	590	14,515	550	138,693	3.707	0.452	4.159
MA Total:	241,413	1	20	123,037	38,069	14,515	32,163	207,785	0.667	0.193	0.861

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.741	0.479	.
(14) Massachusetts Credibility:	0.120	0.190	.
(15) Countrywide Pure Premium:	0.456	0.225	0.681
(16) Countrywide Indicated Relativity:	0.561	0.622	.
(17) Countrywide Credibility:	0.330	0.350	.
(18) Countrywide Lost-Time Claims:	72.000	.	.
(19) Pure Premium Underlying Present Rate:	0.637	0.373	1.010
(20) Relativity to Underlying Present Rate:	0.792	0.930	.
(21) Credibility to Underlying Relativity:	0.550	0.460	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.710	0.736	.
(24) Balanced Formula Relativity:	0.711	0.740	0.720

Class(es): 2660 BOOT OR SHOE MFG NOC		Effective: 7/1/2023							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)
2016	37,929	0	7	0	504	0	2,674	3,178	0.013	0.071	0.084
2017	52,045	0	3	0	1,243	0	2,811	4,054	0.024	0.054	0.078
2018	53,397	0	5	0	33,183	0	10,724	43,907	0.621	0.201	0.822
2019	48,778	0	4	0	0	0	1,278	1,278	0.000	0.026	0.026
2020	45,692	0	3	0	213,218	0	28,722	241,940	4.666	0.629	5.295
MA Total:	237,840	0	22	0	248,149	0	46,209	294,358	1.043	0.194	1.238

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.158	0.481	.
(14) Massachusetts Credibility:	0.140	0.210	.
(15) Countrywide Pure Premium:	0.790	0.429	1.220
(16) Countrywide Indicated Relativity:	0.972	1.187	.
(17) Countrywide Credibility:	0.430	0.400	.
(18) Countrywide Lost-Time Claims:	224.00	.	.
(19) Pure Premium Underlying Present Rate:	0.872	0.486	1.358
(20) Relativity to Underlying Present Rate:	1.083	1.214	.
(21) Credibility to Underlying Relativity:	0.430	0.390	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.046	1.049	.
(24) Balanced Formula Relativity:	1.048	1.054	1.050

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Calculation of Class Relativities

Class(es): 2683 LUGGAGE MFG		Effective: 7/1/2023							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)
2016	2.320	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	10,314	0	0	0	0	0	0	0	0.000	0.000	0.000

	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:	0.911	0.451	1.363
(16) Countrywide Indicated Relativity:	1.121	1.248	.
(17) Countrywide Credibility:	0.190	0.200	.
(18) Countrywide Lost-Time Claims:	19.000	.	.
(19) Pure Premium Underlying Present Rate:	0.903	0.537	1.440
(20) Relativity to Underlying Present Rate:	1.121	1.340	.
(21) Credibility to Underlying Relativity:	0.770	0.740	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.076	1.241	.
(24) Balanced Formula Relativity:	1.079	1.248	1.131

Class(es): 2688 LEATHER GOODS MFG NOC		Effective: 7/1/2023							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)
2016	78.560	1	2	194.285	2.697	27.197	950	225.130	2.507	0.358	2.866
2017	82.441	0	12	0	2.444	0	10.247	12.691	0.030	0.124	0.154
2018	80.590	0	2	0	127	0	2.270	2.397	0.002	0.028	0.030
2019	58.187	0	4	0	488.058	0	180.993	669.051	8.388	3.111	11.498
2020	44.321	0	2	0	0	0	655	655	0.000	0.015	0.015
MA Total:	344,099	1	22	194.285	493.326	27.197	195.116	909,924	1.998	0.646	2.644

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.218	1.599	.
(14) Massachusetts Credibility:	0.150	0.230	.
(15) Countrywide Pure Premium:	0.674	0.386	1.060
(16) Countrywide Indicated Relativity:	0.830	1.067	.
(17) Countrywide Credibility:	0.400	0.390	.
(18) Countrywide Lost-Time Claims:	118.00	.	.
(19) Pure Premium Underlying Present Rate:	0.740	0.418	1.158
(20) Relativity to Underlying Present Rate:	0.920	1.043	.
(21) Credibility to Underlying Relativity:	0.450	0.380	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.078	1.180	.
(24) Balanced Formula Relativity:	1.081	1.186	1.113

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Miscellaneous		
2702 LOGGING OR LUMBERING & 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)
2016	48,638	0	3	0	5,911	0	2,909	8,820	0.122	0.060	0.181
2017	44,769	0	3	0	17,940	0	28,396	46,336	0.401	0.634	1.035
2018	50,265	0	9	0	653,994	0	803,548	1,457,542	13.011	15,986	28,997
2019	56,834	0	8	0	554,356	0	207,352	761,709	9.754	3.648	13.402
2020	59,244	0	6	0	343,159	0	874,845	1,218,004	5.792	14.767	20.559
MA Total:	259,749	0	29	0	1,575,361	0	1,917,050	3,492,411	6.065	7.380	13.445

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.381	6.806	.
(14) Massachusetts Credibility:	0.290	0.470	.
(15) Countrywide Pure Premium:	10.665	4.619	15.284
(16) Countrywide Indicated Relativity:	4.382	4.546	.
(17) Countrywide Credibility:	0.360	0.270	.
(18) Countrywide Lost-Time Claims:	1263.0	.	.
(19) Pure Premium Underlying Present Rate:	5.324	3.327	8.651
(20) Relativity to Underlying Present Rate:	2.584	3.272	.
(21) Credibility to Underlying Relativity:	0.350	0.260	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	3.172	5.277	.
(24) Balanced Formula Relativity:	3.166	5.294	3.801

Class(es):		Effective: 7/1/2023							Manufacturing		
2710 SAWMILLS											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2016	32,162	0	9	0	109,629	0	62,923	172,552	3.409	1.956	5.365
2017	33,841	0	5	0	1,527	0	5,597	7,124	0.045	0.165	0.211
2018	26,758	0	1	0	134,924	0	36,182	171,106	5.042	1.352	6.395
2019	28,779	0	7	0	13,998	0	18,135	32,132	0.486	0.630	1.117
2020	38,565	0	5	0	25,132	0	5,081	30,213	0.652	0.132	0.783
MA Total:	160,106	0	27	0	285,210	0	127,918	413,128	1.781	0.799	2.580

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.977	1.978	.
(14) Massachusetts Credibility:	0.180	0.270	.
(15) Countrywide Pure Premium:	3.106	1.499	4.606
(16) Countrywide Indicated Relativity:	3.822	4.146	.
(17) Countrywide Credibility:	0.410	0.370	.
(18) Countrywide Lost-Time Claims:	2092.0	.	.
(19) Pure Premium Underlying Present Rate:	2.701	1.386	4.087
(20) Relativity to Underlying Present Rate:	3.356	3.457	.
(21) Credibility to Underlying Relativity:	0.410	0.360	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	3.299	3.313	.
(24) Balanced Formula Relativity:	3.305	3.329	3.313

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Calculation of Class Relativities

Class(es): 2731 PLANING OR MOLDING MILL		Effective: 7/1/2023							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)
2016	41,077	0	6	0	739	0	4,487	5,226	0.018	0.109	0.127
2017	41,093	1	9	1,191	14,212	87	15,105	30,594	0.375	0.370	0.745
2018	43,590	0	11	0	143,507	0	69,149	212,656	3.292	1.586	4.879
2019	33,824	0	4	0	0	0	2,512	2,512	0.000	0.074	0.074
2020	31,396	0	5	0	17,521	0	11,919	29,439	0.558	0.380	0.938
MA Total:	190,979	1	35	1,191	175,978	87	103,171	280,427	0.928	0.541	1.468

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.030	1.338	.
(14) Massachusetts Credibility:	0.140	0.220	.
(15) Countrywide Pure Premium:	1.441	0.721	2.162
(16) Countrywide Indicated Relativity:	1.773	1.993	.
(17) Countrywide Credibility:	0.430	0.390	.
(18) Countrywide Lost-Time Claims:	1289.0	.	.
(19) Pure Premium Underlying Present Rate:	1.177	0.704	1.881
(20) Relativity to Underlying Present Rate:	1.462	1.756	.
(21) Credibility to Underlying Relativity:	0.430	0.390	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.535	1.757	.
(24) Balanced Formula Relativity:	1.538	1.765	1.609

Class(es): 2747 COOPERAGE ASSEMBLY		Effective: 7/1/2023							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)
2016	0	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	1	0	0	0	0	0	0	0	0.000	0.000	0.000

	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:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	3.006	2.762	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	2.446	1.120	3.566
(20) Relativity to Underlying Present Rate:	3.039	2.793	.
(21) Credibility to Underlying Relativity:	1.000	1.000	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	3.039	2.793	.
(24) Balanced Formula Relativity:	3.045	2.807	2.972

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Manufacturing		
2790 PATTERN MAKING 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)
2016	34,859	0	5	0	1,573	0	2,882	4,455	0.045	0.083	0.128
2017	49,425	0	11	0	195,574	0	87,523	283,097	3.957	1.771	5.728
2018	43,851	1	5	234,433	0	17,975	1,360	253,767	5.346	0.441	5.787
2019	44,435	0	7	0	5,444	0	3,027	8,470	0.123	0.068	0.191
2020	58,631	0	2	0	0	0	1,474	1,474	0.000	0.025	0.025
MA Total:	231,201	1	30	234,433	202,590	17,975	96,266	551,264	1.890	0.494	2.384

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.098	1.223	.
(14) Massachusetts Credibility:	0.140	0.200	.
(15) Countrywide Pure Premium:	0.732	0.444	1.175
(16) Countrywide Indicated Relativity:	0.900	1.228	.
(17) Countrywide Credibility:	0.430	0.400	.
(18) Countrywide Lost-Time Claims:	136.00	.	.
(19) Pure Premium Underlying Present Rate:	0.990	0.436	1.426
(20) Relativity to Underlying Present Rate:	1.230	1.087	.
(21) Credibility to Underlying Relativity:	0.430	0.400	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.210	1.171	.
(24) Balanced Formula Relativity:	1.212	1.176	1.201

Class(es):		Effective: 7/1/2023							Manufacturing		
2802 CARPENTRY-SHOP ONLY & 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)
2016	1,193,329	6	174	261,455	1,311,696	114,599	771,172	2,458,921	1.318	0.742	2.061
2017	1,236,771	7	161	766,709	2,003,501	521,207	825,221	4,116,638	2.240	1.089	3.329
2018	1,270,061	4	179	437,227	1,201,665	111,009	660,693	2,410,594	1.290	0.608	1.898
2019	1,275,547	6	118	629,376	1,217,561	276,473	507,563	2,630,973	1.448	0.615	2.063
2020	1,273,144	5	124	468,432	1,733,129	194,867	1,250,745	3,647,173	1.729	1.135	2.865
MA Total:	6,248,852	28	756	2,563,199	7,467,552	1,218,154	4,015,394	15,264,300	1.605	0.838	2.443

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.782	2.073	.
(14) Massachusetts Credibility:	0.650	0.960	.
(15) Countrywide Pure Premium:	1.816	0.918	2.734
(16) Countrywide Indicated Relativity:	2.235	2.538	.
(17) Countrywide Credibility:	0.180	0.020	.
(18) Countrywide Lost-Time Claims:	6007.0	.	.
(19) Pure Premium Underlying Present Rate:	1.593	0.801	2.394
(20) Relativity to Underlying Present Rate:	1.979	1.999	.
(21) Credibility to Underlying Relativity:	0.170	0.020	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.897	2.081	.
(24) Balanced Formula Relativity:	1.901	2.091	1.960

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	49,397	1	4	3,096	0	18,991	1,859	23,946	0.063	0.422	0.485
2017	53,322	0	6	0	0	0	3,578	3,578	0.000	0.067	0.067
2018	65,105	0	14	0	190,831	0	18,950	209,781	2.931	0.291	3.222
2019	71,388	0	4	0	5,621	0	9,932	15,553	0.079	0.139	0.218
2020	88,761	0	11	0	21,997	0	8,534	30,531	0.248	0.096	0.344
MA Total:	327,974	1	39	3,096	218,449	18,991	42,853	283,389	0.675	0.189	0.864

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.750	0.467	.
(14) Massachusetts Credibility:	0.150	0.210	.
(15) Countrywide Pure Premium:	1.263	0.572	1.835
(16) Countrywide Indicated Relativity:	1.554	1.581	.
(17) Countrywide Credibility:	0.340	0.360	.
(18) Countrywide Lost-Time Claims:	78.000	.	.
(19) Pure Premium Underlying Present Rate:	0.826	0.349	1.175
(20) Relativity to Underlying Present Rate:	1.026	0.870	.
(21) Credibility to Underlying Relativity:	0.510	0.430	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.164	1.041	.
(24) Balanced Formula Relativity:	1.166	1.046	1.129

Class(es):		Effective: 7/1/2023							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)
2016	5,718	0	1	0	8,444	0	795	9,239	1.477	0.139	1.616
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	225	225	0.000	0.032	0.032
MA Total:	37,913	0	2	0	8,444	0	1,020	9,464	0.223	0.027	0.250

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.247	0.067	.
(14) Massachusetts Credibility:	0.070	0.100	.
(15) Countrywide Pure Premium:	1.537	0.524	2.060
(16) Countrywide Indicated Relativity:	1.891	1.449	.
(17) Countrywide Credibility:	0.310	0.330	.
(18) Countrywide Lost-Time Claims:	62.000	.	.
(19) Pure Premium Underlying Present Rate:	1.162	0.470	1.632
(20) Relativity to Underlying Present Rate:	1.444	1.173	.
(21) Credibility to Underlying Relativity:	0.620	0.570	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.498	1.154	.
(24) Balanced Formula Relativity:	1.501	1.159	1.395

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Calculation of Class Relativities

Class(es): 2841 WOODENWARE MFG NOC		Effective: 7/1/2023							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)
2016	34,041	0	1	0	0	0	118	118	0.000	0.003	0.003
2017	32,136	1	0	231,147	0	158,146	0	389,293	7.193	4.921	12,114
2018	41,549	0	5	0	1,030	0	4,206	5,236	0.025	0.101	0.126
2019	46,891	0	2	0	639	0	3,539	4,178	0.014	0.075	0.089
2020	50,212	0	1	0	3,700	0	421	4,121	0.074	0.008	0.082
MA Total:	204,830	1	9	231,147	5,369	158,146	8,284	402,946	1.155	0.813	1.967

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.282	2.011	.
(14) Massachusetts Credibility:	0.160	0.260	.
(15) Countrywide Pure Premium:	1.075	0.723	1.798
(16) Countrywide Indicated Relativity:	1.323	1.999	.
(17) Countrywide Credibility:	0.420	0.370	.
(18) Countrywide Lost-Time Claims:	185.00	.	.
(19) Pure Premium Underlying Present Rate:	1.449	0.963	2.412
(20) Relativity to Underlying Present Rate:	1.800	2.402	.
(21) Credibility to Underlying Relativity:	0.420	0.370	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.517	2.151	.
(24) Balanced Formula Relativity:	1.520	2.162	1.718

Class(es): 2883 FURNITURE MFG-WOOD-NOC		Effective: 7/1/2023							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)
2016	555,315	2	103	331,585	383,897	69,415	193,418	978,315	1.288	0.473	1.762
2017	537,621	5	82	843,826	526,729	343,098	250,954	1,964,606	2.549	1.105	3.654
2018	509,975	0	67	0	632,837	0	248,712	881,549	1.241	0.488	1.729
2019	510,210	1	58	189,921	175,629	112,882	86,219	564,651	0.716	0.390	1.107
2020	439,562	2	59	68,604	437,061	50,995	253,112	809,771	1.150	0.692	1.842
MA Total:	2,552,684	10	369	1,433,936	2,156,153	576,390	1,032,415	5,198,894	1.406	0.630	2.037

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.561	1.560	.
(14) Massachusetts Credibility:	0.440	0.620	.
(15) Countrywide Pure Premium:	1.271	0.633	1.904
(16) Countrywide Indicated Relativity:	1.563	1.751	.
(17) Countrywide Credibility:	0.280	0.190	.
(18) Countrywide Lost-Time Claims:	4596.0	.	.
(19) Pure Premium Underlying Present Rate:	1.464	0.661	2.124
(20) Relativity to Underlying Present Rate:	1.818	1.648	.
(21) Credibility to Underlying Relativity:	0.280	0.190	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.634	1.613	.
(24) Balanced Formula Relativity:	1.637	1.621	1.632

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Calculation of Class Relativities

Class(es): 2923 PIANO MFG		Effective: 7/1/2023							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)
2016	58.472	0	1	0	0	0	318	318	0.000	0.005	0.005
2017	58.733	0	4	0	0	0	1,025	1,025	0.000	0.017	0.017
2018	62.085	0	5	0	4,423	0	9,778	14,201	0.071	0.157	0.229
2019	51.140	0	4	0	2,159	0	8,115	10,274	0.042	0.159	0.201
2020	40.412	0	1	0	0	0	1,082	1,082	0.000	0.027	0.027
MA Total:	270.842	0	15	0	6,582	0	20,317	26,899	0.024	0.075	0.099

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.027	0.186	.
(14) Massachusetts Credibility:	0.130	0.190	.
(15) Countrywide Pure Premium:	0.550	0.276	0.826
(16) Countrywide Indicated Relativity:	0.676	0.764	.
(17) Countrywide Credibility:	0.300	0.320	.
(18) Countrywide Lost-Time Claims:	56.000	.	.
(19) Pure Premium Underlying Present Rate:	0.625	0.315	0.940
(20) Relativity to Underlying Present Rate:	0.777	0.785	.
(21) Credibility to Underlying Relativity:	0.570	0.490	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.649	0.664	.
(24) Balanced Formula Relativity:	0.651	0.668	0.656

Class(es): 2942 PENCIL, PENHOLDER OR CRAYON MFG		Effective: 7/1/2023							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)
2016	134.148	0	12	0	174.039	0	53.026	227.066	1.297	0.395	1.693
2017	160.530	0	18	0	196.802	0	68.942	265.744	1.226	0.429	1.655
2018	188.079	0	16	0	7.646	0	15.384	23.030	0.041	0.082	0.122
2019	182.960	0	15	0	12.586	0	19.960	32.546	0.069	0.109	0.178
2020	221.520	1	3	168.987	10.061	6.905	3.338	189.292	0.808	0.046	0.855
MA Total:	887.236	1	64	168.987	401.135	6.905	160.651	737.677	0.643	0.189	0.831

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.713	0.467	.
(14) Massachusetts Credibility:	0.210	0.320	.
(15) Countrywide Pure Premium:	0.720	0.422	1.142
(16) Countrywide Indicated Relativity:	0.886	1.169	.
(17) Countrywide Credibility:	0.400	0.340	.
(18) Countrywide Lost-Time Claims:	372.00	.	.
(19) Pure Premium Underlying Present Rate:	0.705	0.366	1.071
(20) Relativity to Underlying Present Rate:	0.875	0.914	.
(21) Credibility to Underlying Relativity:	0.390	0.340	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.845	0.858	.
(24) Balanced Formula Relativity:	0.847	0.862	0.852

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	209,784	1	31	76,567	288,003	15,202	151,568	531,339	1,738	0,795	2,533
2017	218,380	1	18	73,310	87,334	10,581	72,341	243,565	0,736	0,380	1,115
2018	228,390	3	23	348,040	145,865	99,141	76,470	669,517	2,163	0,769	2,931
2019	203,016	1	24	69,697	59,763	92,896	65,226	287,582	0,638	0,779	1,417
2020	218,421	0	18	0	233,514	0	61,438	294,953	1,069	0,281	1,350
MA Total:	1,077,991	6	114	567,614	814,480	217,820	427,043	2,026,956	1,282	0,598	1,880

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.423	1.481	.
(14) Massachusetts Credibility:	0.270	0.390	.
(15) Countrywide Pure Premium:	0.966	0.467	1.433
(16) Countrywide Indicated Relativity:	1.188	1.292	.
(17) Countrywide Credibility:	0.370	0.310	.
(18) Countrywide Lost-Time Claims:	367.00	.	.
(19) Pure Premium Underlying Present Rate:	1.093	0.500	1.593
(20) Relativity to Underlying Present Rate:	1.358	1.247	.
(21) Credibility to Underlying Relativity:	0.360	0.300	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.313	1.352	.
(24) Balanced Formula Relativity:	1.315	1.359	1.329

Class(es):		Effective: 7/1/2023							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)
2016	8,139	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	5,211	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	6,360	0	1	0	4,721	0	1,649	6,369	0,742	0,259	1,001
2019	5,026	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	4,263	0	1	0	41,827	0	40,696	82,523	9,812	9,547	19,359
MA Total:	29,000	0	2	0	46,548	0	42,345	88,893	1,605	1,460	3,065

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.782	3.615	.
(14) Massachusetts Credibility:	0.070	0.110	.
(15) Countrywide Pure Premium:	1.396	0.680	2.076
(16) Countrywide Indicated Relativity:	1.717	1.881	.
(17) Countrywide Credibility:	0.470	0.450	.
(18) Countrywide Lost-Time Claims:	401.00	.	.
(19) Pure Premium Underlying Present Rate:	1.418	0.794	2.211
(20) Relativity to Underlying Present Rate:	1.761	1.980	.
(21) Credibility to Underlying Relativity:	0.460	0.440	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.742	2.115	.
(24) Balanced Formula Relativity:	1.745	2.126	1.863

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	9.601	0	1	0	0	0	494	494	0.000	0.051	0.051
2017	7.162	0	1	0	0	0	333	333	0.000	0.046	0.046
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
MA Total:	16,966	0	2	0	0	0	827	827	0.000	0.049	0.049

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.121	.
(14) Massachusetts Credibility:	0.050	0.080	.
(15) Countrywide Pure Premium:	0.893	0.422	1.315
(16) Countrywide Indicated Relativity:	1.099	1.166	.
(17) Countrywide Credibility:	0.480	0.460	.
(18) Countrywide Lost-Time Claims:	326.00	.	.
(19) Pure Premium Underlying Present Rate:	1.063	0.616	1.678
(20) Relativity to Underlying Present Rate:	1.320	1.536	.
(21) Credibility to Underlying Relativity:	0.470	0.460	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.148	1.252	.
(24) Balanced Formula Relativity:	1.150	1.259	1.184

Class(es):		Effective: 7/1/2023							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)
2016	6.253	0	5	0	7.358	0	4.492	11.851	1.177	0.718	1.895
2017	5.763	0	3	0	8.133	0	4.184	12.317	1.411	0.726	2.137
2018	5.715	0	2	0	0	0	818	818	0.000	0.143	0.143
2019	2.251	0	1	0	56.580	0	17.534	74.114	25.137	7.790	32.927
2020	0	0	0	0	0	0	0	0	0.000	0.000	0.000
MA Total:	19,982	0	11	0	72,071	0	27,029	99,100	3.607	1.353	4.959

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.004	3.348	.
(14) Massachusetts Credibility:	0.060	0.090	.
(15) Countrywide Pure Premium:	1.239	0.578	1.817
(16) Countrywide Indicated Relativity:	1.525	1.599	.
(17) Countrywide Credibility:	0.470	0.460	.
(18) Countrywide Lost-Time Claims:	972.00	.	.
(19) Pure Premium Underlying Present Rate:	1.121	0.612	1.733
(20) Relativity to Underlying Present Rate:	1.392	1.527	.
(21) Credibility to Underlying Relativity:	0.470	0.450	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.611	1.724	.
(24) Balanced Formula Relativity:	1.614	1.732	1.651

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Calculation of Class Relativities

Class(es):									Effective: 7/1/2023			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)			
2016	125,621	1	21	134,202	33,128	177,119	94,451	438,899	1,332	2,162	3,494			
2017	120,391	1	20	14,096	370,416	24,157	125,818	534,486	3,194	1,246	4,440			
2018	132,412	1	19	236,506	107,596	146,289	91,773	582,164	2,599	1,798	4,397			
2019	125,221	2	21	223,177	442,234	59,237	90,291	814,940	5,314	1,194	6,508			
2020	127,544	0	25	0	134,861	0	53,052	187,914	1,057	0,416	1,473			
MA Total:	631,189	5	106	607,981	1,088,236	406,802	455,385	2,558,404	2,687	1,366	4,053			

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.983	3.381	.
(14) Massachusetts Credibility:	0.290	0.440	.
(15) Countrywide Pure Premium:	1.965	0.899	2.864
(16) Countrywide Indicated Relativity:	2.417	2.487	.
(17) Countrywide Credibility:	0.360	0.280	.
(18) Countrywide Lost-Time Claims:	2456.0	.	.
(19) Pure Premium Underlying Present Rate:	2.083	1.139	3.222
(20) Relativity to Underlying Present Rate:	2.588	2.843	.
(21) Credibility to Underlying Relativity:	0.350	0.280	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	2.641	2.980	.
(24) Balanced Formula Relativity:	2.646	2.995	2.754

Class(es):									Effective: 7/1/2023			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)			
2016	217,526	2	42	398,895	145,002	50,444	144,995	739,337	2,500	0,898	3,399			
2017	239,716	0	40	0	262,842	0	134,640	397,482	1,096	0,562	1,658			
2018	251,942	1	46	457,137	1,461,311	227,320	398,980	2,544,747	7,615	2,486	10,101			
2019	269,558	2	31	686,371	391,136	118,093	207,565	1,403,166	3,997	1,208	5,205			
2020	264,857	1	26	481,212	286,759	116,368	197,670	1,082,008	2,900	1,186	4,085			
MA Total:	1,243,599	6	185	2,023,615	2,547,050	512,225	1,083,851	6,166,740	3,675	1,283	4,959			

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.080	3.177	.
(14) Massachusetts Credibility:	0.410	0.530	.
(15) Countrywide Pure Premium:	2.043	0.891	2.934
(16) Countrywide Indicated Relativity:	2.513	2.465	.
(17) Countrywide Credibility:	0.300	0.240	.
(18) Countrywide Lost-Time Claims:	1551.0	.	.
(19) Pure Premium Underlying Present Rate:	2.608	0.932	3.540
(20) Relativity to Underlying Present Rate:	3.240	2.325	.
(21) Credibility to Underlying Relativity:	0.290	0.230	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	3.366	2.810	.
(24) Balanced Formula Relativity:	3.373	2.824	3.203

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	43,286	0	2	0	4,049	0	2,204	6,253	0.094	0.051	0.144
2017	50,813	0	6	0	776	0	4,711	5,487	0.015	0.093	0.108
2018	55,058	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	55,657	0	5	0	0	0	5,916	5,916	0.000	0.106	0.106
2020	58,403	1	6	3,492	0	6,737	10,651	20,880	0.060	0.298	0.358
MA Total:	263,217	1	19	3,492	4,824	6,737	23,482	38,536	0.032	0.115	0.146

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.035	0.284	.
(14) Massachusetts Credibility:	0.160	0.230	.
(15) Countrywide Pure Premium:	1.707	0.662	2.369
(16) Countrywide Indicated Relativity:	2.100	1.831	.
(17) Countrywide Credibility:	0.420	0.390	.
(18) Countrywide Lost-Time Claims:	140.00	.	.
(19) Pure Premium Underlying Present Rate:	1.233	0.525	1.758
(20) Relativity to Underlying Present Rate:	1.531	1.310	.
(21) Credibility to Underlying Relativity:	0.420	0.380	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.531	1.277	.
(24) Balanced Formula Relativity:	1.534	1.283	1.456

Class(es):		Effective: 7/1/2023							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)
2016	7,941	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	8,752	0	2	0	0	0	2,259	2,259	0.000	0.258	0.258
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
MA Total:	56,876	0	2	0	0	0	2,259	2,259	0.000	0.040	0.040

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.098	.
(14) Massachusetts Credibility:	0.100	0.150	.
(15) Countrywide Pure Premium:	1.514	0.560	2.073
(16) Countrywide Indicated Relativity:	1.862	1.548	.
(17) Countrywide Credibility:	0.450	0.430	.
(18) Countrywide Lost-Time Claims:	171.00	.	.
(19) Pure Premium Underlying Present Rate:	1.621	0.824	2.446
(20) Relativity to Underlying Present Rate:	2.014	2.057	.
(21) Credibility to Underlying Relativity:	0.450	0.420	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.744	1.544	.
(24) Balanced Formula Relativity:	1.748	1.552	1.687

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Calculation of Class Relativities

Class(es): 3066 SHEET METAL WORK - SHOP		Effective: 7/1/2023							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)
2016	942,065	2	136	428,369	634,256	130,720	405,652	1,598,997	1,128	0,569	1,697
2017	988,826	3	132	539,110	944,637	71,860	623,475	2,179,083	1,501	0,703	2,204
2018	1,034,565	4	111	337,987	625,740	205,191	320,601	1,489,519	0,932	0,508	1,440
2019	1,051,909	1	116	15,049	454,352	12,899	331,452	813,752	0,446	0,327	0,774
2020	1,105,550	0	119	0	1,003,047	0	823,918	1,826,965	0,907	0,745	1,653
MA Total:	5,122,915	10	614	1,320,516	3,662,033	420,669	2,505,098	7,908,315	0,973	0,571	1,544

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.080	1.414	.
(14) Massachusetts Credibility:	0.500	0.740	.
(15) Countrywide Pure Premium:	1.237	0.543	1.780
(16) Countrywide Indicated Relativity:	1.522	1.501	.
(17) Countrywide Credibility:	0.250	0.130	.
(18) Countrywide Lost-Time Claims:	893.00	.	.
(19) Pure Premium Underlying Present Rate:	1.019	0.511	1.529
(20) Relativity to Underlying Present Rate:	1.266	1.274	.
(21) Credibility to Underlying Relativity:	0.250	0.130	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.237	1.407	.
(24) Balanced Formula Relativity:	1.239	1.414	1.293

Class(es): 3076 FIREPROOF EQUIPMENT MFG		Effective: 7/1/2023							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)
2016	270,095	0	27	0	484,352	0	193,162	677,514	1,793	0,715	2,508
2017	290,946	2	31	60,815	14,829	10,295	33,187	119,126	0,260	0,149	0,409
2018	311,984	1	47	320,125	314,005	104,918	156,896	895,943	2,033	0,839	2,872
2019	278,458	1	35	89,210	1,194,518	14,691	290,460	1,588,879	4,610	1,096	5,706
2020	296,652	0	33	0	125,574	0	78,770	204,344	0,423	0,266	0,689
MA Total:	1,448,134	4	173	470,150	2,133,278	129,904	752,475	3,485,807	1,798	0,609	2,407

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.996	1.508	.
(14) Massachusetts Credibility:	0.290	0.430	.
(15) Countrywide Pure Premium:	1.261	0.598	1.858
(16) Countrywide Indicated Relativity:	1.551	1.653	.
(17) Countrywide Credibility:	0.360	0.290	.
(18) Countrywide Lost-Time Claims:	8186.0	.	.
(19) Pure Premium Underlying Present Rate:	0.962	0.469	1.431
(20) Relativity to Underlying Present Rate:	1.195	1.171	.
(21) Credibility to Underlying Relativity:	0.350	0.280	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.555	1.456	.
(24) Balanced Formula Relativity:	1.559	1.463	1.529

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Calculation of Class Relativities

Class(es): 3081 FOUNDRY-FERROUS-NOC		Effective: 7/1/2023							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)
2016	16,294	0	2	0	0	0	320	320	0.000	0.020	0.020
2017	19,902	1	4	12,716	1,110	19,193	2,757	35,775	0.695	1.103	1.798
2018	18,143	0	5	0	35,686	0	25,170	60,856	1.967	1.387	3.354
2019	18,284	0	5	0	25,970	0	19,562	45,532	1.420	1.070	2.490
2020	20,600	0	5	0	4,115	0	3,665	7,780	0.200	0.178	0.378
MA Total:	93,223	1	21	12,716	66,880	19,193	51,474	150,263	0.854	0.758	1.612

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.948	1.877	.
(14) Massachusetts Credibility:	0.130	0.200	.
(15) Countrywide Pure Premium:	1.829	0.761	2.590
(16) Countrywide Indicated Relativity:	2.250	2.105	.
(17) Countrywide Credibility:	0.440	0.400	.
(18) Countrywide Lost-Time Claims:	1713.0	.	.
(19) Pure Premium Underlying Present Rate:	2.002	1.121	3.124
(20) Relativity to Underlying Present Rate:	2.488	2.798	.
(21) Credibility to Underlying Relativity:	0.430	0.400	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	2.183	2.336	.
(24) Balanced Formula Relativity:	2.187	2.348	2.237

Class(es): 3085 FOUNDRY-NON FERROUS		Effective: 7/1/2023							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)
2016	109,493	0	18	0	13,844	0	33,830	47,674	0.126	0.309	0.435
2017	134,230	0	31	0	167,801	0	92,571	260,371	1.250	0.690	1.940
2018	120,913	0	33	0	520,433	0	339,968	860,401	4.304	2.812	7.116
2019	112,385	0	21	0	52,702	0	50,466	103,168	0.469	0.449	0.918
2020	73,306	1	12	125,426	8,760	18,520	20,438	173,145	1.830	0.531	2.362
MA Total:	550,327	1	115	125,426	763,540	18,520	537,272	1,444,759	1.615	1.010	2.625

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.793	2.500	.
(14) Massachusetts Credibility:	0.270	0.400	.
(15) Countrywide Pure Premium:	1.762	0.837	2.599
(16) Countrywide Indicated Relativity:	2.168	2.314	.
(17) Countrywide Credibility:	0.370	0.300	.
(18) Countrywide Lost-Time Claims:	896.00	.	.
(19) Pure Premium Underlying Present Rate:	1.982	1.056	3.037
(20) Relativity to Underlying Present Rate:	2.462	2.634	.
(21) Credibility to Underlying Relativity:	0.360	0.300	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	2.173	2.484	.
(24) Balanced Formula Relativity:	2.177	2.497	2.276

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	20.193	1	12	143.783	168.506	38.071	73.604	423.964	15.465	5.530	20.996
2017	17.397	0	9	0	96.838	0	36.328	133.167	5.566	2.088	7.655
2018	15.634	1	3	203.995	1.501	26.593	3.037	235.126	13.145	1.895	15.040
2019	12.321	0	1	0	0	0	992	992	0.000	0.080	0.080
2020	30.704	0	10	0	18.995	0	7.484	26.479	0.619	0.244	0.862
MA Total:	96.248	2	35	347.778	285.841	64.664	121.445	819.728	6.583	1.934	8.517

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	7.308	4.787	.
(14) Massachusetts Credibility:	0.180	0.240	.
(15) Countrywide Pure Premium:	1.356	0.692	2.047
(16) Countrywide Indicated Relativity:	1.668	1.913	.
(17) Countrywide Credibility:	0.410	0.380	.
(18) Countrywide Lost-Time Claims:	329.00	.	.
(19) Pure Premium Underlying Present Rate:	4.030	1.673	5.703
(20) Relativity to Underlying Present Rate:	5.007	4.173	.
(21) Credibility to Underlying Relativity:	0.410	0.380	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	4.052	3.461	.
(24) Balanced Formula Relativity:	4.060	3.479	3.880

Class(es):		Effective: 7/1/2023							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)
2016	79.120	0	7	0	6.109	0	21.546	27.655	0.077	0.272	0.350
2017	81.346	0	7	0	95.708	0	30.590	126.298	1.177	0.376	1.553
2018	130.223	0	16	0	248.247	0	126.425	374.672	1.906	0.971	2.877
2019	131.179	0	10	0	219.997	0	77.986	297.983	1.677	0.594	2.272
2020	138.196	0	13	0	388.401	0	138.907	527.308	2.810	1.005	3.816
MA Total:	560.064	0	53	0	958.462	0	395.454	1,353.916	1.711	0.706	2.417

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.900	1.748	.
(14) Massachusetts Credibility:	0.200	0.280	.
(15) Countrywide Pure Premium:	0.872	0.407	1.279
(16) Countrywide Indicated Relativity:	1.072	1.126	.
(17) Countrywide Credibility:	0.400	0.360	.
(18) Countrywide Lost-Time Claims:	201.00	.	.
(19) Pure Premium Underlying Present Rate:	0.936	0.415	1.351
(20) Relativity to Underlying Present Rate:	1.162	1.035	.
(21) Credibility to Underlying Relativity:	0.400	0.360	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.274	1.267	.
(24) Balanced Formula Relativity:	1.276	1.274	1.276

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	805.080	1	87	76.829	395.414	17.438	244.941	734.622	0.587	0.326	0.912
2017	751.772	2	65	177.451	617.598	70.468	278.875	1,144.392	1.058	0.465	1.522
2018	754.877	2	66	178.361	429.240	142.923	204.406	954.930	0.805	0.460	1.265
2019	698.509	0	46	0	754.937	0	181.908	936.845	1.081	0.260	1.341
2020	728.801	2	34	360.887	129.965	96.512	86.704	674.067	0.674	0.251	0.925
MA Total:	3,739,038	7	298	793,528	2,327,154	327,340	996,834	4,444,856	0.835	0.354	1.189

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.927	0.877	.
(14) Massachusetts Credibility:	0.380	0.580	.
(15) Countrywide Pure Premium:	0.811	0.367	1.177
(16) Countrywide Indicated Relativity:	0.997	1.015	.
(17) Countrywide Credibility:	0.310	0.210	.
(18) Countrywide Lost-Time Claims:	1420.0	.	.
(19) Pure Premium Underlying Present Rate:	0.727	0.379	1.107
(20) Relativity to Underlying Present Rate:	0.904	0.946	.
(21) Credibility to Underlying Relativity:	0.310	0.210	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.941	0.920	.
(24) Balanced Formula Relativity:	0.943	0.925	0.938

Class(es):		Effective: 7/1/2023							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)
2016	41.619	1	9	74.411	294	9.150	4.957	88.812	1.795	0.339	2.134
2017	30.261	0	9	0	875	0	5.791	6.666	0.029	0.191	0.220
2018	51.565	0	12	0	9.183	0	12.961	22.144	0.178	0.251	0.429
2019	45.136	0	9	0	109.212	0	88.873	198.085	2.420	1.969	4.389
2020	41.490	0	10	0	27.122	0	15.869	42.992	0.654	0.382	1.036
MA Total:	210,071	1	49	74.411	146,687	9.150	128,451	358,699	1.052	0.655	1.708

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.168	1.621	.
(14) Massachusetts Credibility:	0.150	0.220	.
(15) Countrywide Pure Premium:	0.976	0.547	1.523
(16) Countrywide Indicated Relativity:	1.201	1.513	.
(17) Countrywide Credibility:	0.430	0.390	.
(18) Countrywide Lost-Time Claims:	244.00	.	.
(19) Pure Premium Underlying Present Rate:	1.272	0.587	1.859
(20) Relativity to Underlying Present Rate:	1.580	1.464	.
(21) Credibility to Underlying Relativity:	0.420	0.390	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.355	1.518	.
(24) Balanced Formula Relativity:	1.358	1.525	1.410

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Calculation of Class Relativities

Class(es): 3118 SAW MFG		Effective: 7/1/2023							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)
2016	261.973	0	17	0	56.671	0	49.742	106.413	0.216	0.190	0.406
2017	90.032	0	9	0	65.450	0	102.537	167.987	0.727	1.139	1.866
2018	68.594	0	3	0	10.531	0	3.991	14.522	0.154	0.058	0.212
2019	54.871	0	3	0	1.480	0	2.996	4.476	0.027	0.055	0.082
2020	51.015	0	3	0	9.682	0	2.138	11.821	0.190	0.042	0.232
MA Total:	526.486	0	35	0	143.814	0	161.405	305.219	0.273	0.307	0.580

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.303	0.759	.
(14) Massachusetts Credibility:	0.170	0.250	.
(15) Countrywide Pure Premium:	0.594	0.257	0.851
(16) Countrywide Indicated Relativity:	0.730	0.712	.
(17) Countrywide Credibility:	0.360	0.380	.
(18) Countrywide Lost-Time Claims:	88.000	.	.
(19) Pure Premium Underlying Present Rate:	0.713	0.328	1.042
(20) Relativity to Underlying Present Rate:	0.886	0.819	.
(21) Credibility to Underlying Relativity:	0.470	0.370	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.731	0.763	.
(24) Balanced Formula Relativity:	0.732	0.767	0.743

Class(es): 3119 NEEDLE MFG		Effective: 7/1/2023							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)
2016	57.898	0	6	0	50.293	0	38.979	89.272	0.869	0.673	1.542
2017	58.683	0	2	0	0	0	5.780	5.780	0.000	0.098	0.098
2018	65.473	1	4	98.987	6.280	18.350	9.340	132.956	1.608	0.423	2.031
2019	69.288	0	1	0	0	0	1.205	1.205	0.000	0.017	0.017
2020	60.008	0	2	0	32.835	0	15.436	48.270	0.547	0.257	0.804
MA Total:	311.350	1	15	98.987	89.408	18.350	70.740	277.484	0.605	0.286	0.891

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.672	0.708	.
(14) Massachusetts Credibility:	0.120	0.180	.
(15) Countrywide Pure Premium:	0.134	0.088	0.222
(16) Countrywide Indicated Relativity:	0.165	0.243	.
(17) Countrywide Credibility:	0.140	0.150	.
(18) Countrywide Lost-Time Claims:	9.000	.	.
(19) Pure Premium Underlying Present Rate:	0.447	0.237	0.684
(20) Relativity to Underlying Present Rate:	0.556	0.591	.
(21) Credibility to Underlying Relativity:	0.740	0.670	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.515	0.560	.
(24) Balanced Formula Relativity:	0.516	0.563	0.530

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Calculation of Class Relativities

Class(es): 3120 RAZOR MFG-SAFETY		Effective: 7/1/2023							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)
2016	53,954	1	1	29,949	2,321	3,062	523	35,855	0.598	0.066	0.665
2017	60,462	1	4	11,567	37,563	4,592	13,348	67,070	0.813	0.297	1.109
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
MA Total:	148,171	2	5	41,516	39,884	7,653	13,871	102,924	0.549	0.145	0.695

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.610	0.360	.
(14) Massachusetts Credibility:	0.100	0.130	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	0.711	0.560	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.579	0.227	0.806
(20) Relativity to Underlying Present Rate:	0.719	0.566	.
(21) Credibility to Underlying Relativity:	0.900	0.870	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.708	0.539	.
(24) Balanced Formula Relativity:	0.710	0.542	0.658

Class(es): 3122 CUTLERY MFG-NOC		Effective: 7/1/2023							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)
2016	126,037	0	46	0	307,686	0	97,144	404,830	2.441	0.771	3.212
2017	127,683	0	39	0	11,435	0	29,211	40,645	0.090	0.229	0.318
2018	119,055	1	37	101,235	17,155	4,484	28,663	151,538	0.994	0.278	1.273
2019	126,791	0	31	0	359,446	0	96,285	455,731	2.835	0.759	3.594
2020	121,937	0	15	0	4,122	0	30,151	34,273	0.034	0.247	0.281
MA Total:	621,503	1	168	101,235	699,843	4,484	281,454	1,087,017	1.289	0.460	1.749

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.431	1.139	.
(14) Massachusetts Credibility:	0.210	0.320	.
(15) Countrywide Pure Premium:	0.820	0.323	1.144
(16) Countrywide Indicated Relativity:	1.009	0.894	.
(17) Countrywide Credibility:	0.360	0.340	.
(18) Countrywide Lost-Time Claims:	90.000	.	.
(19) Pure Premium Underlying Present Rate:	0.965	0.504	1.469
(20) Relativity to Underlying Present Rate:	1.198	1.257	.
(21) Credibility to Underlying Relativity:	0.430	0.340	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.179	1.096	.
(24) Balanced Formula Relativity:	1.181	1.101	1.157

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	1,749	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	12,816	0	0	0	0	0	0	0	0.000	0.000	0.000

	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:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	1.253	1.162	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	1.020	0.471	1.491
(20) Relativity to Underlying Present Rate:	1.267	1.175	.
(21) Credibility to Underlying Relativity:	0.950	0.930	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.203	1.093	.
(24) Balanced Formula Relativity:	1.206	1.098	1.172

Class(es):		Effective: 7/1/2023							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)
2016	8,520	0	1	0	0	0	175	175	0.000	0.021	0.021
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	3,467	0	4,384	7,851	0.328	0.414	0.742
2020	7,381	0	0	0	0	0	0	0	0.000	0.000	0.000
MA Total:	44,278	0	3	0	3,467	0	4,559	8,026	0.078	0.103	0.181

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.087	0.255	.
(14) Massachusetts Credibility:	0.060	0.090	.
(15) Countrywide Pure Premium:	0.685	0.384	1.069
(16) Countrywide Indicated Relativity:	0.843	1.062	.
(17) Countrywide Credibility:	0.470	0.460	.
(18) Countrywide Lost-Time Claims:	228.00	.	.
(19) Pure Premium Underlying Present Rate:	0.507	0.321	0.828
(20) Relativity to Underlying Present Rate:	0.630	0.800	.
(21) Credibility to Underlying Relativity:	0.470	0.450	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.698	0.871	.
(24) Balanced Formula Relativity:	0.699	0.876	0.754

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Calculation of Class Relativities

Class(es): 3132 NUT OR BOLT MFG		Effective: 7/1/2023							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)
2016	15,158	0	2	0	0	0	1,958	1,958	0.000	0.129	0.129
2017	15,421	0	1	0	0	0	761	761	0.000	0.049	0.049
2018	28,384	0	7	0	11,600	0	14,727	26,327	0.409	0.519	0.928
2019	16,483	0	2	0	12,940	0	2,258	15,198	0.785	0.137	0.922
2020	20,652	0	4	0	1,505	0	4,538	6,042	0.073	0.220	0.293
MA Total:	96,099	0	16	0	26,045	0	24,242	50,287	0.271	0.252	0.523

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.301	0.624	.
(14) Massachusetts Credibility:	0.100	0.160	.
(15) Countrywide Pure Premium:	0.947	0.437	1.384
(16) Countrywide Indicated Relativity:	1.165	1.209	.
(17) Countrywide Credibility:	0.450	0.420	.
(18) Countrywide Lost-Time Claims:	270.00	.	.
(19) Pure Premium Underlying Present Rate:	0.957	0.562	1.519
(20) Relativity to Underlying Present Rate:	1.189	1.402	.
(21) Credibility to Underlying Relativity:	0.450	0.420	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.090	1.197	.
(24) Balanced Formula Relativity:	1.092	1.203	1.126

Class(es): 3145 SCREW MFG		Effective: 7/1/2023							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)
2016	205,318	1	18	163,818	32,308	20,631	50,979	267,736	0.955	0.349	1.304
2017	344,237	0	15	0	373,182	0	70,525	443,707	1.084	0.205	1.289
2018	221,442	0	12	0	2,348	0	10,864	13,212	0.011	0.049	0.060
2019	422,538	0	26	0	109,325	0	34,414	143,739	0.259	0.081	0.340
2020	388,111	0	21	0	93,919	0	76,917	170,837	0.242	0.198	0.440
MA Total:	1,581,646	1	92	163,818	611,081	20,631	243,699	1,039,230	0.490	0.167	0.657

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.544	0.414	.
(14) Massachusetts Credibility:	0.270	0.400	.
(15) Countrywide Pure Premium:	0.704	0.358	1.062
(16) Countrywide Indicated Relativity:	0.866	0.991	.
(17) Countrywide Credibility:	0.370	0.300	.
(18) Countrywide Lost-Time Claims:	494.00	.	.
(19) Pure Premium Underlying Present Rate:	0.694	0.354	1.047
(20) Relativity to Underlying Present Rate:	0.862	0.883	.
(21) Credibility to Underlying Relativity:	0.360	0.300	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.777	0.727	.
(24) Balanced Formula Relativity:	0.779	0.731	0.764

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Calculation of Class Relativities

Class(es): 3146 HARDWARE MFG-NOC		Effective: 7/1/2023							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)
2016	89,198	1	11	52,156	648	40,960	8,307	102,072	0.592	0.552	1.144
2017	91,785	0	17	0	10,174	0	20,326	30,500	0.111	0.221	0.332
2018	91,813	0	14	0	17,142	0	14,232	31,374	0.187	0.155	0.342
2019	203,094	2	14	408,068	25,708	59,276	28,156	521,208	2.136	0.431	2.566
2020	99,886	0	14	0	29,613	0	33,522	63,135	0.296	0.336	0.632
MA Total:	575,777	3	70	460,225	83,286	100,236	104,543	748,290	0.944	0.356	1.300

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.048	0.880	.
(14) Massachusetts Credibility:	0.200	0.300	.
(15) Countrywide Pure Premium:	0.845	0.429	1.274
(16) Countrywide Indicated Relativity:	1.040	1.186	.
(17) Countrywide Credibility:	0.400	0.350	.
(18) Countrywide Lost-Time Claims:	1326.0	.	.
(19) Pure Premium Underlying Present Rate:	0.884	0.493	1.377
(20) Relativity to Underlying Present Rate:	1.098	1.230	.
(21) Credibility to Underlying Relativity:	0.400	0.350	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.065	1.109	.
(24) Balanced Formula Relativity:	1.067	1.115	1.082

Class(es): 3169 STOVE MFG		Effective: 7/1/2023							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)
2016	420,303	1	51	148,125	271,968	63,010	286,392	769,495	0.999	0.831	1.831
2017	451,102	0	60	0	116,688	0	137,055	253,744	0.259	0.304	0.562
2018	503,174	0	62	0	306,362	0	136,701	443,063	0.609	0.272	0.881
2019	462,404	0	61	0	241,749	0	256,965	498,715	0.523	0.556	1.079
2020	517,389	0	55	0	478,188	0	374,311	852,498	0.924	0.723	1.648
MA Total:	2,354,372	1	289	148,125	1,414,955	63,010	1,191,424	2,817,515	0.664	0.533	1.197

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.737	1.319	.
(14) Massachusetts Credibility:	0.360	0.620	.
(15) Countrywide Pure Premium:	1.127	0.541	1.669
(16) Countrywide Indicated Relativity:	1.387	1.497	.
(17) Countrywide Credibility:	0.320	0.190	.
(18) Countrywide Lost-Time Claims:	6292.0	.	.
(19) Pure Premium Underlying Present Rate:	0.979	0.710	1.689
(20) Relativity to Underlying Present Rate:	1.217	1.771	.
(21) Credibility to Underlying Relativity:	0.320	0.190	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.099	1.439	.
(24) Balanced Formula Relativity:	1.101	1.446	1.208

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	1,330,715	1	83	23,720	489,705	36,867	280,524	830,816	0.386	0.239	0.624
2017	1,545,662	1	92	7,177	881,753	23,173	284,565	1,196,667	0.575	0.199	0.774
2018	1,804,470	4	78	307,822	284,221	107,466	183,653	883,162	0.328	0.161	0.489
2019	1,891,213	0	68	0	606,536	0	418,152	1,024,688	0.321	0.221	0.542
2020	1,976,784	1	57	67,096	318,957	2,742	291,786	680,580	0.195	0.149	0.344
MA Total:	8,548,844	7	378	405,814	2,581,172	170,247	1,458,680	4,615,913	0.349	0.191	0.540

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.388	0.472	.
(14) Massachusetts Credibility:	0.460	0.640	.
(15) Countrywide Pure Premium:	0.794	0.340	1.133
(16) Countrywide Indicated Relativity:	0.976	0.939	.
(17) Countrywide Credibility:	0.270	0.180	.
(18) Countrywide Lost-Time Claims:	3795.0	.	.
(19) Pure Premium Underlying Present Rate:	0.501	0.217	0.718
(20) Relativity to Underlying Present Rate:	0.622	0.543	.
(21) Credibility to Underlying Relativity:	0.270	0.180	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.610	0.569	.
(24) Balanced Formula Relativity:	0.611	0.571	0.599

Class(es):		Effective: 7/1/2023							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)
2016	124,574	1	19	28,417	4,111	6,417	11,727	50,672	0.261	0.146	0.407
2017	130,353	0	25	0	167,659	0	63,069	230,728	1.286	0.484	1.770
2018	121,517	1	17	83,162	285,800	112,190	31,005	512,157	3.036	1.178	4.215
2019	125,675	1	21	5,059	113,089	4,305	56,933	179,387	0.940	0.487	1.427
2020	121,285	1	8	69,490	746	13,277	8,079	91,593	0.579	0.176	0.755
MA Total:	623,404	4	90	186,128	571,406	136,189	170,814	1,064,537	1.215	0.492	1.708

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.349	1.219	.
(14) Massachusetts Credibility:	0.220	0.310	.
(15) Countrywide Pure Premium:	0.978	0.470	1.448
(16) Countrywide Indicated Relativity:	1.203	1.301	.
(17) Countrywide Credibility:	0.390	0.350	.
(18) Countrywide Lost-Time Claims:	322.00	.	.
(19) Pure Premium Underlying Present Rate:	1.126	0.474	1.599
(20) Relativity to Underlying Present Rate:	1.398	1.182	.
(21) Credibility to Underlying Relativity:	0.390	0.340	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.311	1.235	.
(24) Balanced Formula Relativity:	1.314	1.241	1.291

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Manufacturing		
3188 PLUMBERS SUPPLIES 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)
2016	22.318	0	5	0	0	0	3.023	3.023	0.000	0.135	0.135
2017	21.811	0	4	0	6.671	0	11.084	17.756	0.306	0.508	0.814
2018	26.987	0	1	0	0	0	491	491	0.000	0.018	0.018
2019	23.689	0	5	0	50.697	0	28.943	79.640	2.140	1.222	3.362
2020	7.552	0	0	0	0	0	0	0	0.000	0.000	0.000
MA Total:	102.357	0	15	0	57.369	0	43.541	100.910	0.560	0.425	0.986

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.622	1.053	.
(14) Massachusetts Credibility:	0.110	0.150	.
(15) Countrywide Pure Premium:	0.839	0.386	1.225
(16) Countrywide Indicated Relativity:	1.033	1.066	.
(17) Countrywide Credibility:	0.450	0.430	.
(18) Countrywide Lost-Time Claims:	367.00	.	.
(19) Pure Premium Underlying Present Rate:	1.054	0.495	1.549
(20) Relativity to Underlying Present Rate:	1.310	1.235	.
(21) Credibility to Underlying Relativity:	0.440	0.420	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.109	1.135	.
(24) Balanced Formula Relativity:	1.112	1.141	1.121

Class(es):		Effective: 7/1/2023							Manufacturing		
3200 ARMS MFG-SMALL											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2016	106.226	0	9	0	99.802	0	108.364	208.166	0.940	1.020	1.960
2017	58.551	0	7	0	151.489	0	31.121	182.610	2.587	0.532	3.119
2018	20.249	0	6	0	8.900	0	23.688	32.587	0.440	1.170	1.609
2019	191.041	1	16	141.641	44.045	30.366	39.378	255.430	0.972	0.365	1.337
2020	258.109	1	26	272.188	186.683	53.226	100.031	612.127	1.778	0.594	2.372
MA Total:	634.176	2	64	413.829	490.919	83.592	302.581	1,290.921	1.427	0.609	2.036

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.584	1.507	.
(14) Massachusetts Credibility:	0.210	0.310	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	1.139	1.171	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.927	0.474	1.401
(20) Relativity to Underlying Present Rate:	1.151	1.184	.
(21) Credibility to Underlying Relativity:	0.790	0.690	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.242	1.284	.
(24) Balanced Formula Relativity:	1.245	1.290	1.259

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Calculation of Class Relativities

Class(es): 3220 CAN MFG		Effective: 7/1/2023							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)
2016	66,719	0	8	0	11,216	0	18,220	29,436	0.168	0.273	0.441
2017	101,274	0	6	0	146,711	0	35,720	182,431	1.449	0.353	1.801
2018	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	39,299	0	3	0	26,648	0	25,215	51,863	0.678	0.642	1.320
2020	183	0	0	0	0	0	0	0	0.000	0.000	0.000
MA Total:	207,476	0	17	0	184,575	0	79,154	263,729	0.890	0.382	1.271

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.988	0.944	.
(14) Massachusetts Credibility:	0.150	0.220	.
(15) Countrywide Pure Premium:	0.796	0.299	1.095
(16) Countrywide Indicated Relativity:	0.979	0.828	.
(17) Countrywide Credibility:	0.430	0.390	.
(18) Countrywide Lost-Time Claims:	268.00	.	.
(19) Pure Premium Underlying Present Rate:	1.245	0.640	1.884
(20) Relativity to Underlying Present Rate:	1.546	1.596	.
(21) Credibility to Underlying Relativity:	0.420	0.390	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.218	1.153	.
(24) Balanced Formula Relativity:	1.221	1.159	1.202

Class(es): 3255 WIRE CLOTH MFG		Effective: 7/1/2023							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)
2016	968	0	0	0	0	0	0	0	0.000	0.000	0.000
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	631	631	0.000	0.379	0.379
MA Total:	6,138	0	2	0	0	0	631	631	0.000	0.103	0.103

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.254	.
(14) Massachusetts Credibility:	0.030	0.050	.
(15) Countrywide Pure Premium:	1.133	0.547	1.680
(16) Countrywide Indicated Relativity:	1.393	1.513	.
(17) Countrywide Credibility:	0.250	0.270	.
(18) Countrywide Lost-Time Claims:	37.000	.	.
(19) Pure Premium Underlying Present Rate:	0.823	0.413	1.236
(20) Relativity to Underlying Present Rate:	1.022	1.030	.
(21) Credibility to Underlying Relativity:	0.720	0.680	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.084	1.122	.
(24) Balanced Formula Relativity:	1.086	1.127	1.099

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Calculation of Class Relativities

Class(es): 3257 WIRE GOODS MFG - NOC		Effective: 7/1/2023							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)
2016	239,664	2	48	405,030	14,420	95,794	30,837	546,081	1,750	0,528	2,279
2017	251,847	0	62	0	105,772	0	75,423	181,195	0,420	0,299	0,719
2018	264,351	0	29	0	226,004	0	271,586	497,589	0,855	1,027	1,882
2019	226,741	1	27	85,362	112,214	146,196	189,680	533,453	0,871	1,481	2,353
2020	254,474	3	19	462,184	95,072	98,561	36,859	692,676	2,190	0,532	2,722
MA Total:	1,237,077	6	185	952,576	553,483	340,552	604,385	2,450,995	1,217	0,764	1,981

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.351	1.891	.
(14) Massachusetts Credibility:	0.280	0.450	.
(15) Countrywide Pure Premium:	0.942	0.436	1.378
(16) Countrywide Indicated Relativity:	1.158	1.206	.
(17) Countrywide Credibility:	0.360	0.280	.
(18) Countrywide Lost-Time Claims:	813.00	.	.
(19) Pure Premium Underlying Present Rate:	0.972	0.603	1.575
(20) Relativity to Underlying Present Rate:	1.208	1.504	.
(21) Credibility to Underlying Relativity:	0.360	0.270	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.230	1.595	.
(24) Balanced Formula Relativity:	1.233	1.603	1.347

Class(es): 3270 EYELET MFG		Effective: 7/1/2023							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)
2016	6,087	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	33,240	0	0	0	0	0	0	0	0.000	0.000	0.000

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.060	0.100	.
(15) Countrywide Pure Premium:	0.645	0.378	1.023
(16) Countrywide Indicated Relativity:	0.794	1.045	.
(17) Countrywide Credibility:	0.370	0.390	.
(18) Countrywide Lost-Time Claims:	95.000	.	.
(19) Pure Premium Underlying Present Rate:	0.939	0.478	1.417
(20) Relativity to Underlying Present Rate:	1.166	1.194	.
(21) Credibility to Underlying Relativity:	0.570	0.510	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.958	1.016	.
(24) Balanced Formula Relativity:	0.960	1.022	0.979

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	4.863	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	6.708	0	0	0	0	0	0	0	0.000	0.000	0.000

	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:	1.671	1.024	2.695
(16) Countrywide Indicated Relativity:	2.056	2.832	.
(17) Countrywide Credibility:	0.480	0.470	.
(18) Countrywide Lost-Time Claims:	422.00	.	.
(19) Pure Premium Underlying Present Rate:	1.175	0.873	2.049
(20) Relativity to Underlying Present Rate:	1.460	2.179	.
(21) Credibility to Underlying Relativity:	0.480	0.470	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.688	2.355	.
(24) Balanced Formula Relativity:	1.691	2.367	1.900

Class(es):		Effective: 7/1/2023							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)
2016	197.543	0	38	0	274.866	0	209.312	484.178	1.391	1.060	2.451
2017	217.137	0	35	0	479.046	0	188.594	667.640	2.206	0.869	3.075
2018	207.391	0	24	0	205.386	0	104.180	309.566	0.990	0.502	1.493
2019	232.967	1	34	72.346	266.837	94.936	119.437	553.556	1.456	0.920	2.376
2020	172.442	1	15	46.640	80.920	16.123	71.480	215.163	0.740	0.508	1.248
MA Total:	1,027.480	2	146	118.986	1,307.054	111.060	693.003	2,230.103	1.388	0.783	2.170

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.541	1.937	.
(14) Massachusetts Credibility:	0.290	0.420	.
(15) Countrywide Pure Premium:	1.310	0.532	1.841
(16) Countrywide Indicated Relativity:	1.611	1.470	.
(17) Countrywide Credibility:	0.360	0.290	.
(18) Countrywide Lost-Time Claims:	162.00	.	.
(19) Pure Premium Underlying Present Rate:	1.311	0.607	1.917
(20) Relativity to Underlying Present Rate:	1.629	1.513	.
(21) Credibility to Underlying Relativity:	0.350	0.290	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.597	1.679	.
(24) Balanced Formula Relativity:	1.600	1.687	1.627

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Calculation of Class Relativities

Class(es): 3336 TYPE FOUNDRY		Effective: 7/1/2023							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)
2016	4,317	0	4	0	656	0	1,766	2,423	0.152	0.409	0.561
2017	4,022	0	1	0	0	0	179	179	0.000	0.045	0.045
2018	6,990	0	5	0	18,621	0	5,968	24,589	2.664	0.854	3.517
2019	7,981	0	2	0	0	0	1,039	1,039	0.000	0.130	0.130
2020	3,836	0	0	0	0	0	0	0	0.000	0.000	0.000
MA Total:	27,146	0	12	0	19,277	0	8,952	28,230	0.710	0.330	1.040

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.788	0.816	.
(14) Massachusetts Credibility:	0.070	0.090	.
(15) Countrywide Pure Premium:	0.995	0.415	1.410
(16) Countrywide Indicated Relativity:	1.224	1.149	.
(17) Countrywide Credibility:	0.470	0.460	.
(18) Countrywide Lost-Time Claims:	311.00	.	.
(19) Pure Premium Underlying Present Rate:	1.251	0.504	1.755
(20) Relativity to Underlying Present Rate:	1.554	1.258	.
(21) Credibility to Underlying Relativity:	0.460	0.450	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.345	1.168	.
(24) Balanced Formula Relativity:	1.348	1.174	1.294

Class(es): 3365 WELDING OR CUTTING - NOC & DRIVERS		Effective: 7/1/2023							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)
2016	157,538	0	28	0	136,541	0	146,753	283,294	0.867	0.932	1.798
2017	162,505	0	19	0	325,393	0	173,010	498,403	2.002	1.065	3.067
2018	140,987	1	19	20,604	269,708	36,844	439,689	766,845	2.059	3.380	5.439
2019	125,193	0	9	0	181,730	0	60,479	242,209	1.452	0.483	1.935
2020	139,442	0	13	0	265,226	0	87,282	352,508	1.902	0.626	2.528
MA Total:	725,664	1	88	20,604	1,178,598	36,844	907,213	2,143,259	1.653	1.301	2.954

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.705	1.354	.
(14) Massachusetts Credibility:	0.290	0.470	.
(15) Countrywide Pure Premium:	2.221	0.828	3.049
(16) Countrywide Indicated Relativity:	0.955	0.870	.
(17) Countrywide Credibility:	0.360	0.270	.
(18) Countrywide Lost-Time Claims:	872.00	.	.
(19) Pure Premium Underlying Present Rate:	1.919	1.144	3.063
(20) Relativity to Underlying Present Rate:	0.886	1.204	.
(21) Credibility to Underlying Relativity:	0.350	0.260	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.858	1.184	.
(24) Balanced Formula Relativity:	0.868	1.186	0.961

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Calculation of Class Relativities

Class(es): 3372 ELECTROPLATING		Effective: 7/1/2023							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)
2016	570.001	1	49	31.495	539.230	2.333	227.657	800.715	1.001	0.403	1.405
2017	586.890	2	54	171.608	152.627	137.707	132.721	594.663	0.552	0.461	1.013
2018	608.214	6	70	748.259	410.467	175.147	271.361	1,605.235	1.905	0.734	2.639
2019	689.402	1	76	245.562	773.808	113.624	310.854	1,443.849	1.479	0.616	2.094
2020	555.389	0	33	0	52.563	0	40.084	92.648	0.095	0.072	0.167
MA Total:	3,009.897	10	282	1,196.924	1,928.697	428.812	982.678	4,537.110	1.038	0.469	1.507

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.153	1.161	.
(14) Massachusetts Credibility:	0.380	0.570	.
(15) Countrywide Pure Premium:	1.153	0.507	1.660
(16) Countrywide Indicated Relativity:	1.419	1.403	.
(17) Countrywide Credibility:	0.310	0.220	.
(18) Countrywide Lost-Time Claims:	946.00	.	.
(19) Pure Premium Underlying Present Rate:	0.906	0.451	1.357
(20) Relativity to Underlying Present Rate:	1.125	1.126	.
(21) Credibility to Underlying Relativity:	0.310	0.210	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.227	1.207	.
(24) Balanced Formula Relativity:	1.229	1.213	1.224

Class(es): 3373 GALVANIZING OR TINNING - NOT ELECTROLYTIC		Effective: 7/1/2023							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)
2016	8.421	0	0	0	0	0	0	0	0.000	0.000	0.000
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	1.357	1.357	0.000	0.085	0.085
2020	11.198	0	0	0	0	0	0	0	0.000	0.000	0.000
MA Total:	52.788	0	1	0	0	0	1.357	1.357	0.000	0.026	0.026

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.064	.
(14) Massachusetts Credibility:	0.100	0.130	.
(15) Countrywide Pure Premium:	2.173	0.861	3.034
(16) Countrywide Indicated Relativity:	2.673	2.382	.
(17) Countrywide Credibility:	0.450	0.440	.
(18) Countrywide Lost-Time Claims:	229.00	.	.
(19) Pure Premium Underlying Present Rate:	1.714	0.658	2.371
(20) Relativity to Underlying Present Rate:	2.129	1.641	.
(21) Credibility to Underlying Relativity:	0.450	0.430	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	2.161	1.762	.
(24) Balanced Formula Relativity:	2.165	1.771	2.043

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Calculation of Class Relativities

Class(es): 3381 SILVERWARE MFG		Effective: 7/1/2023							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)
2016	7.946	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	7.161	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	7.276	0	1	0	0	0	126	126	0.000	0.017	0.017
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
MA Total:	34.761	0	1	0	0	0	126	126	0.000	0.004	0.004

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.009	.
(14) Massachusetts Credibility:	0.060	0.090	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	1.020	0.941	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.830	0.382	1.212
(20) Relativity to Underlying Present Rate:	1.031	0.952	.
(21) Credibility to Underlying Relativity:	0.940	0.910	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.969	0.867	.
(24) Balanced Formula Relativity:	0.971	0.872	0.940

Class(es): 3383 JEWELRY MFG		Effective: 7/1/2023							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)
2016	572.785	1	53	29.696	487.015	10.030	226.012	752.753	0.902	0.412	1.314
2017	521.522	0	40	0	168.999	0	92.484	261.484	0.324	0.177	0.501
2018	629.724	1	36	38.021	386.817	27.109	161.388	613.335	0.675	0.299	0.974
2019	516.372	0	41	0	129.139	0	108.873	238.012	0.250	0.211	0.461
2020	646.216	0	47	0	510.882	0	244.038	754.920	0.791	0.378	1.168
MA Total:	2.886.619	2	217	67.717	1,682.853	37.139	832.795	2,620.503	0.606	0.301	0.908

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.673	0.746	.
(14) Massachusetts Credibility:	0.330	0.500	.
(15) Countrywide Pure Premium:	0.537	0.276	0.814
(16) Countrywide Indicated Relativity:	0.661	0.764	.
(17) Countrywide Credibility:	0.340	0.250	.
(18) Countrywide Lost-Time Claims:	235.00	.	.
(19) Pure Premium Underlying Present Rate:	0.653	0.341	0.994
(20) Relativity to Underlying Present Rate:	0.811	0.850	.
(21) Credibility to Underlying Relativity:	0.330	0.250	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.715	0.777	.
(24) Balanced Formula Relativity:	0.716	0.780	0.736

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Calculation of Class Relativities

Class(es): 3385 WATCH MFG		Effective: 7/1/2023							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)
2016	24.624	0	2	0	0	0	1.622	1.622	0.000	0.066	0.066
2017	24.734	0	2	0	0	0	1.385	1.385	0.000	0.056	0.056
2018	19.496	0	2	0	0	0	1.440	1.440	0.000	0.074	0.074
2019	16.616	0	1	0	851	0	10.020	10.871	0.051	0.603	0.654
2020	17.285	0	1	0	0	0	1.203	1.203	0.000	0.070	0.070
MA Total:	102.756	0	8	0	851	0	15.670	16.522	0.008	0.153	0.161

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.009	0.378	.
(14) Massachusetts Credibility:	0.070	0.100	.
(15) Countrywide Pure Premium:	0.644	0.433	1.077
(16) Countrywide Indicated Relativity:	0.793	1.198	.
(17) Countrywide Credibility:	0.160	0.170	.
(18) Countrywide Lost-Time Claims:	12.000	.	.
(19) Pure Premium Underlying Present Rate:	0.346	0.170	0.516
(20) Relativity to Underlying Present Rate:	0.430	0.425	.
(21) Credibility to Underlying Relativity:	0.770	0.730	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.458	0.552	.
(24) Balanced Formula Relativity:	0.459	0.554	0.489

Class(es): 3507 CONSTRUCTION OR AGRICULTURAL MACHINERY MFG		Effective: 7/1/2023							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)
2016	34.192	0	4	0	5.731	0	8.965	14.695	0.168	0.262	0.430
2017	26.520	0	5	0	192.399	0	34.408	226.807	7.255	1.297	8.552
2018	31.839	0	4	0	0	0	6.101	6.101	0.000	0.192	0.192
2019	29.840	0	6	0	1.763	0	5.643	7.406	0.059	0.189	0.248
2020	26.369	1	6	63.993	24.724	26.222	11.887	126.826	3.364	1.445	4.810
MA Total:	148.760	1	25	63.993	224.616	26.222	67.005	381.836	1.940	0.627	2.567

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.154	1.551	.
(14) Massachusetts Credibility:	0.130	0.180	.
(15) Countrywide Pure Premium:	1.067	0.469	1.536
(16) Countrywide Indicated Relativity:	1.313	1.296	.
(17) Countrywide Credibility:	0.440	0.410	.
(18) Countrywide Lost-Time Claims:	4362.0	.	.
(19) Pure Premium Underlying Present Rate:	1.236	0.548	1.784
(20) Relativity to Underlying Present Rate:	1.536	1.367	.
(21) Credibility to Underlying Relativity:	0.430	0.410	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.518	1.371	.
(24) Balanced Formula Relativity:	1.521	1.378	1.477

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	46,748	1	18	134,987	61,312	91,115	43,905	331,319	4,199	2,888	7,087
2017	49,945	0	12	0	29,733	0	17,973	47,706	0,595	0,360	0,955
2018	48,410	0	16	0	46,835	0	11,912	58,747	0,967	0,246	1,214
2019	50,787	0	12	0	41,119	0	35,235	76,354	0,810	0,694	1,503
2020	49,247	0	8	0	56,340	0	23,266	79,607	1,144	0,472	1,616
MA Total:	245,137	1	66	134,987	235,340	91,115	132,291	593,733	1,511	0,911	2,422

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.677	2.256	.
(14) Massachusetts Credibility:	0.160	0.230	.
(15) Countrywide Pure Premium:	0.507	0.188	0.695
(16) Countrywide Indicated Relativity:	0.624	0.520	.
(17) Countrywide Credibility:	0.230	0.240	.
(18) Countrywide Lost-Time Claims:	28,000	.	.
(19) Pure Premium Underlying Present Rate:	1.173	0.563	1.736
(20) Relativity to Underlying Present Rate:	1.458	1.404	.
(21) Credibility to Underlying Relativity:	0.610	0.530	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.301	1.388	.
(24) Balanced Formula Relativity:	1.304	1.395	1.332

Class(es):		Effective: 7/1/2023							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)
2016	2,390	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	12,162	0	0	0	0	0	0	0	0.000	0.000	0.000

	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:	0.334	0.535	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.272	0.217	0.489
(20) Relativity to Underlying Present Rate:	0.338	0.541	.
(21) Credibility to Underlying Relativity:	0.970	0.950	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.327	0.514	.
(24) Balanced Formula Relativity:	0.328	0.517	0.387

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	8,666	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	47,443	0	0	0	0	0	0	0	0.000	0.000	0.000

	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:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	0.357	0.317	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.291	0.129	0.419
(20) Relativity to Underlying Present Rate:	0.361	0.321	.
(21) Credibility to Underlying Relativity:	0.950	0.930	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.343	0.298	.
(24) Balanced Formula Relativity:	0.344	0.300	0.330

Class(es):		Effective: 7/1/2023							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)
2016	6,117,980	14	460	1,958,395	4,346,193	502,014	1,788,897	8,595,498	1.031	0.374	1.405
2017	5,938,310	10	419	2,004,456	2,627,733	669,719	1,691,507	6,993,415	0.780	0.398	1.178
2018	6,412,676	9	410	1,250,110	3,255,580	181,733	1,862,076	6,549,500	0.703	0.319	1.021
2019	6,647,845	8	315	1,443,289	2,404,874	642,665	1,614,718	6,105,547	0.579	0.340	0.918
2020	6,556,105	11	350	1,567,879	3,829,792	402,775	2,043,387	7,843,834	0.823	0.373	1.196
MA Total:	31,672,915	52	1,954	8,224,130	16,464,172	2,398,907	9,000,585	36,087,794	0.779	0.360	1.139

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.865	0.891	.
(14) Massachusetts Credibility:	0.900	1.000	.
(15) Countrywide Pure Premium:	0.797	0.348	1.144
(16) Countrywide Indicated Relativity:	0.980	0.961	.
(17) Countrywide Credibility:	0.050	0.000	.
(18) Countrywide Lost-Time Claims:	17086	.	.
(19) Pure Premium Underlying Present Rate:	0.721	0.350	1.071
(20) Relativity to Underlying Present Rate:	0.896	0.874	.
(21) Credibility to Underlying Relativity:	0.050	0.000	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.873	0.891	.
(24) Balanced Formula Relativity:	0.874	0.895	0.881

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Calculation of Class Relativities

Class(es): 3612 PUMP MFG		Effective: 7/1/2023							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)
2016	284.610	0	21	0	44.729	0	135.400	180.130	0.157	0.476	0.633
2017	274.512	0	15	0	27.019	0	18.017	45.036	0.098	0.066	0.164
2018	236.794	0	14	0	280.334	0	70.674	351.008	1.184	0.298	1.482
2019	230.999	0	12	0	4.789	0	22.370	27.158	0.021	0.097	0.118
2020	237.182	0	15	0	130.707	0	111.313	242.020	0.551	0.469	1.020
MA Total:	1,264,097	0	77	0	487,578	0	357,774	845,352	0.386	0.283	0.669

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.428	0.701	.
(14) Massachusetts Credibility:	0.220	0.330	.
(15) Countrywide Pure Premium:	0.755	0.342	1.097
(16) Countrywide Indicated Relativity:	0.929	0.945	.
(17) Countrywide Credibility:	0.390	0.340	.
(18) Countrywide Lost-Time Claims:	1584.0	.	.
(19) Pure Premium Underlying Present Rate:	0.556	0.283	0.840
(20) Relativity to Underlying Present Rate:	0.691	0.706	.
(21) Credibility to Underlying Relativity:	0.390	0.330	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.726	0.786	.
(24) Balanced Formula Relativity:	0.728	0.789	0.747

Class(es): 3620 BOILERMAKING		Effective: 7/1/2023							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)
2016	139.554	0	15	0	582.768	0	78.403	661.172	4.176	0.562	4.738
2017	129.551	1	16	315.152	134.834	71.440	54.403	575.830	3.473	0.971	4.445
2018	127.865	0	16	0	62.673	0	116.925	179.599	0.490	0.914	1.405
2019	137.530	0	11	0	155.049	0	59.092	214.142	1.127	0.430	1.557
2020	136.282	0	17	0	65.994	0	36.114	102.108	0.484	0.265	0.749
MA Total:	670,782	1	75	315,152	1,001,319	71,440	344,938	1,732,849	1.963	0.621	2.583

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.179	1.537	.
(14) Massachusetts Credibility:	0.260	0.390	.
(15) Countrywide Pure Premium:	1.104	0.496	1.600
(16) Countrywide Indicated Relativity:	1.358	1.372	.
(17) Countrywide Credibility:	0.370	0.310	.
(18) Countrywide Lost-Time Claims:	1008.0	.	.
(19) Pure Premium Underlying Present Rate:	1.580	0.769	2.349
(20) Relativity to Underlying Present Rate:	1.963	1.919	.
(21) Credibility to Underlying Relativity:	0.370	0.300	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.795	1.600	.
(24) Balanced Formula Relativity:	1.799	1.608	1.740

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Calculation of Class Relativities

Class(es): 3634 VALVE MFG		Effective: 7/1/2023							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)
2016	295,587	0	19	0	390,588	0	57,550	448,138	1,321	0,195	1,516
2017	251,348	0	21	0	56,142	0	48,000	104,142	0,223	0,191	0,414
2018	368,076	3	16	439,735	208,040	153,698	72,253	873,727	1,760	0,614	2,374
2019	219,396	2	13	331,412	100,251	71,141	84,938	587,742	1,968	0,711	2,679
2020	298,266	1	14	254,666	140,302	27,246	95,640	517,853	1,324	0,412	1,736
MA Total:	1,432,674	6	83	1,025,813	895,323	252,085	358,381	2,531,602	1,341	0,426	1,767

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.489	1.055	.
(14) Massachusetts Credibility:	0.250	0.350	.
(15) Countrywide Pure Premium:	0.681	0.292	0.973
(16) Countrywide Indicated Relativity:	0.838	0.808	.
(17) Countrywide Credibility:	0.380	0.330	.
(18) Countrywide Lost-Time Claims:	796.00	.	.
(19) Pure Premium Underlying Present Rate:	0.675	0.283	0.958
(20) Relativity to Underlying Present Rate:	0.839	0.707	.
(21) Credibility to Underlying Relativity:	0.370	0.320	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.001	0.862	.
(24) Balanced Formula Relativity:	1.003	0.866	0.961

Class(es): 3635 GEAR MFG OR GRINDING		Effective: 7/1/2023							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)
2016	339,117	4	37	256,508	323,217	94,497	541,625	1,215,847	1,710	1,876	3,585
2017	55,670	0	5	0	1,892	0	2,255	4,147	0,034	0,040	0,074
2018	75,529	0	5	0	22,661	0	10,531	33,192	0,300	0,139	0,439
2019	332,597	0	20	0	26,544	0	38,823	65,367	0,080	0,117	0,197
2020	266,867	0	19	0	75,309	0	90,894	166,202	0,282	0,341	0,623
MA Total:	1,069,781	4	86	256,508	449,623	94,497	684,127	1,484,755	0,660	0,728	1,388

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.733	1.802	.
(14) Massachusetts Credibility:	0.260	0.460	.
(15) Countrywide Pure Premium:	0.704	0.280	0.984
(16) Countrywide Indicated Relativity:	0.866	0.775	.
(17) Countrywide Credibility:	0.370	0.270	.
(18) Countrywide Lost-Time Claims:	414.00	.	.
(19) Pure Premium Underlying Present Rate:	0.930	0.736	1.666
(20) Relativity to Underlying Present Rate:	1.155	1.836	.
(21) Credibility to Underlying Relativity:	0.370	0.270	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.938	1.534	.
(24) Balanced Formula Relativity:	0.940	1.541	1.126

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Manufacturing		
3642 BATTERY MFG-DRY											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2016	41,867	0	2	0	0	0	2,426	2,426	0.000	0.058	0.058
2017	68,163	0	1	0	0	0	1,152	1,152	0.000	0.017	0.017
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
MA Total:	308,004	0	3	0	0	0	3,578	3,578	0.000	0.012	0.012

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.029	.
(14) Massachusetts Credibility:	0.120	0.170	.
(15) Countrywide Pure Premium:	0.896	0.362	1.258
(16) Countrywide Indicated Relativity:	1.103	1.001	.
(17) Countrywide Credibility:	0.380	0.400	.
(18) Countrywide Lost-Time Claims:	100.00	.	.
(19) Pure Premium Underlying Present Rate:	0.449	0.218	0.666
(20) Relativity to Underlying Present Rate:	0.557	0.543	.
(21) Credibility to Underlying Relativity:	0.500	0.430	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.698	0.639	.
(24) Balanced Formula Relativity:	0.699	0.642	0.681

Class(es):		Effective: 7/1/2023							Manufacturing		
3643 ELECTRIC POWER OR TRANSMISSION EQUIP 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)
2016	1,013,186	4	36	340,006	521,458	115,981	132,903	1,110,348	0.850	0.246	1,096
2017	1,061,762	2	66	105,354	413,937	41,700	291,442	852,433	0.489	0.314	0.803
2018	1,093,376	7	59	790,847	436,264	298,365	139,119	1,664,595	1.122	0.400	1.522
2019	930,662	2	61	229,959	1,035,372	20,783	543,597	1,829,711	1.360	0.606	1.966
2020	894,611	6	34	658,437	446,719	173,431	208,240	1,486,827	1.235	0.427	1.662
MA Total:	4,993,597	21	256	2,124,604	2,853,750	650,260	1,315,299	6,943,913	0.997	0.394	1.391

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.107	0.974	.
(14) Massachusetts Credibility:	0.420	0.610	.
(15) Countrywide Pure Premium:	0.825	0.364	1.189
(16) Countrywide Indicated Relativity:	1.016	1.006	.
(17) Countrywide Credibility:	0.290	0.200	.
(18) Countrywide Lost-Time Claims:	1823.0	.	.
(19) Pure Premium Underlying Present Rate:	0.687	0.319	1.007
(20) Relativity to Underlying Present Rate:	0.854	0.797	.
(21) Credibility to Underlying Relativity:	0.290	0.190	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.007	0.947	.
(24) Balanced Formula Relativity:	1.009	0.952	0.991

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Manufacturing		
3647 BATTERY MFG-STORAGE											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2016	2,400	0	1	0	0	0	1,271	1,271	0.000	0.530	0.530
2017	3,828	0	1	0	0	0	150	150	0.000	0.039	0.039
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
MA Total:	42,802	0	2	0	0	0	1,421	1,421	0.000	0.033	0.033

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.082	.
(14) Massachusetts Credibility:	0.070	0.110	.
(15) Countrywide Pure Premium:	1.110	0.481	1.591
(16) Countrywide Indicated Relativity:	1.365	1.330	.
(17) Countrywide Credibility:	0.470	0.450	.
(18) Countrywide Lost-Time Claims:	502.00	.	.
(19) Pure Premium Underlying Present Rate:	1.027	0.485	1.512
(20) Relativity to Underlying Present Rate:	1.276	1.211	.
(21) Credibility to Underlying Relativity:	0.460	0.440	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.228	1.140	.
(24) Balanced Formula Relativity:	1.231	1.146	1.205

Class(es):		Effective: 7/1/2023							Manufacturing		
3648 AUTOMOTIVE LIGHTING, IGNITION 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)
2016	40,505	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	31,529	0	1	0	0	0	50	50	0.000	0.002	0.002
2018	36,729	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	23,071	0	1	0	0	0	2,546	2,546	0.000	0.110	0.110
2020	39,174	0	0	0	0	0	0	0	0.000	0.000	0.000
MA Total:	171,008	0	2	0	0	0	2,596	2,596	0.000	0.015	0.015

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.038	.
(14) Massachusetts Credibility:	0.100	0.150	.
(15) Countrywide Pure Premium:	0.518	0.259	0.776
(16) Countrywide Indicated Relativity:	0.637	0.715	.
(17) Countrywide Credibility:	0.450	0.430	.
(18) Countrywide Lost-Time Claims:	577.00	.	.
(19) Pure Premium Underlying Present Rate:	0.489	0.279	0.768
(20) Relativity to Underlying Present Rate:	0.608	0.696	.
(21) Credibility to Underlying Relativity:	0.450	0.420	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.560	0.605	.
(24) Balanced Formula Relativity:	0.561	0.608	0.576

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	5,377,260	8	154	791,985	826,285	352,004	319,733	2,290,007	0.301	0.125	0.426
2017	5,730,181	9	185	461,816	1,073,857	178,068	551,651	2,265,392	0.268	0.127	0.395
2018	5,613,814	1	184	97,568	1,250,827	18,390	622,947	1,989,731	0.240	0.114	0.354
2019	6,414,456	4	164	185,682	1,373,284	113,035	590,395	2,262,396	0.243	0.110	0.353
2020	6,726,704	5	141	957,931	1,766,858	169,619	546,472	3,440,880	0.405	0.106	0.512
MA Total:	29,862,415	27	828	2,494,982	6,291,111	831,116	2,631,198	12,248,407	0.294	0.116	0.410

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.327	0.287	.
(14) Massachusetts Credibility:	0.590	0.860	.
(15) Countrywide Pure Premium:	0.276	0.140	0.416
(16) Countrywide Indicated Relativity:	0.340	0.386	.
(17) Countrywide Credibility:	0.210	0.070	.
(18) Countrywide Lost-Time Claims:	2696.0	.	.
(19) Pure Premium Underlying Present Rate:	0.267	0.130	0.398
(20) Relativity to Underlying Present Rate:	0.332	0.325	.
(21) Credibility to Underlying Relativity:	0.200	0.070	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.331	0.297	.
(24) Balanced Formula Relativity:	0.331	0.298	0.321

Class(es):		Effective: 7/1/2023							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)
2016	6,636,729	11	204	608,291	727,404	147,157	504,303	1,987,156	0.201	0.098	0.299
2017	6,500,544	6	228	792,609	320,241	90,154	394,109	1,597,113	0.171	0.074	0.246
2018	6,729,390	6	210	272,064	1,127,447	123,465	721,646	2,244,622	0.208	0.126	0.334
2019	6,826,461	5	143	319,584	1,149,760	125,889	785,272	2,380,505	0.215	0.133	0.349
2020	7,010,176	3	163	293,412	737,499	77,835	405,854	1,514,600	0.147	0.069	0.216
MA Total:	33,703,300	31	948	2,285,960	4,062,352	564,500	2,811,183	9,723,994	0.188	0.100	0.289

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.209	0.248	.
(14) Massachusetts Credibility:	0.610	0.870	.
(15) Countrywide Pure Premium:	0.328	0.154	0.481
(16) Countrywide Indicated Relativity:	0.403	0.425	.
(17) Countrywide Credibility:	0.200	0.070	.
(18) Countrywide Lost-Time Claims:	1922.0	.	.
(19) Pure Premium Underlying Present Rate:	0.258	0.116	0.374
(20) Relativity to Underlying Present Rate:	0.320	0.289	.
(21) Credibility to Underlying Relativity:	0.190	0.060	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.269	0.263	.
(24) Balanced Formula Relativity:	0.270	0.264	0.268

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	3,528,659	16	370	2,403,988	5,070,465	652,908	2,804,857	10,932,218	2,118	0,980	3,098
2017	3,531,964	15	373	2,845,530	5,604,916	632,680	2,967,984	12,051,110	2,393	1,019	3,412
2018	4,087,538	14	371	2,601,487	4,381,136	639,000	2,043,122	9,664,745	1,708	0,656	2,364
2019	3,941,602	15	362	3,560,776	7,024,461	986,920	3,743,265	15,315,421	2,686	1,200	3,886
2020	4,200,427	16	275	1,642,050	5,037,864	723,057	3,170,833	10,573,804	1,590	0,927	2,517
MA Total:	19,290,190	76	1,751	13,053,831	27,118,842	3,634,564	14,730,062	58,537,299	2,083	0,952	3,035

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.889	0.990	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	1.778	0.683	2.461
(16) Countrywide Indicated Relativity:	0.764	0.717	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	8024.0	.	.
(19) Pure Premium Underlying Present Rate:	2.057	0.914	2.971
(20) Relativity to Underlying Present Rate:	0.949	0.962	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.889	0.990	.
(24) Balanced Formula Relativity:	0.899	0.992	0.926

Class(es):		Effective: 7/1/2023							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)
2016	181,596	2	5	773,877	38,274	114,345	39,829	966,325	4,472	0,849	5,321
2017	154,068	0	5	0	74,810	0	23,982	98,792	0,486	0,156	0,641
2018	105,264	0	1	0	0	0	1,327	1,327	0,000	0,013	0,013
2019	115,550	0	10	0	37,386	0	38,681	76,068	0,324	0,335	0,658
2020	93,033	0	4	0	67,247	0	208,011	275,259	0,723	2,236	2,959
MA Total:	649,510	2	25	773,877	217,718	114,345	311,831	1,417,771	1,527	0,656	2,183

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.652	0.683	.
(14) Massachusetts Credibility:	0.270	0.330	.
(15) Countrywide Pure Premium:	1.967	0.681	2.648
(16) Countrywide Indicated Relativity:	0.845	0.716	.
(17) Countrywide Credibility:	0.370	0.340	.
(18) Countrywide Lost-Time Claims:	462.00	.	.
(19) Pure Premium Underlying Present Rate:	1.767	0.557	2.324
(20) Relativity to Underlying Present Rate:	0.815	0.586	.
(21) Credibility to Underlying Relativity:	0.360	0.330	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.782	0.662	.
(24) Balanced Formula Relativity:	0.791	0.663	0.754

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Calculation of Class Relativities

Class(es): 3808 AUTOMOBILE MFG OR ASSEMBLY		Effective: 7/1/2023							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)
2016	123.879	3	38	199.091	24.782	39.123	28.612	291.608	1.807	0.547	2.354
2017	280.125	1	60	336.030	520.194	48.407	388.362	1,292.993	3.057	1.559	4.616
2018	352.933	1	61	121.965	344.784	28.158	237.955	732.862	1.322	0.754	2.076
2019	310.888	1	49	59.112	179.869	55.421	167.664	462.066	0.769	0.718	1.486
2020	515.891	1	78	42.248	393.445	18.424	175.060	629.178	0.845	0.375	1.220
MA Total:	1,583,716	7	286	758,447	1,463,074	189,533	997,653	3,408,707	1.403	0.750	2.152

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.557	1.856	.
(14) Massachusetts Credibility:	0.350	0.540	.
(15) Countrywide Pure Premium:	1.517	0.561	2.077
(16) Countrywide Indicated Relativity:	1.866	1.551	.
(17) Countrywide Credibility:	0.330	0.230	.
(18) Countrywide Lost-Time Claims:	6103.0	.	.
(19) Pure Premium Underlying Present Rate:	1.390	0.745	2.135
(20) Relativity to Underlying Present Rate:	1.727	1.858	.
(21) Credibility to Underlying Relativity:	0.320	0.230	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.713	1.786	.
(24) Balanced Formula Relativity:	1.717	1.795	1.741

Class(es): 3821 AUTOMOBILE DISMANTLING & DRIVERS		Effective: 7/1/2023							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)
2016	156.778	1	27	100.573	420.951	49.032	241.639	812.195	3.327	1.854	5.181
2017	189.775	1	21	215.106	184.976	187.145	60.589	647.816	2.108	1.305	3.414
2018	182.727	0	16	0	52	0	7.172	7.224	0.000	0.039	0.040
2019	169.421	0	23	0	465.367	0	290.166	755.533	2.747	1.713	4.459
2020	134.721	0	7	0	357.785	0	390.882	748.667	2.656	2.901	5.557
MA Total:	833,422	2	94	315,678	1,429,131	236,176	990,449	2,971,435	2.094	1.472	3.565

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.760	4.214	.
(14) Massachusetts Credibility:	0.320	0.500	.
(15) Countrywide Pure Premium:	2.511	1.140	3.651
(16) Countrywide Indicated Relativity:	3.305	3.230	.
(17) Countrywide Credibility:	0.340	0.250	.
(18) Countrywide Lost-Time Claims:	915.00	.	.
(19) Pure Premium Underlying Present Rate:	2.056	1.182	3.238
(20) Relativity to Underlying Present Rate:	3.060	3.324	.
(21) Credibility to Underlying Relativity:	0.340	0.250	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	3.048	3.746	.
(24) Balanced Formula Relativity:	3.009	3.729	3.236

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Calculation of Class Relativities

Class(es): 3826 AIRCRAFT ENGINE MFG		Effective: 7/1/2023							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)
2016	2,272,901	13	186	1,205,045	2,142,564	677,785	1,501,774	5,527,168	1,473	0.959	2,432
2017	2,282,308	11	150	647,711	2,353,209	189,103	1,534,987	4,725,010	1,315	0.755	2,070
2018	2,291,202	10	145	1,309,781	3,523,664	359,631	1,569,942	6,763,018	2,110	0.842	2,952
2019	2,444,600	12	117	2,475,937	3,782,076	624,439	1,772,590	8,655,042	2,560	0.981	3,540
2020	2,493,671	7	78	1,333,860	2,216,194	494,762	1,234,823	5,279,639	1,424	0.694	2,117
MA Total:	11,784,683	53	676	6,972,335	14,017,706	2,345,719	7,614,115	30,949,876	1,781	0.845	2,626

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.977	2.092	.
(14) Massachusetts Credibility:	0.850	1.000	.
(15) Countrywide Pure Premium:	0.349	0.133	0.482
(16) Countrywide Indicated Relativity:	0.429	0.369	.
(17) Countrywide Credibility:	0.080	0.000	.
(18) Countrywide Lost-Time Claims:	367.00	.	.
(19) Pure Premium Underlying Present Rate:	1.690	1.146	2.836
(20) Relativity to Underlying Present Rate:	2.099	2.859	.
(21) Credibility to Underlying Relativity:	0.070	0.000	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.862	2.092	.
(24) Balanced Formula Relativity:	1.866	2.103	1.939

Class(es): 3841 TUBULAR METAL PRODUCTS MFG OR ASSEMBLY		Effective: 7/1/2023							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)
2016	64,013	0	3	0	0	0	1,198	1,198	0.000	0.019	0.019
2017	61,442	0	4	0	3,275	0	8,344	11,619	0.053	0.136	0.189
2018	64,393	0	6	0	4,529	0	3,498	8,027	0.070	0.054	0.125
2019	67,768	0	5	0	2,211	0	5,933	8,143	0.033	0.088	0.120
2020	50,772	0	2	0	578	0	2,129	2,706	0.011	0.042	0.053
MA Total:	308,388	0	20	0	10,592	0	21,102	31,694	0.034	0.068	0.103

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.038	0.169	.
(14) Massachusetts Credibility:	0.150	0.210	.
(15) Countrywide Pure Premium:	1.218	0.527	1.744
(16) Countrywide Indicated Relativity:	1.498	1.456	.
(17) Countrywide Credibility:	0.390	0.400	.
(18) Countrywide Lost-Time Claims:	108.00	.	.
(19) Pure Premium Underlying Present Rate:	0.832	0.381	1.214
(20) Relativity to Underlying Present Rate:	1.034	0.951	.
(21) Credibility to Underlying Relativity:	0.460	0.390	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.066	0.989	.
(24) Balanced Formula Relativity:	1.068	0.994	1.045

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	479,501	5	40	1,185,828	209,588	484,679	190,054	2,070,150	2,910	1,407	4,317
2017	496,267	0	41	0	987,124	0	596,980	1,584,103	1,989	1,203	3,192
2018	519,175	3	51	1,141,760	1,612,987	262,185	598,547	3,615,479	5,306	1,658	6,964
2019	443,512	1	25	627,431	392,758	289,671	307,102	1,616,962	2,300	1,346	3,646
2020	444,991	1	15	875,822	315,597	366,860	192,833	1,751,111	2,677	1,258	3,935
MA Total:	2,383,446	10	172	3,830,841	3,518,054	1,403,395	1,885,516	10,637,806	3,083	1,380	4,463

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.210	1.272	.
(14) Massachusetts Credibility:	0.530	0.780	.
(15) Countrywide Pure Premium:	2.693	1.162	3.855
(16) Countrywide Indicated Relativity:	1.106	1.144	.
(17) Countrywide Credibility:	0.240	0.110	.
(18) Countrywide Lost-Time Claims:	1007.0	.	.
(19) Pure Premium Underlying Present Rate:	2.500	1.263	3.763
(20) Relativity to Underlying Present Rate:	1.214	1.242	.
(21) Credibility to Underlying Relativity:	0.230	0.110	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	1.186	1.255	.
(24) Balanced Formula Relativity:	1.184	1.259	1.206

Class(es):		Effective: 7/1/2023							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)
2016	10,263	0	2	0	10,580	0	11,386	21,966	1,031	1,109	2,140
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	4,355	0	11,053	15,408	0.361	0.916	1,277
2020	12,344	0	1	0	1,034	0	2,671	3,705	0.084	0.216	0.300
MA Total:	53,795	0	4	0	15,969	0	25,109	41,078	0.297	0.467	0.764

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.330	1.155	.
(14) Massachusetts Credibility:	0.090	0.140	.
(15) Countrywide Pure Premium:	1.548	0.698	2.246
(16) Countrywide Indicated Relativity:	1.904	1.930	.
(17) Countrywide Credibility:	0.460	0.430	.
(18) Countrywide Lost-Time Claims:	232.00	.	.
(19) Pure Premium Underlying Present Rate:	1.351	0.728	2.079
(20) Relativity to Underlying Present Rate:	1.678	1.817	.
(21) Credibility to Underlying Relativity:	0.450	0.430	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.661	1.773	.
(24) Balanced Formula Relativity:	1.664	1.782	1.700

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	49	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	0	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	1,593	0	1	0	0	0	1,220	1,220	0.000	0.766	0.766
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
MA Total:	5,854	0	1	0	0	0	1,220	1,220	0.000	0.208	0.208

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.516	.
(14) Massachusetts Credibility:	0.040	0.060	.
(15) Countrywide Pure Premium:	1.734	0.605	2.339
(16) Countrywide Indicated Relativity:	2.134	1.673	.
(17) Countrywide Credibility:	0.380	0.400	.
(18) Countrywide Lost-Time Claims:	102.00	.	.
(19) Pure Premium Underlying Present Rate:	1.716	0.821	2.537
(20) Relativity to Underlying Present Rate:	2.132	2.049	.
(21) Credibility to Underlying Relativity:	0.580	0.540	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	2.047	1.806	.
(24) Balanced Formula Relativity:	2.051	1.815	1.978

Class(es):		Effective: 7/1/2023							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)
2016	213,542	1	28	318,701	38,002	71,182	64,942	492,826	1,670	0.637	2,308
2017	204,441	0	36	0	247,113	0	170,843	417,956	1,209	0.836	2,044
2018	234,855	4	37	1,324,833	24,782	407,866	80,746	1,838,227	5,747	2.080	7,827
2019	238,794	1	43	59,159	1,350,801	316,633	512,011	2,238,605	5,905	3.470	9,375
2020	254,972	1	31	393,386	790,575	162,357	576,304	1,922,622	4,643	2.897	7,541
MA Total:	1,146,605	7	175	2,096,078	2,451,273	958,038	1,404,847	6,910,236	3,966	2.061	6.027

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.403	5.101	.
(14) Massachusetts Credibility:	0.390	0.600	.
(15) Countrywide Pure Premium:	2.534	1.201	3.736
(16) Countrywide Indicated Relativity:	3.118	3.323	.
(17) Countrywide Credibility:	0.310	0.200	.
(18) Countrywide Lost-Time Claims:	2699.0	.	.
(19) Pure Premium Underlying Present Rate:	2.525	1.370	3.895
(20) Relativity to Underlying Present Rate:	3.137	3.418	.
(21) Credibility to Underlying Relativity:	0.300	0.200	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	3.625	4.409	.
(24) Balanced Formula Relativity:	3.632	4.431	3.879

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	12,550	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	11,931	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	11,361	0	1	0	0	0	812	812	0.000	0.072	0.072
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
MA Total:	58,727	0	1	0	0	0	812	812	0.000	0.014	0.014

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.034	.
(14) Massachusetts Credibility:	0.080	0.110	.
(15) Countrywide Pure Premium:	0.930	0.413	1.343
(16) Countrywide Indicated Relativity:	1.144	1.142	.
(17) Countrywide Credibility:	0.460	0.450	.
(18) Countrywide Lost-Time Claims:	290.00	.	.
(19) Pure Premium Underlying Present Rate:	0.801	0.422	1.224
(20) Relativity to Underlying Present Rate:	0.996	1.054	.
(21) Credibility to Underlying Relativity:	0.460	0.440	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.984	0.981	.
(24) Balanced Formula Relativity:	0.986	0.986	0.986

Class(es):		Effective: 7/1/2023							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)
2016	13,856	0	0	0	0	0	0	0	0.000	0.000	0.000
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	1,391	1,391	0.000	0.349	0.349
2020	11,442	0	0	0	0	0	0	0	0.000	0.000	0.000
MA Total:	57,523	0	1	0	0	0	1,391	1,391	0.000	0.024	0.024

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.060	.
(14) Massachusetts Credibility:	0.090	0.110	.
(15) Countrywide Pure Premium:	1.120	0.552	1.672
(16) Countrywide Indicated Relativity:	1.378	1.526	.
(17) Countrywide Credibility:	0.270	0.280	.
(18) Countrywide Lost-Time Claims:	42.000	.	.
(19) Pure Premium Underlying Present Rate:	1.296	0.398	1.694
(20) Relativity to Underlying Present Rate:	1.610	0.992	.
(21) Credibility to Underlying Relativity:	0.640	0.610	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.403	1.039	.
(24) Balanced Formula Relativity:	1.405	1.044	1.294

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	81.111	0	5	0	5.369	0	9.891	15.260	0.066	0.122	0.188
2017	83.652	0	12	0	22.415	0	14.343	36.758	0.268	0.171	0.439
2018	87.442	0	19	0	23.572	0	29.802	53.373	0.270	0.341	0.610
2019	120.604	0	6	0	14.065	0	17.169	31.234	0.117	0.142	0.259
2020	48.660	0	2	0	69.339	0	92.494	161.833	1.425	1.901	3.326
MA Total:	421.469	0	44	0	134.761	0	163.699	298.460	0.320	0.388	0.708

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.355	0.961	.
(14) Massachusetts Credibility:	0.190	0.280	.
(15) Countrywide Pure Premium:	11.128	0.250	11.378
(16) Countrywide Indicated Relativity:	13.690	0.692	.
(17) Countrywide Credibility:	0.060	0.060	.
(18) Countrywide Lost-Time Claims:	1.000	.	.
(19) Pure Premium Underlying Present Rate:	1.045	0.533	1.578
(20) Relativity to Underlying Present Rate:	1.299	1.330	.
(21) Credibility to Underlying Relativity:	0.750	0.660	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.863	1.189	.
(24) Balanced Formula Relativity:	1.866	1.195	1.658

Class(es):		Effective: 7/1/2023							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)
2016	73.394	0	1	0	0	0	135	135	0.000	0.002	0.002
2017	84.799	0	3	0	221.007	0	66.185	287.192	2.606	0.780	3.387
2018	85.131	1	6	88.237	3.483	16.515	5.089	113.323	1.077	0.254	1.331
2019	80.269	1	0	243.654	0	36.466	0	280.120	3.035	0.454	3.490
2020	82.538	0	2	0	7.880	0	57.459	65.339	0.095	0.696	0.792
MA Total:	406.131	2	12	331.891	232.369	52.980	128.868	746.109	1.389	0.448	1.837

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.542	1.108	.
(14) Massachusetts Credibility:	0.170	0.240	.
(15) Countrywide Pure Premium:	1.054	0.428	1.482
(16) Countrywide Indicated Relativity:	1.297	1.184	.
(17) Countrywide Credibility:	0.420	0.380	.
(18) Countrywide Lost-Time Claims:	273.00	.	.
(19) Pure Premium Underlying Present Rate:	0.864	0.393	1.257
(20) Relativity to Underlying Present Rate:	1.074	0.980	.
(21) Credibility to Underlying Relativity:	0.410	0.380	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.247	1.088	.
(24) Balanced Formula Relativity:	1.250	1.094	1.201

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Manufacturing		
4112 INCANDESCENT LAMP 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)
2016	44,168	0	2	0	1,277	0	5,566	6,843	0.029	0.126	0.155
2017	62,700	0	2	0	296	0	2,175	2,471	0.005	0.035	0.039
2018	99,209	0	7	0	26,384	0	5,212	31,596	0.266	0.053	0.318
2019	450,958	0	7	0	48,533	0	39,701	88,233	0.108	0.088	0.196
2020	519,559	0	2	0	1,686	0	139	1,826	0.003	0.000	0.004
MA Total:	1,176,595	0	20	0	78,176	0	52,793	130,969	0.066	0.045	0.111

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.074	0.111	.
(14) Massachusetts Credibility:	0.130	0.200	.
(15) Countrywide Pure Premium:	0.015	0.002	0.017
(16) Countrywide Indicated Relativity:	0.018	0.006	.
(17) Countrywide Credibility:	0.060	0.060	.
(18) Countrywide Lost-Time Claims:	1.000	.	.
(19) Pure Premium Underlying Present Rate:	0.155	0.090	0.245
(20) Relativity to Underlying Present Rate:	0.192	0.225	.
(21) Credibility to Underlying Relativity:	0.810	0.740	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.166	0.189	.
(24) Balanced Formula Relativity:	0.167	0.190	0.174

Class(es):		Effective: 7/1/2023							Manufacturing		
4114 GLASSWARE 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)
2016	145,591	0	20	0	530,594	0	136,322	666,916	3.644	0.936	4.581
2017	39,083	1	10	249,695	85,747	60,088	11,192	406,722	8.583	1.824	10.407
2018	25,005	0	9	0	38,695	0	54,506	93,201	1.548	2.180	3.727
2019	31,142	0	6	0	0	0	2,545	2,545	0.000	0.082	0.082
2020	19,915	0	3	0	0	0	2,224	2,224	0.000	0.112	0.112
MA Total:	260,736	1	48	249,695	655,037	60,088	206,788	1,171,607	3.470	1.024	4.493

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.852	2.534	.
(14) Massachusetts Credibility:	0.170	0.220	.
(15) Countrywide Pure Premium:	1.148	0.472	1.620
(16) Countrywide Indicated Relativity:	1.412	1.306	.
(17) Countrywide Credibility:	0.420	0.390	.
(18) Countrywide Lost-Time Claims:	321.00	.	.
(19) Pure Premium Underlying Present Rate:	1.279	0.512	1.792
(20) Relativity to Underlying Present Rate:	1.589	1.278	.
(21) Credibility to Underlying Relativity:	0.410	0.390	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.900	1.565	.
(24) Balanced Formula Relativity:	1.903	1.573	1.801

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Calculation of Class Relativities

Class(es): 4130 GLASS MERCHANT		Effective: 7/1/2023							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)
2016	256.142	1	42	274.585	286.336	75.807	96.960	733.688	2.190	0.674	2.864
2017	293.894	0	45	0	232.767	0	102.390	335.156	0.792	0.348	1.140
2018	294.747	5	32	954.065	907.482	304.056	417.107	2,582.711	6.316	2.447	8.762
2019	319.891	2	43	306.639	668.005	55.687	327.248	1,357.578	3.047	1.197	4.244
2020	325.774	3	56	1,120.897	737.994	159.722	321.881	2,340.495	5.706	1.478	7.184
MA Total:	1,490.449	11	218	2,656.186	2,832.584	595.272	1,265.586	7,349.628	3.683	1.249	4.931

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.088	3.091	.
(14) Massachusetts Credibility:	0.360	0.530	.
(15) Countrywide Pure Premium:	1.262	0.566	1.828
(16) Countrywide Indicated Relativity:	1.553	1.565	.
(17) Countrywide Credibility:	0.320	0.240	.
(18) Countrywide Lost-Time Claims:	893.00	.	.
(19) Pure Premium Underlying Present Rate:	1.529	0.782	2.311
(20) Relativity to Underlying Present Rate:	1.900	1.950	.
(21) Credibility to Underlying Relativity:	0.320	0.230	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	2.577	2.462	.
(24) Balanced Formula Relativity:	2.582	2.475	2.549

Class(es): 4133 CATHEDRAL OR ART GLASS WINDOW MFG		Effective: 7/1/2023							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)
2016	11.922	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	55.188	0	0	0	0	0	0	0	0.000	0.000	0.000

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.070	0.100	.
(15) Countrywide Pure Premium:	1.529	0.779	2.308
(16) Countrywide Indicated Relativity:	1.881	2.154	.
(17) Countrywide Credibility:	0.240	0.260	.
(18) Countrywide Lost-Time Claims:	33.000	.	.
(19) Pure Premium Underlying Present Rate:	0.691	0.332	1.022
(20) Relativity to Underlying Present Rate:	0.858	0.827	.
(21) Credibility to Underlying Relativity:	0.690	0.640	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.044	1.089	.
(24) Balanced Formula Relativity:	1.046	1.095	1.061

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Calculation of Class Relativities

Class(es): 4150 OPTICAL GOODS MFG-NOC		Effective: 7/1/2023							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)
2016	2,271,241	2	84	304,894	398,186	61,837	156,640	921,556	0.310	0.096	0.406
2017	1,724,522	4	71	362,080	468,651	66,251	139,329	1,036,311	0.482	0.119	0.601
2018	1,919,466	1	61	119,122	303,103	80,222	201,506	703,953	0.220	0.147	0.367
2019	2,206,000	1	88	52,402	594,991	49,905	217,184	914,482	0.293	0.121	0.415
2020	2,271,927	0	50	0	328,645	0	212,233	540,878	0.145	0.093	0.238
MA Total:	10,393,156	8	354	838,497	2,093,576	258,215	926,891	4,117,179	0.282	0.114	0.396

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.313	0.282	.
(14) Massachusetts Credibility:	0.470	0.600	.
(15) Countrywide Pure Premium:	0.404	0.144	0.548
(16) Countrywide Indicated Relativity:	0.497	0.398	.
(17) Countrywide Credibility:	0.270	0.200	.
(18) Countrywide Lost-Time Claims:	61.000	.	.
(19) Pure Premium Underlying Present Rate:	0.436	0.153	0.589
(20) Relativity to Underlying Present Rate:	0.541	0.381	.
(21) Credibility to Underlying Relativity:	0.260	0.200	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.422	0.325	.
(24) Balanced Formula Relativity:	0.423	0.327	0.393

Class(es): 4239 PAPER MFG		Effective: 7/1/2023							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)
2016	163,690	0	26	0	117,143	0	66,666	183,810	0.716	0.407	1.123
2017	155,440	2	18	303,509	208,027	141,900	99,269	752,705	3.291	1.552	4.842
2018	143,099	1	34	237,633	181,398	80,541	68,998	568,569	2.928	1.045	3.973
2019	205,140	0	10	0	506,501	0	301,435	807,936	2.469	1.469	3.938
2020	206,739	0	19	0	116,627	0	57,515	174,142	0.564	0.278	0.842
MA Total:	874,108	3	107	541,141	1,129,697	222,441	593,883	2,487,162	1.911	0.934	2.845

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.122	2.312	.
(14) Massachusetts Credibility:	0.250	0.370	.
(15) Countrywide Pure Premium:	1.036	0.405	1.442
(16) Countrywide Indicated Relativity:	1.275	1.121	.
(17) Countrywide Credibility:	0.380	0.320	.
(18) Countrywide Lost-Time Claims:	1660.0	.	.
(19) Pure Premium Underlying Present Rate:	1.110	0.522	1.632
(20) Relativity to Underlying Present Rate:	1.378	1.303	.
(21) Credibility to Underlying Relativity:	0.370	0.310	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.525	1.618	.
(24) Balanced Formula Relativity:	1.528	1.626	1.558

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Calculation of Class Relativities

Class(es): 4243 BOX MFG-FOLDING PAPER-NOC		Effective: 7/1/2023							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)
2016	254,426	1	39	241,653	560,608	38,238	168,808	1,009,307	3,153	0,814	3,967
2017	257,211	3	26	260,304	255,905	85,593	96,964	698,766	2,007	0,710	2,717
2018	325,489	0	37	0	176,127	0	122,594	298,722	0,541	0,377	0,918
2019	310,451	1	34	347,523	220,689	40,263	93,167	701,642	1,830	0,430	2,260
2020	325,615	1	44	135,499	311,542	18,227	125,304	590,571	1,373	0,441	1,814
MA Total:	1,473,192	6	180	984,980	1,524,870	182,321	606,836	3,299,007	1,704	0,536	2,239

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.891	1.326	.
(14) Massachusetts Credibility:	0.330	0.460	.
(15) Countrywide Pure Premium:	0.877	0.397	1.274
(16) Countrywide Indicated Relativity:	1.079	1.099	.
(17) Countrywide Credibility:	0.340	0.270	.
(18) Countrywide Lost-Time Claims:	930.00	.	.
(19) Pure Premium Underlying Present Rate:	1.231	0.532	1.763
(20) Relativity to Underlying Present Rate:	1.529	1.327	.
(21) Credibility to Underlying Relativity:	0.330	0.270	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.495	1.265	.
(24) Balanced Formula Relativity:	1.498	1.271	1.428

Class(es): 4244 CORRUGATED OR FIBERBOARD CONTAINER MFG		Effective: 7/1/2023							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)
2016	211,914	2	27	459,797	515,118	263,162	129,524	1,367,601	4,601	1,853	6,454
2017	247,774	0	35	0	225,602	0	97,121	322,723	0,911	0,392	1,302
2018	273,166	2	41	374,922	457,935	65,961	572,669	1,471,488	3,049	2,338	5,387
2019	263,316	2	35	171,622	128,000	64,980	59,442	424,044	1,138	0,473	1,610
2020	258,029	0	30	0	58,896	0	74,250	133,146	0,228	0,288	0,516
MA Total:	1,254,199	6	168	1,006,340	1,385,552	394,104	933,006	3,719,002	1,907	1,058	2,965

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.117	2.619	.
(14) Massachusetts Credibility:	0.310	0.460	.
(15) Countrywide Pure Premium:	0.940	0.465	1.405
(16) Countrywide Indicated Relativity:	1.156	1.287	.
(17) Countrywide Credibility:	0.350	0.270	.
(18) Countrywide Lost-Time Claims:	1447.0	.	.
(19) Pure Premium Underlying Present Rate:	1.299	0.631	1.930
(20) Relativity to Underlying Present Rate:	1.614	1.574	.
(21) Credibility to Underlying Relativity:	0.340	0.270	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.610	1.977	.
(24) Balanced Formula Relativity:	1.613	1.987	1.729

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Calculation of Class Relativities

Class(es): 4250 PAPER COATING		Effective: 7/1/2023							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)
2016	848.955	5	61	801.426	400.394	352.955	182.444	1,737.219	1.416	0.631	2.046
2017	677.713	2	55	314.315	640.467	110.739	307.471	1,372.993	1.409	0.617	2.026
2018	702.306	5	74	988.652	651.284	160.220	584.010	2,384.166	2.335	1.060	3.395
2019	845.425	1	65	259.372	992.172	13.235	328.416	1,593.194	1.480	0.404	1.884
2020	933.674	1	57	181.543	660.475	36.531	247.200	1,125.749	0.902	0.304	1.206
MA Total:	4,008.073	14	312	2,545.308	3,344.791	673.680	1,649.541	8,213.320	1.470	0.580	2.049

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.631	1.435	.
(14) Massachusetts Credibility:	0.440	0.650	.
(15) Countrywide Pure Premium:	0.888	0.387	1.275
(16) Countrywide Indicated Relativity:	1.092	1.071	.
(17) Countrywide Credibility:	0.280	0.180	.
(18) Countrywide Lost-Time Claims:	739.00	.	.
(19) Pure Premium Underlying Present Rate:	0.945	0.475	1.421
(20) Relativity to Underlying Present Rate:	1.174	1.186	.
(21) Credibility to Underlying Relativity:	0.280	0.170	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.352	1.327	.
(24) Balanced Formula Relativity:	1.355	1.334	1.349

Class(es): 4251 STATIONERY MFG		Effective: 7/1/2023							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)
2016	108.686	0	10	0	23.299	0	27.369	50.668	0.214	0.252	0.466
2017	102.812	0	6	0	948	0	4.868	5.817	0.009	0.047	0.057
2018	92.536	0	4	0	76.250	0	27.761	104.011	0.824	0.300	1.124
2019	89.183	2	7	551.927	408.301	100.843	83.659	1,144.730	10.767	2.069	12.836
2020	91.302	0	1	0	3.045	0	155	3.200	0.033	0.002	0.035
MA Total:	484.519	2	28	551.927	511.844	100.843	143.812	1,308.426	2.196	0.505	2.700

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.437	1.250	.
(14) Massachusetts Credibility:	0.200	0.260	.
(15) Countrywide Pure Premium:	1.367	0.587	1.954
(16) Countrywide Indicated Relativity:	1.682	1.623	.
(17) Countrywide Credibility:	0.400	0.370	.
(18) Countrywide Lost-Time Claims:	290.00	.	.
(19) Pure Premium Underlying Present Rate:	1.051	0.383	1.434
(20) Relativity to Underlying Present Rate:	1.305	0.956	.
(21) Credibility to Underlying Relativity:	0.400	0.370	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.682	1.279	.
(24) Balanced Formula Relativity:	1.686	1.285	1.562

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Manufacturing		
4273 BAG MFG-PAPER OR PLASTIC											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2016	50,284	1	22	50,991	65,571	9,470	51,290	177,322	2,318	1,208	3,526
2017	52,552	0	8	0	104,493	0	28,707	133,200	1,988	0,546	2,535
2018	36,584	0	10	0	6,947	0	10,205	17,152	0,190	0,279	0,469
2019	26,979	1	2	30,491	3,252	3,277	7,597	44,616	1,251	0,403	1,654
2020	25,595	0	7	0	181,508	0	66,736	248,245	7,091	2,607	9,699
MA Total:	191,994	2	49	81,482	361,771	12,746	164,536	620,535	2,309	0,923	3,232

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.563	2.286	.
(14) Massachusetts Credibility:	0.150	0.220	.
(15) Countrywide Pure Premium:	0.921	0.397	1.318
(16) Countrywide Indicated Relativity:	1.134	1.098	.
(17) Countrywide Credibility:	0.430	0.390	.
(18) Countrywide Lost-Time Claims:	833.00	.	.
(19) Pure Premium Underlying Present Rate:	1.388	0.627	2.014
(20) Relativity to Underlying Present Rate:	1.724	1.563	.
(21) Credibility to Underlying Relativity:	0.420	0.390	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.596	1.541	.
(24) Balanced Formula Relativity:	1.599	1.548	1.583

Class(es):		Effective: 7/1/2023							Manufacturing		
4279 PAPER 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)
2016	423,740	1	44	227,464	561,270	28,830	227,033	1,044,597	1,861	0,604	2,465
2017	511,109	3	67	289,777	254,323	38,024	162,326	744,449	1,065	0,392	1,457
2018	600,635	1	56	12,675	332,805	87,463	362,787	795,730	0,575	0,750	1,325
2019	681,329	1	52	138,145	612,844	16,302	102,933	870,224	1,102	0,175	1,277
2020	768,159	1	61	92,566	1,396,557	11,807	678,680	2,179,611	1,939	0,899	2,837
MA Total:	2,984,972	7	280	760,627	3,157,799	182,426	1,533,760	5,634,611	1,313	0,575	1,888

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.457	1.423	.
(14) Massachusetts Credibility:	0.400	0.580	.
(15) Countrywide Pure Premium:	1.153	0.496	1.649
(16) Countrywide Indicated Relativity:	1.418	1.372	.
(17) Countrywide Credibility:	0.300	0.210	.
(18) Countrywide Lost-Time Claims:	1580.0	.	.
(19) Pure Premium Underlying Present Rate:	0.988	0.476	1.465
(20) Relativity to Underlying Present Rate:	1.228	1.188	.
(21) Credibility to Underlying Relativity:	0.300	0.210	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.377	1.363	.
(24) Balanced Formula Relativity:	1.380	1.370	1.377

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	6.369	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	15.363	0	2	0	401	0	2,135	2,536	0.026	0.139	0.165
2018	22.803	0	6	0	4,887	0	6,736	11,623	0.214	0.295	0.510
2019	14.347	1	2	285.883	0	45.133	1,112	332.128	19.926	3.223	23.150
2020	9.943	0	0	0	0	0	0	0	0.000	0.000	0.000
MA Total:	68,825	1	10	285,883	5,287	45,133	9,984	346,287	4.231	0.801	5.031

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.696	1.982	.
(14) Massachusetts Credibility:	0.080	0.100	.
(15) Countrywide Pure Premium:	1.008	0.305	1.313
(16) Countrywide Indicated Relativity:	1.240	0.845	.
(17) Countrywide Credibility:	0.420	0.440	.
(18) Countrywide Lost-Time Claims:	130.00	.	.
(19) Pure Premium Underlying Present Rate:	0.682	0.279	0.961
(20) Relativity to Underlying Present Rate:	0.847	0.697	.
(21) Credibility to Underlying Relativity:	0.500	0.460	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.320	0.890	.
(24) Balanced Formula Relativity:	1.322	0.895	1.190

Class(es):		Effective: 7/1/2023							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)
2016	2,216.317	5	179	444.063	1,601.553	54.126	588.102	2,687.843	0.923	0.290	1.213
2017	2,279.712	5	181	542.422	1,659.162	63.836	897.172	3,162.592	0.966	0.422	1.387
2018	2,105.477	7	168	642.072	1,128.781	199.729	399.949	2,370.532	0.841	0.285	1.126
2019	2,126.633	6	144	1,145.960	1,298.082	360.794	634.244	3,439.081	1.149	0.468	1.617
2020	1,829.736	5	96	584.561	553.621	83.130	343.018	1,564.330	0.622	0.233	0.855
MA Total:	10,557.875	28	768	3,359.078	6,241.199	761.614	2,862.486	13,224.378	0.909	0.343	1.253

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.009	0.850	.
(14) Massachusetts Credibility:	0.590	0.880	.
(15) Countrywide Pure Premium:	0.750	0.378	1.128
(16) Countrywide Indicated Relativity:	0.922	1.046	.
(17) Countrywide Credibility:	0.210	0.060	.
(18) Countrywide Lost-Time Claims:	4341.0	.	.
(19) Pure Premium Underlying Present Rate:	0.760	0.386	1.145
(20) Relativity to Underlying Present Rate:	0.944	0.962	.
(21) Credibility to Underlying Relativity:	0.200	0.060	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.978	0.868	.
(24) Balanced Formula Relativity:	0.980	0.873	0.947

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Calculation of Class Relativities

Class(es): 4304 NEWSPAPER PUBLISHING		Effective: 7/1/2023							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)
2016	484,125	0	84	0	862,754	0	494,172	1,356,926	1,782	1,021	2,803
2017	333,639	4	49	948,156	717,339	253,201	281,599	2,200,295	4,992	1,603	6,595
2018	292,900	1	47	141,044	1,079,204	420,081	618,334	2,258,662	4,166	3,545	7,711
2019	268,967	5	27	1,036,291	186,261	313,797	76,249	1,612,599	4,545	1,450	5,996
2020	226,787	3	21	266,706	609,447	183,426	272,576	1,332,154	3,863	2,011	5,874
MA Total:	1,606,418	13	228	2,392,197	3,455,005	1,170,505	1,742,929	8,760,636	3,640	1,814	5,454

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.041	4.490	.
(14) Massachusetts Credibility:	0.400	0.620	.
(15) Countrywide Pure Premium:	2.027	0.948	2.975
(16) Countrywide Indicated Relativity:	2.494	2.621	.
(17) Countrywide Credibility:	0.300	0.190	.
(18) Countrywide Lost-Time Claims:	858.00	.	.
(19) Pure Premium Underlying Present Rate:	1.878	1.059	2.937
(20) Relativity to Underlying Present Rate:	2.333	2.643	.
(21) Credibility to Underlying Relativity:	0.300	0.190	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	3.064	3.784	.
(24) Balanced Formula Relativity:	3.070	3.802	3.297

Class(es): 4307 BOOKBINDING		Effective: 7/1/2023							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)
2016	173,267	1	14	6,001	33,734	212	106,545	146,493	0.229	0.616	0.845
2017	156,740	0	10	0	25,660	0	34,068	59,728	0.164	0.217	0.381
2018	121,094	1	9	167,427	5,674	26,786	18,341	218,229	1.429	0.373	1.802
2019	110,333	0	6	0	36,308	0	21,327	57,635	0.329	0.193	0.522
2020	97,530	0	6	0	867	0	11,759	12,627	0.009	0.121	0.129
MA Total:	658,963	2	45	173,428	102,244	26,999	192,040	494,711	0.418	0.332	0.751

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.464	0.823	.
(14) Massachusetts Credibility:	0.190	0.280	.
(15) Countrywide Pure Premium:	0.562	0.298	0.860
(16) Countrywide Indicated Relativity:	0.691	0.824	.
(17) Countrywide Credibility:	0.410	0.360	.
(18) Countrywide Lost-Time Claims:	146.00	.	.
(19) Pure Premium Underlying Present Rate:	0.684	0.366	1.050
(20) Relativity to Underlying Present Rate:	0.850	0.912	.
(21) Credibility to Underlying Relativity:	0.400	0.360	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.712	0.855	.
(24) Balanced Formula Relativity:	0.713	0.860	0.758

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Calculation of Class Relativities

Class(es): 4308 LINOTYPE OR HAND COMPOSITION		Effective: 7/1/2023							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)
2016	104	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	2,215	0	0	0	0	0	0	0	0.000	0.000	0.000

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.000	.
(14) Massachusetts Credibility:	0.020	0.020	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	1.514	0.380	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	1.232	0.154	1.386
(20) Relativity to Underlying Present Rate:	1.531	0.384	.
(21) Credibility to Underlying Relativity:	0.980	0.980	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.500	0.376	.
(24) Balanced Formula Relativity:	1.503	0.378	1.155

Class(es): 4351 PHOTOENGRAVING		Effective: 7/1/2023							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)
2016	305,322	0	38	0	77,860	0	68,903	146,763	0.255	0.226	0.481
2017	328,065	1	36	56,069	16,870	2,861	21,806	97,606	0.222	0.075	0.298
2018	345,870	0	45	0	190,097	0	48,079	238,176	0.550	0.139	0.689
2019	376,529	0	43	0	132,239	0	59,788	192,027	0.351	0.159	0.510
2020	376,794	0	33	0	41,651	0	29,971	71,622	0.111	0.080	0.190
MA Total:	1,732,580	1	195	56,069	458,717	2,861	228,547	746,194	0.297	0.134	0.431

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.330	0.331	.
(14) Massachusetts Credibility:	0.220	0.320	.
(15) Countrywide Pure Premium:	0.662	0.252	0.913
(16) Countrywide Indicated Relativity:	0.814	0.696	.
(17) Countrywide Credibility:	0.270	0.290	.
(18) Countrywide Lost-Time Claims:	44.000	.	.
(19) Pure Premium Underlying Present Rate:	0.389	0.187	0.577
(20) Relativity to Underlying Present Rate:	0.484	0.467	.
(21) Credibility to Underlying Relativity:	0.510	0.390	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.539	0.490	.
(24) Balanced Formula Relativity:	0.540	0.492	0.525

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Calculation of Class Relativities

Class(es): 4352 ENGRAVING		Effective: 7/1/2023							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)
2016	63.939	0	3	0	979	0	1.340	2.320	0.015	0.021	0.036
2017	71.041	0	4	0	0	0	2.751	2.751	0.000	0.039	0.039
2018	65.726	0	0	0	0	0	0	0	0.000	0.000	0.000
2019	66.429	0	1	0	0	0	130	130	0.000	0.002	0.002
2020	68.540	0	1	0	0	0	1.841	1.841	0.000	0.027	0.027
MA Total:	335.676	0	9	0	979	0	6.062	7.041	0.003	0.018	0.021

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.003	0.045	.
(14) Massachusetts Credibility:	0.130	0.180	.
(15) Countrywide Pure Premium:	0.502	0.282	0.784
(16) Countrywide Indicated Relativity:	0.617	0.780	.
(17) Countrywide Credibility:	0.350	0.370	.
(18) Countrywide Lost-Time Claims:	86.000	.	.
(19) Pure Premium Underlying Present Rate:	0.535	0.231	0.765
(20) Relativity to Underlying Present Rate:	0.664	0.575	.
(21) Credibility to Underlying Relativity:	0.520	0.450	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.562	0.556	.
(24) Balanced Formula Relativity:	0.563	0.558	0.561

Class(es): 4360 MOTION PICTURE: DEVLPMNT OF NEGATIVES, PRINTING & ALL SUB OP		Effective: 7/1/2023							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)
2016	541.230	0	3	0	291	0	4.021	4.312	0.001	0.007	0.008
2017	576.657	0	1	0	0	0	161	161	0.000	0.000	0.000
2018	614.549	0	2	0	2.210	0	551	2.761	0.004	0.001	0.004
2019	924.765	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	318.213	0	0	0	0	0	0	0	0.000	0.000	0.000
MA Total:	2,975.415	0	6	0	2,501	0	4,734	7,234	0.001	0.002	0.002

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.001	0.004	.
(14) Massachusetts Credibility:	0.240	0.330	.
(15) Countrywide Pure Premium:	0.493	0.213	0.706
(16) Countrywide Indicated Relativity:	0.606	0.590	.
(17) Countrywide Credibility:	0.330	0.340	.
(18) Countrywide Lost-Time Claims:	73.000	.	.
(19) Pure Premium Underlying Present Rate:	0.272	0.120	0.391
(20) Relativity to Underlying Present Rate:	0.337	0.298	.
(21) Credibility to Underlying Relativity:	0.430	0.330	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.345	0.300	.
(24) Balanced Formula Relativity:	0.346	0.302	0.332

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Office and Clerical		
4361 PHOTOGRAPHER - ALL EMP & 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)
2016	633,866	3	21	183,684	7,585	77,899	27,680	296,847	0.302	0.167	0.468
2017	590,655	1	19	95,318	2,094	37,884	16,664	151,960	0.165	0.092	0.257
2018	617,313	0	20	0	97,813	0	59,934	157,747	0.158	0.097	0.256
2019	508,463	3	26	63,491	61,021	76,717	45,349	246,578	0.245	0.240	0.485
2020	451,721	0	5	0	14,847	0	48,862	63,709	0.033	0.108	0.141
MA Total:	2,802,018	7	91	342,493	183,360	192,500	198,489	916,842	0.188	0.140	0.327

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.982	4.584	.
(14) Massachusetts Credibility:	0.220	0.360	.
(15) Countrywide Pure Premium:	0.222	0.112	0.334
(16) Countrywide Indicated Relativity:	4.721	4.436	.
(17) Countrywide Credibility:	0.390	0.320	.
(18) Countrywide Lost-Time Claims:	395.00	.	.
(19) Pure Premium Underlying Present Rate:	0.230	0.156	0.386
(20) Relativity to Underlying Present Rate:	4.048	4.821	.
(21) Credibility to Underlying Relativity:	0.390	0.320	.
(22) Industry Group Converted Pure Premium:	0.063	0.030	0.093
(23) Formula Relativity:	4.076	4.612	.
(24) Balanced Formula Relativity:	4.050	4.610	4.233

Class(es):		Effective: 7/1/2023							Goods and Services		
4362 MOTION PICTURE: FILM EXCH & PROJECTION RMS, CL											
		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)
2016	1,769	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	25,110	0	0	0	0	0	0	0	0.000	0.000	0.000

	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:	0.320	0.291	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.217	0.105	0.322
(20) Relativity to Underlying Present Rate:	0.323	0.295	.
(21) Credibility to Underlying Relativity:	0.970	0.950	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.313	0.280	.
(24) Balanced Formula Relativity:	0.309	0.279	0.300

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Manufacturing		
4410 RUBBER 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)
2016	387,605	0	37	0	632,068	0	617,541	1,249,609	1,631	1,593	3,224
2017	427,530	1	43	116,461	186,654	198,760	160,388	662,264	0,709	0,840	1,549
2018	455,267	1	58	14,239	732,883	2,685	204,209	954,016	1,641	0,454	2,096
2019	448,292	1	53	198,209	481,685	80,680	191,851	952,425	1,517	0,608	2,125
2020	459,164	0	50	0	155,124	0	108,696	263,820	0,338	0,237	0,575
MA Total:	2,177,860	3	241	328,910	2,188,414	282,124	1,282,685	4,082,133	1,156	0,719	1,874

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.283	1.779	.
(14) Massachusetts Credibility:	0.380	0.630	.
(15) Countrywide Pure Premium:	1.161	0.514	1.675
(16) Countrywide Indicated Relativity:	1.429	1.421	.
(17) Countrywide Credibility:	0.310	0.190	.
(18) Countrywide Lost-Time Claims:	2311.0	.	.
(19) Pure Premium Underlying Present Rate:	1.214	0.823	2.037
(20) Relativity to Underlying Present Rate:	1.508	2.054	.
(21) Credibility to Underlying Relativity:	0.310	0.180	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.398	1.760	.
(24) Balanced Formula Relativity:	1.401	1.769	1.515

Class(es):		Effective: 7/1/2023							Manufacturing		
4432 FOUNTAIN PEN 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)
2016	63,230	0	5	0	6,492	0	1,254	7,747	0,103	0,020	0,123
2017	63,484	0	10	0	2,163	0	4,145	6,308	0,034	0,065	0,099
2018	68,230	0	3	0	0	0	451	451	0,000	0,007	0,007
2019	62,340	0	3	0	5,716	0	12,747	18,463	0,092	0,204	0,296
2020	48,478	0	3	0	3,145	0	2,670	5,815	0,065	0,055	0,120
MA Total:	305,763	0	24	0	17,517	0	21,267	38,784	0,057	0,070	0,127

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.064	0.172	.
(14) Massachusetts Credibility:	0.100	0.160	.
(15) Countrywide Pure Premium:	0.638	0.223	0.861
(16) Countrywide Indicated Relativity:	0.785	0.618	.
(17) Countrywide Credibility:	0.290	0.310	.
(18) Countrywide Lost-Time Claims:	53.000	.	.
(19) Pure Premium Underlying Present Rate:	0.274	0.174	0.448
(20) Relativity to Underlying Present Rate:	0.341	0.435	.
(21) Credibility to Underlying Relativity:	0.610	0.530	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.442	0.449	.
(24) Balanced Formula Relativity:	0.443	0.452	0.445

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Manufacturing		
4439 LACQUER OR SPIRIT VARNISH 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)
2016	42,107	0	10	0	41,404	0	57,401	98,805	0.983	1.363	2.347
2017	44,734	0	6	0	25,596	0	11,329	36,925	0.572	0.253	0.825
2018	39,787	0	4	0	8,876	0	5,684	14,560	0.223	0.143	0.366
2019	41,740	0	7	0	0	0	6,659	6,659	0.000	0.160	0.160
2020	29,751	1	8	105,361	42,575	55,332	67,543	270,811	4.972	4.130	9.103
MA Total:	198,119	1	35	105,361	118,450	55,332	148,616	427,759	1.130	1.029	2.159

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.254	2.548	.
(14) Massachusetts Credibility:	0.190	0.320	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	2.947	3.971	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	2.398	1.610	4.008
(20) Relativity to Underlying Present Rate:	2.980	4.016	.
(21) Credibility to Underlying Relativity:	0.810	0.680	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	2.652	3.546	.
(24) Balanced Formula Relativity:	2.657	3.564	2.938

Class(es):		Effective: 7/1/2023							Manufacturing		
4452 PLASTICS MFG: FABRICATED 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)
2016	777,658	3	91	273,028	1,003,241	144,926	303,756	1,724,951	1.641	0.577	2.218
2017	772,863	5	102	808,352	371,467	112,063	189,242	1,481,124	1.527	0.390	1.916
2018	867,990	2	118	227,119	1,536,422	34,645	485,928	2,284,114	2.032	0.600	2.631
2019	851,541	3	94	694,211	978,334	753,305	438,501	2,864,351	1.964	1.400	3.364
2020	889,879	2	89	322,068	1,140,685	78,524	406,355	1,947,632	1.644	0.545	2.189
MA Total:	4,159,931	15	494	2,324,779	5,030,147	1,123,463	1,823,782	10,302,172	1.768	0.708	2.477

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.963	1.754	.
(14) Massachusetts Credibility:	0.490	0.680	.
(15) Countrywide Pure Premium:	1.066	0.528	1.594
(16) Countrywide Indicated Relativity:	1.312	1.460	.
(17) Countrywide Credibility:	0.260	0.160	.
(18) Countrywide Lost-Time Claims:	1955.0	.	.
(19) Pure Premium Underlying Present Rate:	1.206	0.515	1.721
(20) Relativity to Underlying Present Rate:	1.498	1.286	.
(21) Credibility to Underlying Relativity:	0.250	0.160	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.677	1.632	.
(24) Balanced Formula Relativity:	1.681	1.640	1.668

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	553,511	1	82	292,460	373,738	64,595	191,843	922,635	1,204	0,463	1,667
2017	533,736	3	80	630,540	645,744	133,361	320,470	1,730,116	2,391	0,850	3,242
2018	657,597	5	75	383,940	581,804	144,171	379,525	1,489,439	1,469	0,796	2,265
2019	796,107	3	53	313,890	236,488	95,669	191,562	837,609	0,691	0,361	1,052
2020	720,811	1	53	67,198	286,762	33,706	222,156	609,822	0,491	0,355	0,846
MA Total:	3,261,762	13	343	1,688,027	2,124,536	471,502	1,305,556	5,589,621	1,169	0,545	1,714

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.298	1.349	.
(14) Massachusetts Credibility:	0.450	0.670	.
(15) Countrywide Pure Premium:	1.110	0.532	1.642
(16) Countrywide Indicated Relativity:	1.366	1.472	.
(17) Countrywide Credibility:	0.280	0.170	.
(18) Countrywide Lost-Time Claims:	2474.0	.	.
(19) Pure Premium Underlying Present Rate:	1.250	0.634	1.884
(20) Relativity to Underlying Present Rate:	1.553	1.582	.
(21) Credibility to Underlying Relativity:	0.270	0.160	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.386	1.407	.
(24) Balanced Formula Relativity:	1.388	1.414	1.396

Class(es):		Effective: 7/1/2023							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)
2016	480,077	0	44	0	216,237	0	69,113	285,350	0,450	0,144	0,594
2017	577,543	2	59	201,704	511,092	279,935	150,524	1,143,256	1,234	0,745	1,980
2018	652,433	2	51	251,616	269,053	57,519	150,309	728,497	0,798	0,319	1,117
2019	680,080	3	44	118,869	319,935	29,174	180,762	648,741	0,645	0,309	0,954
2020	699,738	1	48	76,544	328,430	47,854	133,480	586,308	0,579	0,259	0,838
MA Total:	3,089,871	8	246	648,734	1,644,747	414,482	684,189	3,392,152	0,742	0,356	1,098

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.824	0.880	.
(14) Massachusetts Credibility:	0.390	0.550	.
(15) Countrywide Pure Premium:	0.970	0.383	1.353
(16) Countrywide Indicated Relativity:	1.194	1.058	.
(17) Countrywide Credibility:	0.310	0.230	.
(18) Countrywide Lost-Time Claims:	434.00	.	.
(19) Pure Premium Underlying Present Rate:	0.892	0.410	1.302
(20) Relativity to Underlying Present Rate:	1.108	1.024	.
(21) Credibility to Underlying Relativity:	0.300	0.220	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.024	0.953	.
(24) Balanced Formula Relativity:	1.026	0.957	1.005

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	2,207,444	11	274	635,778	1,839,920	298,797	956,633	3,731,128	1,122	0,569	1,690
2017	1,807,574	6	243	274,781	1,526,447	79,085	723,109	2,603,423	0,996	0,444	1,440
2018	2,083,549	7	259	874,615	1,764,913	141,393	739,777	3,520,698	1,267	0,423	1,690
2019	1,991,527	4	220	340,928	1,793,379	184,070	794,962	3,113,338	1,072	0,492	1,563
2020	2,174,376	9	203	870,133	1,616,731	216,793	1,005,471	3,709,127	1,144	0,562	1,706
MA Total:	10,264,470	37	1,199	2,996,235	8,541,390	920,138	4,219,952	16,677,714	1,124	0,501	1,625

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.248	1.240	.
(14) Massachusetts Credibility:	0.610	0.970	.
(15) Countrywide Pure Premium:	0.958	0.450	1.409
(16) Countrywide Indicated Relativity:	1.179	1.246	.
(17) Countrywide Credibility:	0.200	0.020	.
(18) Countrywide Lost-Time Claims:	9523.0	.	.
(19) Pure Premium Underlying Present Rate:	0.842	0.499	1.342
(20) Relativity to Underlying Present Rate:	1.047	1.245	.
(21) Credibility to Underlying Relativity:	0.190	0.010	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.196	1.240	.
(24) Balanced Formula Relativity:	1.198	1.246	1.213

Class(es):		Effective: 7/1/2023							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)
2016	294,171	0	36	0	116,020	0	61,144	177,164	0,394	0,208	0,602
2017	330,057	1	37	143,259	96,886	33,423	103,647	377,214	0,728	0,415	1,143
2018	313,226	0	33	0	337,573	0	144,670	482,243	1,078	0,462	1,540
2019	304,595	0	34	0	262,580	0	84,703	347,283	0,862	0,278	1,140
2020	356,383	1	43	137,808	783,161	85,741	186,940	1,193,650	2,584	0,765	3,349
MA Total:	1,598,432	2	183	281,067	1,596,219	119,163	581,105	2,577,555	1,174	0,438	1,613

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.304	1.085	.
(14) Massachusetts Credibility:	0.290	0.430	.
(15) Countrywide Pure Premium:	0.987	0.372	1.358
(16) Countrywide Indicated Relativity:	1.214	1.028	.
(17) Countrywide Credibility:	0.360	0.290	.
(18) Countrywide Lost-Time Claims:	161.00	.	.
(19) Pure Premium Underlying Present Rate:	0.825	0.419	1.244
(20) Relativity to Underlying Present Rate:	1.025	1.045	.
(21) Credibility to Underlying Relativity:	0.350	0.280	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.174	1.057	.
(24) Balanced Formula Relativity:	1.176	1.062	1.141

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	5,592,906	3	92	353,449	461,770	84,690	361,025	1,260,934	0.146	0.080	0.225
2017	5,818,522	2	84	333,033	84,143	97,804	163,850	678,831	0.072	0.045	0.117
2018	5,849,931	3	91	342,861	670,198	144,877	316,238	1,474,175	0.173	0.079	0.252
2019	6,388,564	4	79	116,926	616,133	44,581	428,635	1,206,275	0.115	0.074	0.189
2020	8,416,450	1	72	62,625	553,907	62,268	199,186	877,986	0.073	0.031	0.104
MA Total:	32,066,373	13	418	1,208,893	2,386,151	434,221	1,468,934	5,498,199	0.112	0.059	0.171

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.148	0.170	.
(14) Massachusetts Credibility:	0.470	0.690	.
(15) Countrywide Pure Premium:	0.205	0.106	0.311
(16) Countrywide Indicated Relativity:	0.270	0.300	.
(17) Countrywide Credibility:	0.270	0.160	.
(18) Countrywide Lost-Time Claims:	1748.0	.	.
(19) Pure Premium Underlying Present Rate:	0.144	0.069	0.214
(20) Relativity to Underlying Present Rate:	0.215	0.195	.
(21) Credibility to Underlying Relativity:	0.260	0.150	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.198	0.195	.
(24) Balanced Formula Relativity:	0.196	0.194	0.195

Class(es):		Effective: 7/1/2023							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)
2016	14,024,024	2	99	91,467	411,404	18,631	190,773	712,275	0.036	0.015	0.051
2017	15,409,103	1	118	65,672	937,455	3,351	254,707	1,261,185	0.065	0.017	0.082
2018	19,053,947	2	146	529,072	267,782	106,021	307,718	1,210,594	0.042	0.022	0.064
2019	22,985,557	2	130	106,249	55,911	29,742	259,078	450,979	0.007	0.013	0.020
2020	29,038,255	3	103	331,322	736,670	74,388	269,489	1,411,869	0.037	0.012	0.049
MA Total:	100,510,886	10	596	1,123,782	2,409,221	232,134	1,281,766	5,046,902	0.035	0.015	0.050

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.046	0.043	.
(14) Massachusetts Credibility:	0.450	0.670	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	0.059	0.058	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.040	0.021	0.061
(20) Relativity to Underlying Present Rate:	0.060	0.058	.
(21) Credibility to Underlying Relativity:	0.550	0.330	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.054	0.048	.
(24) Balanced Formula Relativity:	0.053	0.048	0.051

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Calculation of Class Relativities

Class(es): 4557 INK MFG		Effective: 7/1/2023							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)
2016	397.721	1	30	16.757	160.007	790	73.395	250.950	0.444	0.187	0.631
2017	459.827	3	24	533.545	293.585	122.691	64.201	1,014.023	1.799	0.406	2.205
2018	496.570	1	44	147.146	804.510	14.391	135.387	1,101.435	1.916	0.302	2.218
2019	484.749	1	22	133.505	166.673	30.180	70.752	401.110	0.619	0.208	0.827
2020	503.949	0	24	0	134.482	0	82.379	216.860	0.267	0.163	0.430
MA Total:	2,342.817	6	144	830.953	1,559.258	168.053	426.114	2,984.378	1.020	0.254	1.274

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.133	0.628	.
(14) Massachusetts Credibility:	0.340	0.440	.
(15) Countrywide Pure Premium:	1.043	0.432	1.475
(16) Countrywide Indicated Relativity:	1.283	1.194	.
(17) Countrywide Credibility:	0.330	0.280	.
(18) Countrywide Lost-Time Claims:	527.00	.	.
(19) Pure Premium Underlying Present Rate:	0.868	0.314	1.182
(20) Relativity to Underlying Present Rate:	1.078	0.784	.
(21) Credibility to Underlying Relativity:	0.330	0.280	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.164	0.830	.
(24) Balanced Formula Relativity:	1.167	0.834	1.064

Class(es): 4558 PAINT MFG		Effective: 7/1/2023							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)
2016	129.470	0	9	0	2.447	0	8.104	10.551	0.019	0.063	0.081
2017	149.941	2	11	451.116	12.105	185.249	14.779	663.249	3.089	1.334	4.423
2018	133.252	1	11	3.738	0	48.534	6.702	58.974	0.028	0.415	0.443
2019	134.749	0	8	0	183	0	6.219	6.402	0.001	0.046	0.048
2020	139.681	2	5	674.376	342.767	312.705	103.171	1,433.019	7.282	2.977	10.259
MA Total:	687.094	5	44	1,129.230	357.502	546.489	138.974	2,172.195	2.164	0.998	3.161

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.402	2.470	.
(14) Massachusetts Credibility:	0.190	0.290	.
(15) Countrywide Pure Premium:	0.682	0.319	1.001
(16) Countrywide Indicated Relativity:	0.840	0.881	.
(17) Countrywide Credibility:	0.410	0.360	.
(18) Countrywide Lost-Time Claims:	546.00	.	.
(19) Pure Premium Underlying Present Rate:	0.658	0.359	1.017
(20) Relativity to Underlying Present Rate:	0.818	0.896	.
(21) Credibility to Underlying Relativity:	0.400	0.350	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.128	1.347	.
(24) Balanced Formula Relativity:	1.130	1.354	1.199

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	55,189	0	2	0	2,270	0	1,466	3,736	0.041	0.027	0.068
2017	55,074	0	7	0	209,900	0	72,577	282,477	3.811	1.318	5.129
2018	51,235	0	10	0	48,603	0	29,113	77,716	0.949	0.568	1.517
2019	55,336	0	4	0	0	0	2,645	2,645	0.000	0.048	0.048
2020	50,981	0	7	0	17,333	0	11,752	29,085	0.340	0.231	0.571
MA Total:	267,816	0	30	0	278,106	0	117,553	395,659	1.038	0.439	1.477

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.153	1.087	.
(14) Massachusetts Credibility:	0.160	0.230	.
(15) Countrywide Pure Premium:	1.378	0.695	2.073
(16) Countrywide Indicated Relativity:	1.695	1.922	.
(17) Countrywide Credibility:	0.420	0.390	.
(18) Countrywide Lost-Time Claims:	466.00	.	.
(19) Pure Premium Underlying Present Rate:	1.094	0.558	1.652
(20) Relativity to Underlying Present Rate:	1.360	1.391	.
(21) Credibility to Underlying Relativity:	0.420	0.380	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.467	1.528	.
(24) Balanced Formula Relativity:	1.470	1.536	1.491

Class(es):		Effective: 7/1/2023							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)
2016	656,509	1	57	174,036	215,123	38,502	72,886	500,547	0.593	0.170	0.762
2017	573,823	2	32	65,916	352,617	19,553	92,017	530,104	0.729	0.194	0.924
2018	657,547	0	41	0	498,326	0	229,212	727,538	0.758	0.349	1.106
2019	4,986,409	0	45	0	671,133	0	296,949	968,082	0.135	0.060	0.194
2020	1,648,636	3	33	375,038	387,147	222,413	167,487	1,152,085	0.462	0.236	0.699
MA Total:	8,522,923	6	208	614,990	2,124,346	280,468	858,551	3,878,355	0.321	0.134	0.455

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.357	0.331	.
(14) Massachusetts Credibility:	0.410	0.590	.
(15) Countrywide Pure Premium:	0.454	0.221	0.675
(16) Countrywide Indicated Relativity:	0.558	0.611	.
(17) Countrywide Credibility:	0.300	0.210	.
(18) Countrywide Lost-Time Claims:	2115.0	.	.
(19) Pure Premium Underlying Present Rate:	0.375	0.177	0.552
(20) Relativity to Underlying Present Rate:	0.466	0.441	.
(21) Credibility to Underlying Relativity:	0.290	0.200	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.449	0.412	.
(24) Balanced Formula Relativity:	0.450	0.414	0.439

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	163.269	1	24	93.845	185.150	33.216	234.157	546.367	1.709	1.638	3.346
2017	167.372	0	11	0	471.145	0	156.161	627.306	2.815	0.933	3.748
2018	157.648	1	20	305.602	279.271	214.973	389.391	1,189.236	3.710	3.834	7.544
2019	172.928	1	11	359.389	380.175	67.007	157.362	963.932	4.277	1.297	5.574
2020	159.147	0	15	0	188.442	0	210.711	399.152	1.184	1.324	2.508
MA Total:	820.365	3	81	758.835	1,504,182	315,196	1,147,782	3,725,994	2.759	1.783	4.542

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.062	4.415	.
(14) Massachusetts Credibility:	0.300	0.530	.
(15) Countrywide Pure Premium:	1.235	0.495	1.730
(16) Countrywide Indicated Relativity:	1.519	1.370	.
(17) Countrywide Credibility:	0.350	0.240	.
(18) Countrywide Lost-Time Claims:	623.00	.	.
(19) Pure Premium Underlying Present Rate:	1.851	1.367	3.217
(20) Relativity to Underlying Present Rate:	2.299	3.409	.
(21) Credibility to Underlying Relativity:	0.350	0.230	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	2.255	3.453	.
(24) Balanced Formula Relativity:	2.260	3.470	2.634

Class(es):		Effective: 7/1/2023							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)
2016	46.606	0	7	0	8.151	0	19.122	27.273	0.175	0.410	0.585
2017	46.048	0	5	0	184.751	0	62.960	247.711	4.012	1.367	5.379
2018	52.645	0	3	0	0	0	1.174	1.174	0.000	0.022	0.022
2019	37.799	0	2	0	0	0	870	870	0.000	0.023	0.023
2020	53.878	1	2	68.599	0	23.296	1.025	92.920	1.273	0.451	1.725
MA Total:	236.976	1	19	68,599	192,902	23,296	85,151	369,948	1.103	0.458	1.561

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.225	1.133	.
(14) Massachusetts Credibility:	0.140	0.190	.
(15) Countrywide Pure Premium:	0.975	0.464	1.439
(16) Countrywide Indicated Relativity:	1.200	1.284	.
(17) Countrywide Credibility:	0.340	0.360	.
(18) Countrywide Lost-Time Claims:	79.000	.	.
(19) Pure Premium Underlying Present Rate:	0.914	0.368	1.282
(20) Relativity to Underlying Present Rate:	1.135	0.919	.
(21) Credibility to Underlying Relativity:	0.520	0.450	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.170	1.091	.
(24) Balanced Formula Relativity:	1.172	1.096	1.149

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	55,468	1	11	271,982	42,375	69,483	58,022	441,862	5,667	2,299	7,966
2017	57,365	0	9	0	264,342	0	53,728	318,070	4,608	0,937	5,545
2018	61,497	1	18	226,495	40,719	33,743	71,329	372,287	4,345	1,709	6,054
2019	60,905	0	13	0	424,406	0	276,214	700,620	6,968	4,535	11,504
2020	146,242	2	15	123,620	546,548	71,121	742,021	1,483,310	4,583	5,560	10,143
MA Total:	381,476	4	66	622,098	1,318,390	174,347	1,201,315	3,316,150	5,087	3,606	8,693

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	5.647	8.927	.
(14) Massachusetts Credibility:	0.340	0.440	.
(15) Countrywide Pure Premium:	3.030	1.342	4.372
(16) Countrywide Indicated Relativity:	3.728	3.713	.
(17) Countrywide Credibility:	0.330	0.280	.
(18) Countrywide Lost-Time Claims:	487.00	.	.
(19) Pure Premium Underlying Present Rate:	5.180	1.908	7.088
(20) Relativity to Underlying Present Rate:	6.435	4.760	.
(21) Credibility to Underlying Relativity:	0.330	0.280	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	5.274	6.300	.
(24) Balanced Formula Relativity:	5.284	6.331	5.608

Class(es):		Effective: 7/1/2023							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)
2016	414,821	0	7	0	43,514	0	16,872	60,386	0.105	0.041	0.146
2017	405,304	0	5	0	264	0	3,695	3,959	0.001	0.009	0.010
2018	397,799	3	5	49,680	85,437	19,342	44,703	199,161	0.340	0.161	0.501
2019	424,490	0	4	0	16,539	0	8,996	25,535	0.039	0.021	0.060
2020	415,468	0	2	0	17,562	0	16,261	33,823	0.042	0.039	0.081
MA Total:	2,057,883	3	23	49,680	163,317	19,342	90,526	322,865	0.104	0.053	0.157

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.115	0.132	.
(14) Massachusetts Credibility:	0.190	0.270	.
(15) Countrywide Pure Premium:	0.299	0.135	0.433
(16) Countrywide Indicated Relativity:	0.367	0.372	.
(17) Countrywide Credibility:	0.410	0.370	.
(18) Countrywide Lost-Time Claims:	185.00	.	.
(19) Pure Premium Underlying Present Rate:	0.234	0.105	0.339
(20) Relativity to Underlying Present Rate:	0.291	0.261	.
(21) Credibility to Underlying Relativity:	0.400	0.360	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.289	0.268	.
(24) Balanced Formula Relativity:	0.290	0.269	0.283

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	492,297	1	42	75,099	143,348	32,600	87,398	338,446	0.444	0.244	0.687
2017	612,234	2	31	168,724	133,855	22,800	75,036	400,416	0.494	0.160	0.654
2018	548,286	2	23	114,972	40,824	35,255	71,783	262,834	0.284	0.195	0.479
2019	459,150	0	7	0	5,222	0	29,542	34,764	0.011	0.064	0.076
2020	501,680	0	11	0	3,068	0	17,863	20,931	0.006	0.036	0.042
MA Total:	2,613,646	5	114	358,795	326,318	90,655	281,622	1,057,390	0.262	0.142	0.405

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.291	0.353	.
(14) Massachusetts Credibility:	0.240	0.380	.
(15) Countrywide Pure Premium:	0.408	0.203	0.611
(16) Countrywide Indicated Relativity:	0.502	0.563	.
(17) Countrywide Credibility:	0.380	0.310	.
(18) Countrywide Lost-Time Claims:	763.00	.	.
(19) Pure Premium Underlying Present Rate:	0.338	0.189	0.527
(20) Relativity to Underlying Present Rate:	0.420	0.472	.
(21) Credibility to Underlying Relativity:	0.380	0.310	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.420	0.455	.
(24) Balanced Formula Relativity:	0.421	0.457	0.432

Class(es):		Effective: 7/1/2023							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)
2016	219,466	0	20	0	111,914	0	56,017	167,931	0.510	0.255	0.765
2017	250,194	1	14	22,889	16,619	5,089	33,103	77,700	0.158	0.153	0.311
2018	225,676	0	20	0	261,146	0	126,374	387,520	1.157	0.560	1.717
2019	246,230	1	22	133,777	211,312	44,693	134,577	524,360	1.401	0.728	2.130
2020	262,979	1	21	153,896	204,501	35,162	103,243	496,802	1.363	0.526	1.889
MA Total:	1,204,546	3	97	310,562	805,492	84,944	453,316	1,654,313	0.927	0.447	1.373

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.029	1.106	.
(14) Massachusetts Credibility:	0.240	0.360	.
(15) Countrywide Pure Premium:	0.774	0.402	1.176
(16) Countrywide Indicated Relativity:	0.952	1.112	.
(17) Countrywide Credibility:	0.380	0.320	.
(18) Countrywide Lost-Time Claims:	409.00	.	.
(19) Pure Premium Underlying Present Rate:	0.695	0.361	1.056
(20) Relativity to Underlying Present Rate:	0.863	0.901	.
(21) Credibility to Underlying Relativity:	0.380	0.320	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.937	1.042	.
(24) Balanced Formula Relativity:	0.939	1.047	0.972

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	16.503	0	2	0	192	0	1,582	1,774	0.012	0.096	0.107
2017	14.478	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	13.676	0	1	0	0	0	89	89	0.000	0.007	0.007
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
MA Total:	77.471	0	3	0	192	0	1,671	1,863	0.002	0.022	0.024

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.003	0.053	.
(14) Massachusetts Credibility:	0.060	0.080	.
(15) Countrywide Pure Premium:	0.398	0.139	0.537
(16) Countrywide Indicated Relativity:	0.490	0.384	.
(17) Countrywide Credibility:	0.470	0.460	.
(18) Countrywide Lost-Time Claims:	519.00	.	.
(19) Pure Premium Underlying Present Rate:	0.341	0.150	0.491
(20) Relativity to Underlying Present Rate:	0.423	0.375	.
(21) Credibility to Underlying Relativity:	0.470	0.460	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.429	0.353	.
(24) Balanced Formula Relativity:	0.430	0.355	0.407

Class(es):		Effective: 7/1/2023							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)
2016	3.033	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	3.531	0	1	0	4,193	0	3,089	7,282	1.188	0.875	2.062
2018	77.043	1	0	309,211	0	110,891	0	420,102	4,013	1,439	5,452
2019	73.203	1	5	218,193	35,003	73,447	48,511	375,153	3,459	1,666	5,125
2020	84.965	2	5	234,938	4,757	73,795	4,849	318,338	2,821	0.926	3,747
MA Total:	241.774	4	11	762,341	43,953	258,133	56,448	1,120,875	3,335	1,301	4,636

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.702	3.221	.
(14) Massachusetts Credibility:	0.150	0.220	.
(15) Countrywide Pure Premium:	1.601	0.541	2.142
(16) Countrywide Indicated Relativity:	1.969	1.498	.
(17) Countrywide Credibility:	0.380	0.390	.
(18) Countrywide Lost-Time Claims:	100.00	.	.
(19) Pure Premium Underlying Present Rate:	1.152	0.529	1.682
(20) Relativity to Underlying Present Rate:	1.432	1.320	.
(21) Credibility to Underlying Relativity:	0.470	0.390	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.977	1.807	.
(24) Balanced Formula Relativity:	1.981	1.816	1.930

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Calculation of Class Relativities

Class(es): 4771 EXPLOSIVES OR AMMUNITION MFG: NOC - & DRIVERS									Effective: 7/1/2023			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)			
2016	11,970	0	1	0	0	0	76	76	0.000	0.006	0.006			
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			
MA Total:	22,720	0	1	0	0	0	76	76	0.000	0.003	0.003			

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.008	.
(14) Massachusetts Credibility:	0.060	0.080	.
(15) Countrywide Pure Premium:	0.968	0.448	1.416
(16) Countrywide Indicated Relativity:	1.191	1.238	.
(17) Countrywide Credibility:	0.470	0.460	.
(18) Countrywide Lost-Time Claims:	364.00	.	.
(19) Pure Premium Underlying Present Rate:	1.145	0.401	1.546
(20) Relativity to Underlying Present Rate:	1.422	1.001	.
(21) Credibility to Underlying Relativity:	0.470	0.460	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.228	1.030	.
(24) Balanced Formula Relativity:	1.231	1.036	1.170

Class(es): 4825 DRUG, MEDICINE OR PHARM PREP MFG & INCIDENTAL MFG INGREDIENTS									Effective: 7/1/2023			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)			
2016	3,803,048	3	51	365,452	268,713	69,327	131,644	835,135	0.167	0.053	0.220			
2017	3,383,372	0	53	0	146,178	0	88,495	234,673	0.043	0.026	0.069			
2018	3,785,747	2	62	226,123	122,152	83,597	210,497	642,368	0.092	0.078	0.170			
2019	4,058,745	2	45	44,596	222,028	44,568	173,396	484,588	0.066	0.054	0.119			
2020	7,513,281	0	45	0	398,374	0	186,739	585,113	0.053	0.025	0.078			
MA Total:	22,544,192	7	256	636,171	1,157,444	197,492	790,771	2,781,877	0.080	0.044	0.123			

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.088	0.109	.
(14) Massachusetts Credibility:	0.460	0.640	.
(15) Countrywide Pure Premium:	0.316	0.150	0.466
(16) Countrywide Indicated Relativity:	0.388	0.415	.
(17) Countrywide Credibility:	0.270	0.180	.
(18) Countrywide Lost-Time Claims:	850.00	.	.
(19) Pure Premium Underlying Present Rate:	0.194	0.081	0.275
(20) Relativity to Underlying Present Rate:	0.241	0.201	.
(21) Credibility to Underlying Relativity:	0.270	0.180	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.211	0.180	.
(24) Balanced Formula Relativity:	0.211	0.181	0.202

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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: 7/1/2023							Manufacturing		
4828 CHEMICAL BLENDING OR MIXING NOC- ALL 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)
2016	1,083,705	0	32	0	196,686	0	151,709	348,395	0.181	0.140	0.321
2017	1,155,740	0	23	0	77,935	0	91,671	169,606	0.067	0.079	0.147
2018	810,784	0	23	0	40,867	0	130,640	171,507	0.050	0.161	0.212
2019	845,493	1	18	271,744	144,215	70,328	186,527	672,814	0.492	0.304	0.796
2020	797,026	1	23	651,249	525,184	91,370	316,873	1,584,677	1.476	0.512	1.988
MA Total:	4,692,748	2	119	922,993	984,887	161,698	877,421	2,946,999	0.407	0.221	0.628

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.451	0.548	.
(14) Massachusetts Credibility:	0.330	0.480	.
(15) Countrywide Pure Premium:	0.569	0.241	0.811
(16) Countrywide Indicated Relativity:	0.701	0.668	.
(17) Countrywide Credibility:	0.340	0.260	.
(18) Countrywide Lost-Time Claims:	2250.0	.	.
(19) Pure Premium Underlying Present Rate:	0.390	0.190	0.580
(20) Relativity to Underlying Present Rate:	0.485	0.475	.
(21) Credibility to Underlying Relativity:	0.330	0.260	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	0.547	0.560	.
(24) Balanced Formula Relativity:	0.548	0.563	0.553

Class(es):		Effective: 7/1/2023							Construction		
5020 CEILING INSTALLATION-SUSPENDED ACOUSTICAL GRID											
		Converted Unlimited Losses									
		Amount									
		Claim Count		Indemnity		Medical		MA Indicated Pure Premiums			
Policy Period	Exposure (2)	Likely (3)	Not-Likely (4)	Likely (5)	Not-Likely (6)	Likely (7)	Not-Likely (8)	Total (9)	Indemnity (10)	Medical (11)	Total (12)
2016	224,390	1	13	332,922	76,766	51,104	57,027	517,818	1.826	0.482	2.308
2017	242,102	0	14	0	28,692	0	23,508	52,200	0.119	0.097	0.216
2018	285,125	1	21	336,745	87,497	57,850	75,970	558,063	1.488	0.469	1.957
2019	278,740	0	20	0	1,689,722	0	334,191	2,023,913	6.062	1.199	7.261
2020	277,985	0	8	0	577,450	0	211,464	788,914	2.077	0.761	2.838
MA Total:	1,308,342	2	76	669,667	2,460,127	108,954	702,161	3,940,908	2.392	0.620	3.012

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.021	0.645	.
(14) Massachusetts Credibility:	0.390	0.490	.
(15) Countrywide Pure Premium:	2.732	0.843	3.575
(16) Countrywide Indicated Relativity:	1.174	0.885	.
(17) Countrywide Credibility:	0.310	0.260	.
(18) Countrywide Lost-Time Claims:	254.00	.	.
(19) Pure Premium Underlying Present Rate:	2.103	0.726	2.828
(20) Relativity to Underlying Present Rate:	0.970	0.764	.
(21) Credibility to Underlying Relativity:	0.300	0.250	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.053	0.737	.
(24) Balanced Formula Relativity:	1.065	0.739	0.970

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Calculation of Class Relativities

Class(es): 5022 MASONRY NOC		Effective: 7/1/2023							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)
2016	1,374,130	11	121	1,975,134	5,019,437	926,643	1,317,209	9,238,422	5,090	1,633	6,723
2017	1,502,871	15	120	3,042,485	3,971,151	1,225,973	1,308,333	9,547,942	4,667	1,686	6,353
2018	1,677,729	7	111	2,580,012	5,696,764	918,755	2,559,773	11,755,303	4,933	2,073	7,007
2019	1,529,043	8	70	3,208,906	3,259,809	964,804	1,466,339	8,899,858	4,231	1,590	5,821
2020	1,611,425	7	94	1,754,742	4,191,560	1,150,040	1,860,701	8,957,043	3,690	1,868	5,558
MA Total:	7,695,198	48	516	12,561,279	22,138,721	5,186,214	8,512,355	48,398,569	4,509	1,780	6,289

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.924	1.852	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	3.674	1.322	4.996
(16) Countrywide Indicated Relativity:	1.579	1.388	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	4710.0	.	.
(19) Pure Premium Underlying Present Rate:	4.808	1.908	6.716
(20) Relativity to Underlying Present Rate:	2.219	2.008	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.924	1.852	.
(24) Balanced Formula Relativity:	1.947	1.856	1.920

Class(es): 5037 PAINTING: METAL STRUCTURES-OVER 2 STORIES IN HEIGHT & DRIVERS		Effective: 7/1/2023							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)
2016	61,101	0	5	0	0	0	4,075	4,075	0,000	0,067	0,067
2017	89,725	1	7	377,570	435,603	100,815	80,602	994,591	9,063	2,022	11,085
2018	66,499	2	8	922,397	99,285	435,646	30,380	1,487,709	15,364	7,008	22,372
2019	60,508	1	0	2,155	0	1,821	0	3,976	0,036	0,030	0,066
2020	108,702	0	6	0	691,467	0	335,831	1,027,298	6,361	3,089	9,451
MA Total:	386,535	4	26	1,302,123	1,226,355	538,282	450,888	3,517,648	6,541	2,559	9,100

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.792	2.663	.
(14) Massachusetts Credibility:	0.390	0.530	.
(15) Countrywide Pure Premium:	3.925	1.360	5.286
(16) Countrywide Indicated Relativity:	1.687	1.429	.
(17) Countrywide Credibility:	0.310	0.240	.
(18) Countrywide Lost-Time Claims:	80,000	.	.
(19) Pure Premium Underlying Present Rate:	7.378	3.007	10.385
(20) Relativity to Underlying Present Rate:	3.405	3.165	.
(21) Credibility to Underlying Relativity:	0.300	0.230	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	2.633	2.482	.
(24) Balanced Formula Relativity:	2.664	2.487	2.612

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)	
2016	243,004	2	46	678,778	2,041,970	263,689	657,788	3,642,224	11,196	3,792	14,988	
2017	302,183	6	57	1,573,922	2,319,103	321,848	731,462	4,946,335	12,883	3,486	16,369	
2018	262,179	3	34	1,280,172	1,783,016	436,286	568,437	4,067,911	11,684	3,832	15,516	
2019	389,433	4	56	1,395,434	4,968,243	418,274	1,781,927	8,563,879	16,341	5,650	21,991	
2020	530,619	6	63	3,503,485	3,121,127	768,772	1,231,583	8,624,967	12,485	3,770	16,255	
MA Total:	1,727,417	21	256	8,431,791	14,233,459	2,208,869	4,971,198	29,845,317	13,121	4,157	17,277	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	5.599	4.325	.
(14) Massachusetts Credibility:	0.810	1.000	.
(15) Countrywide Pure Premium:	3.594	1.220	4.814
(16) Countrywide Indicated Relativity:	1.545	1.281	.
(17) Countrywide Credibility:	0.100	0.000	.
(18) Countrywide Lost-Time Claims:	888.00	.	.
(19) Pure Premium Underlying Present Rate:	10.038	3.912	13.950
(20) Relativity to Underlying Present Rate:	4.633	4.117	.
(21) Credibility to Underlying Relativity:	0.090	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	5.107	4.325	.
(24) Balanced Formula Relativity:	5.166	4.333	4.924

Class(es):		Effective: 7/1/2023							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)	
2016	21,372	1	7	334,575	342,858	418,898	72,210	1,168,541	31,698	22,979	54,677	
2017	32,070	0	8	0	85,763	0	51,055	136,818	2,674	1,592	4,266	
2018	23,087	0	5	0	338,519	0	70,753	409,272	14,663	3,065	17,727	
2019	18,638	0	3	0	0	0	11,037	11,037	0,000	0,592	0,592	
2020	33,262	0	3	0	1,073,676	0	392,035	1,465,711	32,279	11,786	44,065	
MA Total:	128,429	1	26	334,575	1,840,816	418,898	597,091	3,191,379	16,938	7,911	24,849	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	7.228	8.231	.
(14) Massachusetts Credibility:	0.250	0.430	.
(15) Countrywide Pure Premium:	2.025	0.705	2.730
(16) Countrywide Indicated Relativity:	0.870	0.740	.
(17) Countrywide Credibility:	0.380	0.290	.
(18) Countrywide Lost-Time Claims:	828.00	.	.
(19) Pure Premium Underlying Present Rate:	7.037	5.268	12.306
(20) Relativity to Underlying Present Rate:	3.248	5.544	.
(21) Credibility to Underlying Relativity:	0.370	0.280	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	3.339	5.306	.
(24) Balanced Formula Relativity:	3.378	5.317	3.942

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	126,683	1	16	270,547	1,264,227	176,215	529,790	2,240,779	12,115	5,573	17,688
2017	135,109	2	17	487,086	600,701	504,458	279,531	1,871,776	8,051	5,803	13,854
2018	151,869	7	24	2,028,672	1,480,553	873,307	794,816	5,177,348	23,107	10,984	34,091
2019	151,167	2	12	1,261,818	523,356	305,623	816,318	2,907,115	11,809	7,422	19,231
2020	120,189	2	9	213,468	410,912	54,443	218,543	897,366	5,195	2,271	7,466
MA Total:	685,017	14	78	4,261,590	4,279,750	1,914,046	2,638,998	13,094,384	12,469	6,647	19,115

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	5.321	6.915	.
(14) Massachusetts Credibility:	0.610	0.950	.
(15) Countrywide Pure Premium:	7.376	3.387	10.763
(16) Countrywide Indicated Relativity:	3.170	3.557	.
(17) Countrywide Credibility:	0.200	0.030	.
(18) Countrywide Lost-Time Claims:	399.00	.	.
(19) Pure Premium Underlying Present Rate:	12.608	7.122	19.730
(20) Relativity to Underlying Present Rate:	5.819	7.495	.
(21) Credibility to Underlying Relativity:	0.190	0.020	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	4.985	6.826	.
(24) Balanced Formula Relativity:	5.043	6.840	5.566

Class(es):		Effective: 7/1/2023							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)
2016	787,109	4	65	806,329	1,334,657	182,191	543,654	2,866,832	2,720	0,922	3,642
2017	830,919	9	78	2,036,918	2,497,596	565,447	989,048	6,089,009	5,457	1,871	7,328
2018	888,553	3	89	260,611	1,802,630	40,039	751,823	2,855,103	2,322	0,891	3,213
2019	829,966	3	61	1,512,324	1,784,025	224,943	909,243	4,430,534	3,972	1,367	5,338
2020	977,200	5	71	1,334,138	1,806,310	254,281	740,997	4,135,727	3,214	1,019	4,232
MA Total:	4,313,748	24	364	5,950,319	9,225,218	1,266,902	3,934,765	20,377,204	3,518	1,206	4,724

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.501	1.255	.
(14) Massachusetts Credibility:	0.730	0.920	.
(15) Countrywide Pure Premium:	2.615	1.081	3.696
(16) Countrywide Indicated Relativity:	1.124	1.135	.
(17) Countrywide Credibility:	0.140	0.040	.
(18) Countrywide Lost-Time Claims:	2181.0	.	.
(19) Pure Premium Underlying Present Rate:	3.145	1.062	4.207
(20) Relativity to Underlying Present Rate:	1.451	1.118	.
(21) Credibility to Underlying Relativity:	0.130	0.040	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.442	1.244	.
(24) Balanced Formula Relativity:	1.459	1.247	1.397

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	681.012	4	103	330.247	2,243.970	55.606	710.116	3,339.939	3.780	1.124	4.904
2017	697.578	10	89	2,145.632	1,705.179	745.936	687.248	5,283.995	5.520	2.055	7.575
2018	651.501	2	74	691.936	959.199	114.766	380.079	2,145.981	2.534	0.760	3.294
2019	710.276	4	81	630.741	2,370.016	216.002	741.791	3,958.550	4.225	1.348	5.573
2020	554.895	3	29	561.646	512.115	167.007	237.479	1,478.247	1.935	0.729	2.664
MA Total:	3,295.261	23	376	4,360.203	7,790.478	1,299.317	2,756.714	16,206.712	3.687	1.231	4.918

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.574	1.281	.
(14) Massachusetts Credibility:	0.660	0.890	.
(15) Countrywide Pure Premium:	2.291	0.811	3.102
(16) Countrywide Indicated Relativity:	0.985	0.852	.
(17) Countrywide Credibility:	0.170	0.060	.
(18) Countrywide Lost-Time Claims:	1747.0	.	.
(19) Pure Premium Underlying Present Rate:	3.217	1.286	4.503
(20) Relativity to Underlying Present Rate:	1.485	1.353	.
(21) Credibility to Underlying Relativity:	0.170	0.050	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.458	1.259	.
(24) Balanced Formula Relativity:	1.475	1.261	1.413

Class(es):		Effective: 7/1/2023							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)
2016	991.153	2	51	60.933	270.769	62.114	246.196	640.011	0.335	0.311	0.646
2017	1,071.737	4	50	1,116.458	2,495.866	345.633	648.090	4,606.047	3.371	0.927	4.298
2018	1,159.864	4	43	1,764.931	1,579.983	363.125	488.913	4,196.952	2.884	0.735	3.618
2019	1,409.811	4	49	2,656.456	1,833.489	577.643	711.221	5,778.808	3.185	0.914	4.099
2020	654.553	2	23	557.034	536.884	89.283	268.982	1,452.184	1.671	0.547	2.219
MA Total:	5,287.118	16	216	6,155.812	6,716.991	1,437.798	2,363.401	16,674.002	2.435	0.719	3.154

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.039	0.748	.
(14) Massachusetts Credibility:	0.570	0.770	.
(15) Countrywide Pure Premium:	1.022	0.383	1.405
(16) Countrywide Indicated Relativity:	0.439	0.402	.
(17) Countrywide Credibility:	0.220	0.120	.
(18) Countrywide Lost-Time Claims:	507.00	.	.
(19) Pure Premium Underlying Present Rate:	1.395	0.553	1.948
(20) Relativity to Underlying Present Rate:	0.644	0.582	.
(21) Credibility to Underlying Relativity:	0.210	0.110	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.824	0.688	.
(24) Balanced Formula Relativity:	0.834	0.690	0.792

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	8,047,694	37	630	6,239,294	9,014,068	1,806,300	3,656,360	20,716,023	1,895	0,679	2,574
2017	8,707,050	29	700	5,224,370	8,548,915	1,818,142	4,038,623	19,630,051	1,582	0,673	2,255
2018	9,220,435	30	642	6,769,982	8,840,256	1,932,712	4,119,644	21,662,594	1,693	0,656	2,349
2019	9,327,498	31	553	8,566,250	11,900,874	2,094,611	5,031,483	27,593,218	2,194	0,764	2,958
2020	10,059,818	23	547	4,127,757	8,848,230	1,056,750	4,107,135	18,139,873	1,290	0,513	1,803
MA Total:	45,362,496	150	3,072	30,927,654	47,152,344	8,708,515	20,953,246	107,741,759	1,721	0,654	2,375

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.735	0.680	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	1.487	0.554	2.041
(16) Countrywide Indicated Relativity:	0.639	0.582	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	10463	.	.
(19) Pure Premium Underlying Present Rate:	1.489	0.598	2.087
(20) Relativity to Underlying Present Rate:	0.687	0.629	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.735	0.680	.
(24) Balanced Formula Relativity:	0.743	0.682	0.725

Class(es):		Effective: 7/1/2023							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)
2016	958,566	2	85	658,805	915,955	364,593	375,046	2,314,400	1,643	0,772	2,414
2017	987,831	2	67	680,965	1,575,834	199,603	391,285	2,847,686	2,285	0,598	2,883
2018	1,052,310	3	76	235,481	2,073,042	120,002	574,587	3,003,112	2,194	0,660	2,854
2019	1,036,531	3	71	696,389	1,250,948	281,548	360,511	2,589,396	1,879	0,619	2,498
2020	1,110,951	2	69	21,324	2,403,672	45,556	691,903	3,162,454	2,183	0,664	2,847
MA Total:	5,146,189	12	368	2,292,964	8,219,451	1,011,302	2,393,332	13,917,049	2,043	0,662	2,704

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.872	0.688	.
(14) Massachusetts Credibility:	0.640	0.830	.
(15) Countrywide Pure Premium:	1.589	0.627	2.217
(16) Countrywide Indicated Relativity:	0.683	0.659	.
(17) Countrywide Credibility:	0.180	0.090	.
(18) Countrywide Lost-Time Claims:	1017.0	.	.
(19) Pure Premium Underlying Present Rate:	1.919	0.677	2.596
(20) Relativity to Underlying Present Rate:	0.886	0.712	.
(21) Credibility to Underlying Relativity:	0.180	0.080	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.840	0.688	.
(24) Balanced Formula Relativity:	0.850	0.689	0.803

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	9,199,542	30	601	5,472,855	5,942,208	1,789,151	2,890,086	16,094,299	1,241	0,509	1,749
2017	10,010,147	25	663	3,479,203	8,380,816	1,176,028	3,479,969	16,516,016	1,185	0,465	1,650
2018	10,926,405	28	699	6,302,319	6,817,087	2,279,303	3,789,088	19,187,797	1,201	0,555	1,756
2019	11,210,573	13	581	3,875,708	7,908,758	1,890,025	3,487,981	17,162,472	1,051	0,480	1,531
2020	11,448,969	15	514	2,399,984	9,325,065	684,057	4,966,529	17,375,634	1,024	0,494	1,518
MA Total:	52,795,634	111	3,058	21,530,068	38,373,934	7,818,564	18,613,652	86,336,218	1,135	0,501	1,635

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.484	0.521	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	1.283	0.533	1.816
(16) Countrywide Indicated Relativity:	0.551	0.560	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	10821	.	.
(19) Pure Premium Underlying Present Rate:	1.073	0.517	1.590
(20) Relativity to Underlying Present Rate:	0.495	0.544	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.484	0.521	.
(24) Balanced Formula Relativity:	0.490	0.522	0.499

Class(es):		Effective: 7/1/2023							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)
2016	4,414,102	5	121	331,796	1,125,184	91,679	1,065,197	2,613,857	0,330	0,262	0,592
2017	4,613,313	4	123	931,508	727,598	113,505	487,798	2,260,409	0,360	0,130	0,490
2018	4,840,562	3	128	113,751	1,241,396	46,652	902,817	2,304,616	0,280	0,196	0,476
2019	5,030,083	4	90	1,139,436	327,228	335,983	306,610	2,109,257	0,292	0,128	0,419
2020	4,833,809	6	88	403,478	557,997	176,076	436,229	1,573,779	0,199	0,127	0,326
MA Total:	23,731,869	22	550	2,919,969	3,979,403	763,895	3,198,651	10,861,918	0,291	0,167	0,458

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.383	0.478	.
(14) Massachusetts Credibility:	0.590	0.890	.
(15) Countrywide Pure Premium:	0.470	0.187	0.658
(16) Countrywide Indicated Relativity:	0.619	0.531	.
(17) Countrywide Credibility:	0.210	0.060	.
(18) Countrywide Lost-Time Claims:	3311.0	.	.
(19) Pure Premium Underlying Present Rate:	0.336	0.175	0.510
(20) Relativity to Underlying Present Rate:	0.500	0.492	.
(21) Credibility to Underlying Relativity:	0.200	0.050	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.456	0.482	.
(24) Balanced Formula Relativity:	0.450	0.480	0.460

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Section IX - Classification Pricing
 Subsection G - Class Relativities
 7/1/2023

Section IX - G
 Exhibit 107

Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	383,815	2	33	23,064	73,627	28,356	41,432	166,479	0.252	0.182	0.434
2017	455,133	3	43	15,845	781,659	19,552	223,398	1,040,453	1.752	0.534	2.286
2018	402,028	6	52	572,020	233,350	64,201	310,060	1,179,630	2.003	0.931	2.934
2019	375,249	2	40	162,652	888,781	31,236	180,469	1,263,138	2.802	0.564	3.366
2020	287,480	1	15	47,640	405,571	12,269	89,307	554,787	1.576	0.353	1.930
MA Total:	1,903,706	14	183	821,221	2,382,987	155,614	844,665	4,204,488	1.683	0.525	2.209

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.219	1.504	.
(14) Massachusetts Credibility:	0.360	0.540	.
(15) Countrywide Pure Premium:	1.347	0.569	1.916
(16) Countrywide Indicated Relativity:	1.772	1.612	.
(17) Countrywide Credibility:	0.320	0.230	.
(18) Countrywide Lost-Time Claims:	1601.0	.	.
(19) Pure Premium Underlying Present Rate:	1.213	0.619	1.832
(20) Relativity to Underlying Present Rate:	1.805	1.742	.
(21) Credibility to Underlying Relativity:	0.320	0.230	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.944	1.584	.
(24) Balanced Formula Relativity:	1.919	1.577	1.811

Class(es):		Effective: 7/1/2023							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)
2016	749,509	10	105	1,704,793	1,221,326	362,792	681,574	3,970,485	3.904	1.393	5.297
2017	951,809	8	120	2,350,366	2,358,852	881,112	937,455	6,527,786	4.948	1.911	6.858
2018	786,332	6	117	734,013	2,843,745	184,214	1,207,394	4,969,366	4.550	1.770	6.320
2019	960,178	1	114	184,977	2,830,496	75,845	1,067,422	4,158,741	3.141	1.191	4.331
2020	843,733	3	110	1,166,735	2,480,240	226,163	1,096,163	4,969,301	4.322	1.567	5.890
MA Total:	4,291,561	28	566	6,140,885	11,734,659	1,730,126	4,990,009	24,595,679	4.165	1.566	5.731

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.778	1.629	.
(14) Massachusetts Credibility:	0.910	1.000	.
(15) Countrywide Pure Premium:	3.004	1.133	4.136
(16) Countrywide Indicated Relativity:	1.291	1.189	.
(17) Countrywide Credibility:	0.050	0.000	.
(18) Countrywide Lost-Time Claims:	5019.0	.	.
(19) Pure Premium Underlying Present Rate:	5.425	2.138	7.563
(20) Relativity to Underlying Present Rate:	2.504	2.250	.
(21) Credibility to Underlying Relativity:	0.040	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.782	1.629	.
(24) Balanced Formula Relativity:	1.803	1.632	1.753

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)	
2016	339,385	1	21	388,294	520,363	137,255	252,327	1,298,239	2,677	1,148	3,825	
2017	363,706	2	24	163,720	424,275	18,124	233,833	839,951	1,617	0,693	2,309	
2018	365,152	1	35	90,684	583,278	10,778	378,692	1,063,432	1,846	1,067	2,912	
2019	377,981	3	25	765,824	1,199,465	184,403	348,579	2,498,271	5,199	1,410	6,610	
2020	374,256	6	26	1,096,935	409,936	380,579	123,021	2,010,470	4,026	1,346	5,372	
MA Total:	1,820,480	13	131	2,505,456	3,137,317	731,137	1,336,452	7,710,362	3,100	1,136	4,235	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.323	1.182	.
(14) Massachusetts Credibility:	0.430	0.600	.
(15) Countrywide Pure Premium:	2.627	0.997	3.624
(16) Countrywide Indicated Relativity:	1.129	1.047	.
(17) Countrywide Credibility:	0.290	0.200	.
(18) Countrywide Lost-Time Claims:	1490.0	.	.
(19) Pure Premium Underlying Present Rate:	1.968	0.845	2.812
(20) Relativity to Underlying Present Rate:	0.908	0.889	.
(21) Credibility to Underlying Relativity:	0.280	0.200	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.150	1.096	.
(24) Balanced Formula Relativity:	1.164	1.098	1.145

Class(es):		Effective: 7/1/2023							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)	
2016	1,848,829	20	184	3,235,010	3,324,842	893,779	1,400,904	8,854,534	3,548	1,241	4,789	
2017	2,092,496	23	152	4,673,417	2,160,658	1,253,235	1,059,331	9,146,641	3,266	1,105	4,371	
2018	2,362,322	12	198	1,856,075	5,921,979	689,441	2,444,542	10,912,038	3,293	1,327	4,619	
2019	2,300,241	15	168	2,740,105	5,545,811	1,283,862	1,961,930	11,531,708	3,602	1,411	5,013	
2020	2,440,266	7	180	1,641,168	7,271,216	324,683	2,969,431	12,206,499	3,652	1,350	5,002	
MA Total:	11,044,154	77	882	14,145,776	24,224,506	4,445,000	9,836,137	52,651,419	3,474	1,293	4,767	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.483	1.345	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	2.196	0.851	3.047
(16) Countrywide Indicated Relativity:	0.944	0.893	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	7822.0	.	.
(19) Pure Premium Underlying Present Rate:	3.195	1.208	4.404
(20) Relativity to Underlying Present Rate:	1.475	1.272	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.483	1.345	.
(24) Balanced Formula Relativity:	1.500	1.348	1.456

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	271,967	2	30	327,945	1,141,485	262,461	254,453	1,986,343	5,403	1,901	7,304
2017	260,958	1	24	195,986	2,385,783	16,631	466,278	3,064,678	9,893	1,851	11,744
2018	176,257	1	12	386,683	67,855	61,180	42,815	558,533	2,579	0,590	3,169
2019	250,062	1	23	387,668	1,005,503	137,426	269,604	1,800,201	5,571	1,628	7,199
2020	314,886	0	11	0	496,344	0	121,198	617,542	1,576	0,385	1,961
MA Total:	1,274,131	5	100	1,298,282	5,096,970	477,698	1,154,349	8,027,299	5,019	1,281	6,300

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.142	1.333	.
(14) Massachusetts Credibility:	0.530	0.620	.
(15) Countrywide Pure Premium:	3.620	1.351	4.970
(16) Countrywide Indicated Relativity:	1.556	1.418	.
(17) Countrywide Credibility:	0.240	0.190	.
(18) Countrywide Lost-Time Claims:	959.00	.	.
(19) Pure Premium Underlying Present Rate:	4.785	1.342	6.127
(20) Relativity to Underlying Present Rate:	2.208	1.412	.
(21) Credibility to Underlying Relativity:	0.230	0.190	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	2.017	1.364	.
(24) Balanced Formula Relativity:	2.040	1.367	1.844

Class(es):		Effective: 7/1/2023							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)
2016	236,221	2	19	115,241	495,542	23,367	110,660	744,809	2,586	0,567	3,153
2017	238,937	1	22	70,306	104,711	107,812	92,505	375,335	0,732	0,838	1,571
2018	273,294	1	26	168,605	471,751	40,619	176,749	857,723	2,343	0,795	3,138
2019	308,211	0	22	0	99,876	0	88,842	188,718	0,324	0,288	0,612
2020	357,156	1	26	73,167	605,366	26,673	286,477	991,683	1,900	0,877	2,777
MA Total:	1,413,818	5	115	427,319	1,777,245	198,470	755,233	3,158,267	1,559	0,675	2,234

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.665	0.702	.
(14) Massachusetts Credibility:	0.390	0.520	.
(15) Countrywide Pure Premium:	1.997	0.754	2.751
(16) Countrywide Indicated Relativity:	0.858	0.792	.
(17) Countrywide Credibility:	0.310	0.240	.
(18) Countrywide Lost-Time Claims:	708.00	.	.
(19) Pure Premium Underlying Present Rate:	1.942	0.781	2.723
(20) Relativity to Underlying Present Rate:	0.896	0.822	.
(21) Credibility to Underlying Relativity:	0.300	0.240	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.794	0.752	.
(24) Balanced Formula Relativity:	0.804	0.754	0.789

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	809,817	7	59	474,019	1,472,920	84,224	452,630	2,483,793	2,404	0,663	3,067
2017	938,536	8	50	1,673,348	1,086,963	241,613	534,799	3,536,723	2,941	0,827	3,768
2018	1,199,870	5	75	1,369,229	2,265,061	554,145	777,882	4,966,317	3,029	1,110	4,139
2019	1,162,305	1	45	93,907	785,392	27,009	296,232	1,202,540	0,757	0,278	1,035
2020	1,188,194	5	58	1,083,384	1,871,654	209,695	756,818	3,921,552	2,487	0,813	3,300
MA Total:	5,298,721	26	287	4,693,887	7,481,991	1,116,687	2,818,360	16,110,924	2,298	0,743	3,041

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.981	0.773	.
(14) Massachusetts Credibility:	0.720	0.890	.
(15) Countrywide Pure Premium:	2.118	0.730	2,848
(16) Countrywide Indicated Relativity:	0.910	0.767	.
(17) Countrywide Credibility:	0.140	0.060	.
(18) Countrywide Lost-Time Claims:	1925.0	.	.
(19) Pure Premium Underlying Present Rate:	2.450	0.783	3,233
(20) Relativity to Underlying Present Rate:	1.131	0.824	.
(21) Credibility to Underlying Relativity:	0.140	0.050	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3,304
(23) Formula Relativity:	0.992	0.775	.
(24) Balanced Formula Relativity:	1.003	0.776	0.937

Class(es):		Effective: 7/1/2023							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)
2016	4,179	0	1	0	0	0	1,326	1,326	0,000	0,317	0,317
2017	6,876	0	1	0	7,539	0	7,126	14,665	1,096	1,036	2,133
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	3,089	0	1,272	4,361	0,517	0,213	0,730
MA Total:	31,416	0	4	0	10,627	0	9,724	20,352	0,338	0,310	0,648

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.144	0.322	.
(14) Massachusetts Credibility:	0.100	0.140	.
(15) Countrywide Pure Premium:	2.868	0.923	3,791
(16) Countrywide Indicated Relativity:	1.233	0.970	.
(17) Countrywide Credibility:	0.230	0.240	.
(18) Countrywide Lost-Time Claims:	28,000	.	.
(19) Pure Premium Underlying Present Rate:	3.147	1.231	4,378
(20) Relativity to Underlying Present Rate:	1.452	1.295	.
(21) Credibility to Underlying Relativity:	0.670	0.620	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3,304
(23) Formula Relativity:	1.271	1.081	.
(24) Balanced Formula Relativity:	1.286	1.083	1.227

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Calculation of Class Relativities

Class(es): 5403 CARPENTRY NOC		Effective: 7/1/2023							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)
2016	2,018,591	25	257	5,373,620	8,252,646	2,088,222	2,726,183	18,440,672	6,750	2,385	9,135
2017	2,236,514	20	285	3,346,432	5,389,150	1,270,891	2,599,072	12,605,545	3,906	1,730	5,636
2018	2,353,856	17	283	2,087,636	6,870,636	405,971	2,373,050	11,737,293	3,806	1,181	4,986
2019	2,505,891	15	219	2,697,460	9,990,633	852,276	3,567,243	17,107,612	5,063	1,764	6,827
2020	2,818,910	10	196	2,784,276	5,481,491	730,041	2,634,163	11,629,971	2,932	1,193	4,126
MA Total:	11,933,762	87	1,240	16,289,424	35,984,556	5,347,401	13,899,712	71,521,093	4,380	1,613	5,993

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.869	1.678	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	2.776	1.106	3.883
(16) Countrywide Indicated Relativity:	1.193	1.162	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	7278.0	.	.
(19) Pure Premium Underlying Present Rate:	4.334	1.666	6.000
(20) Relativity to Underlying Present Rate:	2.000	1.753	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.869	1.678	.
(24) Balanced Formula Relativity:	1.891	1.681	1.830

Class(es): 5437 CARPENTRY-INSTALL OF CABINET WORK OR INT TRIM		Effective: 7/1/2023							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)
2016	2,950,046	7	228	1,584,865	2,991,788	553,764	1,615,666	6,746,083	1,551	0,735	2,287
2017	3,171,230	17	279	2,248,937	6,069,122	588,982	2,103,385	11,010,426	2,623	0,849	3,472
2018	3,346,171	10	221	1,018,785	2,618,691	284,419	1,293,666	5,215,560	1,087	0,472	1,559
2019	3,573,651	9	228	2,088,736	5,410,878	560,550	2,365,445	10,425,610	2,099	0,819	2,917
2020	3,361,798	11	159	1,844,086	3,350,786	436,890	1,476,568	7,108,329	1,545	0,569	2,114
MA Total:	16,402,896	54	1,115	8,785,409	20,441,264	2,424,605	8,854,728	40,506,007	1,782	0,688	2,469

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.760	0.715	.
(14) Massachusetts Credibility:	0.980	1.000	.
(15) Countrywide Pure Premium:	2.798	1.108	3.906
(16) Countrywide Indicated Relativity:	1.203	1.163	.
(17) Countrywide Credibility:	0.010	0.000	.
(18) Countrywide Lost-Time Claims:	4867.0	.	.
(19) Pure Premium Underlying Present Rate:	1.742	0.715	2.456
(20) Relativity to Underlying Present Rate:	0.804	0.752	.
(21) Credibility to Underlying Relativity:	0.010	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.765	0.715	.
(24) Balanced Formula Relativity:	0.774	0.717	0.757

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Construction		
5443 LATHING & 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)
2016	133	0	0	0	0	0	0	0	0.000	0.000	0.000
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
MA Total:	2,157	0	0	0	0	0	0	0	0.000	0.000	0.000

	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:	1.134	0.526	1.660
(16) Countrywide Indicated Relativity:	0.487	0.553	.
(17) Countrywide Credibility:	0.400	0.430	.
(18) Countrywide Lost-Time Claims:	118.00	.	.
(19) Pure Premium Underlying Present Rate:	1.695	0.684	2.379
(20) Relativity to Underlying Present Rate:	0.782	0.720	.
(21) Credibility to Underlying Relativity:	0.570	0.530	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.641	0.619	.
(24) Balanced Formula Relativity:	0.648	0.621	0.640

Class(es):		Effective: 7/1/2023							Construction		
5445 WALLBOARD INSTALLATION WITHIN BUILDINGS & 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)
2016	2,105,057	10	159	3,119,184	4,136,554	787,452	1,552,489	9,595,678	3,447	1,112	4,558
2017	2,808,670	16	175	2,820,826	6,795,648	599,344	2,183,523	12,399,341	3,424	0,991	4,415
2018	3,069,615	9	196	2,982,984	9,639,635	777,214	2,802,009	16,201,841	4,112	1,166	5,278
2019	2,790,804	4	123	1,165,842	6,229,701	426,520	1,859,760	9,681,823	2,650	0,819	3,469
2020	3,206,760	9	143	2,351,644	5,713,267	686,423	1,818,569	10,569,903	2,515	0,781	3,296
MA Total:	13,980,906	48	796	12,440,480	32,514,804	3,276,953	10,216,350	58,448,587	3,215	0,965	4,181

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.372	1.004	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	2.728	1.010	3.738
(16) Countrywide Indicated Relativity:	1.172	1.061	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	4425.0	.	.
(19) Pure Premium Underlying Present Rate:	3.181	1.085	4.267
(20) Relativity to Underlying Present Rate:	1.468	1.142	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.372	1.004	.
(24) Balanced Formula Relativity:	1.388	1.006	1.277

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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: 7/1/2023							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)
2016	666,300	3	77	669,709	1,023,257	89,720	431,945	2,214,630	2,541	0,783	3,324
2017	726,425	5	88	1,752,817	1,134,046	477,012	823,251	4,187,127	3,974	1,790	5,764
2018	845,576	3	81	1,285,661	784,999	224,385	260,602	2,555,647	2,449	0,574	3,022
2019	842,145	2	83	1,152,201	1,712,636	224,699	630,014	3,719,550	3,402	1,015	4,417
2020	924,842	4	58	1,250,548	1,986,103	905,759	678,736	4,821,147	3,500	1,713	5,213
MA Total:	4,005,288	17	387	6,110,937	6,641,041	1,921,574	2,824,549	17,498,100	3,184	1,185	4,369

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.359	1.233	.
(14) Massachusetts Credibility:	0.670	0.850	.
(15) Countrywide Pure Premium:	2.791	1.033	3.824
(16) Countrywide Indicated Relativity:	1.199	1.085	.
(17) Countrywide Credibility:	0.170	0.080	.
(18) Countrywide Lost-Time Claims:	1528.0	.	.
(19) Pure Premium Underlying Present Rate:	2.761	0.945	3.706
(20) Relativity to Underlying Present Rate:	1.274	0.994	.
(21) Credibility to Underlying Relativity:	0.160	0.070	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.318	1.204	.
(24) Balanced Formula Relativity:	1.333	1.207	1.296

Class(es):		Effective: 7/1/2023							Construction		
5472 ASBESTOS REMOVAL OP: ASBESTOS CONTR-PIPE&BOILR 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)
2016	130,859	3	5	345,105	486,204	175,073	95,223	1,101,605	6,353	2,066	8,418
2017	135,187	0	6	0	321,755	0	126,811	448,567	2,380	0,938	3,318
2018	117,072	1	3	483,973	88,923	60,905	15,634	649,435	4,894	0,654	5,547
2019	124,621	0	5	0	486,206	0	212,825	699,031	3,901	1,708	5,609
2020	115,240	0	11	0	725,837	0	453,859	1,179,696	6,299	3,938	10,237
MA Total:	622,978	4	30	829,078	2,108,925	235,978	904,352	4,078,333	4,716	1,830	6,547

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.013	1.904	.
(14) Massachusetts Credibility:	0.370	0.460	.
(15) Countrywide Pure Premium:	4.118	1.204	5.322
(16) Countrywide Indicated Relativity:	1.770	1.264	.
(17) Countrywide Credibility:	0.320	0.270	.
(18) Countrywide Lost-Time Claims:	89.000	.	.
(19) Pure Premium Underlying Present Rate:	3.855	1.311	5.166
(20) Relativity to Underlying Present Rate:	1.779	1.380	.
(21) Credibility to Underlying Relativity:	0.310	0.270	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.863	1.590	.
(24) Balanced Formula Relativity:	1.884	1.593	1.799

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)	
2016	371,681	1	19	463,399	730,607	73,640	353,102	1,620,748	3,212	1,148	4,361	
2017	414,488	4	42	1,053,162	1,357,877	350,124	495,239	3,256,402	5,817	2,040	7,856	
2018	364,994	3	25	161,204	1,413,943	168,919	570,917	2,314,983	4,316	2,027	6,343	
2019	386,691	5	34	2,178,522	1,457,491	1,178,569	489,051	5,303,633	9,403	4,313	13,715	
2020	367,508	3	19	846,683	1,979,111	180,213	774,501	3,780,508	7,689	2,598	10,287	
MA Total:	1,905,361	16	139	4,702,971	6,939,028	1,951,465	2,682,809	16,276,274	6,110	2,432	8,542	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.607	2.531	.
(14) Massachusetts Credibility:	0.590	0.820	.
(15) Countrywide Pure Premium:	4.015	1.632	5.646
(16) Countrywide Indicated Relativity:	1.725	1.714	.
(17) Countrywide Credibility:	0.210	0.090	.
(18) Countrywide Lost-Time Claims:	444.00	.	.
(19) Pure Premium Underlying Present Rate:	4.185	1.812	5.997
(20) Relativity to Underlying Present Rate:	1.931	1.907	.
(21) Credibility to Underlying Relativity:	0.200	0.090	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	2.287	2.401	.
(24) Balanced Formula Relativity:	2.313	2.406	2.340

Class(es):		Effective: 7/1/2023							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)	
2016	3,778,877	22	146	3,623,196	3,667,693	1,122,997	1,502,340	9,916,226	1,929	0,695	2,624	
2017	4,087,450	19	202	3,388,591	6,286,894	773,770	2,508,193	12,957,449	2,367	0,803	3,170	
2018	4,396,134	25	178	4,750,283	4,771,350	1,732,188	2,229,649	13,483,471	2,166	0,901	3,067	
2019	4,590,832	14	160	4,220,108	7,780,935	1,908,580	3,547,741	17,457,364	2,614	1,189	3,803	
2020	4,864,129	15	159	3,103,648	7,731,160	2,043,882	3,973,892	16,852,582	2,227	1,237	3,465	
MA Total:	21,717,421	95	845	19,085,827	30,238,031	7,581,418	13,761,816	70,667,091	2,271	0,983	3,254	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.969	1.022	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	2.773	1.116	3.889
(16) Countrywide Indicated Relativity:	1.192	1.172	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	5793.0	.	.
(19) Pure Premium Underlying Present Rate:	1.893	0.814	2.707
(20) Relativity to Underlying Present Rate:	0.874	0.857	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.969	1.022	.
(24) Balanced Formula Relativity:	0.980	1.025	0.993

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	765,676	4	62	312,621	1,847,464	125,010	516,018	2,801,112	2,821	0,837	3,658
2017	837,586	1	46	303,809	1,493,411	104,915	429,456	2,331,590	2,146	0,638	2,784
2018	1,044,093	5	60	889,937	884,284	92,591	363,380	2,230,191	1,699	0,437	2,136
2019	1,057,891	5	53	1,495,513	2,773,710	280,072	538,189	5,087,484	4,036	0,773	4,809
2020	943,255	2	34	202,778	2,173,200	40,087	571,351	2,987,417	2,519	0,648	3,167
MA Total:	4,648,500	17	255	3,204,657	9,172,068	642,674	2,418,393	15,437,793	2,663	0,659	3,321

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.136	0.685	.
(14) Massachusetts Credibility:	0.600	0.750	.
(15) Countrywide Pure Premium:	2.025	0.681	2.706
(16) Countrywide Indicated Relativity:	0.870	0.716	.
(17) Countrywide Credibility:	0.200	0.130	.
(18) Countrywide Lost-Time Claims:	1118.0	.	.
(19) Pure Premium Underlying Present Rate:	1.750	0.587	2.336
(20) Relativity to Underlying Present Rate:	0.807	0.617	.
(21) Credibility to Underlying Relativity:	0.200	0.120	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.017	0.681	.
(24) Balanced Formula Relativity:	1.029	0.682	0.928

Class(es):		Effective: 7/1/2023							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)
2016	535,648	2	66	134,400	1,296,929	46,133	359,087	1,836,549	2,672	0,757	3,429
2017	593,133	3	86	185,042	833,711	30,351	421,627	1,470,731	1,718	0,762	2,480
2018	707,878	8	93	783,492	1,669,579	509,018	693,275	3,655,365	3,465	1,698	5,164
2019	720,499	2	98	242,995	1,866,683	72,803	772,619	2,955,101	2,928	1,173	4,101
2020	848,219	3	86	60,277	1,617,968	74,743	806,849	2,559,838	1,979	1,039	3,018
MA Total:	3,405,379	18	429	1,406,207	7,284,871	733,049	3,053,458	12,477,584	2,552	1,112	3,664

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.089	1.157	.
(14) Massachusetts Credibility:	0.610	0.860	.
(15) Countrywide Pure Premium:	2.748	1.335	4.082
(16) Countrywide Indicated Relativity:	1.181	1.402	.
(17) Countrywide Credibility:	0.200	0.070	.
(18) Countrywide Lost-Time Claims:	1780.0	.	.
(19) Pure Premium Underlying Present Rate:	2.524	1.130	3.653
(20) Relativity to Underlying Present Rate:	1.165	1.189	.
(21) Credibility to Underlying Relativity:	0.190	0.070	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.122	1.176	.
(24) Balanced Formula Relativity:	1.135	1.179	1.148

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	548,911	1	27	225,799	1,051,756	40,757	406,275	1,724,587	2,327	0,814	3,142
2017	553,617	2	27	60,871	673,786	149,441	346,282	1,230,380	1,327	0,895	2,222
2018	579,053	2	26	203,457	830,881	70,741	167,417	1,272,496	1,786	0,411	2,198
2019	583,813	1	19	11,349	1,115,922	23,290	395,683	1,546,244	1,931	0,718	2,649
2020	537,214	2	17	138,781	313,084	101,030	248,326	801,221	0,841	0,650	1,491
MA Total:	2,802,608	8	116	640,258	3,985,428	385,258	1,563,984	6,574,928	1,650	0,696	2,346

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.704	0.724	.
(14) Massachusetts Credibility:	0.540	0.690	.
(15) Countrywide Pure Premium:	3.599	1.315	4.914
(16) Countrywide Indicated Relativity:	1.547	1.381	.
(17) Countrywide Credibility:	0.230	0.160	.
(18) Countrywide Lost-Time Claims:	151.00	.	.
(19) Pure Premium Underlying Present Rate:	2.302	0.794	3.096
(20) Relativity to Underlying Present Rate:	1.062	0.836	.
(21) Credibility to Underlying Relativity:	0.230	0.150	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.980	0.846	.
(24) Balanced Formula Relativity:	0.992	0.847	0.950

Class(es):		Effective: 7/1/2023							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)
2016	668,156	3	32	886,222	956,896	197,952	447,072	2,488,142	2,759	0,965	3,724
2017	682,200	7	50	1,684,792	543,941	512,650	245,437	2,986,819	3,267	1,111	4,378
2018	694,351	5	41	1,445,804	1,378,417	757,862	394,136	3,976,218	4,067	1,659	5,727
2019	710,426	1	42	303,319	344,575	51,158	189,531	888,584	0,912	0,339	1,251
2020	955,347	2	19	587,140	1,410,711	226,618	734,726	2,959,195	2,091	1,006	3,098
MA Total:	3,710,479	18	184	4,907,276	4,634,540	1,746,240	2,010,902	13,298,958	2,572	1,013	3,584

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.097	1.054	.
(14) Massachusetts Credibility:	0.660	0.880	.
(15) Countrywide Pure Premium:	2.881	1.125	4.006
(16) Countrywide Indicated Relativity:	1.238	1.182	.
(17) Countrywide Credibility:	0.170	0.060	.
(18) Countrywide Lost-Time Claims:	4344.0	.	.
(19) Pure Premium Underlying Present Rate:	2.797	1.110	3.908
(20) Relativity to Underlying Present Rate:	1.291	1.168	.
(21) Credibility to Underlying Relativity:	0.170	0.060	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.154	1.068	.
(24) Balanced Formula Relativity:	1.168	1.070	1.139

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	185,186	0	14	0	1,675,970	0	390,699	2,066,669	9,050	2,110	11,160
2017	211,419	2	20	336,573	115,070	292,955	138,379	882,977	2,136	2,040	4,176
2018	180,895	0	16	0	129,385	0	70,662	200,047	0,715	0,391	1,106
2019	177,293	0	9	0	377,779	0	95,916	473,695	2,131	0,541	2,672
2020	385,529	0	11	0	12,716	0	36,756	49,472	0,033	0,095	0,128
MA Total:	1,140,322	2	70	336,573	2,310,921	292,955	732,412	3,672,861	2,322	0,899	3,221

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.991	0.936	.
(14) Massachusetts Credibility:	0.400	0.520	.
(15) Countrywide Pure Premium:	2.254	0.827	3.081
(16) Countrywide Indicated Relativity:	0.969	0.869	.
(17) Countrywide Credibility:	0.300	0.240	.
(18) Countrywide Lost-Time Claims:	1437.0	.	.
(19) Pure Premium Underlying Present Rate:	2.696	0.975	3.671
(20) Relativity to Underlying Present Rate:	1.244	1.026	.
(21) Credibility to Underlying Relativity:	0.300	0.240	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.060	0.941	.
(24) Balanced Formula Relativity:	1.072	0.943	1.035

Class(es):		Effective: 7/1/2023							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)
2016	69,565	0	17	0	301,039	0	73,272	374,311	4,327	1,053	5,381
2017	52,477	2	5	421,632	10,994	366,267	16,921	815,815	8,244	7,302	15,546
2018	39,799	0	8	0	1,028	0	2,912	3,940	0,026	0,073	0,099
2019	28,560	0	1	0	0	0	6,151	6,151	0,000	0,215	0,215
2020	22,997	0	1	0	1,666	0	3,725	5,391	0,072	0,162	0,234
MA Total:	213,398	2	32	421,632	314,726	366,267	102,981	1,205,607	3,451	2,199	5,650

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.473	2.288	.
(14) Massachusetts Credibility:	0.200	0.320	.
(15) Countrywide Pure Premium:	2.193	1.192	3.386
(16) Countrywide Indicated Relativity:	0.943	1.252	.
(17) Countrywide Credibility:	0.400	0.340	.
(18) Countrywide Lost-Time Claims:	477.00	.	.
(19) Pure Premium Underlying Present Rate:	2.557	1.495	4.053
(20) Relativity to Underlying Present Rate:	1.180	1.574	.
(21) Credibility to Underlying Relativity:	0.400	0.340	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.144	1.693	.
(24) Balanced Formula Relativity:	1.157	1.696	1.314

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	2,629,911	10	251	2,682,633	3,906,672	404,550	1,631,646	8,625,501	2,506	0,774	3,280
2017	2,810,244	13	318	2,095,424	3,902,175	832,821	1,773,919	8,604,339	2,134	0,928	3,062
2018	3,171,235	9	316	1,517,978	3,511,576	1,011,872	1,468,882	7,510,307	1,586	0,782	2,368
2019	3,652,515	9	300	2,127,211	5,427,289	565,182	3,090,616	11,210,298	2,068	1,001	3,069
2020	3,693,465	16	254	1,688,419	3,704,734	653,305	1,911,745	7,958,203	1,460	0,694	2,155
MA Total:	15,957,370	57	1,439	10,111,665	20,452,445	3,467,728	9,876,809	43,908,647	1,915	0,836	2,752

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.817	0.870	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	3.097	1.325	4.422
(16) Countrywide Indicated Relativity:	1.331	1.391	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	285.00	.	.
(19) Pure Premium Underlying Present Rate:	1.894	0.869	2.763
(20) Relativity to Underlying Present Rate:	0.874	0.914	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.817	0.870	.
(24) Balanced Formula Relativity:	0.827	0.872	0.840

Class(es):		Effective: 7/1/2023							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)
2016	212,306	11	50	2,116,534	2,037,577	1,218,210	1,421,755	6,794,076	19,567	12,435	32,001
2017	183,302	10	36	1,531,910	1,452,821	853,181	708,807	4,546,718	16,283	8,521	24,805
2018	200,556	8	56	1,280,015	4,027,661	540,282	2,281,660	8,129,618	26,465	14,071	40,535
2019	196,966	9	36	1,746,502	2,266,761	901,539	1,193,886	6,108,689	20,375	10,638	31,014
2020	232,697	8	34	1,436,860	3,899,936	1,935,043	2,126,748	9,398,587	22,934	17,455	40,390
MA Total:	1,025,828	46	212	8,111,821	13,684,756	5,448,255	7,732,856	34,977,688	21,248	12,849	34,097

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	9.067	13.369	.
(14) Massachusetts Credibility:	0.860	1.000	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	8.730	12.792	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	19.889	12.976	32.865
(20) Relativity to Underlying Present Rate:	9.179	13.657	.
(21) Credibility to Underlying Relativity:	0.140	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	9.083	13.369	.
(24) Balanced Formula Relativity:	9.188	13.395	10.412

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)	
2016	662,932	10	64	1,771,069	2,603,140	691,457	1,664,696	6,730,362	6,598	3,554	10,152	
2017	679,113	1	72	75,608	3,086,090	21,227	789,300	3,972,226	4,656	1,194	5,849	
2018	749,747	1	80	168,393	3,766,303	78,996	1,629,137	5,642,828	5,248	2,278	7,526	
2019	832,348	6	74	1,170,139	4,211,017	634,550	1,916,048	7,931,753	6,465	3,064	9,529	
2020	867,482	4	50	538,940	1,694,961	317,068	1,916,227	4,467,196	2,575	2,574	5,150	
MA Total:	3,791,622	22	340	3,724,149	15,361,511	1,743,298	7,915,408	28,744,365	5,034	2,547	7,581	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.148	2.650	.
(14) Massachusetts Credibility:	0.820	1.000	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	2.115	2.518	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	4.819	2.554	7.372
(20) Relativity to Underlying Present Rate:	2.224	2.688	.
(21) Credibility to Underlying Relativity:	0.180	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	2.162	2.650	.
(24) Balanced Formula Relativity:	2.187	2.656	2.323

Class(es):		Effective: 7/1/2023							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)	
2016	8,106,957	13	133	2,474,703	2,200,721	622,298	1,082,525	6,380,246	0.577	0.210	0.787	
2017	8,736,518	11	151	2,208,034	4,111,497	849,360	1,797,731	8,966,622	0.723	0.303	1.026	
2018	8,953,581	7	191	1,609,918	4,718,395	326,727	2,010,173	8,665,213	0.707	0.261	0.968	
2019	9,276,656	4	149	1,027,721	3,515,570	233,323	2,071,116	6,847,730	0.490	0.248	0.738	
2020	9,798,594	2	156	421,354	5,467,512	294,769	2,304,779	8,488,415	0.601	0.265	0.866	
MA Total:	44,872,305	37	780	7,741,730	20,013,694	2,326,477	9,266,324	39,348,225	0.619	0.258	0.877	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.264	0.269	.
(14) Massachusetts Credibility:	0.930	1.000	.
(15) Countrywide Pure Premium:	0.468	0.193	0.661
(16) Countrywide Indicated Relativity:	0.201	0.203	.
(17) Countrywide Credibility:	0.040	0.000	.
(18) Countrywide Lost-Time Claims:	3827.0	.	.
(19) Pure Premium Underlying Present Rate:	0.559	0.289	0.849
(20) Relativity to Underlying Present Rate:	0.258	0.305	.
(21) Credibility to Underlying Relativity:	0.030	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.261	0.269	.
(24) Balanced Formula Relativity:	0.264	0.269	0.266

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	653,024	6	38	1,146,065	133,878	450,757	121,667	1,852,367	1,960	0,877	2,837
2017	644,611	1	39	157,929	839,538	21,451	176,326	1,195,244	1,547	0,307	1,854
2018	642,257	2	44	713,231	4,065,005	76,400	713,251	5,567,888	7,440	1,229	8,669
2019	556,582	2	51	556,541	2,805,194	96,019	828,558	4,286,313	6,040	1,661	7,701
2020	369,053	2	27	891,549	383,734	139,914	151,826	1,567,024	3,456	0,791	4,246
MA Total:	2,865,528	13	199	3,465,315	8,227,348	784,542	1,991,630	14,468,835	4,080	0,969	5,049

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.741	1.008	.
(14) Massachusetts Credibility:	0.550	0.680	.
(15) Countrywide Pure Premium:	2.114	0.968	3.082
(16) Countrywide Indicated Relativity:	0.909	1.017	.
(17) Countrywide Credibility:	0.230	0.160	.
(18) Countrywide Lost-Time Claims:	465.00	.	.
(19) Pure Premium Underlying Present Rate:	2.321	0.745	3.066
(20) Relativity to Underlying Present Rate:	1.071	0.784	.
(21) Credibility to Underlying Relativity:	0.220	0.160	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.402	0.974	.
(24) Balanced Formula Relativity:	1.419	0.975	1.290

Class(es):		Effective: 7/1/2023							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)
2016	6,636,847	45	673	5,978,150	12,624,452	2,441,733	7,441,915	28,486,249	2,803	1,489	4,292
2017	7,031,096	54	689	7,630,880	11,702,968	3,541,279	7,025,493	29,900,619	2,750	1,503	4,253
2018	7,578,048	59	702	8,657,898	14,308,194	4,364,955	8,219,444	35,550,491	3,031	1,661	4,691
2019	7,906,799	43	629	7,635,078	20,153,841	3,742,230	10,920,177	42,451,327	3,515	1,854	5,369
2020	8,311,470	42	535	8,969,881	19,220,949	4,392,438	9,818,512	42,401,780	3,392	1,710	5,102
MA Total:	37,464,261	243	3,228	38,871,886	78,010,403	18,482,635	43,425,541	178,790,466	3,120	1,652	4,772

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.331	1.719	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	5.318	2.338	7.656
(16) Countrywide Indicated Relativity:	2.286	2.455	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	12984	.	.
(19) Pure Premium Underlying Present Rate:	2.806	1.648	4.454
(20) Relativity to Underlying Present Rate:	1.295	1.734	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.331	1.719	.
(24) Balanced Formula Relativity:	1.347	1.723	1.456

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	50,768	0	5	0	298,920	0	533,102	832,022	5,888	10,501	16,389
2017	49,330	0	6	0	595,881	0	155,755	751,636	12,080	3,157	15,237
2018	40,801	0	2	0	175,087	0	38,037	213,123	4,291	0,932	5,224
2019	60,390	0	6	0	9,125	0	32,796	41,921	0,151	0,543	0,694
2020	96,167	1	2	56,463	141,830	22,402	55,565	276,259	2,062	0,811	2,873
MA Total:	297,455	1	21	56,463	1,220,842	22,402	815,254	2,114,960	4,294	2,816	7,110

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.832	2.930	.
(14) Massachusetts Credibility:	0.380	0.570	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	3.914	4.572	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	8.917	4.638	13.555
(20) Relativity to Underlying Present Rate:	4.115	4.881	.
(21) Credibility to Underlying Relativity:	0.620	0.430	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	3.248	3.769	.
(24) Balanced Formula Relativity:	3.285	3.777	3.428

Class(es):		Effective: 7/1/2023							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)
2016	15,821	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	17,361	0	1	0	8,072	0	5,626	13,699	0.465	0.324	0.789
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	18,674	0	2	0	75,032	0	63,687	138,718	4,018	3,411	7,429
MA Total:	90,783	0	3	0	83,104	0	69,313	152,417	0,915	0,763	1,679

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.391	0.794	.
(14) Massachusetts Credibility:	0.190	0.260	.
(15) Countrywide Pure Premium:	3.807	2.317	6.124
(16) Countrywide Indicated Relativity:	1.636	2.434	.
(17) Countrywide Credibility:	0.210	0.220	.
(18) Countrywide Lost-Time Claims:	22.000	.	.
(19) Pure Premium Underlying Present Rate:	5.345	2.125	7.469
(20) Relativity to Underlying Present Rate:	2.467	2.236	.
(21) Credibility to Underlying Relativity:	0.600	0.520	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.898	1.905	.
(24) Balanced Formula Relativity:	1.920	1.908	1.916

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	1,952	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	247	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	270	0	1	0	0	0	733	733	0.000	2.715	2.715
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
MA Total:	2,976	0	1	0	0	0	733	733	0.000	0.246	0.246

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.256	.
(14) Massachusetts Credibility:	0.050	0.060	.
(15) Countrywide Pure Premium:	8.440	3.616	12.056
(16) Countrywide Indicated Relativity:	3.627	3.798	.
(17) Countrywide Credibility:	0.180	0.190	.
(18) Countrywide Lost-Time Claims:	15.000	.	.
(19) Pure Premium Underlying Present Rate:	4.502	1.773	6.275
(20) Relativity to Underlying Present Rate:	2.078	1.866	.
(21) Credibility to Underlying Relativity:	0.770	0.750	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	2.253	2.136	.
(24) Balanced Formula Relativity:	2.279	2.141	2.239

Class(es):		Effective: 7/1/2023							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)
2016	89,447	2	10	319,255	42,147	86,809	58,859	507,070	4,040	1,629	5,669
2017	66,365	0	1	0	0	0	85	85	0,000	0,001	0,001
2018	95,002	0	6	0	49,029	0	12,991	62,021	0,516	0,137	0,653
2019	77,305	0	8	0	708,489	0	180,269	888,758	9,165	2,332	11,497
2020	108,472	0	3	0	90,514	0	31,817	122,330	0,834	0,293	1,128
MA Total:	436,592	2	28	319,255	890,179	86,809	284,021	1,580,264	2,770	0,849	3,620

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.182	0.884	.
(14) Massachusetts Credibility:	0.310	0.410	.
(15) Countrywide Pure Premium:	3.039	1.224	4.263
(16) Countrywide Indicated Relativity:	1.306	1.286	.
(17) Countrywide Credibility:	0.350	0.300	.
(18) Countrywide Lost-Time Claims:	114.00	.	.
(19) Pure Premium Underlying Present Rate:	3.758	1.347	5.106
(20) Relativity to Underlying Present Rate:	1.734	1.418	.
(21) Credibility to Underlying Relativity:	0.340	0.290	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.413	1.159	.
(24) Balanced Formula Relativity:	1.430	1.162	1.352

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	170.168	1	10	16.487	325.805	5.721	58.629	406.642	2.011	0.378	2.390
2017	194.706	0	10	0	54.427	0	34.614	89.041	0.280	0.178	0.457
2018	174.072	0	16	0	1,329.823	0	375.842	1,705.664	7.639	2.159	9.799
2019	222.169	1	10	102.535	541.457	30.722	135.862	810.576	2.899	0.750	3.648
2020	234.843	1	7	449.873	420.229	142.808	103.374	1,116.285	3.705	1.048	4.753
MA Total:	995.958	3	53	568.895	2,671,740	179,251	708,321	4,128,208	3.254	0.891	4.145

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.389	0.927	.
(14) Massachusetts Credibility:	0.370	0.500	.
(15) Countrywide Pure Premium:	3.398	1.266	4.664
(16) Countrywide Indicated Relativity:	1.461	1.329	.
(17) Countrywide Credibility:	0.320	0.250	.
(18) Countrywide Lost-Time Claims:	769.00	.	.
(19) Pure Premium Underlying Present Rate:	2.522	1.007	3.529
(20) Relativity to Underlying Present Rate:	1.164	1.060	.
(21) Credibility to Underlying Relativity:	0.310	0.250	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.342	1.061	.
(24) Balanced Formula Relativity:	1.357	1.063	1.272

Class(es):		Effective: 7/1/2023							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)
2016	4,212.871	28	224	4,378.020	6,201.059	1,435.484	2,712.824	14,727.387	2.511	0.985	3.496
2017	4,579.109	26	268	6,452.876	7,300.567	2,104.215	2,463.286	18,320.944	3.004	0.997	4.001
2018	5,119.000	18	208	4,108.698	5,035.264	1,200.474	2,114.451	12,458.888	1.786	0.648	2.434
2019	5,173.865	8	201	2,259.574	5,674.015	644.565	2,563.341	11,141.494	1.533	0.620	2.153
2020	5,005.151	12	188	2,911.841	10,511.076	798.908	4,393.420	18,615.244	2.682	1.037	3.719
MA Total:	24,089.996	92	1,089	20,111.007	34,721.981	6,183.646	14,247.322	75,263.957	2.276	0.848	3.124

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.971	0.882	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	2.040	0.790	2.830
(16) Countrywide Indicated Relativity:	0.877	0.829	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	6366.0	.	.
(19) Pure Premium Underlying Present Rate:	2.137	0.792	2.929
(20) Relativity to Underlying Present Rate:	0.986	0.834	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.971	0.882	.
(24) Balanced Formula Relativity:	0.983	0.884	0.954

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	415,392	2	15	211,332	188,606	162,649	105,859	668,446	0.963	0.646	1.609
2017	458,887	1	35	165,900	507,211	24,468	209,353	906,932	1.467	0.510	1.976
2018	478,111	2	40	147,299	1,110,894	40,568	410,689	1,709,449	2.632	0.944	3.575
2019	516,847	3	28	582,084	891,683	90,565	569,866	2,134,198	2.851	1.278	4.129
2020	511,709	3	28	1,329,614	547,176	340,355	281,187	2,498,332	3.668	1.215	4.882
MA Total:	2,380,946	11	146	2,436,228	3,245,569	658,606	1,576,954	7,917,357	2.386	0.939	3.325

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.018	0.977	.
(14) Massachusetts Credibility:	0.460	0.640	.
(15) Countrywide Pure Premium:	2.286	0.911	3.197
(16) Countrywide Indicated Relativity:	0.983	0.956	.
(17) Countrywide Credibility:	0.270	0.180	.
(18) Countrywide Lost-Time Claims:	593.00	.	.
(19) Pure Premium Underlying Present Rate:	1.804	0.783	2.587
(20) Relativity to Underlying Present Rate:	0.833	0.824	.
(21) Credibility to Underlying Relativity:	0.270	0.180	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.959	0.946	.
(24) Balanced Formula Relativity:	0.970	0.948	0.963

Class(es):		Effective: 7/1/2023							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)
2016	72,927	0	0	0	0	0	0	0	0.000	0.000	0.000
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	44,394	0	13,976	58,370	1.295	0.408	1.702
2020	39,524	0	2	0	0	0	9,368	9,368	0.000	0.237	0.237
MA Total:	213,045	0	3	0	44,394	0	23,344	67,738	0.208	0.110	0.318

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.089	0.114	.
(14) Massachusetts Credibility:	0.140	0.180	.
(15) Countrywide Pure Premium:	1.313	0.376	1.689
(16) Countrywide Indicated Relativity:	0.564	0.395	.
(17) Countrywide Credibility:	0.430	0.410	.
(18) Countrywide Lost-Time Claims:	564.00	.	.
(19) Pure Premium Underlying Present Rate:	1.072	0.348	1.420
(20) Relativity to Underlying Present Rate:	0.495	0.367	.
(21) Credibility to Underlying Relativity:	0.430	0.410	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.468	0.333	.
(24) Balanced Formula Relativity:	0.473	0.333	0.433

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	0	0	0	0	0	0	0	0	0.000	0.000	0.000
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	2,234	2,234	0.000	0.172	0.172
MA Total:	13,483	0	1	0	0	0	2,234	2,234	0.000	0.166	0.166

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.172	.
(14) Massachusetts Credibility:	0.060	0.080	.
(15) Countrywide Pure Premium:	2.699	0.773	3.472
(16) Countrywide Indicated Relativity:	1.160	0.812	.
(17) Countrywide Credibility:	0.270	0.290	.
(18) Countrywide Lost-Time Claims:	45.000	.	.
(19) Pure Premium Underlying Present Rate:	2.209	0.693	2.902
(20) Relativity to Underlying Present Rate:	1.019	0.730	.
(21) Credibility to Underlying Relativity:	0.670	0.630	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.996	0.709	.
(24) Balanced Formula Relativity:	1.008	0.710	0.921

Class(es):		Effective: 7/1/2023							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)
2016	80,775	1	6	9,542	134,366	1,724	102,965	248,598	1.782	1.296	3.078
2017	50,464	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	90,317	0	1	0	75,005	0	45,802	120,807	0.830	0.507	1.338
2019	100,837	0	4	0	19,391	0	67,057	86,448	0.192	0.665	0.857
2020	70,243	0	2	0	275,098	0	142,339	417,437	3.916	2.026	5.943
MA Total:	392,636	1	13	9,542	503,860	1,724	358,164	873,291	1.308	0.917	2.224

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.558	0.954	.
(14) Massachusetts Credibility:	0.230	0.290	.
(15) Countrywide Pure Premium:	2.128	0.658	2.786
(16) Countrywide Indicated Relativity:	0.915	0.691	.
(17) Countrywide Credibility:	0.300	0.320	.
(18) Countrywide Lost-Time Claims:	57.000	.	.
(19) Pure Premium Underlying Present Rate:	2.011	0.656	2.668
(20) Relativity to Underlying Present Rate:	0.928	0.691	.
(21) Credibility to Underlying Relativity:	0.470	0.390	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.839	0.767	.
(24) Balanced Formula Relativity:	0.849	0.769	0.825

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)	
2016	276,051	6	26	1,355,697	648,483	278,268	194,545	2,476,993	7,260	1,713	8,973	
2017	254,204	2	21	587,155	914,654	148,412	278,422	1,928,643	5,908	1,679	7,587	
2018	268,233	2	29	647,825	1,047,615	443,736	313,176	2,452,353	6,321	2,822	9,143	
2019	265,190	2	22	617,668	1,196,792	100,776	302,914	2,218,150	6,842	1,522	8,364	
2020	280,685	2	21	414,059	1,263,599	151,412	235,005	2,064,075	5,977	1,377	7,354	
MA Total:	1,344,363	14	119	3,622,404	5,071,143	1,122,604	1,324,062	11,140,214	6,467	1,820	8,287	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.760	1.894	.
(14) Massachusetts Credibility:	0.520	0.680	.
(15) Countrywide Pure Premium:	2.157	0.873	3.029
(16) Countrywide Indicated Relativity:	0.927	0.917	.
(17) Countrywide Credibility:	0.240	0.160	.
(18) Countrywide Lost-Time Claims:	1467.0	.	.
(19) Pure Premium Underlying Present Rate:	4.325	1.577	5.902
(20) Relativity to Underlying Present Rate:	1.996	1.659	.
(21) Credibility to Underlying Relativity:	0.240	0.160	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	2.137	1.700	.
(24) Balanced Formula Relativity:	2.161	1.703	2.028

Class(es):		Effective: 7/1/2023							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)	
2016	969,608	2	53	278,975	882,526	70,553	401,034	1,633,088	1,198	0,486	1,684	
2017	910,626	2	23	304,177	952,842	33,396	512,046	1,802,461	1,380	0,599	1,979	
2018	1,205,269	1	32	454,822	814,691	55,590	375,758	1,700,861	1,053	0,358	1,411	
2019	1,068,279	0	30	0	733,073	0	605,783	1,338,856	0,686	0,567	1,253	
2020	1,223,341	0	25	0	1,625,366	0	702,677	2,328,043	1,329	0,574	1,903	
MA Total:	5,377,124	5	163	1,037,973	5,008,498	159,540	2,597,298	8,803,309	1,124	0,513	1,637	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.480	0.533	.
(14) Massachusetts Credibility:	0.570	0.750	.
(15) Countrywide Pure Premium:	1.398	0.570	1.968
(16) Countrywide Indicated Relativity:	0.601	0.599	.
(17) Countrywide Credibility:	0.220	0.130	.
(18) Countrywide Lost-Time Claims:	1386.0	.	.
(19) Pure Premium Underlying Present Rate:	1.332	0.511	1.843
(20) Relativity to Underlying Present Rate:	0.615	0.538	.
(21) Credibility to Underlying Relativity:	0.210	0.120	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.535	0.542	.
(24) Balanced Formula Relativity:	0.541	0.544	0.542

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	261.444	2	8	172.285	684	14.631	14.257	201.857	0.662	0.110	0.772
2017	281.605	0	12	0	35.520	0	59.041	94.561	0.126	0.210	0.336
2018	357.932	0	4	0	65.662	0	14.580	80.243	0.183	0.041	0.224
2019	399.512	0	16	0	1.183.338	0	644.180	1.827.517	2.962	1.612	4.574
2020	409.072	1	12	57.650	122.979	42.825	228.222	451.675	0.442	0.663	1.104
MA Total:	1,709,565	3	52	229,935	1,408,183	57,455	960,280	2,655,853	0.958	0.595	1.554

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.409	0.619	.
(14) Massachusetts Credibility:	0.350	0.470	.
(15) Countrywide Pure Premium:	1.749	0.740	2.490
(16) Countrywide Indicated Relativity:	0.752	0.778	.
(17) Countrywide Credibility:	0.330	0.270	.
(18) Countrywide Lost-Time Claims:	1245.0	.	.
(19) Pure Premium Underlying Present Rate:	1.219	0.507	1.725
(20) Relativity to Underlying Present Rate:	0.562	0.533	.
(21) Credibility to Underlying Relativity:	0.320	0.260	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.571	0.640	.
(24) Balanced Formula Relativity:	0.578	0.641	0.596

Class(es):		Effective: 7/1/2023							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)
2016	387.001	4	45	631.051	126.730	542.989	156.313	1,457.083	1.958	1.807	3.765
2017	430.680	2	60	65.746	929.256	10.839	330.871	1,336.710	2.310	0.793	3.104
2018	461.061	2	51	188.397	446.819	76.739	279.461	991.416	1.378	0.773	2.150
2019	486.981	3	54	446.696	953.802	135.533	438.558	1,974.589	2.876	1.179	4.055
2020	539.834	1	49	434.394	713.778	99.136	514.486	1,761.795	2.127	1.137	3.264
MA Total:	2,305,557	12	259	1,766,284	3,170,385	865,236	1,719,688	7,521,593	2.141	1.121	3.262

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.914	1.166	.
(14) Massachusetts Credibility:	0.480	0.730	.
(15) Countrywide Pure Premium:	2.202	1.016	3.218
(16) Countrywide Indicated Relativity:	0.946	1.067	.
(17) Countrywide Credibility:	0.260	0.140	.
(18) Countrywide Lost-Time Claims:	973.00	.	.
(19) Pure Premium Underlying Present Rate:	2.104	1.098	3.202
(20) Relativity to Underlying Present Rate:	0.971	1.155	.
(21) Credibility to Underlying Relativity:	0.260	0.130	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.937	1.151	.
(24) Balanced Formula Relativity:	0.948	1.153	1.008

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	266.057	2	29	50.698	531.207	115.568	258.014	955.487	2.187	1.404	3.591
2017	279.223	1	26	11.446	66.779	4.567	84.164	166.956	0.280	0.318	0.598
2018	289.798	0	29	0	11.544	0	37.582	49.126	0.040	0.130	0.170
2019	300.352	1	29	27.203	691.229	23.114	244.024	985.569	2.392	0.889	3.281
2020	315.185	1	22	44.707	24.818	11.719	87.881	169.125	0.221	0.316	0.537
MA Total:	1,450.615	5	135	134.055	1,325.576	154.969	711.665	2,326.264	1.006	0.597	1.604

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.395	0.551	.
(14) Massachusetts Credibility:	0.280	0.470	.
(15) Countrywide Pure Premium:	1.186	0.632	1.818
(16) Countrywide Indicated Relativity:	0.487	0.622	.
(17) Countrywide Credibility:	0.360	0.270	.
(18) Countrywide Lost-Time Claims:	1001.0	.	.
(19) Pure Premium Underlying Present Rate:	0.885	0.579	1.464
(20) Relativity to Underlying Present Rate:	0.430	0.570	.
(21) Credibility to Underlying Relativity:	0.360	0.260	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.441	0.575	.
(24) Balanced Formula Relativity:	0.440	0.577	0.481

Class(es):		Effective: 7/1/2023							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)
2016	483.859	3	49	630.516	91.586	233.297	160.211	1,115.610	1.492	0.813	2.306
2017	543.485	1	86	29.303	227.134	88.691	333.990	679.119	0.472	0.778	1.250
2018	563.590	1	58	35.259	174.054	16.399	280.692	506.404	0.371	0.527	0.899
2019	562.811	3	44	268.191	649.783	244.583	170.847	1,333.405	1.631	0.738	2.369
2020	555.904	0	47	0	537.150	0	440.513	977.663	0.966	0.792	1.759
MA Total:	2,709.649	8	284	963.269	1,679.707	582.970	1,386.253	4,612.200	0.975	0.727	1.702

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.383	0.670	.
(14) Massachusetts Credibility:	0.400	0.700	.
(15) Countrywide Pure Premium:	1.485	0.833	2.317
(16) Countrywide Indicated Relativity:	0.610	0.820	.
(17) Countrywide Credibility:	0.300	0.150	.
(18) Countrywide Lost-Time Claims:	613.00	.	.
(19) Pure Premium Underlying Present Rate:	1.126	0.845	1.972
(20) Relativity to Underlying Present Rate:	0.547	0.831	.
(21) Credibility to Underlying Relativity:	0.300	0.150	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.500	0.717	.
(24) Balanced Formula Relativity:	0.499	0.719	0.565

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	3,112,709	32	365	4,116,949	6,746,873	2,516,870	3,419,680	16,800,373	3,490	1,907	5,397
2017	3,197,857	35	409	6,157,431	7,029,309	1,615,678	2,753,325	17,555,743	4,124	1,366	5,490
2018	3,026,588	30	308	4,831,000	6,516,664	1,182,136	3,738,175	16,267,975	3,749	1,626	5,375
2019	3,007,632	37	286	6,517,830	7,288,245	2,245,245	3,299,902	19,351,221	4,590	1,844	6,434
2020	3,073,616	24	257	3,368,922	7,406,415	1,286,621	2,977,979	15,039,938	3,506	1,387	4,893
MA Total:	15,418,403	158	1,625	24,992,132	34,987,506	8,846,549	16,189,061	85,015,249	3,890	1,624	5,514

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.527	1.497	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	4.154	1.419	5.573
(16) Countrywide Indicated Relativity:	1.707	1.397	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	52519	.	.
(19) Pure Premium Underlying Present Rate:	3.548	1.552	5.100
(20) Relativity to Underlying Present Rate:	1.722	1.526	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	1.527	1.497	.
(24) Balanced Formula Relativity:	1.524	1.502	1.517

Class(es):		Effective: 7/1/2023							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)
2016	73,897	2	11	56,907	133,001	12,381	103,834	306,124	2,570	1,573	4,143
2017	92,075	0	28	0	438,462	0	200,635	639,097	4,762	2,179	6,941
2018	110,087	1	35	208,745	578,843	128,000	244,207	1,159,794	7,154	3,381	10,535
2019	212,593	1	46	17,678	982,919	20,754	412,658	1,434,009	4,707	2,039	6,745
2020	43,700	0	7	0	290,195	0	158,608	448,803	6,641	3,629	10,270
MA Total:	532,352	4	127	283,330	2,423,419	161,135	1,119,941	3,987,826	5,085	2,406	7,491

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.996	2.219	.
(14) Massachusetts Credibility:	0.350	0.480	.
(15) Countrywide Pure Premium:	4.006	1.627	5.633
(16) Countrywide Indicated Relativity:	1.646	1.601	.
(17) Countrywide Credibility:	0.330	0.260	.
(18) Countrywide Lost-Time Claims:	1336.0	.	.
(19) Pure Premium Underlying Present Rate:	4.127	1.702	5.829
(20) Relativity to Underlying Present Rate:	2.004	1.673	.
(21) Credibility to Underlying Relativity:	0.320	0.260	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	1.883	1.917	.
(24) Balanced Formula Relativity:	1.879	1.923	1.892

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)	
2016	668,100	26	126	3,359,008	1,888,838	1,171,952	979,661	7,399,458	7,855	3,220	11,075	
2017	701,798	17	159	1,495,051	2,946,882	407,340	1,003,806	5,853,079	6,329	2,011	8,340	
2018	901,235	17	198	2,278,370	3,736,298	1,000,475	1,377,908	8,393,051	6,674	2,639	9,313	
2019	1,423,408	24	275	3,703,011	4,042,378	1,204,183	1,541,436	10,491,009	5,441	1,929	7,370	
2020	2,250,174	55	542	5,188,367	7,614,153	1,523,207	3,600,575	17,926,301	5,690	2,277	7,967	
MA Total:	5,944,714	139	1,300	16,023,806	20,228,550	5,307,157	8,503,386	50,062,899	6,098	2,323	8,421	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.394	2.142	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	4.565	1.559	6.124
(16) Countrywide Indicated Relativity:	1.876	1.535	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	6838.0	.	.
(19) Pure Premium Underlying Present Rate:	5.294	2.495	7.790
(20) Relativity to Underlying Present Rate:	2.570	2.454	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	2.394	2.142	.
(24) Balanced Formula Relativity:	2.389	2.149	2.317

Class(es):		Effective: 7/1/2023							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)	
2016	108,174	0	14	0	232,797	0	43,240	276,037	2,152	0.400	2,552	
2017	116,769	2	18	52,284	326,165	13,765	92,604	484,817	3,241	0.911	4,152	
2018	134,299	1	32	75,589	578,888	42,082	165,200	861,759	4,873	1.543	6,417	
2019	210,271	1	20	104,943	278,082	13,331	226,447	622,803	1,822	1.140	2,962	
2020	229,711	2	22	255,918	69,762	64,217	36,705	426,602	1,418	0.439	1,857	
MA Total:	799,225	6	106	488,734	1,485,693	133,395	564,197	2,672,019	2,470	0.873	3,343	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.970	0.805	.
(14) Massachusetts Credibility:	0.310	0.430	.
(15) Countrywide Pure Premium:	2.369	1.060	3.429
(16) Countrywide Indicated Relativity:	0.973	1.043	.
(17) Countrywide Credibility:	0.350	0.290	.
(18) Countrywide Lost-Time Claims:	1662.0	.	.
(19) Pure Premium Underlying Present Rate:	1.969	0.868	2.836
(20) Relativity to Underlying Present Rate:	0.956	0.853	.
(21) Credibility to Underlying Relativity:	0.340	0.280	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.966	0.887	.
(24) Balanced Formula Relativity:	0.964	0.890	0.942

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	1,477,483	22	446	2,011,024	2,045,576	734,007	1,360,187	6,150,795	2,746	1,417	4,163
2017	1,792,415	15	527	1,640,509	1,840,223	445,663	1,146,769	5,073,164	1,942	0,888	2,830
2018	1,827,016	15	506	1,144,185	2,017,381	460,668	1,362,956	4,985,190	1,730	0,998	2,729
2019	1,778,307	22	433	2,086,078	1,816,992	385,647	1,304,415	5,593,132	2,195	0,950	3,145
2020	1,755,798	20	399	1,920,473	4,257,227	684,430	1,563,447	8,425,577	3,518	1,280	4,799
MA Total:	8,631,020	94	2,311	8,802,269	11,977,399	2,710,416	6,737,775	30,227,858	2,408	1,095	3,502

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.945	1.009	.
(14) Massachusetts Credibility:	0.740	1.000	.
(15) Countrywide Pure Premium:	2.336	1.091	3.427
(16) Countrywide Indicated Relativity:	0.960	1.074	.
(17) Countrywide Credibility:	0.130	0.000	.
(18) Countrywide Lost-Time Claims:	1911.0	.	.
(19) Pure Premium Underlying Present Rate:	1.614	0.945	2.558
(20) Relativity to Underlying Present Rate:	0.783	0.929	.
(21) Credibility to Underlying Relativity:	0.130	0.000	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.926	1.009	.
(24) Balanced Formula Relativity:	0.924	1.013	0.950

Class(es):		Effective: 7/1/2023							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)
2016	4,100,662	56	743	5,707,587	6,934,934	2,003,382	4,044,694	18,690,597	3,083	1,475	4,558
2017	4,338,898	37	755	5,161,709	9,415,433	1,467,496	4,431,707	20,476,345	3,360	1,360	4,719
2018	4,332,185	46	766	6,725,175	8,435,331	1,954,173	4,000,809	21,115,487	3,500	1,375	4,874
2019	4,337,442	38	630	6,040,445	10,436,713	1,525,854	4,746,992	22,750,004	3,799	1,446	5,245
2020	4,021,814	33	525	3,852,821	11,656,106	1,277,871	4,617,567	21,404,365	3,856	1,466	5,322
MA Total:	21,131,001	210	3,419	27,487,737	46,878,516	8,228,776	21,841,769	104,436,799	3,519	1,423	4,942

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.381	1.312	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	2.946	1.223	4.169
(16) Countrywide Indicated Relativity:	1.211	1.203	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	27928	.	.
(19) Pure Premium Underlying Present Rate:	2.714	1.300	4.013
(20) Relativity to Underlying Present Rate:	1.317	1.278	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	1.381	1.312	.
(24) Balanced Formula Relativity:	1.378	1.317	1.360

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	3,839,451	39	715	3,075,694	3,656,484	898,247	2,212,181	9,842,606	1,753	0,810	2,564
2017	3,874,954	46	614	2,712,889	3,455,217	687,520	1,725,549	8,581,175	1,592	0,623	2,215
2018	4,141,900	60	596	4,418,980	4,919,920	1,345,209	2,541,379	13,225,489	2,255	0,938	3,193
2019	3,487,951	31	429	2,609,718	3,078,564	847,637	1,436,192	7,972,110	1,631	0,655	2,286
2020	2,699,296	33	282	3,692,608	3,010,187	1,042,739	1,451,613	9,197,147	2,483	0,924	3,407
MA Total:	18,043,553	209	2,636	16,509,889	18,120,372	4,821,353	9,366,914	48,818,527	1,919	0,786	2,706

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.753	0.725	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	2.258	1.084	3.342
(16) Countrywide Indicated Relativity:	0.928	1.067	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	7946.0	.	.
(19) Pure Premium Underlying Present Rate:	1.706	0.827	2.532
(20) Relativity to Underlying Present Rate:	0.828	0.813	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.753	0.725	.
(24) Balanced Formula Relativity:	0.752	0.727	0.745

Class(es):		Effective: 7/1/2023							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)
2016	1,786,646	6	256	354,611	1,167,634	92,805	1,151,035	2,766,085	0,852	0,696	1,548
2017	1,935,320	13	259	1,331,736	1,122,151	454,779	953,009	3,861,675	1,268	0,727	1,995
2018	1,444,009	5	200	1,342,207	1,715,900	172,793	782,465	4,013,365	2,118	0,662	2,779
2019	1,352,347	2	128	172,844	1,859,265	53,931	678,740	2,764,779	1,503	0,542	2,044
2020	1,205,820	8	82	733,035	1,356,033	332,110	819,753	3,240,931	1,732	0,955	2,688
MA Total:	7,724,141	34	925	3,934,433	7,220,983	1,106,417	4,385,002	16,646,836	1,444	0,711	2,155

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.567	0.656	.
(14) Massachusetts Credibility:	0.670	1.000	.
(15) Countrywide Pure Premium:	1.904	0.801	2.704
(16) Countrywide Indicated Relativity:	0.782	0.788	.
(17) Countrywide Credibility:	0.170	0.000	.
(18) Countrywide Lost-Time Claims:	16927	.	.
(19) Pure Premium Underlying Present Rate:	1.426	0.852	2.278
(20) Relativity to Underlying Present Rate:	0.692	0.838	.
(21) Credibility to Underlying Relativity:	0.160	0.000	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.623	0.656	.
(24) Balanced Formula Relativity:	0.622	0.658	0.633

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Calculation of Class Relativities

Class(es):									Effective: 7/1/2023			Miscellaneous	
7405 AIRCRAFT OR HELICOP OP: AIR CARRIER-SCHD/ SUPPL: 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)		
2016	2,924,810	1	95	13,373	941,802	3,733	398,060	1,356,969	0.327	0.137	0.464		
2017	3,158,686	10	154	1,923,231	1,686,360	411,621	574,566	4,595,779	1.143	0.312	1.455		
2018	950,567	1	34	21,248	893,457	15,142	385,153	1,314,999	0.962	0.421	1.383		
2019	878,693	2	47	263,840	407,749	45,559	161,566	878,714	0.764	0.236	1.000		
2020	684,748	2	15	424,258	88,222	399,321	41,579	953,381	0.748	0.644	1.392		
MA Total:	8,597,503	16	345	2,645,950	4,017,590	875,377	1,560,926	9,099,842	0.775	0.283	1.058		

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.304	0.261	.
(14) Massachusetts Credibility:	0.480	0.670	.
(15) Countrywide Pure Premium:	0.728	0.214	0.941
(16) Countrywide Indicated Relativity:	0.299	0.210	.
(17) Countrywide Credibility:	0.260	0.170	.
(18) Countrywide Lost-Time Claims:	6013.0	.	.
(19) Pure Premium Underlying Present Rate:	0.549	0.236	0.785
(20) Relativity to Underlying Present Rate:	0.267	0.232	.
(21) Credibility to Underlying Relativity:	0.260	0.160	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.293	0.248	.
(24) Balanced Formula Relativity:	0.292	0.249	0.279

Class(es):									Effective: 7/1/2023			Miscellaneous	
7420 AIRCRAFT OR HELICOP OP: PUBLIC EXHIB STUNT FLYING: FLY 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)		
2016	3,623	1	0	350,817	0	249,503	0	600,320	96.837	68.871	165.71		
2017	3,061	0	1	0	137,623	0	24,871	162,494	44.957	8.124	53.082		
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		
MA Total:	13,938	1	1	350,817	137,623	249,503	24,871	762,814	35.043	19.685	54.727		

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	13.755	18.152	.
(14) Massachusetts Credibility:	0.110	0.200	.
(15) Countrywide Pure Premium:	3.714	0.646	4.360
(16) Countrywide Indicated Relativity:	1.526	0.636	.
(17) Countrywide Credibility:	0.170	0.180	.
(18) Countrywide Lost-Time Claims:	14.000	.	.
(19) Pure Premium Underlying Present Rate:	8.330	6.789	15.119
(20) Relativity to Underlying Present Rate:	4.044	6.675	.
(21) Credibility to Underlying Relativity:	0.720	0.620	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	4.684	7.884	.
(24) Balanced Formula Relativity:	4.674	7.910	5.640

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)	
2016	380.964	0	3	0	224.351	0	34.404	258.754	0.589	0.090	0.679	
2017	405.138	0	8	0	0	0	12.856	12.856	0.000	0.032	0.032	
2018	460.095	1	4	305.952	25.715	38.391	18.436	388.494	0.721	0.124	0.844	
2019	425.796	1	3	102.661	0	17.009	4.820	124.491	0.241	0.051	0.292	
2020	479.075	0	2	0	23.398	0	8.722	32.120	0.049	0.018	0.067	
MA Total:	2,151.068	2	20	408.614	273.464	55.400	79.238	816.715	0.317	0.063	0.380	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.124	0.058	.
(14) Massachusetts Credibility:	0.270	0.350	.
(15) Countrywide Pure Premium:	0.799	0.182	0.981
(16) Countrywide Indicated Relativity:	0.328	0.179	.
(17) Countrywide Credibility:	0.370	0.330	.
(18) Countrywide Lost-Time Claims:	411.00	.	.
(19) Pure Premium Underlying Present Rate:	0.541	0.190	0.731
(20) Relativity to Underlying Present Rate:	0.263	0.186	.
(21) Credibility to Underlying Relativity:	0.360	0.320	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.250	0.139	.
(24) Balanced Formula Relativity:	0.249	0.139	0.216

Class(es):		Effective: 7/1/2023							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)	
2016	83.601	0	3	0	0	0	2.669	2.669	0.000	0.032	0.032	
2017	27.763	1	1	413.071	0	209.764	268	623.103	14.879	7.565	22.444	
2018	33.732	0	0	0	0	0	0	0	0.000	0.000	0.000	
2019	25.944	0	4	0	6.657	0	4.590	11.247	0.257	0.177	0.434	
2020	30.536	0	2	0	150.261	0	29.195	179.456	4.921	0.956	5.877	
MA Total:	201.575	1	10	413.071	156.917	209.764	36.722	816.474	2.828	1.223	4.050	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.110	1.128	.
(14) Massachusetts Credibility:	0.150	0.200	.
(15) Countrywide Pure Premium:	1.125	0.294	1.419
(16) Countrywide Indicated Relativity:	0.462	0.289	.
(17) Countrywide Credibility:	0.430	0.400	.
(18) Countrywide Lost-Time Claims:	179.00	.	.
(19) Pure Premium Underlying Present Rate:	1.265	0.499	1.764
(20) Relativity to Underlying Present Rate:	0.614	0.491	.
(21) Credibility to Underlying Relativity:	0.420	0.400	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.623	0.537	.
(24) Balanced Formula Relativity:	0.622	0.539	0.597

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)	
2016	227,480	0	17	0	465,839	0	84,339	550,178	2,048	0,371	2,419	
2017	267,378	1	22	76,709	141,971	5,599	93,987	318,266	0,818	0,372	1,190	
2018	257,535	0	15	0	41,453	0	58,883	100,336	0,161	0,229	0,390	
2019	227,412	1	18	499,721	643,881	52,278	105,209	1,301,089	5,029	0,693	5,721	
2020	251,084	0	7	0	13,686	0	32,118	45,804	0,055	0,128	0,182	
MA Total:	1,230,890	2	79	576,430	1,306,831	57,877	374,536	2,315,675	1,530	0,351	1,881	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.601	0.324	.
(14) Massachusetts Credibility:	0.250	0.360	.
(15) Countrywide Pure Premium:	0.971	0.409	1.380
(16) Countrywide Indicated Relativity:	0.399	0.403	.
(17) Countrywide Credibility:	0.380	0.320	.
(18) Countrywide Lost-Time Claims:	414.00	.	.
(19) Pure Premium Underlying Present Rate:	0.781	0.349	1.130
(20) Relativity to Underlying Present Rate:	0.379	0.343	.
(21) Credibility to Underlying Relativity:	0.370	0.320	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.442	0.355	.
(24) Balanced Formula Relativity:	0.441	0.356	0.416

Class(es):		Effective: 7/1/2023							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)	
2016	9,407	0	1	0	0	0	1,046	1,046	0,000	0,111	0,111	
2017	4,220	0	0	0	0	0	0	0	0,000	0,000	0,000	
2018	5,649	0	1	0	0	0	191	191	0,000	0,034	0,034	
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	
MA Total:	32,759	0	2	0	0	0	1,237	1,237	0,000	0,038	0,038	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.035	.
(14) Massachusetts Credibility:	0.070	0.160	.
(15) Countrywide Pure Premium:	0.539	0.195	0.735
(16) Countrywide Indicated Relativity:	0.222	0.192	.
(17) Countrywide Credibility:	0.470	0.420	.
(18) Countrywide Lost-Time Claims:	341.00	.	.
(19) Pure Premium Underlying Present Rate:	1.071	1.774	2.846
(20) Relativity to Underlying Present Rate:	0.520	1.745	.
(21) Credibility to Underlying Relativity:	0.460	0.420	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.343	0.819	.
(24) Balanced Formula Relativity:	0.343	0.822	0.486

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)	
2016	263,036	2	30	206,354	101,941	23,370	110,401	442,066	1,172	0,509	1,681	
2017	167,354	2	22	565,940	21,042	94,814	49,634	731,431	3,507	0,863	4,371	
2018	159,320	0	26	0	78,731	0	78,752	157,483	0,494	0,494	0,988	
2019	340,697	3	22	476,880	227,795	128,931	153,772	987,379	2,068	0,830	2,898	
2020	326,325	1	17	345,250	168,685	222,582	79,310	815,828	1,575	0,925	2,500	
MA Total:	1,256,732	8	117	1,594,424	598,194	469,698	471,870	3,134,186	1,745	0,749	2,494	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.685	0.691	.
(14) Massachusetts Credibility:	0.310	0.470	.
(15) Countrywide Pure Premium:	1.482	0.734	2.216
(16) Countrywide Indicated Relativity:	0.609	0.722	.
(17) Countrywide Credibility:	0.350	0.270	.
(18) Countrywide Lost-Time Claims:	1893.0	.	.
(19) Pure Premium Underlying Present Rate:	1.280	0.678	1.959
(20) Relativity to Underlying Present Rate:	0.622	0.667	.
(21) Credibility to Underlying Relativity:	0.340	0.260	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.637	0.693	.
(24) Balanced Formula Relativity:	0.635	0.695	0.653

Class(es):		Effective: 7/1/2023							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)	
2016	228,924	1	9	204,720	582,341	58,428	185,589	1,031,078	3,438	1,066	4,504	
2017	237,828	0	9	0	25,900	0	14,429	40,329	0,109	0,061	0,170	
2018	306,010	2	32	4,333	175,507	14,436	228,126	422,401	0,588	0,793	1,380	
2019	373,551	0	14	0	184,336	0	102,320	286,656	0,493	0,274	0,767	
2020	330,485	0	18	0	378,686	0	242,201	620,887	1,146	0,733	1,879	
MA Total:	1,476,798	3	82	209,053	1,346,770	72,864	772,665	2,401,351	1,054	0,573	1,626	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.450	0.596	.
(14) Massachusetts Credibility:	0.440	0.610	.
(15) Countrywide Pure Premium:	1.566	0.621	2.187
(16) Countrywide Indicated Relativity:	0.673	0.652	.
(17) Countrywide Credibility:	0.280	0.200	.
(18) Countrywide Lost-Time Claims:	1287.0	.	.
(19) Pure Premium Underlying Present Rate:	2.565	1.101	3.666
(20) Relativity to Underlying Present Rate:	1.184	1.158	.
(21) Credibility to Underlying Relativity:	0.280	0.190	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.718	0.714	.
(24) Balanced Formula Relativity:	0.726	0.715	0.723

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Miscellaneous		
7539 ELECTRIC LIGHT OR POWER CO 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)
2016	1,274,073	3	57	567,539	372,018	386,787	419,978	1,746,322	0.737	0.633	1.371
2017	1,128,701	4	39	302,972	280,082	124,769	122,524	830,347	0.517	0.219	0.736
2018	1,038,994	1	35	381,524	1,150,704	38,049	397,467	1,967,744	1.475	0.419	1.894
2019	1,480,306	0	33	0	375,171	0	327,595	702,766	0.253	0.221	0.475
2020	1,124,023	1	14	364,853	226,839	81,537	75,343	748,573	0.526	0.140	0.666
MA Total:	6,046,096	9	178	1,616,888	2,404,816	631,142	1,342,906	5,995,752	0.665	0.326	0.992

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.261	0.301	.
(14) Massachusetts Credibility:	0.430	0.690	.
(15) Countrywide Pure Premium:	0.711	0.321	1.032
(16) Countrywide Indicated Relativity:	0.292	0.316	.
(17) Countrywide Credibility:	0.290	0.160	.
(18) Countrywide Lost-Time Claims:	1148.0	.	.
(19) Pure Premium Underlying Present Rate:	0.597	0.368	0.964
(20) Relativity to Underlying Present Rate:	0.290	0.362	.
(21) Credibility to Underlying Relativity:	0.280	0.150	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.278	0.313	.
(24) Balanced Formula Relativity:	0.277	0.314	0.288

Class(es):		Effective: 7/1/2023							Miscellaneous		
7580 SEWAGE DISPOSAL PLANT 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)
2016	221,081	2	25	459,106	75,744	54,523	79,675	669,048	2.419	0.607	3.026
2017	209,456	0	21	0	207,010	0	145,547	352,557	0.988	0.695	1.683
2018	188,385	1	11	233,740	43,375	26,294	28,555	331,964	1.471	0.291	1.762
2019	244,082	1	18	11,357	878,714	7,586	224,825	1,122,482	3.647	0.952	4.599
2020	258,621	0	9	0	43,148	0	12,014	55,163	0.167	0.046	0.213
MA Total:	1,121,624	4	84	704,204	1,247,991	88,402	490,617	2,531,214	1.741	0.516	2.257

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.683	0.476	.
(14) Massachusetts Credibility:	0.330	0.450	.
(15) Countrywide Pure Premium:	1.270	0.667	1.938
(16) Countrywide Indicated Relativity:	0.522	0.657	.
(17) Countrywide Credibility:	0.340	0.280	.
(18) Countrywide Lost-Time Claims:	707.00	.	.
(19) Pure Premium Underlying Present Rate:	1.607	0.660	2.267
(20) Relativity to Underlying Present Rate:	0.780	0.649	.
(21) Credibility to Underlying Relativity:	0.330	0.270	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.660	0.573	.
(24) Balanced Formula Relativity:	0.659	0.575	0.634

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	26,800	4	21	199,136	434,332	133,535	317,025	1,084,029	23,637	16,812	40,449
2017	49,989	1	23	219,870	23,084	106,353	28,972	378,279	4,860	2,707	7,567
2018	39,609	1	5	8,957	249,058	44,613	62,421	365,049	6,514	2,702	9,216
2019	51,699	0	2	0	0	0	5,185	5,185	0.000	0.100	0.100
2020	56,437	0	6	0	26,784	0	51,961	78,746	0.475	0.921	1,395
MA Total:	224,532	6	57	427,963	733,259	284,502	465,564	1,911,289	5.172	3.341	8.512

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.030	3.080	.
(14) Massachusetts Credibility:	0.210	0.350	.
(15) Countrywide Pure Premium:	1.874	0.939	2.813
(16) Countrywide Indicated Relativity:	0.770	0.924	.
(17) Countrywide Credibility:	0.400	0.330	.
(18) Countrywide Lost-Time Claims:	450.00	.	.
(19) Pure Premium Underlying Present Rate:	2.812	1.853	4.665
(20) Relativity to Underlying Present Rate:	1.365	1.822	.
(21) Credibility to Underlying Relativity:	0.390	0.320	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	1.266	1.966	.
(24) Balanced Formula Relativity:	1.264	1.973	1.475

Class(es):		Effective: 7/1/2023							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)
2016	3,592,825	23	227	4,939,397	5,051,547	1,534,460	1,756,743	13,282,147	2,781	0,916	3,697
2017	3,738,832	21	264	5,220,357	5,507,801	1,060,387	2,236,550	14,025,095	2,869	0,882	3,751
2018	3,896,640	20	266	3,738,578	5,645,982	1,309,043	2,119,933	12,813,536	2,408	0,880	3,288
2019	4,008,339	16	242	1,946,474	7,021,790	599,230	2,343,650	11,911,145	2,237	0,734	2,972
2020	3,862,806	14	192	2,554,666	6,880,343	620,423	2,108,532	12,163,963	2,443	0,706	3,149
MA Total:	19,099,443	94	1,191	18,399,472	30,107,463	5,123,543	10,565,408	64,195,886	2,540	0,821	3,361

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.997	0.757	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	2.600	0.935	3.535
(16) Countrywide Indicated Relativity:	1.068	0.920	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	12008	.	.
(19) Pure Premium Underlying Present Rate:	1.814	0.683	2.497
(20) Relativity to Underlying Present Rate:	0.880	0.672	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.997	0.757	.
(24) Balanced Formula Relativity:	0.995	0.760	0.925

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)	
2016	272,846	0	13	0	19,249	0	109,922	129,171	0.071	0.403	0.473	
2017	268,280	1	9	183,712	17,898	32,747	14,690	249,046	0.751	0.177	0.928	
2018	252,633	1	12	285,784	29,870	41,246	33,871	390,771	1.249	0.297	1.547	
2019	262,126	0	7	0	353,246	0	120,352	473,598	1.348	0.459	1.807	
2020	239,580	0	3	0	194,473	0	86,251	280,724	0.812	0.360	1.172	
MA Total:	1,295,465	2	44	469,496	614,737	73,993	365,086	1,523,311	0.837	0.339	1.176	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.357	0.353	.
(14) Massachusetts Credibility:	0.400	0.590	.
(15) Countrywide Pure Premium:	2.071	1.150	3.221
(16) Countrywide Indicated Relativity:	0.890	1.208	.
(17) Countrywide Credibility:	0.200	0.210	.
(18) Countrywide Lost-Time Claims:	21.000	.	.
(19) Pure Premium Underlying Present Rate:	2.302	1.163	3.465
(20) Relativity to Underlying Present Rate:	1.062	1.224	.
(21) Credibility to Underlying Relativity:	0.400	0.200	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.746	0.706	.
(24) Balanced Formula Relativity:	0.754	0.708	0.741

Class(es):		Effective: 7/1/2023							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)	
2016	3,730,805	2	69	294,477	1,120,569	155,874	400,279	1,971,199	0.379	0.149	0.528	
2017	4,294,239	4	82	287,753	658,616	45,988	291,557	1,283,913	0.220	0.079	0.299	
2018	4,165,769	1	53	609,203	1,308,504	128,613	385,217	2,431,538	0.460	0.123	0.584	
2019	5,658,893	2	48	60,500	116,722	52,920	171,738	401,880	0.031	0.040	0.071	
2020	4,721,235	1	44	1,002,938	900,016	128,964	335,893	2,367,810	0.403	0.098	0.502	
MA Total:	22,570,941	10	296	2,254,871	4,104,426	512,359	1,584,683	8,456,339	0.282	0.093	0.375	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.477	3.052	.
(14) Massachusetts Credibility:	0.540	0.710	.
(15) Countrywide Pure Premium:	0.153	0.070	0.222
(16) Countrywide Indicated Relativity:	3.248	2.747	.
(17) Countrywide Credibility:	0.230	0.150	.
(18) Countrywide Lost-Time Claims:	1806.0	.	.
(19) Pure Premium Underlying Present Rate:	0.280	0.104	0.383
(20) Relativity to Underlying Present Rate:	4.914	3.201	.
(21) Credibility to Underlying Relativity:	0.230	0.140	.
(22) Industry Group Converted Pure Premium:	0.063	0.030	0.093
(23) Formula Relativity:	4.295	3.027	.
(24) Balanced Formula Relativity:	4.268	3.026	3.863

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Calculation of Class Relativities

Class(es): 7704 FIREFIGHTERS & DRIVERS		Effective: 7/1/2023							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)
2016	15,648	0	2	0	265	0	2,053	2,318	0.017	0.131	0.148
2017	15,353	0	2	0	0	0	2,895	2,895	0.000	0.189	0.189
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
MA Total:	39,941	0	4	0	265	0	4,947	5,212	0.007	0.124	0.131

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.003	0.114	.
(14) Massachusetts Credibility:	0.090	0.150	.
(15) Countrywide Pure Premium:	2.015	1.357	3.373
(16) Countrywide Indicated Relativity:	0.828	1.336	.
(17) Countrywide Credibility:	0.460	0.430	.
(18) Countrywide Lost-Time Claims:	827.00	.	.
(19) Pure Premium Underlying Present Rate:	1.782	1.170	2.952
(20) Relativity to Underlying Present Rate:	0.865	1.150	.
(21) Credibility to Underlying Relativity:	0.450	0.420	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.770	1.075	.
(24) Balanced Formula Relativity:	0.769	1.078	0.861

Class(es): 7720 POLICE OFFICERS & DRIVERS		Effective: 7/1/2023							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)
2016	1,811,493	7	102	635,744	294,047	527,895	321,954	1,779,640	0.513	0.469	0.982
2017	2,037,569	7	119	374,051	1,053,850	46,730	460,489	1,935,120	0.701	0.249	0.950
2018	2,308,026	5	117	121,383	1,474,787	27,480	787,492	2,411,141	0.692	0.353	1.045
2019	2,418,385	7	97	590,711	1,631,739	91,749	726,007	3,040,206	0.919	0.338	1.257
2020	2,929,791	3	77	342,161	808,858	221,544	501,351	1,873,914	0.393	0.247	0.640
MA Total:	11,505,264	29	512	2,064,050	5,263,280	915,398	2,797,293	11,040,020	0.637	0.323	0.960

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.250	0.298	.
(14) Massachusetts Credibility:	0.570	0.890	.
(15) Countrywide Pure Premium:	1.342	0.712	2.054
(16) Countrywide Indicated Relativity:	0.551	0.701	.
(17) Countrywide Credibility:	0.220	0.060	.
(18) Countrywide Lost-Time Claims:	12177	.	.
(19) Pure Premium Underlying Present Rate:	0.633	0.359	0.991
(20) Relativity to Underlying Present Rate:	0.307	0.353	.
(21) Credibility to Underlying Relativity:	0.210	0.050	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.328	0.325	.
(24) Balanced Formula Relativity:	0.328	0.326	0.327

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	33,601	0	4	0	83,759	0	33,725	117,484	2,493	1,004	3,496
2017	55,224	0	1	0	0	0	10,964	10,964	0,000	0,199	0,199
2018	189,866	2	8	237,721	3,260	109,078	5,423	355,482	1,269	0,603	1,872
2019	379,963	2	28	707,076	1,138,133	376,287	320,229	2,541,725	4,856	1,833	6,689
2020	149,384	1	6	94,245	42,795	34,902	13,361	185,303	0,917	0,323	1,240
MA Total:	808,038	5	47	1,039,042	1,267,946	520,268	383,701	3,210,958	2,855	1,119	3,974

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.218	1.164	.
(14) Massachusetts Credibility:	0.280	0.370	.
(15) Countrywide Pure Premium:	2.090	0.675	2.765
(16) Countrywide Indicated Relativity:	0.898	0.709	.
(17) Countrywide Credibility:	0.360	0.320	.
(18) Countrywide Lost-Time Claims:	202.00	.	.
(19) Pure Premium Underlying Present Rate:	1.592	0.568	2.160
(20) Relativity to Underlying Present Rate:	0.735	0.598	.
(21) Credibility to Underlying Relativity:	0.360	0.310	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.929	0.843	.
(24) Balanced Formula Relativity:	0.940	0.844	0.912

Class(es):		Effective: 7/1/2023							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)
2016	654,573	6	83	135,014	332,174	86,505	241,149	794,841	0,714	0,501	1,214
2017	645,307	0	65	0	291,624	0	190,235	481,859	0,452	0,295	0,747
2018	632,393	1	69	1,096	691,654	45	400,384	1,093,178	1,095	0,633	1,729
2019	590,343	1	53	2,878	626,004	4,851	344,572	978,306	1,065	0,592	1,657
2020	581,539	2	50	163,432	333,316	57,911	187,918	742,577	0,854	0,423	1,277
MA Total:	3,104,155	10	320	302,420	2,274,772	149,312	1,364,259	4,090,761	0,830	0,488	1,318

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.095	1.396	.
(14) Massachusetts Credibility:	0.340	0.570	.
(15) Countrywide Pure Premium:	0.910	0.496	1.406
(16) Countrywide Indicated Relativity:	1.198	1.405	.
(17) Countrywide Credibility:	0.330	0.220	.
(18) Countrywide Lost-Time Claims:	1193.0	.	.
(19) Pure Premium Underlying Present Rate:	0.659	0.443	1.102
(20) Relativity to Underlying Present Rate:	0.981	1.246	.
(21) Credibility to Underlying Relativity:	0.330	0.210	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.091	1.366	.
(24) Balanced Formula Relativity:	1.077	1.360	1.167

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	73.750	0	15	0	43.055	0	61.432	104.487	0.584	0.833	1.417
2017	86.443	0	12	0	118.072	0	94.625	212.697	1.366	1.095	2.461
2018	93.373	1	10	31.191	15.428	2.817	8.669	58.104	0.499	0.123	0.622
2019	96.356	0	9	0	67.894	0	49.900	117.794	0.705	0.518	1.222
2020	105.169	1	13	115.051	19.389	46.171	52.532	233.143	1.278	0.939	2.217
MA Total:	455.092	2	59	146.242	263.838	48.987	267.158	726.225	0.901	0.695	1.596

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.188	1.989	.
(14) Massachusetts Credibility:	0.160	0.310	.
(15) Countrywide Pure Premium:	0.741	0.431	1.172
(16) Countrywide Indicated Relativity:	0.975	1.222	.
(17) Countrywide Credibility:	0.420	0.350	.
(18) Countrywide Lost-Time Claims:	1901.0	.	.
(19) Pure Premium Underlying Present Rate:	0.697	0.651	1.349
(20) Relativity to Underlying Present Rate:	1.038	1.832	.
(21) Credibility to Underlying Relativity:	0.420	0.340	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.035	1.667	.
(24) Balanced Formula Relativity:	1.022	1.660	1.223

Class(es):		Effective: 7/1/2023							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)
2016	3,161.096	6	235	189.971	386.878	45.542	447.144	1,069.535	0.182	0.156	0.338
2017	3,368.090	10	275	381.396	651.952	77.898	820.812	1,932.058	0.307	0.267	0.574
2018	3,419.169	10	263	514.433	1,599.797	185.126	792.805	3,092.161	0.618	0.286	0.904
2019	3,608.635	8	241	914.583	1,061.361	238.683	677.489	2,892.115	0.548	0.254	0.801
2020	2,535.199	2	68	123.937	486.929	52.572	374.754	1,038.191	0.241	0.169	0.410
MA Total:	16,092.188	36	1,082	2,124.319	4,186.916	599.820	3,113.004	10,024.060	0.392	0.231	0.623

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.517	0.661	.
(14) Massachusetts Credibility:	0.580	0.960	.
(15) Countrywide Pure Premium:	0.849	0.396	1.245
(16) Countrywide Indicated Relativity:	1.117	1.123	.
(17) Countrywide Credibility:	0.210	0.020	.
(18) Countrywide Lost-Time Claims:	12736	.	.
(19) Pure Premium Underlying Present Rate:	0.472	0.316	0.789
(20) Relativity to Underlying Present Rate:	0.703	0.889	.
(21) Credibility to Underlying Relativity:	0.210	0.020	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.682	0.674	.
(24) Balanced Formula Relativity:	0.673	0.671	0.673

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	3,319,676	5	178	483,780	932,050	185,360	539,182	2,140,371	0.426	0.218	0.645
2017	3,277,596	5	174	321,292	737,002	156,766	357,749	1,572,809	0.323	0.157	0.480
2018	3,607,256	7	161	709,991	354,184	121,196	492,985	1,678,356	0.295	0.170	0.465
2019	3,481,671	6	189	972,781	361,367	138,463	418,225	1,890,835	0.383	0.160	0.543
2020	2,780,560	1	75	22,211	477,173	2,046	280,159	781,589	0.180	0.101	0.281
MA Total:	16,466,758	24	777	2,510,055	2,861,775	603,831	2,088,300	8,063,961	0.326	0.163	0.490

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.430	0.468	.
(14) Massachusetts Credibility:	0.500	0.800	.
(15) Countrywide Pure Premium:	0.446	0.245	0.692
(16) Countrywide Indicated Relativity:	0.588	0.694	.
(17) Countrywide Credibility:	0.250	0.100	.
(18) Countrywide Lost-Time Claims:	8240.0	.	.
(19) Pure Premium Underlying Present Rate:	0.323	0.193	0.516
(20) Relativity to Underlying Present Rate:	0.481	0.543	.
(21) Credibility to Underlying Relativity:	0.250	0.100	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.482	0.498	.
(24) Balanced Formula Relativity:	0.476	0.496	0.482

Class(es):		Effective: 7/1/2023							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)
2016	1,985,890	8	180	694,050	1,170,042	257,863	801,525	2,923,480	0.939	0.533	1.472
2017	2,171,852	9	186	965,335	1,176,979	222,854	507,199	2,872,368	0.986	0.336	1.323
2018	2,176,138	4	143	201,788	912,458	33,348	694,925	1,842,519	0.512	0.335	0.847
2019	2,257,250	6	156	615,033	678,803	299,672	680,422	2,273,930	0.573	0.434	1.007
2020	2,182,192	3	95	249,692	607,343	125,570	292,961	1,275,566	0.393	0.192	0.585
MA Total:	10,773,322	30	760	2,725,898	4,545,625	939,308	2,977,032	11,187,863	0.675	0.364	1.038

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.890	1.041	.
(14) Massachusetts Credibility:	0.580	0.900	.
(15) Countrywide Pure Premium:	0.713	0.376	1.090
(16) Countrywide Indicated Relativity:	0.939	1.067	.
(17) Countrywide Credibility:	0.210	0.050	.
(18) Countrywide Lost-Time Claims:	5498.0	.	.
(19) Pure Premium Underlying Present Rate:	0.693	0.402	1.095
(20) Relativity to Underlying Present Rate:	1.032	1.131	.
(21) Credibility to Underlying Relativity:	0.210	0.050	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.930	1.047	.
(24) Balanced Formula Relativity:	0.918	1.042	0.957

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Calculation of Class Relativities

Class(es): 8013 STORE: JEWELRY STORES		Effective: 7/1/2023							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)
2016	1,346,721	0	21	0	59,804	0	53,201	113,004	0.044	0.040	0.084
2017	1,380,473	2	17	248,068	14,243	546,454	70,551	879,316	0.190	0.447	0.637
2018	1,439,816	0	13	0	130,585	0	67,367	197,953	0.091	0.047	0.137
2019	1,415,004	0	12	0	2,413	0	14,367	16,780	0.002	0.010	0.012
2020	1,550,410	0	10	0	129,189	0	74,387	203,576	0.083	0.048	0.131
MA Total:	7,132,424	2	73	248,068	336,234	546,454	279,873	1,410,629	0.082	0.116	0.198

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.108	0.332	.
(14) Massachusetts Credibility:	0.260	0.440	.
(15) Countrywide Pure Premium:	0.161	0.079	0.241
(16) Countrywide Indicated Relativity:	0.212	0.224	.
(17) Countrywide Credibility:	0.370	0.280	.
(18) Countrywide Lost-Time Claims:	750.00	.	.
(19) Pure Premium Underlying Present Rate:	0.141	0.102	0.242
(20) Relativity to Underlying Present Rate:	0.209	0.286	.
(21) Credibility to Underlying Relativity:	0.370	0.280	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.184	0.289	.
(24) Balanced Formula Relativity:	0.182	0.287	0.215

Class(es): 8017 STORE: RETAIL NOC		Effective: 7/1/2023							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)
2016	11,568,547	16	784	1,570,596	3,155,720	420,280	2,233,632	7,380,229	0.409	0.229	0.638
2017	12,157,752	24	823	1,789,156	3,303,459	354,882	1,842,730	7,290,227	0.419	0.181	0.600
2018	14,675,875	38	1,090	3,161,089	6,345,385	926,624	3,984,310	14,417,408	0.648	0.335	0.982
2019	11,629,920	15	584	1,302,563	5,324,233	263,832	2,192,560	9,083,187	0.570	0.211	0.781
2020	8,957,102	13	269	1,060,305	2,404,293	648,818	1,212,824	5,326,240	0.387	0.208	0.595
MA Total:	58,989,195	106	3,550	8,883,709	20,533,091	2,614,436	11,466,055	43,497,291	0.499	0.239	0.737

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.658	0.683	.
(14) Massachusetts Credibility:	0.910	1.000	.
(15) Countrywide Pure Premium:	0.571	0.288	0.859
(16) Countrywide Indicated Relativity:	0.751	0.815	.
(17) Countrywide Credibility:	0.050	0.000	.
(18) Countrywide Lost-Time Claims:	24267	.	.
(19) Pure Premium Underlying Present Rate:	0.397	0.251	0.648
(20) Relativity to Underlying Present Rate:	0.591	0.706	.
(21) Credibility to Underlying Relativity:	0.040	0.000	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.660	0.683	.
(24) Balanced Formula Relativity:	0.651	0.680	0.660

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Calculation of Class Relativities

Class(es): 8018 STORE: WHOLESALE NOC		Effective: 7/1/2023							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)
2016	3,935,244	25	709	2,813,924	6,059,341	751,676	2,646,129	12,271,070	2,255	0,863	3,118
2017	4,443,797	42	870	3,258,753	6,551,242	822,393	2,693,375	13,325,762	2,208	0,791	2,999
2018	4,689,366	50	697	3,301,612	6,145,506	818,059	2,366,730	12,631,908	2,015	0,679	2,694
2019	4,924,902	27	812	2,529,573	8,474,291	680,594	3,480,184	15,164,642	2,234	0,845	3,079
2020	6,795,511	55	929	4,056,027	6,889,008	1,720,521	2,967,654	15,633,210	1,611	0,690	2,301
MA Total:	24,788,820	199	4,017	15,959,890	34,119,388	4,793,243	14,154,072	69,026,593	2,020	0,764	2,785

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.664	2.188	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	1.415	0.568	1.982
(16) Countrywide Indicated Relativity:	1.862	1.608	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	33621	.	.
(19) Pure Premium Underlying Present Rate:	1.689	0.722	2.412
(20) Relativity to Underlying Present Rate:	2.515	2.032	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	2.664	2.188	.
(24) Balanced Formula Relativity:	2.630	2.179	2.488

Class(es): 8021 STORE: MEAT, FISH OR POULTRY DEALER- WHOLESALE		Effective: 7/1/2023							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)
2016	1,084,915	8	157	659,456	2,561,475	118,147	655,322	3,994,400	2,969	0,713	3,682
2017	1,084,462	9	130	672,781	1,131,623	330,767	444,265	2,579,436	1,664	0,715	2,379
2018	1,184,048	7	149	437,931	1,278,349	144,901	656,545	2,517,725	1,450	0,677	2,126
2019	1,287,172	8	162	1,316,143	1,567,837	406,311	912,135	4,202,426	2,241	1,024	3,265
2020	1,422,990	5	149	628,625	1,985,711	186,355	925,911	3,726,602	1,837	0,782	2,619
MA Total:	6,063,588	37	747	3,714,937	8,524,996	1,186,481	3,594,177	17,020,590	2,019	0,788	2,807

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.662	2.257	.
(14) Massachusetts Credibility:	0.630	0.890	.
(15) Countrywide Pure Premium:	1.028	0.546	1.574
(16) Countrywide Indicated Relativity:	1.353	1.547	.
(17) Countrywide Credibility:	0.190	0.060	.
(18) Countrywide Lost-Time Claims:	2755.0	.	.
(19) Pure Premium Underlying Present Rate:	1.572	0.700	2.271
(20) Relativity to Underlying Present Rate:	2.339	1.968	.
(21) Credibility to Underlying Relativity:	0.180	0.050	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	2.355	2.200	.
(24) Balanced Formula Relativity:	2.325	2.191	2.282

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	194,979	1	24	100,711	2,430	19,227	23,115	145,483	0.529	0.217	0.746
2017	218,153	0	18	0	5,009	0	14,872	19,881	0.023	0.068	0.091
2018	247,316	0	19	0	320,691	0	144,222	464,913	1.297	0.583	1.880
2019	237,076	1	14	91,258	2,812	217,699	7,885	319,654	0.397	0.952	1.348
2020	308,486	1	9	3	188,504	0	89,052	277,558	0.611	0.289	0.900
MA Total:	1,206,010	3	84	191,972	519,446	236,926	279,146	1,227,490	0.590	0.428	1.018

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.778	1.225	.
(14) Massachusetts Credibility:	0.240	0.370	.
(15) Countrywide Pure Premium:	0.790	0.442	1.232
(16) Countrywide Indicated Relativity:	1.039	1.252	.
(17) Countrywide Credibility:	0.380	0.320	.
(18) Countrywide Lost-Time Claims:	536.00	.	.
(19) Pure Premium Underlying Present Rate:	0.713	0.393	1.106
(20) Relativity to Underlying Present Rate:	1.061	1.105	.
(21) Credibility to Underlying Relativity:	0.380	0.310	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.985	1.197	.
(24) Balanced Formula Relativity:	0.972	1.191	1.041

Class(es):		Effective: 7/1/2023							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)
2016	282,589	0	27	0	57,936	0	116,107	174,043	0.205	0.411	0.616
2017	283,334	1	15	71,832	16,531	7,218	59,611	155,191	0.312	0.236	0.548
2018	308,687	1	28	44,218	2,371	16,238	16,958	79,786	0.151	0.108	0.258
2019	314,386	2	14	321,455	7,828	39,202	16,573	385,058	1.047	0.177	1.225
2020	303,089	0	7	0	85,740	0	47,802	133,542	0.283	0.158	0.441
MA Total:	1,492,085	4	91	437,505	170,406	62,658	257,051	927,620	0.407	0.214	0.622

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.537	0.613	.
(14) Massachusetts Credibility:	0.240	0.370	.
(15) Countrywide Pure Premium:	0.840	0.393	1.233
(16) Countrywide Indicated Relativity:	1.106	1.112	.
(17) Countrywide Credibility:	0.380	0.320	.
(18) Countrywide Lost-Time Claims:	1573.0	.	.
(19) Pure Premium Underlying Present Rate:	0.546	0.314	0.860
(20) Relativity to Underlying Present Rate:	0.812	0.883	.
(21) Credibility to Underlying Relativity:	0.380	0.310	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.858	0.857	.
(24) Balanced Formula Relativity:	0.847	0.853	0.849

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)	
2016	749,338	3	67	130,062	271,812	24,392	224,232	650,498	0.536	0.332	0.868	
2017	794,297	1	58	31,102	274,241	11,958	143,758	461,059	0.384	0.196	0.580	
2018	845,402	2	63	76,996	353,386	20,153	202,590	653,125	0.509	0.263	0.773	
2019	2,911,919	7	418	553,970	1,171,351	106,260	922,678	2,754,259	0.593	0.353	0.946	
2020	3,558,807	6	407	362,433	2,200,642	261,403	1,459,192	4,283,670	0.720	0.483	1.204	
MA Total:	8,859,762	19	1,013	1,154,562	4,271,432	424,166	2,952,450	8,802,611	0.612	0.381	0.994	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.808	1.091	.
(14) Massachusetts Credibility:	0.510	0.750	.
(15) Countrywide Pure Premium:	0.790	0.395	1.185
(16) Countrywide Indicated Relativity:	1.040	1.119	.
(17) Countrywide Credibility:	0.250	0.130	.
(18) Countrywide Lost-Time Claims:	21489	.	.
(19) Pure Premium Underlying Present Rate:	0.637	0.313	0.950
(20) Relativity to Underlying Present Rate:	0.948	0.880	.
(21) Credibility to Underlying Relativity:	0.240	0.120	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.899	1.069	.
(24) Balanced Formula Relativity:	0.888	1.065	0.944

Class(es):		Effective: 7/1/2023							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)	
2016	355,404	1	45	86,575	242,084	8,604	179,574	516,837	0.925	0.529	1.454	
2017	443,606	0	70	0	844,732	0	222,410	1,067,142	1.904	0.501	2.406	
2018	368,301	0	33	0	566,568	0	87,831	654,398	1.538	0.238	1.777	
2019	350,611	1	31	228,023	524,585	30,201	192,200	975,009	2.147	0.634	2.781	
2020	355,847	2	36	132,825	467,096	30,563	185,017	815,501	1.686	0.606	2.292	
MA Total:	1,873,769	4	215	447,423	2,645,065	69,368	867,031	4,028,887	1.650	0.500	2.150	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.176	1.431	.
(14) Massachusetts Credibility:	0.390	0.500	.
(15) Countrywide Pure Premium:	1.309	0.491	1.800
(16) Countrywide Indicated Relativity:	1.723	1.390	.
(17) Countrywide Credibility:	0.310	0.250	.
(18) Countrywide Lost-Time Claims:	281.00	.	.
(19) Pure Premium Underlying Present Rate:	1.461	0.525	1.986
(20) Relativity to Underlying Present Rate:	2.175	1.476	.
(21) Credibility to Underlying Relativity:	0.300	0.250	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	2.035	1.432	.
(24) Balanced Formula Relativity:	2.009	1.426	1.825

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Calculation of Class Relativities

Class(es): 8039 STORE: DEPARTMENT - RETAIL		Effective: 7/1/2023							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)
2016	3,688,344	20	448	1,522,418	1,147,007	338,627	860,904	3,868,956	0.724	0.325	1.049
2017	3,343,672	11	419	853,836	1,759,904	144,990	1,069,546	3,828,276	0.782	0.363	1.145
2018	190,376	2	16	291,706	16,767	80,548	26,046	415,067	1.620	0.560	2.180
2019	3,321,237	16	378	973,707	2,261,850	324,403	1,410,906	4,970,866	0.974	0.522	1.497
2020	3,246,734	14	432	2,113,333	2,658,447	508,587	1,815,262	7,095,629	1.470	0.716	2.185
MA Total:	13,790,363	63	1,693	5,755,000	7,843,975	1,397,154	5,182,664	20,178,793	0.986	0.477	1.463

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.300	1.366	.
(14) Massachusetts Credibility:	0.570	0.950	.
(15) Countrywide Pure Premium:	0.576	0.380	0.957
(16) Countrywide Indicated Relativity:	0.758	1.078	.
(17) Countrywide Credibility:	0.220	0.030	.
(18) Countrywide Lost-Time Claims:	4561.0	.	.
(19) Pure Premium Underlying Present Rate:	0.529	0.356	0.885
(20) Relativity to Underlying Present Rate:	0.787	1.002	.
(21) Credibility to Underlying Relativity:	0.210	0.020	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.073	1.350	.
(24) Balanced Formula Relativity:	1.060	1.344	1.149

Class(es): 8044 STORE: FURNITURE & DRIVERS		Effective: 7/1/2023							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)
2016	818,434	5	115	567,285	910,554	115,687	416,236	2,009,762	1.806	0.650	2.456
2017	1,222,162	7	121	811,902	918,429	333,302	500,479	2,564,113	1.416	0.682	2.098
2018	1,435,881	5	164	315,020	1,322,348	108,356	735,975	2,481,699	1.140	0.588	1.728
2019	1,295,245	3	131	207,358	1,685,191	137,505	695,507	2,725,561	1.461	0.643	2.104
2020	1,263,714	5	117	886,149	794,303	434,297	542,408	2,657,158	1.330	0.773	2.103
MA Total:	6,035,435	25	648	2,787,715	5,630,826	1,129,147	2,890,605	12,438,293	1.395	0.666	2.061

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.839	1.907	.
(14) Massachusetts Credibility:	0.570	0.860	.
(15) Countrywide Pure Premium:	1.182	0.491	1.672
(16) Countrywide Indicated Relativity:	1.555	1.390	.
(17) Countrywide Credibility:	0.220	0.070	.
(18) Countrywide Lost-Time Claims:	6835.0	.	.
(19) Pure Premium Underlying Present Rate:	1.188	0.632	1.820
(20) Relativity to Underlying Present Rate:	1.769	1.777	.
(21) Credibility to Underlying Relativity:	0.210	0.070	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.762	1.862	.
(24) Balanced Formula Relativity:	1.739	1.853	1.775

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	309,996	2	29	262,552	13,690	332,864	32,976	642,081	0.891	1.180	2.071
2017	293,065	1	27	83,360	110,114	101,710	127,513	422,696	0.660	0.782	1.442
2018	355,155	3	30	156,893	166,904	77,001	235,505	636,303	0.912	0.880	1.792
2019	360,888	2	33	204,741	304,082	32,616	270,664	812,104	1.410	0.840	2.250
2020	623,188	5	72	593,450	534,150	166,252	330,667	1,624,519	1.809	0.797	2.607
MA Total:	1,942,292	13	191	1,300,996	1,128,940	710,442	997,325	4,137,703	1.251	0.879	2.130

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.650	2.517	.
(14) Massachusetts Credibility:	0.320	0.530	.
(15) Countrywide Pure Premium:	0.995	0.538	1.532
(16) Countrywide Indicated Relativity:	1.309	1.524	.
(17) Countrywide Credibility:	0.340	0.240	.
(18) Countrywide Lost-Time Claims:	6316.0	.	.
(19) Pure Premium Underlying Present Rate:	0.878	0.599	1.478
(20) Relativity to Underlying Present Rate:	1.307	1.686	.
(21) Credibility to Underlying Relativity:	0.340	0.230	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.417	2.088	.
(24) Balanced Formula Relativity:	1.399	2.079	1.613

Class(es):		Effective: 7/1/2023							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)
2016	478,144	2	54	339,358	216,061	100,242	213,718	869,380	1.162	0.657	1.818
2017	525,899	3	73	197,479	528,550	32,818	289,198	1,048,043	1.381	0.612	1.993
2018	540,838	1	71	106,351	470,976	6,580	300,772	884,679	1.067	0.568	1.636
2019	561,117	0	79	0	1,037,292	0	430,019	1,467,311	1.849	0.766	2.615
2020	485,760	0	17	0	85,938	0	72,282	158,220	0.177	0.149	0.326
MA Total:	2,591,758	6	294	643,188	2,338,816	139,640	1,305,990	4,427,633	1.151	0.558	1.708

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.517	1.597	.
(14) Massachusetts Credibility:	0.380	0.590	.
(15) Countrywide Pure Premium:	1.312	0.417	1.729
(16) Countrywide Indicated Relativity:	1.727	1.183	.
(17) Countrywide Credibility:	0.260	0.210	.
(18) Countrywide Lost-Time Claims:	40.000	.	.
(19) Pure Premium Underlying Present Rate:	1.046	0.574	1.620
(20) Relativity to Underlying Present Rate:	1.557	1.613	.
(21) Credibility to Underlying Relativity:	0.360	0.200	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.586	1.513	.
(24) Balanced Formula Relativity:	1.566	1.507	1.547

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	299,558	1	35	12,448	396,398	3,311	262,122	674,279	1,365	0,886	2,251
2017	330,077	1	46	207,481	235,873	68,440	205,716	717,509	1,343	0,831	2,174
2018	374,175	1	31	557,427	174,025	98,790	129,641	959,884	1,955	0,610	2,565
2019	377,894	0	37	0	273,251	0	151,084	424,335	0,723	0,400	1,123
2020	446,530	1	51	113,323	477,937	24,997	266,200	882,456	1,324	0,652	1,976
MA Total:	1,828,234	4	200	890,678	1,557,484	195,538	1,014,763	3,658,463	1,339	0,662	2,001

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.766	1.895	.
(14) Massachusetts Credibility:	0.310	0.540	.
(15) Countrywide Pure Premium:	0.997	0.603	1.600
(16) Countrywide Indicated Relativity:	1.312	1.708	.
(17) Countrywide Credibility:	0.350	0.230	.
(18) Countrywide Lost-Time Claims:	5236.0	.	.
(19) Pure Premium Underlying Present Rate:	0.849	0.656	1.506
(20) Relativity to Underlying Present Rate:	1.264	1.846	.
(21) Credibility to Underlying Relativity:	0.340	0.230	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.436	1.841	.
(24) Balanced Formula Relativity:	1.418	1.833	1.549

Class(es):		Effective: 7/1/2023							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)
2016	1,075	0	0	0	0	0	0	0	0,000	0,000	0,000
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
MA Total:	8,430	0	0	0	0	0	0	0	0,000	0,000	0,000

	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:	2.235	0.776	3.010
(16) Countrywide Indicated Relativity:	2.941	2.198	.
(17) Countrywide Credibility:	0.260	0.280	.
(18) Countrywide Lost-Time Claims:	40,000	.	.
(19) Pure Premium Underlying Present Rate:	1.117	0.648	1.765
(20) Relativity to Underlying Present Rate:	1.663	1.822	.
(21) Credibility to Underlying Relativity:	0.700	0.660	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.929	1.818	.
(24) Balanced Formula Relativity:	1.904	1.810	1.874

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	10,188	0	1	0	33,892	0	5,823	39,715	3,327	0,572	3,898
2017	10,092	1	1	436,384	71,432	119,789	7,553	635,159	50,320	12,619	62,939
2018	8,931	0	1	0	356	0	134	490	0,040	0,015	0,055
2019	10,840	0	1	0	0	0	882	882	0,000	0,081	0,081
2020	8,574	0	0	0	0	0	0	0	0,000	0,000	0,000
MA Total:	48,624	1	4	436,384	105,680	119,789	14,392	676,246	11,148	2,760	13,908

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	14.699	7.901	.
(14) Massachusetts Credibility:	0.190	0.230	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	13.484	8.131	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	9.158	2.923	12.080
(20) Relativity to Underlying Present Rate:	13.630	8.221	.
(21) Credibility to Underlying Relativity:	0.810	0.770	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	13.833	8.147	.
(24) Balanced Formula Relativity:	13.656	8.112	11.908

Class(es):		Effective: 7/1/2023							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)
2016	162,483	0	42	0	279,709	0	157,390	437,099	1,721	0,969	2,690
2017	152,996	1	35	405,979	167,264	68,858	180,470	822,571	3,747	1,630	5,376
2018	170,213	1	32	1,295	84,099	732	81,294	167,420	0,502	0,482	0,984
2019	169,260	1	19	73,776	88,899	78,214	52,610	293,499	0,961	0,773	1,734
2020	176,619	0	30	0	574,431	0	423,600	998,032	3,252	2,398	5,651
MA Total:	831,570	3	158	481,050	1,194,402	147,804	895,365	2,718,621	2,015	1,254	3,269

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.657	3.592	.
(14) Massachusetts Credibility:	0.330	0.510	.
(15) Countrywide Pure Premium:	1.942	0.915	2.857
(16) Countrywide Indicated Relativity:	2.556	2.593	.
(17) Countrywide Credibility:	0.340	0.250	.
(18) Countrywide Lost-Time Claims:	2332.0	.	.
(19) Pure Premium Underlying Present Rate:	2.167	1.263	3.430
(20) Relativity to Underlying Present Rate:	3.225	3.552	.
(21) Credibility to Underlying Relativity:	0.330	0.240	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	2.810	3.333	.
(24) Balanced Formula Relativity:	2.774	3.318	2.945

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	880,557	4	94	1,195,476	388,862	317,389	496,931	2,398,658	1,799	0,925	2,724
2017	954,873	2	74	309,338	405,826	41,174	324,399	1,080,738	0,749	0,383	1,132
2018	1,013,426	6	91	1,331,892	648,587	266,722	376,850	2,624,052	1,954	0,635	2,589
2019	1,017,773	3	70	280,399	550,823	77,107	388,707	1,297,037	0,817	0,458	1,274
2020	1,036,927	0	67	0	456,845	0	396,090	852,935	0,441	0,382	0,823
MA Total:	4,903,556	15	396	3,117,104	2,450,944	702,393	1,982,977	8,253,418	1,136	0,548	1,683

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.497	1.568	.
(14) Massachusetts Credibility:	0.540	0.830	.
(15) Countrywide Pure Premium:	1.194	0.522	1.717
(16) Countrywide Indicated Relativity:	1.572	1.480	.
(17) Countrywide Credibility:	0.230	0.090	.
(18) Countrywide Lost-Time Claims:	5294.0	.	.
(19) Pure Premium Underlying Present Rate:	1.305	0.707	2,012
(20) Relativity to Underlying Present Rate:	1.942	1.989	.
(21) Credibility to Underlying Relativity:	0.230	0.080	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.617	1.594	.
(24) Balanced Formula Relativity:	1.596	1.587	1.593

Class(es):		Effective: 7/1/2023							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)
2016	835,578	5	110	528,826	548,389	338,510	377,222	1,792,947	1,289	0,857	2,146
2017	1,003,914	3	126	438,495	1,450,309	164,473	584,414	2,637,691	1,881	0,746	2,627
2018	1,001,355	6	130	604,710	431,630	107,387	442,434	1,586,161	1,035	0,549	1,584
2019	958,925	9	117	1,403,893	1,340,222	461,226	521,065	3,726,405	2,862	1,024	3,886
2020	1,001,140	3	94	214,791	460,452	130,991	328,441	1,134,675	0,674	0,459	1,133
MA Total:	4,800,911	26	577	3,190,714	4,231,003	1,202,587	2,253,575	10,877,879	1,546	0,720	2,266

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.038	2.061	.
(14) Massachusetts Credibility:	0.500	0.820	.
(15) Countrywide Pure Premium:	0.917	0.431	1.348
(16) Countrywide Indicated Relativity:	1.207	1.220	.
(17) Countrywide Credibility:	0.250	0.090	.
(18) Countrywide Lost-Time Claims:	1450.0	.	.
(19) Pure Premium Underlying Present Rate:	1.088	0.709	1,797
(20) Relativity to Underlying Present Rate:	1.620	1.994	.
(21) Credibility to Underlying Relativity:	0.250	0.090	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.726	1.979	.
(24) Balanced Formula Relativity:	1.704	1.971	1.788

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Goods and Services		
8203 ICE 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)
2016	45,974	0	5	0	3,529	0	6,423	9,952	0.077	0.140	0.216
2017	44,402	0	14	0	129,653	0	32,831	162,484	2.920	0.739	3.659
2018	45,955	1	6	5,145	11,017	6,847	13,483	36,492	0.352	0.442	0.794
2019	41,037	0	6	0	810	0	5,137	5,947	0.020	0.125	0.145
2020	38,696	0	5	0	26,245	0	67,116	93,361	0.678	1.734	2.413
MA Total:	216,064	1	36	5,145	171,254	6,847	124,990	308,236	0.816	0.610	1.427

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.076	1.747	.
(14) Massachusetts Credibility:	0.210	0.300	.
(15) Countrywide Pure Premium:	3.110	1.206	4.315
(16) Countrywide Indicated Relativity:	4.093	3.416	.
(17) Countrywide Credibility:	0.400	0.350	.
(18) Countrywide Lost-Time Claims:	351.00	.	.
(19) Pure Premium Underlying Present Rate:	2.745	1.326	4.072
(20) Relativity to Underlying Present Rate:	4.086	3.731	.
(21) Credibility to Underlying Relativity:	0.390	0.350	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	3.457	3.025	.
(24) Balanced Formula Relativity:	3.413	3.012	3.286

Class(es):		Effective: 7/1/2023							Goods and Services		
8204 BUILDING MATERIAL YARD & 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)
2016	58,540	1	9	177,016	13,781	56,913	35,296	283,006	3.259	1.575	4.834
2017	63,555	1	7	18,699	12,185	11,620	7,034	49,538	0.486	0.294	0.779
2018	66,861	1	4	170,272	443	36,074	1,983	208,771	2.553	0.569	3.122
2019	66,055	0	4	0	3,697	0	7,894	11,591	0.056	0.120	0.175
2020	53,543	0	5	0	16,867	0	16,751	33,618	0.315	0.313	0.628
MA Total:	308,554	3	29	365,987	46,973	104,606	68,958	586,524	1.338	0.563	1.901

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.765	1.610	.
(14) Massachusetts Credibility:	0.250	0.400	.
(15) Countrywide Pure Premium:	1.811	0.876	2.687
(16) Countrywide Indicated Relativity:	2.383	2.483	.
(17) Countrywide Credibility:	0.380	0.300	.
(18) Countrywide Lost-Time Claims:	193.00	.	.
(19) Pure Premium Underlying Present Rate:	2.942	1.814	4.755
(20) Relativity to Underlying Present Rate:	4.379	5.101	.
(21) Credibility to Underlying Relativity:	0.370	0.300	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	2.967	2.919	.
(24) Balanced Formula Relativity:	2.929	2.907	2.922

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)	
2016	79,200	0	19	0	260,386	0	114,433	374,819	3,288	1,445	4,733	
2017	75,007	0	5	0	44,928	0	36,882	81,811	0,599	0,492	1,091	
2018	68,328	0	10	0	104,489	0	39,238	143,727	1,529	0,574	2,103	
2019	80,561	0	2	0	0	0	886	886	0,000	0,011	0,011	
2020	99,844	0	6	0	45,818	0	45,319	91,137	0,459	0,454	0,913	
MA Total:	402,940	0	42	0	455,622	0	236,758	692,380	1,131	0,588	1,718	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.491	1.682	.
(14) Massachusetts Credibility:	0.200	0.310	.
(15) Countrywide Pure Premium:	1.565	0.787	2.352
(16) Countrywide Indicated Relativity:	2.060	2.229	.
(17) Countrywide Credibility:	0.400	0.350	.
(18) Countrywide Lost-Time Claims:	1654.0	.	.
(19) Pure Premium Underlying Present Rate:	1.355	0.774	2.129
(20) Relativity to Underlying Present Rate:	2.017	2.176	.
(21) Credibility to Underlying Relativity:	0.400	0.340	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.929	2.042	.
(24) Balanced Formula Relativity:	1.905	2.033	1.945

Class(es):		Effective: 7/1/2023							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)	
2016	1,247,134	2	75	732,722	1,050,071	174,085	496,734	2,453,612	1,430	0,538	1,967	
2017	1,319,605	7	91	1,916,787	3,606,367	945,921	1,946,890	8,415,965	4,185	2,192	6,378	
2018	1,364,404	4	96	2,086,537	1,530,669	1,028,944	1,169,086	5,815,236	2,651	1,611	4,262	
2019	1,333,224	3	94	845,760	2,411,429	457,598	1,647,631	5,362,417	2,443	1,579	4,022	
2020	1,404,796	4	74	1,740,416	4,259,773	497,444	1,423,401	7,921,034	4,271	1,367	5,639	
MA Total:	6,669,165	20	430	7,322,221	12,858,309	3,103,992	6,683,743	29,968,264	3,026	1,468	4,494	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.291	1.527	.
(14) Massachusetts Credibility:	0.750	1.000	.
(15) Countrywide Pure Premium:	1.697	0.716	2.412
(16) Countrywide Indicated Relativity:	0.729	0.752	.
(17) Countrywide Credibility:	0.130	0.000	.
(18) Countrywide Lost-Time Claims:	2931.0	.	.
(19) Pure Premium Underlying Present Rate:	2.196	1.317	3.513
(20) Relativity to Underlying Present Rate:	1.013	1.386	.
(21) Credibility to Underlying Relativity:	0.120	0.000	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.185	1.527	.
(24) Balanced Formula Relativity:	1.199	1.530	1.295

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	1,395,745	9	230	2,204,046	2,541,437	600,527	1,074,390	6,420,400	3,400	1,200	4,600
2017	1,526,712	7	239	677,221	1,614,524	415,328	1,179,836	3,886,908	1,501	1,045	2,546
2018	1,701,887	7	232	1,511,050	2,582,296	487,570	1,289,700	5,870,617	2,405	1,044	3,449
2019	1,574,571	7	171	1,306,959	1,732,199	421,042	1,153,663	4,613,863	1,930	1,000	2,930
2020	1,638,282	7	156	1,617,420	2,824,010	335,153	1,425,688	6,202,271	2,711	1,075	3,786
MA Total:	7,837,197	37	1,028	7,316,697	11,294,466	2,259,620	6,123,277	26,994,060	2,375	1,070	3,444

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.131	3.062	.
(14) Massachusetts Credibility:	0.830	1.000	.
(15) Countrywide Pure Premium:	2.096	0.896	2.993
(16) Countrywide Indicated Relativity:	2.759	2.540	.
(17) Countrywide Credibility:	0.090	0.000	.
(18) Countrywide Lost-Time Claims:	10789	.	.
(19) Pure Premium Underlying Present Rate:	2.392	1.260	3.651
(20) Relativity to Underlying Present Rate:	3.559	3.543	.
(21) Credibility to Underlying Relativity:	0.080	0.000	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	3.132	3.062	.
(24) Balanced Formula Relativity:	3.092	3.049	3.078

Class(es):		Effective: 7/1/2023							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)
2016	276,760	3	23	417,052	116,361	404,942	78,994	1,017,349	1,927	1,749	3,676
2017	316,862	2	30	215,913	816,825	50,410	637,678	1,720,826	3,259	2,172	5,431
2018	363,388	0	29	0	767,331	0	355,545	1,122,876	2,112	0,978	3,090
2019	257,888	2	25	688,950	827,026	181,778	221,985	1,919,738	5,878	1,566	7,444
2020	264,572	1	27	103,591	488,016	23,666	139,409	754,683	2,236	0,616	2,852
MA Total:	1,479,470	8	134	1,425,505	3,015,559	660,796	1,433,611	6,535,472	3,002	1,416	4,417

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.958	4.053	.
(14) Massachusetts Credibility:	0.420	0.660	.
(15) Countrywide Pure Premium:	2.337	1.052	3.389
(16) Countrywide Indicated Relativity:	3.076	2.982	.
(17) Countrywide Credibility:	0.290	0.170	.
(18) Countrywide Lost-Time Claims:	1684.0	.	.
(19) Pure Premium Underlying Present Rate:	2.316	1.344	3.660
(20) Relativity to Underlying Present Rate:	3.448	3.781	.
(21) Credibility to Underlying Relativity:	0.290	0.170	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	3.554	3.825	.
(24) Balanced Formula Relativity:	3.509	3.808	3.603

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							Goods and Services		
8235 SASH, DOOR OR ASSEMBLED MILLWORK DEALER & 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)
2016	125.943	1	39	1.925	393.332	6.181	230.582	632.021	3.138	1.880	5.018
2017	130.561	0	14	0	617.140	0	245.944	863.084	4.727	1.884	6.611
2018	138.451	1	16	9.959	146.524	33.606	85.358	275.448	1.130	0.859	1.990
2019	140.886	2	18	109.324	23.750	29.796	57.352	220.221	0.945	0.619	1.563
2020	161.207	2	23	109.841	57.515	35.803	84.353	287.512	1.038	0.745	1.784
MA Total:	697.047	6	110	231.050	1,238.262	105.385	703.590	2,278.287	2.108	1.161	3.268

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.779	3.323	.
(14) Massachusetts Credibility:	0.280	0.430	.
(15) Countrywide Pure Premium:	2.073	0.859	2.932
(16) Countrywide Indicated Relativity:	2.728	2.435	.
(17) Countrywide Credibility:	0.360	0.290	.
(18) Countrywide Lost-Time Claims:	708.00	.	.
(19) Pure Premium Underlying Present Rate:	1.730	0.961	2.691
(20) Relativity to Underlying Present Rate:	2.574	2.703	.
(21) Credibility to Underlying Relativity:	0.360	0.280	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	2.687	2.892	.
(24) Balanced Formula Relativity:	2.653	2.879	2.724

Class(es):		Effective: 7/1/2023							Goods and Services		
8263 JUNK 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)
2016	91.393	0	14	0	204.653	0	118.942	323.595	2.239	1.301	3.541
2017	88.879	1	14	15.547	95.665	1.414	104.217	216.843	1.251	1.188	2.440
2018	92.324	1	16	10.277	148.215	7.209	78.004	243.704	1.717	0.923	2.640
2019	80.019	0	9	0	13.355	0	15.453	28.808	0.167	0.193	0.360
2020	75.286	0	9	0	65.225	0	39.258	104.483	0.866	0.521	1.388
MA Total:	427.902	2	62	25.824	527.113	8.623	355.873	917.433	1.292	0.852	2.144

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.704	2.439	.
(14) Massachusetts Credibility:	0.260	0.380	.
(15) Countrywide Pure Premium:	2.914	1.467	4.381
(16) Countrywide Indicated Relativity:	3.836	4.157	.
(17) Countrywide Credibility:	0.370	0.310	.
(18) Countrywide Lost-Time Claims:	212.00	.	.
(19) Pure Premium Underlying Present Rate:	2.292	1.179	3.470
(20) Relativity to Underlying Present Rate:	3.411	3.315	.
(21) Credibility to Underlying Relativity:	0.370	0.310	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	3.124	3.243	.
(24) Balanced Formula Relativity:	3.084	3.229	3.130

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Calculation of Class Relativities

Class(es): 8264 BOTTLE DEALER-USED & DRIVERS		Effective: 7/1/2023							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)
2016	344,271	3	66	311,032	493,006	162,443	297,629	1,264,109	2,335	1,336	3,672
2017	406,197	3	53	441,440	113,719	253,340	80,599	889,098	1,367	0,822	2,189
2018	417,139	3	65	830,850	910,097	235,917	467,079	2,443,943	4,174	1,685	5,859
2019	341,913	2	49	237,278	121,968	72,570	92,262	524,079	1,051	0,482	1,533
2020	347,554	2	28	358,819	636,232	108,083	153,520	1,256,654	2,863	0,753	3,616
MA Total:	1,857,074	13	261	2,179,419	2,275,022	832,354	1,091,088	6,377,883	2,399	1,036	3,434

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.163	2.965	.
(14) Massachusetts Credibility:	0.440	0.690	.
(15) Countrywide Pure Premium:	2.140	0.970	3.110
(16) Countrywide Indicated Relativity:	2.817	2.749	.
(17) Countrywide Credibility:	0.280	0.160	.
(18) Countrywide Lost-Time Claims:	1207.0	.	.
(19) Pure Premium Underlying Present Rate:	2.102	1.193	3.295
(20) Relativity to Underlying Present Rate:	3.128	3.356	.
(21) Credibility to Underlying Relativity:	0.280	0.150	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	3.056	2.989	.
(24) Balanced Formula Relativity:	3.017	2.976	3.004

Class(es): 8279 STABLE OR BREEDING FARM & DRIVERS		Effective: 7/1/2023							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)
2016	178,452	1	27	59,301	105,614	7,778	210,469	383,162	0,924	1,223	2,147
2017	191,411	1	25	976	35,277	8,421	154,211	198,885	0,189	0,850	1,039
2018	198,446	0	25	0	254,151	0	124,595	378,746	1,281	0,628	1,909
2019	203,536	1	24	2,483	36,377	17,623	129,107	185,590	0,191	0,721	0,912
2020	204,507	0	14	0	200,212	0	225,462	425,674	0,979	1,102	2,081
MA Total:	976,353	3	115	62,761	631,631	33,822	843,845	1,572,058	0,711	0,899	1,610

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.938	2.574	.
(14) Massachusetts Credibility:	0.300	0.500	.
(15) Countrywide Pure Premium:	2.334	1.569	3.903
(16) Countrywide Indicated Relativity:	3.072	4.446	.
(17) Countrywide Credibility:	0.350	0.250	.
(18) Countrywide Lost-Time Claims:	972.00	.	.
(19) Pure Premium Underlying Present Rate:	1.460	1.031	2.491
(20) Relativity to Underlying Present Rate:	2.173	2.900	.
(21) Credibility to Underlying Relativity:	0.350	0.250	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	2.117	3.123	.
(24) Balanced Formula Relativity:	2.090	3.110	2.411

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Calculation of Class Relativities

Class(es): 8291 STORAGE WAREHOUSE-COLD		Effective: 7/1/2023							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)
2016	157,651	2	28	247,934	563,412	56,877	189,649	1,057,873	5,146	1,564	6,710
2017	187,322	2	31	252,846	122,439	199,883	200,042	775,210	2,003	2,135	4,138
2018	204,486	1	21	7,787	56,553	4,508	57,736	126,583	0,315	0,304	0,619
2019	225,418	2	27	656,286	249,736	451,892	55,985	1,413,899	4,019	2,253	6,272
2020	162,641	2	19	147,015	328,391	30,641	322,567	828,615	2,923	2,172	5,095
MA Total:	937,517	9	126	1,311,869	1,320,530	743,800	825,980	4,202,179	2,808	1,674	4,482

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.702	4.794	.
(14) Massachusetts Credibility:	0.290	0.470	.
(15) Countrywide Pure Premium:	1.394	0.656	2.050
(16) Countrywide Indicated Relativity:	1.835	1.858	.
(17) Countrywide Credibility:	0.360	0.270	.
(18) Countrywide Lost-Time Claims:	1025.0	.	.
(19) Pure Premium Underlying Present Rate:	1.376	0.895	2.271
(20) Relativity to Underlying Present Rate:	2.049	2.517	.
(21) Credibility to Underlying Relativity:	0.350	0.260	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	2.451	3.409	.
(24) Balanced Formula Relativity:	2.420	3.394	2.727

Class(es): 8292 STORAGE WAREHOUSE NOC		Effective: 7/1/2023							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)
2016	711,629	6	126	666,220	519,528	319,459	399,270	1,904,477	1,666	1,010	2,676
2017	766,331	7	155	485,474	708,316	149,660	370,543	1,713,993	1,558	0,679	2,237
2018	871,993	4	110	296,705	1,057,312	87,303	518,354	1,959,674	1,553	0,695	2,247
2019	846,856	4	106	495,768	1,213,041	79,536	645,649	2,433,994	2,018	0,856	2,874
2020	971,984	9	93	785,833	1,302,451	224,842	665,611	2,978,737	2,148	0,916	3,065
MA Total:	4,168,793	30	590	2,729,999	4,800,649	860,801	2,599,427	10,990,876	1,806	0,830	2,636

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.382	2.376	.
(14) Massachusetts Credibility:	0.540	0.790	.
(15) Countrywide Pure Premium:	1.572	0.676	2.248
(16) Countrywide Indicated Relativity:	2.069	1.915	.
(17) Countrywide Credibility:	0.230	0.110	.
(18) Countrywide Lost-Time Claims:	7763.0	.	.
(19) Pure Premium Underlying Present Rate:	1.499	0.735	2.234
(20) Relativity to Underlying Present Rate:	2.231	2.066	.
(21) Credibility to Underlying Relativity:	0.230	0.100	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	2.275	2.295	.
(24) Balanced Formula Relativity:	2.246	2.285	2.258

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	737,773	14	165	1,280,450	887,338	637,923	515,326	3,321,037	2,938	1,563	4,501
2017	761,834	12	144	1,383,214	866,580	569,143	757,613	3,576,550	2,953	1,742	4,695
2018	773,372	3	181	575,137	1,862,302	235,808	807,935	3,481,183	3,152	1,350	4,501
2019	759,037	8	141	486,589	1,281,046	325,929	1,004,904	3,098,469	2,329	1,753	4,082
2020	771,532	8	130	875,847	2,064,546	312,154	1,021,446	4,273,993	3,811	1,729	5,540
MA Total:	3,803,547	45	761	4,601,238	6,961,813	2,080,957	4,107,224	17,751,232	3,040	1,627	4,667

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.009	4.658	.
(14) Massachusetts Credibility:	0.710	1.000	.
(15) Countrywide Pure Premium:	3.534	1.350	4.884
(16) Countrywide Indicated Relativity:	4.651	3.825	.
(17) Countrywide Credibility:	0.150	0.000	.
(18) Countrywide Lost-Time Claims:	3826.0	.	.
(19) Pure Premium Underlying Present Rate:	3.363	1.731	5.093
(20) Relativity to Underlying Present Rate:	5.005	4.868	.
(21) Credibility to Underlying Relativity:	0.140	0.000	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	4.244	4.658	.
(24) Balanced Formula Relativity:	4.190	4.638	4.331

Class(es):		Effective: 7/1/2023							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)
2016	1,603,213	15	205	3,443,102	2,059,473	613,336	1,306,772	7,422,683	3,432	1,198	4,630
2017	1,601,793	12	225	1,402,325	3,927,116	476,864	1,587,314	7,393,618	3,327	1,289	4,616
2018	1,518,983	12	177	2,254,427	4,300,701	416,398	1,685,131	8,656,656	4,315	1,384	5,699
2019	1,595,846	5	179	765,302	4,779,375	713,080	1,998,669	8,256,426	3,474	1,699	5,174
2020	1,660,416	12	168	1,855,491	4,953,180	689,871	1,804,242	9,302,785	4,101	1,502	5,603
MA Total:	7,980,250	56	954	9,720,648	20,019,845	2,909,548	8,382,128	41,032,168	3,727	1,415	5,142

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.914	4.051	.
(14) Massachusetts Credibility:	0.940	1.000	.
(15) Countrywide Pure Premium:	3.107	0.988	4.095
(16) Countrywide Indicated Relativity:	4.089	2.800	.
(17) Countrywide Credibility:	0.030	0.000	.
(18) Countrywide Lost-Time Claims:	3699.0	.	.
(19) Pure Premium Underlying Present Rate:	3.175	1.335	4.510
(20) Relativity to Underlying Present Rate:	4.726	3.755	.
(21) Credibility to Underlying Relativity:	0.030	0.000	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	4.884	4.051	.
(24) Balanced Formula Relativity:	4.821	4.033	4.573

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	8,598,210	25	933	3,984,602	5,982,115	1,301,355	3,384,368	14,652,440	1,159	0,545	1,704
2017	8,850,940	31	909	2,704,722	7,856,657	1,099,282	3,541,450	15,202,111	1,193	0,524	1,718
2018	9,290,323	34	897	3,463,308	10,064,035	1,033,780	4,726,010	19,287,133	1,456	0,620	2,076
2019	9,148,525	28	751	3,723,767	9,212,058	836,038	4,775,516	18,547,379	1,414	0,613	2,027
2020	9,447,387	23	601	3,454,898	6,179,914	1,112,941	3,388,759	14,136,511	1,020	0,477	1,496
MA Total:	45,335,385	141	4,091	17,331,297	39,294,779	5,383,395	19,816,102	81,825,574	1,249	0,556	1,805

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.647	1.591	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	1.112	0.454	1.566
(16) Countrywide Indicated Relativity:	1.464	1.286	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	25997	.	.
(19) Pure Premium Underlying Present Rate:	1.149	0.569	1.718
(20) Relativity to Underlying Present Rate:	1.711	1.601	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.647	1.591	.
(24) Balanced Formula Relativity:	1.626	1.584	1.613

Class(es):		Effective: 7/1/2023							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)
2016	190,054	2	14	18,537	43,869	6,258	91,297	159,961	0,328	0,513	0,842
2017	169,424	1	8	41,097	91,284	16,169	48,837	197,386	0,781	0,384	1,165
2018	205,325	2	8	143,055	322,795	56,548	55,374	577,773	2,269	0,545	2,814
2019	601,588	1	11	80,931	2,086	8,152	13,305	104,474	0,138	0,036	0,174
2020	705,589	0	7	0	9,758	0	10,997	20,755	0,014	0,016	0,029
MA Total:	1,871,980	6	48	283,620	469,792	87,128	219,810	1,060,349	0,402	0,164	0,566

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.531	0.469	.
(14) Massachusetts Credibility:	0.280	0.470	.
(15) Countrywide Pure Premium:	0.686	0.327	1.013
(16) Countrywide Indicated Relativity:	0.903	0.926	.
(17) Countrywide Credibility:	0.360	0.270	.
(18) Countrywide Lost-Time Claims:	414.00	.	.
(19) Pure Premium Underlying Present Rate:	0.676	0.441	1.117
(20) Relativity to Underlying Present Rate:	1.007	1.241	.
(21) Credibility to Underlying Relativity:	0.360	0.260	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.836	0.793	.
(24) Balanced Formula Relativity:	0.825	0.790	0.814

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	472,893	1	58	91,275	793,689	15,507	274,701	1,175,171	1,871	0,614	2,485
2017	515,950	6	102	385,251	1,205,655	220,531	435,607	2,247,043	3,083	1,272	4,355
2018	554,695	3	100	235,962	1,307,081	32,482	609,258	2,184,783	2,782	1,157	3,939
2019	465,353	1	66	601,538	159,422	261,162	148,630	1,170,752	1,635	0,881	2,516
2020	490,419	3	57	255,240	756,081	92,397	300,516	1,404,235	2,062	0,801	2,863
MA Total:	2,499,310	14	383	1,569,265	4,221,928	622,078	1,768,712	8,181,984	2,317	0,957	3,274

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.055	2.739	.
(14) Massachusetts Credibility:	0.460	0.670	.
(15) Countrywide Pure Premium:	1.162	0.463	1.624
(16) Countrywide Indicated Relativity:	1.529	1.310	.
(17) Countrywide Credibility:	0.270	0.170	.
(18) Countrywide Lost-Time Claims:	1449.0	.	.
(19) Pure Premium Underlying Present Rate:	1.668	0.819	2.487
(20) Relativity to Underlying Present Rate:	2.483	2.303	.
(21) Credibility to Underlying Relativity:	0.270	0.160	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	2.489	2.426	.
(24) Balanced Formula Relativity:	2.457	2.416	2.444

Class(es):		Effective: 7/1/2023							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)
2016	517,861	1	35	12,955	177,267	47,865	170,728	408,815	0,367	0,422	0,789
2017	452,618	1	46	11,220	247,457	9,640	158,018	426,334	0,572	0,370	0,942
2018	446,693	2	33	379,327	385,524	65,188	136,284	966,323	1,712	0,451	2,163
2019	440,399	2	30	90,129	46,917	20,803	92,501	250,350	0,311	0,257	0,568
2020	359,216	0	8	0	302	0	5,060	5,362	0,001	0,014	0,015
MA Total:	2,216,787	6	152	493,631	857,467	143,496	562,592	2,057,185	0,609	0,319	0,928

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.804	0.912	.
(14) Massachusetts Credibility:	0.300	0.520	.
(15) Countrywide Pure Premium:	0.846	0.456	1.302
(16) Countrywide Indicated Relativity:	1.114	1.292	.
(17) Countrywide Credibility:	0.350	0.240	.
(18) Countrywide Lost-Time Claims:	1315.0	.	.
(19) Pure Premium Underlying Present Rate:	0.657	0.481	1.138
(20) Relativity to Underlying Present Rate:	0.978	1.353	.
(21) Credibility to Underlying Relativity:	0.350	0.240	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.973	1.109	.
(24) Balanced Formula Relativity:	0.961	1.104	1.006

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Calculation of Class Relativities

Class(es): 8393 AUTOMOBILE BODY REPAIR		Effective: 7/1/2023							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)
2016	2,020,089	4	114	156,833	726,227	87,509	475,112	1,445,681	0.437	0.279	0.716
2017	2,181,063	3	104	122,313	659,751	58,957	289,110	1,130,131	0.359	0.160	0.518
2018	2,250,249	4	101	557,739	1,734,769	139,546	547,982	2,980,037	1.019	0.306	1.324
2019	2,231,179	2	89	163,501	659,824	39,354	304,277	1,166,956	0.369	0.154	0.523
2020	2,182,633	1	67	553,396	1,679,233	47,048	918,423	3,198,099	1.023	0.442	1.465
MA Total:	10,865,213	14	475	1,553,781	5,459,804	372,415	2,534,904	9,920,904	0.646	0.268	0.913

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.851	0.766	.
(14) Massachusetts Credibility:	0.540	0.730	.
(15) Countrywide Pure Premium:	0.832	0.305	1.137
(16) Countrywide Indicated Relativity:	1.095	0.864	.
(17) Countrywide Credibility:	0.230	0.140	.
(18) Countrywide Lost-Time Claims:	2935.0	.	.
(19) Pure Premium Underlying Present Rate:	0.587	0.234	0.821
(20) Relativity to Underlying Present Rate:	0.874	0.657	.
(21) Credibility to Underlying Relativity:	0.230	0.130	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.913	0.766	.
(24) Balanced Formula Relativity:	0.901	0.762	0.857

Class(es): 8601 ARCHITECT OR ENGINEER-CONSULTING		Effective: 7/1/2023							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)
2016	15,296,734	6	157	1,496,975	1,550,493	186,556	790,875	4,024,899	0.199	0.064	0.263
2017	15,730,238	5	175	290,576	311,749	110,300	335,160	1,047,785	0.038	0.028	0.067
2018	16,653,264	5	130	468,017	198,949	58,115	430,545	1,155,626	0.040	0.029	0.069
2019	17,663,827	5	111	1,598,696	994,214	598,266	822,909	4,014,085	0.147	0.080	0.227
2020	20,115,045	4	84	1,079,325	858,314	452,175	458,383	2,848,196	0.096	0.045	0.142
MA Total:	85,459,107	25	657	4,933,591	3,913,719	1,405,411	2,837,871	13,090,592	0.104	0.050	0.153

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.645	1.631	.
(14) Massachusetts Credibility:	0.570	0.860	.
(15) Countrywide Pure Premium:	0.082	0.042	0.125
(16) Countrywide Indicated Relativity:	1.753	1.676	.
(17) Countrywide Credibility:	0.220	0.070	.
(18) Countrywide Lost-Time Claims:	1956.0	.	.
(19) Pure Premium Underlying Present Rate:	0.087	0.046	0.132
(20) Relativity to Underlying Present Rate:	1.528	1.407	.
(21) Credibility to Underlying Relativity:	0.210	0.070	.
(22) Industry Group Converted Pure Premium:	0.063	0.030	0.093
(23) Formula Relativity:	1.644	1.619	.
(24) Balanced Formula Relativity:	1.634	1.618	1.629

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	1,000	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	1,453	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	3,181	0	1	0	0	0	938	938	0.000	0.295	0.295
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
MA Total:	12,676	0	1	0	0	0	938	938	0.000	0.074	0.074

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.000	0.212	.
(14) Massachusetts Credibility:	0.050	0.070	.
(15) Countrywide Pure Premium:	1.001	0.460	1.462
(16) Countrywide Indicated Relativity:	1.318	1.304	.
(17) Countrywide Credibility:	0.190	0.200	.
(18) Countrywide Lost-Time Claims:	17.000	.	.
(19) Pure Premium Underlying Present Rate:	1.262	0.519	1.781
(20) Relativity to Underlying Present Rate:	1.878	1.459	.
(21) Credibility to Underlying Relativity:	0.760	0.730	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.678	1.341	.
(24) Balanced Formula Relativity:	1.656	1.335	1.555

Class(es):		Effective: 7/1/2023							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)
2016	1,811,281	2	44	211,336	120,863	33,411	92,305	457,915	0.183	0.069	0.253
2017	2,063,618	1	52	79,607	718,863	11,813	316,237	1,126,520	0.387	0.159	0.546
2018	2,068,228	3	53	518,696	240,704	128,334	318,499	1,206,232	0.367	0.216	0.583
2019	2,201,462	2	48	598,039	239,036	450,070	244,593	1,531,739	0.380	0.316	0.696
2020	2,223,561	4	33	341,679	165,633	115,002	161,673	783,986	0.228	0.124	0.353
MA Total:	10,368,150	12	230	1,749,358	1,485,098	738,631	1,133,306	5,106,393	0.312	0.181	0.493

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.411	0.517	.
(14) Massachusetts Credibility:	0.440	0.650	.
(15) Countrywide Pure Premium:	0.561	0.229	0.790
(16) Countrywide Indicated Relativity:	0.739	0.650	.
(17) Countrywide Credibility:	0.280	0.180	.
(18) Countrywide Lost-Time Claims:	1479.0	.	.
(19) Pure Premium Underlying Present Rate:	0.372	0.182	0.554
(20) Relativity to Underlying Present Rate:	0.554	0.513	.
(21) Credibility to Underlying Relativity:	0.280	0.170	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.543	0.540	.
(24) Balanced Formula Relativity:	0.536	0.538	0.536

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	292,653	0	4	0	2,163	0	15,503	17,666	0.007	0.053	0.060
2017	325,926	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	335,638	0	1	0	0	0	95	95	0.000	0.000	0.000
2019	363,304	0	1	0	195	0	33,804	33,999	0.001	0.093	0.094
2020	349,432	0	2	0	0	0	5,633	5,633	0.000	0.016	0.016
MA Total:	1,666,952	0	8	0	2,357	0	55,036	57,393	0.001	0.033	0.034

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.022	1.085	.
(14) Massachusetts Credibility:	0.120	0.180	.
(15) Countrywide Pure Premium:	0.079	0.037	0.117
(16) Countrywide Indicated Relativity:	1.689	1.469	.
(17) Countrywide Credibility:	0.390	0.410	.
(18) Countrywide Lost-Time Claims:	108.00	.	.
(19) Pure Premium Underlying Present Rate:	0.084	0.047	0.130
(20) Relativity to Underlying Present Rate:	1.473	1.441	.
(21) Credibility to Underlying Relativity:	0.490	0.410	.
(22) Industry Group Converted Pure Premium:	0.063	0.030	0.093
(23) Formula Relativity:	1.383	1.388	.
(24) Balanced Formula Relativity:	1.374	1.388	1.379

Class(es):		Effective: 7/1/2023							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)
2016	110,861,743	25	454	1,396,872	3,609,601	590,264	2,220,188	7,816,925	0.045	0.025	0.071
2017	115,942,206	20	534	1,508,515	1,541,438	778,704	1,888,934	5,717,591	0.026	0.023	0.049
2018	121,930,359	32	519	3,602,726	4,023,584	884,541	2,573,929	11,084,780	0.063	0.028	0.091
2019	132,528,244	15	432	1,944,926	5,179,267	971,234	3,321,131	11,416,558	0.054	0.032	0.086
2020	125,693,230	13	270	1,331,352	3,462,636	404,535	2,883,863	8,082,386	0.038	0.026	0.064
MA Total:	606,955,783	105	2,209	9,784,391	17,816,526	3,629,278	12,888,044	44,118,240	0.045	0.027	0.073

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.723	0.894	.
(14) Massachusetts Credibility:	0.920	1.000	.
(15) Countrywide Pure Premium:	0.075	0.036	0.111
(16) Countrywide Indicated Relativity:	1.598	1.427	.
(17) Countrywide Credibility:	0.040	0.000	.
(18) Countrywide Lost-Time Claims:	14106	.	.
(19) Pure Premium Underlying Present Rate:	0.040	0.026	0.066
(20) Relativity to Underlying Present Rate:	0.705	0.812	.
(21) Credibility to Underlying Relativity:	0.040	0.000	.
(22) Industry Group Converted Pure Premium:	0.063	0.030	0.093
(23) Formula Relativity:	0.757	0.894	.
(24) Balanced Formula Relativity:	0.752	0.894	0.798

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)	
2016	113,391	1	15	45,694	97,438	6,634	37,208	186,974	1,262	0,387	1,649	
2017	81,736	0	12	0	485,607	0	101,460	587,066	5,941	1,241	7,182	
2018	61,447	1	14	232,783	100,007	42,254	185,768	560,812	5,416	3,711	9,127	
2019	91,007	0	7	0	446,421	0	158,668	605,089	4,905	1,743	6,649	
2020	49,791	0	2	0	2,766	0	5,133	7,899	0,056	0,103	0,159	
MA Total:	397,372	2	50	278,477	1,132,240	48,888	488,236	1,947,841	3,550	1,352	4,902	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.681	3.870	.
(14) Massachusetts Credibility:	0.250	0.430	.
(15) Countrywide Pure Premium:	1.659	0.773	2.432
(16) Countrywide Indicated Relativity:	2.184	2.189	.
(17) Countrywide Credibility:	0.380	0.290	.
(18) Countrywide Lost-Time Claims:	242.00	.	.
(19) Pure Premium Underlying Present Rate:	2.456	1.666	4.122
(20) Relativity to Underlying Present Rate:	3.655	4.687	.
(21) Credibility to Underlying Relativity:	0.370	0.280	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	3.353	3.611	.
(24) Balanced Formula Relativity:	3.310	3.596	3.400

Class(es):		Effective: 7/1/2023							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)	
2016	147,459	0	2	0	0	0	866	866	0,000	0,006	0,006	
2017	178,727	0	1	0	0	0	107	107	0,000	0,001	0,001	
2018	192,211	0	5	0	258,373	0	65,937	324,310	1,344	0,343	1,687	
2019	215,012	0	6	0	172,139	0	16,654	188,793	0,801	0,077	0,878	
2020	164,120	0	2	0	23,627	0	44,073	67,701	0,144	0,269	0,413	
MA Total:	897,528	0	16	0	454,139	0	127,637	581,776	0,506	0,142	0,648	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.667	0.407	.
(14) Massachusetts Credibility:	0.160	0.210	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	0.525	0.347	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	0.356	0.125	0.481
(20) Relativity to Underlying Present Rate:	0.530	0.351	.
(21) Credibility to Underlying Relativity:	0.840	0.790	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.552	0.363	.
(24) Balanced Formula Relativity:	0.545	0.361	0.487

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Calculation of Class Relativities

Class(es): 8748 AUTOMOBILE SALESPERSONS		Effective: 7/1/2023							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)
2016	3,131,553	1	61	93,284	550,641	31,516	404,099	1,079,540	0.206	0.139	0.345
2017	3,209,251	6	89	352,455	881,671	40,710	453,537	1,728,374	0.385	0.154	0.539
2018	3,313,459	7	63	1,025,700	330,258	181,366	204,431	1,741,755	0.409	0.116	0.526
2019	3,049,942	1	36	385,129	721,361	83,326	315,579	1,505,395	0.363	0.131	0.494
2020	3,858,408	1	30	17,313	686,069	10,862	183,986	898,230	0.182	0.050	0.233
MA Total:	16,562,612	16	279	1,873,882	3,170,000	347,780	1,561,631	6,953,293	0.305	0.115	0.420

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	4.840	3.787	.
(14) Massachusetts Credibility:	0.490	0.700	.
(15) Countrywide Pure Premium:	0.145	0.068	0.213
(16) Countrywide Indicated Relativity:	3.084	2.703	.
(17) Countrywide Credibility:	0.260	0.150	.
(18) Countrywide Lost-Time Claims:	1841.0	.	.
(19) Pure Premium Underlying Present Rate:	0.308	0.140	0.448
(20) Relativity to Underlying Present Rate:	5.413	4.326	.
(21) Credibility to Underlying Relativity:	0.250	0.150	.
(22) Industry Group Converted Pure Premium:	0.063	0.030	0.093
(23) Formula Relativity:	4.526	3.705	.
(24) Balanced Formula Relativity:	4.497	3.704	4.239

Class(es): 8800 MAILING OR ADDRESSING CO & CLERICAL		Effective: 7/1/2023							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)
2016	389,109	0	6	0	3,739	0	21,436	25,176	0.010	0.055	0.065
2017	344,130	0	14	0	217,794	0	96,272	314,066	0.633	0.280	0.913
2018	447,535	0	10	0	258,139	0	82,656	340,795	0.577	0.185	0.761
2019	278,181	0	6	0	152,898	0	60,258	213,155	0.550	0.217	0.766
2020	271,156	0	7	0	96,335	0	49,281	145,616	0.355	0.182	0.537
MA Total:	1,730,111	0	43	0	728,905	0	309,904	1,038,809	0.421	0.179	0.600

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	6.695	5.884	.
(14) Massachusetts Credibility:	0.230	0.340	.
(15) Countrywide Pure Premium:	0.373	0.211	0.584
(16) Countrywide Indicated Relativity:	7.934	8.345	.
(17) Countrywide Credibility:	0.390	0.330	.
(18) Countrywide Lost-Time Claims:	635.00	.	.
(19) Pure Premium Underlying Present Rate:	0.444	0.219	0.662
(20) Relativity to Underlying Present Rate:	7.804	6.753	.
(21) Credibility to Underlying Relativity:	0.380	0.330	.
(22) Industry Group Converted Pure Premium:	0.063	0.030	0.093
(23) Formula Relativity:	7.600	6.983	.
(24) Balanced Formula Relativity:	7.551	6.980	7.365

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	30,800,724	0	48	0	368,700	0	333,130	701,831	0.012	0.011	0.023
2017	31,511,882	2	34	258,217	19,474	77,735	143,062	498,488	0.009	0.007	0.016
2018	36,528,079	6	60	1,845,949	246,852	431,018	266,887	2,790,705	0.057	0.019	0.076
2019	39,201,396	3	33	847,473	454,765	123,551	211,587	1,637,375	0.033	0.009	0.042
2020	39,358,302	1	12	6,655	187,298	17,551	32,257	243,762	0.005	0.001	0.006
MA Total:	177,400,384	12	187	2,958,294	1,277,089	649,855	986,923	5,872,161	0.024	0.009	0.033

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.379	0.303	.
(14) Massachusetts Credibility:	0.420	0.660	.
(15) Countrywide Pure Premium:	0.013	0.007	0.021
(16) Countrywide Indicated Relativity:	0.287	0.287	.
(17) Countrywide Credibility:	0.290	0.170	.
(18) Countrywide Lost-Time Claims:	753.00	.	.
(19) Pure Premium Underlying Present Rate:	0.019	0.011	0.030
(20) Relativity to Underlying Present Rate:	0.339	0.341	.
(21) Credibility to Underlying Relativity:	0.290	0.170	.
(22) Industry Group Converted Pure Premium:	0.063	0.030	0.093
(23) Formula Relativity:	0.341	0.307	.
(24) Balanced Formula Relativity:	0.339	0.307	0.328

Class(es):		Effective: 7/1/2023							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)
2016	549,525,746	77	1,645	7,741,292	7,635,815	2,328,804	5,688,563	23,394,473	0.028	0.015	0.043
2017	581,521,492	73	1,824	7,308,811	10,588,649	1,964,938	7,615,641	27,478,039	0.031	0.016	0.047
2018	605,608,785	82	1,680	7,793,150	7,537,815	2,495,130	6,350,201	24,176,296	0.025	0.015	0.040
2019	656,148,369	58	1,463	6,719,200	10,380,429	1,631,143	6,550,145	25,280,917	0.026	0.012	0.039
2020	696,638,174	45	1,007	4,355,466	10,226,383	1,687,907	5,982,105	22,251,860	0.021	0.011	0.032
MA Total:	3,089,442,566	335	7,619	33,917,919	46,369,091	10,107,921	32,186,654	122,581,585	0.026	0.014	0.040

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.413	0.450	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	0.032	0.018	0.050
(16) Countrywide Indicated Relativity:	0.683	0.703	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	36441	.	.
(19) Pure Premium Underlying Present Rate:	0.026	0.016	0.042
(20) Relativity to Underlying Present Rate:	0.460	0.503	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.063	0.030	0.093
(23) Formula Relativity:	0.413	0.450	.
(24) Balanced Formula Relativity:	0.410	0.450	0.423

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	26,502,020	5	42	51,508	625,548	22,833	245,262	945,151	0.026	0.010	0.036
2017	27,645,958	5	55	22,580	457,279	31,287	161,636	672,781	0.017	0.007	0.024
2018	29,138,061	2	39	64,882	102,043	34,677	128,962	330,564	0.006	0.006	0.011
2019	31,082,777	4	37	554,435	420,204	230,006	659,485	1,864,129	0.031	0.029	0.060
2020	32,253,208	3	21	100,717	197,641	63,965	212,709	575,032	0.009	0.009	0.018
MA Total:	146,622,024	19	194	794,122	1,802,715	382,768	1,408,053	4,387,657	0.018	0.012	0.030

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.281	0.401	.
(14) Massachusetts Credibility:	0.460	0.700	.
(15) Countrywide Pure Premium:	0.029	0.015	0.044
(16) Countrywide Indicated Relativity:	0.622	0.587	.
(17) Countrywide Credibility:	0.270	0.150	.
(18) Countrywide Lost-Time Claims:	1292.0	.	.
(19) Pure Premium Underlying Present Rate:	0.030	0.016	0.045
(20) Relativity to Underlying Present Rate:	0.524	0.480	.
(21) Credibility to Underlying Relativity:	0.270	0.150	.
(22) Industry Group Converted Pure Premium:	0.063	0.030	0.093
(23) Formula Relativity:	0.439	0.441	.
(24) Balanced Formula Relativity:	0.436	0.441	0.438

Class(es):		Effective: 7/1/2023							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)
2016	1,015,694	6	189	112,512	690,772	82,691	346,342	1,232,317	0.791	0.422	1.213
2017	1,313,347	6	280	495,587	752,671	213,592	520,209	1,982,059	0.950	0.559	1.509
2018	1,434,509	7	281	580,235	1,222,412	131,944	492,032	2,426,623	1.257	0.435	1.692
2019	2,197,996	11	330	1,009,234	1,119,469	319,807	641,405	3,089,915	0.968	0.437	1.406
2020	2,332,980	7	246	774,510	2,327,904	183,636	832,999	4,119,050	1.330	0.436	1.766
MA Total:	8,294,526	37	1,326	2,972,078	6,113,229	931,669	2,832,987	12,849,963	1.095	0.454	1.549

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.444	1.299	.
(14) Massachusetts Credibility:	0.580	0.880	.
(15) Countrywide Pure Premium:	1.122	0.551	1.673
(16) Countrywide Indicated Relativity:	1.477	1.562	.
(17) Countrywide Credibility:	0.210	0.060	.
(18) Countrywide Lost-Time Claims:	10908	.	.
(19) Pure Premium Underlying Present Rate:	0.938	0.497	1.435
(20) Relativity to Underlying Present Rate:	1.396	1.399	.
(21) Credibility to Underlying Relativity:	0.210	0.060	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.441	1.321	.
(24) Balanced Formula Relativity:	1.423	1.315	1.389

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	986,402	3	146	307,507	324,197	138,298	212,538	982,540	0.640	0.356	0.996
2017	1,092,034	4	167	59,248	155,594	16,422	165,156	396,420	0.197	0.166	0.363
2018	1,190,678	2	195	203,536	726,389	64,307	435,331	1,429,563	0.781	0.420	1.201
2019	1,253,531	3	182	579,592	973,012	73,936	512,991	2,139,531	1.239	0.468	1.707
2020	1,333,940	5	133	620,066	720,578	235,731	293,100	1,869,475	1.005	0.396	1.401
MA Total:	5,856,586	17	823	1,769,949	2,899,769	528,695	1,619,116	6,817,529	0.797	0.367	1.164

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.051	1.050	.
(14) Massachusetts Credibility:	0.450	0.670	.
(15) Countrywide Pure Premium:	0.738	0.426	1.164
(16) Countrywide Indicated Relativity:	0.972	1.207	.
(17) Countrywide Credibility:	0.280	0.170	.
(18) Countrywide Lost-Time Claims:	4704.0	.	.
(19) Pure Premium Underlying Present Rate:	0.671	0.352	1.023
(20) Relativity to Underlying Present Rate:	0.999	0.989	.
(21) Credibility to Underlying Relativity:	0.270	0.160	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.015	1.067	.
(24) Balanced Formula Relativity:	1.002	1.062	1.021

Class(es):		Effective: 7/1/2023							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)
2016	9,675,684	59	1,598	4,529,450	7,623,124	801,620	3,534,819	16,489,012	1.256	0.448	1.704
2017	10,406,799	34	1,524	4,576,289	7,645,954	1,767,709	3,922,275	17,912,227	1.174	0.547	1.721
2018	9,884,033	45	1,465	5,859,206	8,844,066	1,341,261	3,726,701	19,771,234	1.488	0.513	2.000
2019	9,875,696	42	1,182	4,560,267	10,020,252	943,204	3,549,723	19,073,446	1.476	0.455	1.931
2020	8,496,554	38	790	4,981,149	9,677,748	1,137,616	2,996,647	18,793,161	1.725	0.487	2.212
MA Total:	48,338,766	218	6,559	24,506,360	43,811,144	5,991,411	17,730,165	92,039,081	1.413	0.491	1.904

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.864	1.405	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	0.837	0.391	1.228
(16) Countrywide Indicated Relativity:	1.102	1.107	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	18142	.	.
(19) Pure Premium Underlying Present Rate:	1.091	0.477	1.568
(20) Relativity to Underlying Present Rate:	1.623	1.342	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.864	1.405	.
(24) Balanced Formula Relativity:	1.840	1.399	1.701

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Calculation of Class Relativities

Class(es): 8831 PET GROOMING & DRIVERS		Effective: 7/1/2023							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)
2016	3,124,172	5	566	255,242	495,577	564,401	883,311	2,198,529	0.240	0.463	0.704
2017	3,717,012	9	711	190,580	751,890	113,687	1,097,189	2,153,345	0.254	0.326	0.579
2018	3,947,233	9	718	706,437	1,378,178	300,400	1,234,556	3,619,572	0.528	0.389	0.917
2019	4,160,995	5	612	293,425	674,299	169,509	1,223,359	2,360,593	0.233	0.335	0.567
2020	4,294,698	4	619	191,609	743,655	97,871	1,624,689	2,657,823	0.218	0.401	0.619
MA Total:	19,244,110	32	3,226	1,637,292	4,043,599	1,245,868	6,063,104	12,989,862	0.295	0.380	0.675

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.389	1.087	.
(14) Massachusetts Credibility:	0.530	1.000	.
(15) Countrywide Pure Premium:	0.347	0.293	0.640
(16) Countrywide Indicated Relativity:	0.457	0.830	.
(17) Countrywide Credibility:	0.240	0.000	.
(18) Countrywide Lost-Time Claims:	5073.0	.	.
(19) Pure Premium Underlying Present Rate:	0.320	0.367	0.687
(20) Relativity to Underlying Present Rate:	0.477	1.032	.
(21) Credibility to Underlying Relativity:	0.230	0.000	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.426	1.087	.
(24) Balanced Formula Relativity:	0.420	1.083	0.629

Class(es): 8832 PHYSICIAN & CLERICAL		Effective: 7/1/2023							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)
2016	56,765,637	36	1,295	3,539,012	6,135,711	1,242,047	2,925,522	13,842,292	0.170	0.073	0.244
2017	58,142,612	32	1,330	4,295,018	4,082,193	863,086	2,409,221	11,649,519	0.144	0.056	0.200
2018	60,803,450	30	1,232	3,648,551	4,603,352	864,452	2,556,399	11,672,755	0.136	0.056	0.192
2019	61,558,724	33	1,192	4,110,660	5,116,248	909,765	2,714,784	12,851,457	0.150	0.059	0.209
2020	65,016,735	28	957	2,922,918	3,201,765	962,498	2,092,945	9,180,126	0.094	0.047	0.141
MA Total:	302,287,158	159	6,006	18,516,160	23,139,269	4,841,848	12,698,871	59,196,148	0.138	0.058	0.196

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.190	1.906	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	0.077	0.038	0.114
(16) Countrywide Indicated Relativity:	1.634	1.487	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	13940	.	.
(19) Pure Premium Underlying Present Rate:	0.124	0.061	0.185
(20) Relativity to Underlying Present Rate:	2.178	1.896	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.063	0.030	0.093
(23) Formula Relativity:	2.190	1.906	.
(24) Balanced Formula Relativity:	2.176	1.905	2.088

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	9,957,396	28	944	2,911,653	3,916,150	846,119	1,831,135	9,505,057	0.686	0.269	0.955
2017	10,814,357	20	864	1,710,755	2,821,605	504,665	1,307,841	6,344,865	0.419	0.168	0.587
2018	11,425,650	20	949	1,892,158	5,046,820	377,523	2,168,689	9,485,190	0.607	0.223	0.830
2019	11,497,589	24	835	2,974,263	6,854,271	726,230	2,492,918	13,047,684	0.855	0.280	1.135
2020	11,802,151	20	593	1,985,870	4,161,565	494,987	1,453,133	8,095,555	0.521	0.165	0.686
MA Total:	55,497,142	112	4,185	11,474,700	22,800,412	2,949,523	9,253,715	46,478,350	0.618	0.220	0.837

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	9.815	7.223	.
(14) Massachusetts Credibility:	0.980	1.000	.
(15) Countrywide Pure Premium:	0.233	0.119	0.352
(16) Countrywide Indicated Relativity:	4.962	4.703	.
(17) Countrywide Credibility:	0.010	0.000	.
(18) Countrywide Lost-Time Claims:	18222	.	.
(19) Pure Premium Underlying Present Rate:	0.509	0.218	0.727
(20) Relativity to Underlying Present Rate:	8.940	6.738	.
(21) Credibility to Underlying Relativity:	0.010	0.000	.
(22) Industry Group Converted Pure Premium:	0.063	0.030	0.093
(23) Formula Relativity:	9.758	7.223	.
(24) Balanced Formula Relativity:	9.695	7.220	8.888

Class(es):		Effective: 7/1/2023							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)
2016	10,904,796	45	917	2,188,989	4,723,127	1,028,158	2,644,266	10,584,540	0.634	0.337	0.971
2017	10,401,818	50	845	4,213,924	5,356,390	884,620	2,145,996	12,600,930	0.920	0.291	1.211
2018	10,681,478	54	799	4,422,283	5,499,755	1,129,697	2,308,263	13,359,998	0.929	0.322	1.251
2019	11,009,796	38	739	4,003,640	7,049,945	938,487	2,487,296	14,479,368	1.004	0.311	1.315
2020	11,310,098	44	649	5,271,170	6,410,896	1,363,526	2,437,222	15,482,816	1.033	0.336	1.369
MA Total:	54,307,985	231	3,949	20,100,006	29,040,113	5,344,488	12,023,044	66,507,651	0.905	0.320	1.225

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.193	0.916	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	0.872	0.351	1.223
(16) Countrywide Indicated Relativity:	1.147	0.994	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	17431	.	.
(19) Pure Premium Underlying Present Rate:	0.840	0.339	1.179
(20) Relativity to Underlying Present Rate:	1.250	0.953	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.193	0.916	.
(24) Balanced Formula Relativity:	1.178	0.912	1.094

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	43,564,642	72	3,336	6,628,634	6,973,869	2,139,377	5,629,302	21,371,181	0.312	0.178	0.491
2017	44,912,948	84	3,541	6,618,265	11,126,383	2,193,004	7,130,176	27,067,829	0.395	0.208	0.603
2018	46,131,020	101	4,021	7,822,597	10,766,089	2,120,209	7,471,175	28,180,070	0.403	0.208	0.611
2019	46,881,574	65	3,084	7,024,881	9,503,121	2,272,871	5,993,539	24,794,413	0.353	0.176	0.529
2020	46,845,277	68	2,093	6,492,265	11,710,017	1,637,082	5,718,887	25,558,251	0.389	0.157	0.546
MA Total:	228,335,460	390	16,075	34,586,643	50,079,478	10,362,544	31,943,078	126,971,744	0.371	0.185	0.556

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	5.893	6.086	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	0.087	0.062	0.149
(16) Countrywide Indicated Relativity:	1.857	2.430	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	18211	.	.
(19) Pure Premium Underlying Present Rate:	0.303	0.183	0.487
(20) Relativity to Underlying Present Rate:	5.334	5.659	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.063	0.030	0.093
(23) Formula Relativity:	5.893	6.086	.
(24) Balanced Formula Relativity:	5.855	6.084	5.929

Class(es):		Effective: 7/1/2023							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)
2016	7,053,732	36	587	1,934,377	4,188,651	542,374	2,499,509	9,164,911	0.868	0.431	1.299
2017	7,252,295	39	576	3,671,234	5,206,071	1,452,898	3,437,759	13,767,962	1.224	0.674	1.898
2018	7,633,618	32	564	2,676,288	5,026,144	943,872	2,478,490	11,124,794	1.009	0.448	1.457
2019	7,775,212	21	443	2,961,599	4,882,872	1,103,459	2,368,858	11,316,788	1.009	0.447	1.455
2020	7,946,784	26	349	2,968,955	4,613,217	886,295	2,329,846	10,798,313	0.954	0.405	1.359
MA Total:	37,661,641	154	2,519	14,212,452	23,916,956	4,928,898	13,114,461	56,172,767	1.012	0.479	1.492

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.335	1.372	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	1.211	0.544	1.754
(16) Countrywide Indicated Relativity:	1.593	1.540	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	18206	.	.
(19) Pure Premium Underlying Present Rate:	0.901	0.465	1.366
(20) Relativity to Underlying Present Rate:	1.342	1.307	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.335	1.372	.
(24) Balanced Formula Relativity:	1.318	1.366	1.333

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	6,406,483	37	662	4,123,144	3,690,370	719,347	2,347,790	10,880,650	1,220	0,479	1,698
2017	6,571,044	37	724	4,870,599	6,017,467	1,595,727	2,834,542	15,318,335	1,657	0,674	2,331
2018	6,621,043	28	724	3,472,253	6,833,765	1,103,119	3,297,166	14,706,303	1,557	0,665	2,221
2019	6,895,914	27	675	4,037,188	7,014,067	1,093,247	3,718,296	15,862,798	1,603	0,698	2,300
2020	6,875,672	25	428	3,663,603	6,353,670	930,187	3,221,020	14,168,480	1,457	0,604	2,061
MA Total:	33,370,156	154	3,213	20,166,787	29,909,339	5,441,627	15,418,814	70,936,567	1,501	0,625	2,126

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.979	1.790	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	1.281	0.569	1.850
(16) Countrywide Indicated Relativity:	1.687	1.612	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	14628	.	.
(19) Pure Premium Underlying Present Rate:	1.319	0.664	1.983
(20) Relativity to Underlying Present Rate:	1.963	1.867	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.979	1.790	.
(24) Balanced Formula Relativity:	1.953	1.782	1.899

Class(es):		Effective: 7/1/2023							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)
2016	689,510	1	81	16,746	259,611	6,379	234,598	517,334	0,401	0,349	0,750
2017	769,621	1	94	61,427	197,990	6,838	233,601	499,857	0,337	0,312	0,649
2018	795,942	2	89	55,964	322,111	8,662	413,586	800,323	0,475	0,531	1,006
2019	712,297	2	75	184,333	285,675	71,580	304,509	846,096	0,660	0,528	1,188
2020	585,081	1	31	13,781	38,860	15,789	62,255	130,684	0,090	0,133	0,223
MA Total:	3,552,450	7	370	332,251	1,104,246	109,249	1,248,548	2,794,294	0,404	0,382	0,787

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.533	1.094	.
(14) Massachusetts Credibility:	0.360	0.640	.
(15) Countrywide Pure Premium:	0.823	0.544	1.367
(16) Countrywide Indicated Relativity:	1.083	1.542	.
(17) Countrywide Credibility:	0.320	0.180	.
(18) Countrywide Lost-Time Claims:	1851.0	.	.
(19) Pure Premium Underlying Present Rate:	0.635	0.513	1.148
(20) Relativity to Underlying Present Rate:	0.945	1.443	.
(21) Credibility to Underlying Relativity:	0.320	0.180	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.841	1.238	.
(24) Balanced Formula Relativity:	0.830	1.232	0.957

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	34,723	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	31,783	0	0	0	0	0	0	0	0.000	0.000	0.000
2018	31,703	0	1	0	22,147	0	4,821	26,968	0.699	0.152	0.851
2019	29,646	0	1	0	3,295	0	2,572	5,867	0.111	0.087	0.198
2020	24,116	0	0	0	0	0	0	0	0.000	0.000	0.000
MA Total:	151,971	0	2	0	25,442	0	7,393	32,835	0.167	0.049	0.216

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.066	0.045	.
(14) Massachusetts Credibility:	0.130	0.190	.
(15) Countrywide Pure Premium:	1.833	1.068	2.901
(16) Countrywide Indicated Relativity:	0.753	1.051	.
(17) Countrywide Credibility:	0.310	0.330	.
(18) Countrywide Lost-Time Claims:	61.000	.	.
(19) Pure Premium Underlying Present Rate:	1.222	0.598	1.821
(20) Relativity to Underlying Present Rate:	0.593	0.588	.
(21) Credibility to Underlying Relativity:	0.560	0.480	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.574	0.638	.
(24) Balanced Formula Relativity:	0.573	0.640	0.593

Class(es):		Effective: 7/1/2023							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)
2016	230,630	0	17	0	107,677	0	60,292	167,969	0.467	0.261	0.728
2017	225,817	1	19	99,693	547,072	7,940	207,453	862,159	2.864	0.954	3.818
2018	229,189	1	29	15,612	218,890	2,044	102,834	339,380	1.023	0.458	1.481
2019	247,136	0	15	0	71,235	0	42,872	114,107	0.288	0.173	0.462
2020	256,934	4	21	815,591	352,922	171,467	173,546	1,513,527	4.548	1.343	5.891
MA Total:	1,189,706	6	101	930,896	1,297,797	181,452	586,998	2,997,142	1.873	0.646	2.519

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.470	1.849	.
(14) Massachusetts Credibility:	0.290	0.400	.
(15) Countrywide Pure Premium:	1.041	0.430	1.471
(16) Countrywide Indicated Relativity:	1.370	1.219	.
(17) Countrywide Credibility:	0.360	0.300	.
(18) Countrywide Lost-Time Claims:	758.00	.	.
(19) Pure Premium Underlying Present Rate:	1.112	0.487	1.599
(20) Relativity to Underlying Present Rate:	1.654	1.370	.
(21) Credibility to Underlying Relativity:	0.350	0.300	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.789	1.516	.
(24) Balanced Formula Relativity:	1.766	1.510	1.685

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	758,763	2	175	441,721	675,833	132,973	347,330	1,597,857	1,473	0,633	2,106
2017	788,233	5	148	462,917	583,478	272,054	303,605	1,622,054	1,328	0,730	2,058
2018	843,714	7	165	898,927	1,336,332	145,165	474,530	2,854,955	2,649	0,734	3,384
2019	945,452	3	141	487,548	833,637	122,833	442,300	1,886,318	1,397	0,598	1,995
2020	904,950	3	147	171,021	785,948	43,700	394,222	1,394,891	1,057	0,484	1,541
MA Total:	4,241,113	20	776	2,462,135	4,215,228	716,725	1,961,986	9,356,074	1,574	0,632	2,206

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.076	1.808	.
(14) Massachusetts Credibility:	0.520	0.780	.
(15) Countrywide Pure Premium:	1.240	0.645	1.885
(16) Countrywide Indicated Relativity:	1.633	1.826	.
(17) Countrywide Credibility:	0.240	0.110	.
(18) Countrywide Lost-Time Claims:	5732.0	.	.
(19) Pure Premium Underlying Present Rate:	1.341	0.717	2.058
(20) Relativity to Underlying Present Rate:	1.996	2.016	.
(21) Credibility to Underlying Relativity:	0.240	0.110	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.950	1.833	.
(24) Balanced Formula Relativity:	1.926	1.825	1.894

Class(es):		Effective: 7/1/2023							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)
2016	6,900,387	27	630	1,922,250	3,537,355	480,266	1,507,669	7,447,540	0,791	0,288	1,079
2017	7,346,371	25	639	1,757,905	3,838,165	389,113	2,067,183	8,052,365	0,762	0,334	1,096
2018	7,450,383	30	686	2,681,009	3,410,101	676,966	2,076,627	8,844,703	0,818	0,370	1,187
2019	6,364,741	24	498	2,544,086	3,474,463	1,182,664	1,708,970	8,910,184	0,946	0,454	1,400
2020	4,160,310	8	233	325,088	1,563,060	162,979	874,312	2,925,438	0,454	0,249	0,703
MA Total:	32,222,191	114	2,686	9,230,338	15,823,144	2,891,988	8,234,761	36,180,230	0,778	0,345	1,123

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.025	0.989	.
(14) Massachusetts Credibility:	0.870	1.000	.
(15) Countrywide Pure Premium:	0.794	0.388	1.181
(16) Countrywide Indicated Relativity:	1.044	1.099	.
(17) Countrywide Credibility:	0.070	0.000	.
(18) Countrywide Lost-Time Claims:	17285	.	.
(19) Pure Premium Underlying Present Rate:	0.651	0.323	0.974
(20) Relativity to Underlying Present Rate:	0.969	0.907	.
(21) Credibility to Underlying Relativity:	0.060	0.000	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.023	0.989	.
(24) Balanced Formula Relativity:	1.010	0.984	1.002

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	2,278,621	5	292	242,636	769,935	61,713	508,652	1,582,936	0.444	0.250	0.695
2017	2,289,424	14	349	1,002,614	1,861,776	176,634	903,017	3,944,041	1.251	0.472	1.723
2018	1,973,741	7	270	617,178	1,804,049	210,925	624,260	3,256,412	1.227	0.423	1.650
2019	1,830,471	7	194	794,911	427,155	242,954	304,725	1,769,745	0.668	0.299	0.967
2020	919,012	1	61	46,310	416,259	14,046	332,332	808,947	0.503	0.377	0.880
MA Total:	9,291,269	34	1,166	2,703,650	5,279,173	706,273	2,672,986	11,362,081	0.859	0.364	1.223

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.133	1.041	.
(14) Massachusetts Credibility:	0.520	0.800	.
(15) Countrywide Pure Premium:	0.564	0.283	0.847
(16) Countrywide Indicated Relativity:	0.742	0.802	.
(17) Countrywide Credibility:	0.240	0.100	.
(18) Countrywide Lost-Time Claims:	6211.0	.	.
(19) Pure Premium Underlying Present Rate:	0.632	0.343	0.975
(20) Relativity to Underlying Present Rate:	0.941	0.965	.
(21) Credibility to Underlying Relativity:	0.240	0.100	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.993	1.010	.
(24) Balanced Formula Relativity:	0.980	1.005	0.988

Class(es):		Effective: 7/1/2023							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)
2016	3,464,708	5	284	328,956	824,691	175,982	692,800	2,022,429	0.333	0.251	0.584
2017	3,622,771	4	295	194,068	1,544,408	188,343	1,082,103	3,008,922	0.480	0.351	0.831
2018	3,642,446	7	267	336,662	1,033,922	188,175	711,735	2,270,495	0.376	0.247	0.623
2019	3,579,488	7	241	801,192	1,016,555	432,069	853,422	3,103,237	0.508	0.359	0.867
2020	3,584,478	4	163	1,089,075	560,829	85,014	550,988	2,285,905	0.460	0.177	0.638
MA Total:	17,893,892	27	1,250	2,749,953	4,980,405	1,069,583	3,891,047	12,690,988	0.432	0.277	0.709

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.570	0.794	.
(14) Massachusetts Credibility:	0.550	0.970	.
(15) Countrywide Pure Premium:	0.539	0.311	0.850
(16) Countrywide Indicated Relativity:	0.709	0.882	.
(17) Countrywide Credibility:	0.230	0.020	.
(18) Countrywide Lost-Time Claims:	4788.0	.	.
(19) Pure Premium Underlying Present Rate:	0.374	0.294	0.667
(20) Relativity to Underlying Present Rate:	0.556	0.826	.
(21) Credibility to Underlying Relativity:	0.220	0.010	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.599	0.796	.
(24) Balanced Formula Relativity:	0.591	0.792	0.655

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	734,364	2	23	164,586	127,764	37,626	102,842	432,819	0.398	0.191	0.589
2017	723,497	1	29	136	15,872	41	57,384	73,433	0.022	0.079	0.101
2018	725,086	3	22	507,593	477,410	109,405	134,383	1,228,791	1.358	0.336	1.695
2019	650,513	1	14	112,013	99,950	17,330	41,509	270,802	0.326	0.090	0.416
2020	470,585	0	6	0	34,671	0	28,218	62,889	0.074	0.060	0.134
MA Total:	3,304,046	7	94	784,329	755,667	164,401	364,336	2,068,734	0.466	0.160	0.626

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.615	0.458	.
(14) Massachusetts Credibility:	0.290	0.480	.
(15) Countrywide Pure Premium:	0.514	0.239	0.752
(16) Countrywide Indicated Relativity:	0.676	0.677	.
(17) Countrywide Credibility:	0.360	0.260	.
(18) Countrywide Lost-Time Claims:	535.00	.	.
(19) Pure Premium Underlying Present Rate:	0.407	0.266	0.673
(20) Relativity to Underlying Present Rate:	0.606	0.747	.
(21) Credibility to Underlying Relativity:	0.350	0.260	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.634	0.590	.
(24) Balanced Formula Relativity:	0.625	0.588	0.614

Class(es):		Effective: 7/1/2023							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)
2016	6,803,148	6	395	268,549	1,211,339	204,606	1,206,554	2,891,048	0.218	0.207	0.425
2017	6,955,804	7	362	301,414	1,092,326	153,243	1,104,387	2,651,370	0.200	0.181	0.381
2018	7,427,944	9	355	419,738	1,885,531	177,724	1,162,226	3,645,219	0.310	0.180	0.491
2019	7,034,823	4	271	407,459	1,369,361	102,906	1,099,628	2,979,354	0.253	0.171	0.424
2020	6,084,574	2	159	176,193	1,135,585	36,828	869,385	2,217,990	0.216	0.149	0.365
MA Total:	34,306,292	28	1,542	1,573,354	6,694,142	675,307	5,442,180	14,384,982	0.241	0.178	0.419

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.318	0.511	.
(14) Massachusetts Credibility:	0.580	1.000	.
(15) Countrywide Pure Premium:	0.287	0.201	0.487
(16) Countrywide Indicated Relativity:	0.378	0.568	.
(17) Countrywide Credibility:	0.210	0.000	.
(18) Countrywide Lost-Time Claims:	3745.0	.	.
(19) Pure Premium Underlying Present Rate:	0.220	0.180	0.400
(20) Relativity to Underlying Present Rate:	0.327	0.507	.
(21) Credibility to Underlying Relativity:	0.210	0.000	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.332	0.511	.
(24) Balanced Formula Relativity:	0.328	0.508	0.385

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Calculation of Class Relativities

Class(es): 9079 RESTAURANT NOC		Effective: 7/1/2023							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)
2016	29,827,735	57	2,868	4,171,892	9,415,208	1,544,635	6,260,414	21,392,150	0.456	0.262	0.717
2017	31,206,251	64	2,836	3,247,960	10,188,331	1,068,073	6,480,157	20,984,521	0.431	0.242	0.672
2018	33,715,622	57	2,746	3,227,209	10,875,884	1,100,967	6,472,857	21,676,918	0.418	0.225	0.643
2019	32,771,509	48	2,193	3,917,163	13,069,565	1,560,616	6,733,758	25,281,102	0.518	0.253	0.771
2020	29,156,165	42	1,396	3,451,371	7,913,910	1,248,341	4,718,950	17,332,573	0.390	0.205	0.594
MA Total:	156,677,281	268	12,039	18,015,595	51,462,899	6,522,633	30,666,136	106,667,264	0.443	0.237	0.681

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.585	0.680	.
(14) Massachusetts Credibility:	1.000	1.000	.
(15) Countrywide Pure Premium:	0.452	0.269	0.721
(16) Countrywide Indicated Relativity:	0.595	0.762	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	3688.0	.	.
(19) Pure Premium Underlying Present Rate:	0.401	0.254	0.655
(20) Relativity to Underlying Present Rate:	0.597	0.714	.
(21) Credibility to Underlying Relativity:	0.000	0.000	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.585	0.680	.
(24) Balanced Formula Relativity:	0.577	0.677	0.609

Class(es): 9089 BILLIARD HALL		Effective: 7/1/2023							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)
2016	3,488	0	0	0	0	0	0	0	0.000	0.000	0.000
2017	6,717	0	1	0	143	0	324	467	0.021	0.048	0.070
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
MA Total:	32,896	0	1	0	143	0	324	467	0.004	0.010	0.014

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.006	0.028	.
(14) Massachusetts Credibility:	0.040	0.070	.
(15) Countrywide Pure Premium:	0.283	0.104	0.387
(16) Countrywide Indicated Relativity:	0.373	0.294	.
(17) Countrywide Credibility:	0.140	0.140	.
(18) Countrywide Lost-Time Claims:	8.000	.	.
(19) Pure Premium Underlying Present Rate:	0.282	0.185	0.467
(20) Relativity to Underlying Present Rate:	0.420	0.520	.
(21) Credibility to Underlying Relativity:	0.820	0.790	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.396	0.454	.
(24) Balanced Formula Relativity:	0.391	0.452	0.411

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Calculation of Class Relativities

Class(es): 9093 BOWLING LANE		Effective: 7/1/2023							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)
2016	242,116	1	27	51,941	21,338	2,122	40,365	115,766	0.303	0.175	0.478
2017	262,917	3	29	65,766	8,228	70,836	31,685	176,515	0.281	0.390	0.671
2018	288,546	1	22	66,027	142,801	5,480	52,501	266,809	0.724	0.201	0.925
2019	238,901	0	12	0	5,225	0	10,778	16,003	0.022	0.045	0.067
2020	154,956	0	6	0	2,935	0	12,702	15,637	0.019	0.082	0.101
MA Total:	1,187,436	5	96	183,734	180,526	78,439	148,030	590,729	0.307	0.191	0.497

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.404	0.546	.
(14) Massachusetts Credibility:	0.190	0.340	.
(15) Countrywide Pure Premium:	0.412	0.297	0.709
(16) Countrywide Indicated Relativity:	0.542	0.841	.
(17) Countrywide Credibility:	0.410	0.330	.
(18) Countrywide Lost-Time Claims:	419.00	.	.
(19) Pure Premium Underlying Present Rate:	0.413	0.314	0.727
(20) Relativity to Underlying Present Rate:	0.615	0.884	.
(21) Credibility to Underlying Relativity:	0.400	0.330	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.545	0.755	.
(24) Balanced Formula Relativity:	0.538	0.752	0.605

Class(es): 9101 COLLEGE: ALL OTHER EMPLOYEES		Effective: 7/1/2023							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)
2016	1,593,004	19	786	1,329,963	1,977,686	372,811	1,651,900	5,332,360	2.076	1.271	3.347
2017	1,733,298	21	784	1,861,755	2,056,852	490,431	1,280,723	5,689,761	2.261	1.022	3.283
2018	1,766,677	11	435	1,408,180	1,270,604	283,753	901,019	3,863,557	1.516	0.671	2.187
2019	1,721,319	11	365	657,587	2,601,508	181,506	991,931	4,432,533	1.893	0.682	2.575
2020	1,597,573	8	308	1,723,348	2,773,151	295,055	978,408	5,769,962	2.815	0.797	3.612
MA Total:	8,411,872	70	2,678	6,980,834	10,679,801	1,623,555	5,803,983	25,088,173	2.099	0.883	2.982

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.768	2.528	.
(14) Massachusetts Credibility:	0.720	1.000	.
(15) Countrywide Pure Premium:	1.320	0.764	2.083
(16) Countrywide Indicated Relativity:	1.737	2.164	.
(17) Countrywide Credibility:	0.140	0.000	.
(18) Countrywide Lost-Time Claims:	12986	.	.
(19) Pure Premium Underlying Present Rate:	1.555	0.923	2.478
(20) Relativity to Underlying Present Rate:	2.314	2.596	.
(21) Credibility to Underlying Relativity:	0.140	0.000	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	2.560	2.528	.
(24) Balanced Formula Relativity:	2.528	2.517	2.524

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	325,868	0	35	0	33,724	0	31,945	65,669	0.103	0.098	0.202
2017	349,426	0	51	0	55,554	0	67,403	122,957	0.159	0.193	0.352
2018	368,243	1	87	215,284	244,190	33,511	252,895	745,880	1.248	0.778	2.026
2019	390,814	0	48	0	461,853	0	235,995	697,848	1.182	0.604	1.786
2020	383,989	1	55	334,559	680,145	71,711	356,764	1,443,179	2.643	1.116	3.758
MA Total:	1,818,340	2	276	549,843	1,475,466	105,222	945,003	3,075,534	1.114	0.578	1.691

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.437	0.533	.
(14) Massachusetts Credibility:	0.310	0.490	.
(15) Countrywide Pure Premium:	1.378	0.776	2.154
(16) Countrywide Indicated Relativity:	0.566	0.764	.
(17) Countrywide Credibility:	0.350	0.260	.
(18) Countrywide Lost-Time Claims:	7976.0	.	.
(19) Pure Premium Underlying Present Rate:	0.845	0.524	1.368
(20) Relativity to Underlying Present Rate:	0.410	0.515	.
(21) Credibility to Underlying Relativity:	0.340	0.250	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.473	0.588	.
(24) Balanced Formula Relativity:	0.472	0.590	0.507

Class(es):		Effective: 7/1/2023							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)
2016	695,944	1	88	299,545	89,012	66,808	185,056	640,421	0.558	0.362	0.920
2017	846,248	1	104	284	227,573	215	237,997	466,069	0.269	0.281	0.551
2018	966,610	4	111	1,106,267	1,131,437	100,460	477,044	2,815,208	2.315	0.597	2.912
2019	751,986	4	65	1,268,066	459,675	138,375	362,627	2,228,743	2.298	0.666	2.964
2020	449,607	0	31	0	121,370	0	128,898	250,267	0.270	0.287	0.557
MA Total:	3,710,395	10	399	2,674,162	2,029,067	305,858	1,391,622	6,400,709	1.268	0.457	1.725

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.498	0.422	.
(14) Massachusetts Credibility:	0.360	0.600	.
(15) Countrywide Pure Premium:	0.626	0.425	1.050
(16) Countrywide Indicated Relativity:	0.257	0.418	.
(17) Countrywide Credibility:	0.320	0.200	.
(18) Countrywide Lost-Time Claims:	1724.0	.	.
(19) Pure Premium Underlying Present Rate:	0.620	0.414	1.035
(20) Relativity to Underlying Present Rate:	0.301	0.407	.
(21) Credibility to Underlying Relativity:	0.320	0.200	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.358	0.418	.
(24) Balanced Formula Relativity:	0.357	0.420	0.376

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	370,079	0	100	0	244,870	0	267,043	511,912	0.662	0.722	1.383
2017	361,353	2	84	181,051	521,194	26,767	335,279	1,064,290	1.943	1.002	2.945
2018	423,278	1	51	977	226,989	1,131	201,397	430,495	0.539	0.478	1.017
2019	331,303	0	31	0	160,693	0	76,910	237,602	0.485	0.232	0.717
2020	145,961	0	22	0	40,613	0	59,652	100,266	0.278	0.409	0.687
MA Total:	1,631,974	3	288	182,028	1,194,358	27,898	940,281	2,344,565	0.843	0.593	1.437

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	13.403	19.488	.
(14) Massachusetts Credibility:	0.280	0.490	.
(15) Countrywide Pure Premium:	0.587	0.293	0.880
(16) Countrywide Indicated Relativity:	12.498	11.547	.
(17) Countrywide Credibility:	0.360	0.260	.
(18) Countrywide Lost-Time Claims:	814.00	.	.
(19) Pure Premium Underlying Present Rate:	0.739	0.588	1.327
(20) Relativity to Underlying Present Rate:	12.997	18.173	.
(21) Credibility to Underlying Relativity:	0.360	0.250	.
(22) Industry Group Converted Pure Premium:	0.063	0.030	0.093
(23) Formula Relativity:	12.931	17.095	.
(24) Balanced Formula Relativity:	12.848	17.087	14.230

Class(es):		Effective: 7/1/2023							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)
2016	33,943	0	75	0	319,510	0	560,648	880,158	9.413	16.517	25.930
2017	16,735	0	82	0	52,528	0	255,495	308,023	3.139	15.267	18.406
2018	34,655	0	61	0	329,351	0	159,627	488,978	9.504	4.606	14.110
2019	37,662	1	66	45,003	171,306	1,646	276,589	494,544	5.744	7.388	13.131
2020	44,164	0	42	0	30,613	0	113,892	144,506	0.693	2.579	3.272
MA Total:	167,159	1	326	45,003	903,308	1,646	1,366,252	2,316,209	5.673	8.183	13.856

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.227	7.546	.
(14) Massachusetts Credibility:	0.190	0.500	.
(15) Countrywide Pure Premium:	1.532	1.695	3.226
(16) Countrywide Indicated Relativity:	0.629	1.668	.
(17) Countrywide Credibility:	0.410	0.250	.
(18) Countrywide Lost-Time Claims:	619.00	.	.
(19) Pure Premium Underlying Present Rate:	2.807	6.001	8.808
(20) Relativity to Underlying Present Rate:	1.363	5.901	.
(21) Credibility to Underlying Relativity:	0.400	0.250	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	1.226	5.665	.
(24) Balanced Formula Relativity:	1.224	5.684	2.555

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	18,213	2	58	1,292	706,094	53	387,180	1,094,618	38,840	21,262	60,102
2017	21,062	0	89	0	484,454	0	535,188	1,019,642	23,001	25,410	48,410
2018	25,157	1	86	227,995	1,096,307	93,814	439,163	1,857,279	52,642	21,186	73,828
2019	34,601	0	100	0	892,625	0	662,530	1,555,155	25,797	19,148	44,945
2020	46,189	0	135	0	29,646	0	804,521	834,167	0,642	17,418	18,060
MA Total:	145,222	3	468	229,287	3,209,126	93,867	2,828,581	6,360,861	23,677	20,124	43,801

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	9.294	18.557	.
(14) Massachusetts Credibility:	0.360	0.760	.
(15) Countrywide Pure Premium:	3.186	2.000	5.186
(16) Countrywide Indicated Relativity:	1.309	1.969	.
(17) Countrywide Credibility:	0.320	0.120	.
(18) Countrywide Lost-Time Claims:	1813.0	.	.
(19) Pure Premium Underlying Present Rate:	15.679	19.557	35.236
(20) Relativity to Underlying Present Rate:	7.611	19.231	.
(21) Credibility to Underlying Relativity:	0.320	0.120	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	6.200	16.647	.
(24) Balanced Formula Relativity:	6.187	16.702	9.326

Class(es):		Effective: 7/1/2023							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)
2016	203,744	1	44	3,206	361,489	14,659	193,338	572,691	1,790	1,021	2,811
2017	217,602	3	54	16,581	107,466	44,437	200,535	369,019	0,570	1,126	1,696
2018	245,881	1	72	53,339	256,482	86,517	207,679	604,017	1,260	1,196	2,457
2019	202,559	1	42	12,893	176,170	24,122	190,823	404,008	0,933	1,061	1,995
2020	167,805	0	26	0	152,545	0	147,313	299,858	0,909	0,878	1,787
MA Total:	1,037,591	6	238	86,019	1,054,152	169,735	939,687	2,249,593	1,099	1,069	2,168

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.431	0.986	.
(14) Massachusetts Credibility:	0.310	0.590	.
(15) Countrywide Pure Premium:	2.201	1.713	3.914
(16) Countrywide Indicated Relativity:	0.904	1.685	.
(17) Countrywide Credibility:	0.350	0.210	.
(18) Countrywide Lost-Time Claims:	2073.0	.	.
(19) Pure Premium Underlying Present Rate:	1.561	1.448	3.009
(20) Relativity to Underlying Present Rate:	0.758	1.424	.
(21) Credibility to Underlying Relativity:	0.340	0.200	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.708	1.220	.
(24) Balanced Formula Relativity:	0.706	1.224	0.861

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	274,308	0	34	0	193,769	0	259,794	453,563	0.706	0.947	1.653
2017	247,447	1	42	485,087	1,209,438	146,757	385,677	2,226,969	6.848	2.152	9.000
2018	364,336	1	44	9,475	109,306	3,177	196,562	318,520	0.326	0.548	0.874
2019	316,564	0	33	0	59,218	0	156,747	215,965	0.187	0.495	0.682
2020	232,581	0	29	0	45,415	0	103,500	148,915	0.195	0.445	0.640
MA Total:	1,435,236	2	182	494,572	1,617,146	149,934	1,102,281	3,363,932	1.471	0.872	2.344

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.578	0.805	.
(14) Massachusetts Credibility:	0.300	0.560	.
(15) Countrywide Pure Premium:	0.703	0.629	1.333
(16) Countrywide Indicated Relativity:	0.289	0.619	.
(17) Countrywide Credibility:	0.350	0.220	.
(18) Countrywide Lost-Time Claims:	493.00	.	.
(19) Pure Premium Underlying Present Rate:	1.040	0.907	1.947
(20) Relativity to Underlying Present Rate:	0.505	0.892	.
(21) Credibility to Underlying Relativity:	0.350	0.220	.
(22) Industry Group Converted Pure Premium:	2.548	1.084	3.632
(23) Formula Relativity:	0.451	0.783	.
(24) Balanced Formula Relativity:	0.450	0.786	0.550

Class(es):		Effective: 7/1/2023							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)
2016	200,731	1	25	182,284	119,592	36,170	110,785	448,831	1.504	0.732	2.236
2017	198,501	0	31	0	728,388	0	248,205	976,593	3.669	1.250	4.920
2018	186,621	0	26	0	80,947	0	117,768	198,716	0.434	0.631	1.065
2019	200,785	0	18	0	164,628	0	70,458	235,086	0.820	0.351	1.171
2020	211,405	0	16	0	36,890	0	51,976	88,866	0.175	0.246	0.420
MA Total:	998,043	1	116	182,284	1,130,447	36,170	599,192	1,948,093	1.315	0.637	1.952

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.734	1.823	.
(14) Massachusetts Credibility:	0.310	0.470	.
(15) Countrywide Pure Premium:	2.487	1.016	3.502
(16) Countrywide Indicated Relativity:	3.273	2.877	.
(17) Countrywide Credibility:	0.350	0.270	.
(18) Countrywide Lost-Time Claims:	604.00	.	.
(19) Pure Premium Underlying Present Rate:	1.619	0.856	2.475
(20) Relativity to Underlying Present Rate:	2.409	2.409	.
(21) Credibility to Underlying Relativity:	0.340	0.260	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	2.502	2.260	.
(24) Balanced Formula Relativity:	2.470	2.250	2.401

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	953,073	1	70	1,658	857,889	2,797	786,060	1,648,403	0.902	0.828	1,730
2017	1,107,240	6	91	948,969	1,723,410	288,337	629,418	3,590,134	2,414	0.829	3,242
2018	1,089,565	11	83	1,486,707	2,055,714	537,669	713,943	4,794,033	3,251	1,149	4,400
2019	1,071,224	3	60	669,145	1,326,526	281,630	652,229	2,929,530	1,863	0.872	2,735
2020	1,062,439	3	51	629,609	1,307,305	100,108	804,956	2,841,979	1,823	0.852	2,675
MA Total:	5,283,541	24	355	3,736,088	7,270,844	1,210,541	3,586,606	15,804,079	2.083	0.908	2,991

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.818	0.837	.
(14) Massachusetts Credibility:	0.640	0.900	.
(15) Countrywide Pure Premium:	2,371	1,050	3,421
(16) Countrywide Indicated Relativity:	0.974	1.034	.
(17) Countrywide Credibility:	0.180	0.050	.
(18) Countrywide Lost-Time Claims:	2074.0	.	.
(19) Pure Premium Underlying Present Rate:	1.818	0.804	2,622
(20) Relativity to Underlying Present Rate:	0.883	0.791	.
(21) Credibility to Underlying Relativity:	0.180	0.050	.
(22) Industry Group Converted Pure Premium:	2,548	1,084	3,632
(23) Formula Relativity:	0.858	0.845	.
(24) Balanced Formula Relativity:	0.856	0.848	0.853

Class(es):		Effective: 7/1/2023							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)
2016	1,125,248	12	210	2,202,255	3,273,154	637,477	1,433,668	7,546,554	4,866	1,841	6,707
2017	1,250,253	21	275	3,383,645	4,184,881	992,021	1,721,804	10,282,352	6,054	2,171	8,224
2018	1,100,681	11	259	2,881,955	6,397,916	1,143,537	1,905,272	12,328,679	8,431	2,770	11,201
2019	1,112,785	9	163	2,923,866	4,791,566	864,478	2,159,341	10,739,250	6,933	2,717	9,651
2020	1,069,311	15	166	2,541,199	5,239,833	1,471,336	2,641,509	11,893,877	7,277	3,846	11,123
MA Total:	5,658,278	68	1,073	13,932,920	23,887,350	5,108,848	9,861,594	52,790,712	6,684	2,646	9,330

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.624	2.440	.
(14) Massachusetts Credibility:	0.940	1.000	.
(15) Countrywide Pure Premium:	4,070	1,689	5,758
(16) Countrywide Indicated Relativity:	1.672	1.662	.
(17) Countrywide Credibility:	0.030	0.000	.
(18) Countrywide Lost-Time Claims:	8058.0	.	.
(19) Pure Premium Underlying Present Rate:	4,542	2,043	6,585
(20) Relativity to Underlying Present Rate:	2.205	2.009	.
(21) Credibility to Underlying Relativity:	0.030	0.000	.
(22) Industry Group Converted Pure Premium:	2,548	1,084	3,632
(23) Formula Relativity:	2.582	2.440	.
(24) Balanced Formula Relativity:	2.577	2.448	2.538

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	47,525	1	18	273,558	63,993	25,598	36,628	399,778	7,103	1,309	8,412
2017	51,803	0	21	0	54,157	0	68,700	122,857	1,045	1,326	2,372
2018	45,226	0	23	0	77,315	0	97,328	174,643	1,710	2,152	3,862
2019	52,675	0	13	0	163,318	0	48,246	211,564	3,100	0,916	4,016
2020	40,193	0	4	0	0	0	12,865	12,865	0,000	0,320	0,320
MA Total:	237,423	1	79	273,558	358,784	25,598	263,767	921,708	2,663	1,219	3,882

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	3.512	3.489	.
(14) Massachusetts Credibility:	0.180	0.290	.
(15) Countrywide Pure Premium:	1.055	0.483	1.537
(16) Countrywide Indicated Relativity:	1.388	1.368	.
(17) Countrywide Credibility:	0.410	0.360	.
(18) Countrywide Lost-Time Claims:	1012.0	.	.
(19) Pure Premium Underlying Present Rate:	1.830	1.073	2.902
(20) Relativity to Underlying Present Rate:	2.723	3.017	.
(21) Credibility to Underlying Relativity:	0.410	0.350	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	2.318	2.560	.
(24) Balanced Formula Relativity:	2.288	2.549	2.370

Class(es):		Effective: 7/1/2023							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)
2016	369,499	2	39	264,185	223,986	20,103	105,361	613,634	1,321	0,340	1,661
2017	400,587	1	31	271,024	449,256	93,171	106,100	919,552	1,798	0,497	2,296
2018	402,800	1	21	199,130	24,540	147,653	36,634	407,958	0,555	0,458	1,013
2019	387,128	0	27	0	47,842	0	63,482	111,324	0,124	0,164	0,288
2020	427,196	1	25	78,037	196,608	37,257	111,519	423,422	0,643	0,348	0,991
MA Total:	1,987,211	5	143	812,377	942,233	298,185	423,096	2,475,891	0,883	0,363	1,246

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.980	0.899	.
(14) Massachusetts Credibility:	0.330	0.470	.
(15) Countrywide Pure Premium:	1.108	0.544	1.652
(16) Countrywide Indicated Relativity:	1.363	1.504	.
(17) Countrywide Credibility:	0.340	0.270	.
(18) Countrywide Lost-Time Claims:	1291.0	.	.
(19) Pure Premium Underlying Present Rate:	0.915	0.434	1.348
(20) Relativity to Underlying Present Rate:	1.137	1.082	.
(21) Credibility to Underlying Relativity:	0.330	0.260	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.162	1.110	.
(24) Balanced Formula Relativity:	1.164	1.115	1.149

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)	
2016	860.679	1	49	1.884	123.688	1.646	127.406	254.623	0.146	0.150	0.296	
2017	876.495	2	66	233.880	740.884	86.127	479.847	1,540.738	1.112	0.646	1.758	
2018	936.316	3	63	274.982	778.550	194.182	259.220	1,506.934	1.125	0.484	1.609	
2019	1,017.343	2	59	733.003	254.817	89.333	177.668	1,254.822	0.971	0.262	1.233	
2020	947.133	3	53	353.745	670.891	101.360	255.948	1,381.944	1.082	0.377	1.459	
MA Total:	4,637,967	11	290	1,597,494	2,568,830	472,647	1,300,089	5,939,060	0.898	0.382	1.281	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.184	1.094	.
(14) Massachusetts Credibility:	0.500	0.710	.
(15) Countrywide Pure Premium:	2.203	0.709	2.912
(16) Countrywide Indicated Relativity:	2.900	2.010	.
(17) Countrywide Credibility:	0.250	0.150	.
(18) Countrywide Lost-Time Claims:	2129.0	.	.
(19) Pure Premium Underlying Present Rate:	1.162	0.511	1.672
(20) Relativity to Underlying Present Rate:	1.729	1.436	.
(21) Credibility to Underlying Relativity:	0.250	0.140	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	1.749	1.280	.
(24) Balanced Formula Relativity:	1.727	1.274	1.584

Class(es):		Effective: 7/1/2023							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)	
2016	275.642	0	32	0	504.064	0	453.883	957.947	1.829	1.647	3.475	
2017	311.607	2	34	78.307	295.033	32.193	94.983	500.516	1.198	0.408	1.606	
2018	284.395	0	17	0	24.057	0	27.759	51.816	0.085	0.098	0.182	
2019	299.745	2	31	378.187	696.404	182.466	344.007	1,601.064	3.585	1.756	5.341	
2020	308.596	0	26	0	1,288.152	0	447.537	1,735.690	4.174	1.450	5.624	
MA Total:	1,479,984	4	140	456,494	2,807,709	214,660	1,368,169	4,847,032	2.206	1.069	3.275	

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	2.448	2.648	.
(14) Massachusetts Credibility:	0.340	0.490	.
(15) Countrywide Pure Premium:	1.372	0.595	1.967
(16) Countrywide Indicated Relativity:	1.688	1.645	.
(17) Countrywide Credibility:	0.330	0.260	.
(18) Countrywide Lost-Time Claims:	747.00	.	.
(19) Pure Premium Underlying Present Rate:	1.358	0.623	1.981
(20) Relativity to Underlying Present Rate:	1.687	1.555	.
(21) Credibility to Underlying Relativity:	0.330	0.250	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.946	2.114	.
(24) Balanced Formula Relativity:	1.950	2.124	2.004

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Calculation of Class Relativities

Class(es): 9522 UPHOLSTERING		Effective: 7/1/2023							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)
2016	115,056	0	8	0	6,024	0	5,459	11,482	0.052	0.047	0.100
2017	122,488	0	6	0	250,834	0	55,764	306,598	2.048	0.455	2.503
2018	120,893	0	4	0	11,425	0	4,620	16,045	0.095	0.038	0.133
2019	93,300	0	0	0	0	0	0	0	0.000	0.000	0.000
2020	95,227	0	2	0	0	0	1,368	1,368	0.000	0.014	0.014
MA Total:	546,964	0	20	0	268,283	0	67,211	335,494	0.490	0.123	0.613

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.544	0.304	.
(14) Massachusetts Credibility:	0.180	0.250	.
(15) Countrywide Pure Premium:	1.168	0.436	1.604
(16) Countrywide Indicated Relativity:	1.437	1.205	.
(17) Countrywide Credibility:	0.410	0.380	.
(18) Countrywide Lost-Time Claims:	1990.0	.	.
(19) Pure Premium Underlying Present Rate:	0.734	0.325	1.059
(20) Relativity to Underlying Present Rate:	0.911	0.812	.
(21) Credibility to Underlying Relativity:	0.410	0.370	.
(22) Industry Group Converted Pure Premium:	0.901	0.404	1.305
(23) Formula Relativity:	1.061	0.834	.
(24) Balanced Formula Relativity:	1.063	0.839	0.994

Class(es): 9533 SCAFFOLDING: SCAFFOLD INST, RPR OR REMOVAL- BUILT UP FROM GROUN		Effective: 7/1/2023							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)
2016	58,633	1	8	154,690	621,746	26,776	222,049	1,025,262	13,242	4,244	17,486
2017	65,778	1	11	18,944	1,195,815	3,223	208,521	1,426,503	18,468	3,219	21,687
2018	69,127	3	12	437,214	239,495	206,627	179,010	1,062,345	9,789	5,579	15,368
2019	59,353	2	5	457,488	133,134	103,343	62,283	756,248	9,951	2,790	12,741
2020	75,646	0	1	0	847,860	0	172,466	1,020,326	11,208	2,280	13,488
MA Total:	328,537	7	37	1,068,336	3,038,049	339,968	844,330	5,290,683	12,499	3,605	16,104

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	5.334	3.750	.
(14) Massachusetts Credibility:	0.380	0.500	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	3.496	2.939	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	7.965	2.982	10.947
(20) Relativity to Underlying Present Rate:	3.676	3.138	.
(21) Credibility to Underlying Relativity:	0.620	0.500	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	4.306	3.444	.
(24) Balanced Formula Relativity:	4.356	3.451	4.093

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	362,160	3	20	1,156,827	1,496,697	183,922	433,245	3,270,691	7,327	1,704	9,031
2017	437,387	0	22	0	1,771,782	0	568,695	2,340,477	4,051	1,300	5,351
2018	504,501	1	24	113,072	240,003	15,569	142,834	511,478	0,700	0,314	1,014
2019	433,646	1	22	47,557	1,333,354	15,732	472,981	1,869,623	3,184	1,127	4,311
2020	477,843	2	24	187,610	1,347,874	67,537	931,783	2,534,804	3,213	2,091	5,305
MA Total:	2,215,537	7	112	1,505,067	6,189,709	282,759	2,549,538	10,527,072	3,473	1,278	4,751

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	1.482	1.330	.
(14) Massachusetts Credibility:	0.520	0.670	.
(15) Countrywide Pure Premium:	1.974	0.679	2.654
(16) Countrywide Indicated Relativity:	0.848	0.714	.
(17) Countrywide Credibility:	0.240	0.170	.
(18) Countrywide Lost-Time Claims:	463.00	.	.
(19) Pure Premium Underlying Present Rate:	2.651	0.931	3.582
(20) Relativity to Underlying Present Rate:	1.224	0.980	.
(21) Credibility to Underlying Relativity:	0.240	0.160	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.268	1.169	.
(24) Balanced Formula Relativity:	1.283	1.172	1.250

Class(es):		Effective: 7/1/2023							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)
2016	16,020	0	1	0	33,450	0	2,442	35,892	2,088	0,152	2,240
2017	6,455	0	1	0	0	0	463	463	0,000	0,072	0,072
2018	3,724	0	0	0	0	0	0	0	0,000	0,000	0,000
2019	12,900	1	2	16,599	0	29,321	1,340	47,260	1,287	2,377	3,664
2020	14,800	0	0	0	0	0	0	0	0,000	0,000	0,000
MA Total:	53,899	1	4	16,599	33,450	29,321	4,245	83,615	0,929	0,623	1,551

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.396	0.648	.
(14) Massachusetts Credibility:	0.110	0.130	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	0.893	0.634	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	2.035	0.643	2.678
(20) Relativity to Underlying Present Rate:	0.939	0.677	.
(21) Credibility to Underlying Relativity:	0.890	0.870	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	0.879	0.673	.
(24) Balanced Formula Relativity:	0.889	0.674	0.827

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	166,687	1	13	227,276	80,909	134,691	37,993	480,869	1,849	1,036	2,885
2017	175,578	1	17	352,628	303,962	275,924	76,415	1,008,930	3,740	2,007	5,746
2018	185,946	0	20	0	38,650	0	29,530	68,180	0,208	0,159	0,367
2019	192,255	1	25	530,272	198,651	65,444	225,130	1,019,497	3,791	1,511	5,303
2020	213,819	1	16	26,434	81,520	18,142	62,530	188,626	0,505	0,377	0,882
MA Total:	934,285	4	91	1,136,610	703,692	494,201	431,598	2,766,101	1,970	0,991	2,961

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.841	1.031	.
(14) Massachusetts Credibility:	0.390	0.600	.
(15) Countrywide Pure Premium:	0.000	0.000	0.000
(16) Countrywide Indicated Relativity:	1.296	1.662	.
(17) Countrywide Credibility:	0.000	0.000	.
(18) Countrywide Lost-Time Claims:	0.000	.	.
(19) Pure Premium Underlying Present Rate:	2.953	1.686	4.639
(20) Relativity to Underlying Present Rate:	1.363	1.775	.
(21) Credibility to Underlying Relativity:	0.610	0.400	.
(22) Industry Group Converted Pure Premium:	2.343	0.961	3.304
(23) Formula Relativity:	1.159	1.328	.
(24) Balanced Formula Relativity:	1.173	1.331	1.219

Class(es):		Effective: 7/1/2023							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)
2016	5,077,821	3	82	68,812	268,097	18,399	260,391	615,699	0,066	0,055	0,121
2017	5,328,952	0	81	0	872,238	0	322,996	1,195,235	0,164	0,061	0,224
2018	5,710,198	3	74	87,262	444,363	10,809	197,660	740,094	0,093	0,037	0,130
2019	5,376,864	3	45	280,143	559,174	81,167	212,226	1,132,710	0,156	0,055	0,211
2020	5,001,159	1	49	137,147	220,186	206,883	273,253	837,469	0,071	0,096	0,167
MA Total:	26,494,994	10	331	573,364	2,364,058	317,257	1,266,527	4,521,206	0,111	0,060	0,171

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.146	0.171	.
(14) Massachusetts Credibility:	0.450	0.620	.
(15) Countrywide Pure Premium:	0.235	0.093	0.328
(16) Countrywide Indicated Relativity:	0.309	0.265	.
(17) Countrywide Credibility:	0.280	0.190	.
(18) Countrywide Lost-Time Claims:	1560.0	.	.
(19) Pure Premium Underlying Present Rate:	0.151	0.065	0.216
(20) Relativity to Underlying Present Rate:	0.225	0.182	.
(21) Credibility to Underlying Relativity:	0.270	0.190	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.213	0.191	.
(24) Balanced Formula Relativity:	0.210	0.190	0.204

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Calculation of Class Relativities

Class(es):		Effective: 7/1/2023							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)
2016	704,217	0	10	0	18,998	0	77,155	96,153	0.027	0.110	0.137
2017	711,317	2	13	31,518	12,489	12,271	72,022	128,300	0.062	0.119	0.180
2018	729,817	0	6	0	264,491	0	148,379	412,871	0.362	0.203	0.566
2019	760,479	0	12	0	108,014	0	52,929	160,943	0.142	0.070	0.212
2020	787,628	1	15	97,032	197,122	34,007	103,019	431,180	0.373	0.174	0.547
MA Total:	3,693,459	3	56	128,550	601,114	46,278	453,504	1,229,445	0.198	0.135	0.333

	Pure Premium Relativities		
	Indemnity	Medical	Total
(13) Massachusetts Indicated Relativity:	0.260	0.387	.
(14) Massachusetts Credibility:	0.270	0.430	.
(15) Countrywide Pure Premium:	0.511	0.289	0.800
(16) Countrywide Indicated Relativity:	0.673	0.819	.
(17) Countrywide Credibility:	0.370	0.290	.
(18) Countrywide Lost-Time Claims:	636.00	.	.
(19) Pure Premium Underlying Present Rate:	0.305	0.185	0.490
(20) Relativity to Underlying Present Rate:	0.454	0.520	.
(21) Credibility to Underlying Relativity:	0.360	0.280	.
(22) Industry Group Converted Pure Premium:	0.758	0.349	1.108
(23) Formula Relativity:	0.483	0.550	.
(24) Balanced Formula Relativity:	0.477	0.547	0.499

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Section IX - Classification Pricing
Subsection H - Industry Group Rate Change and Rate Level Factors
7/1/2023

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	1.001	0.980	0.969	0.997	1.083
(2) Experience and Benefit Level Change - Overall	-4.0%	-4.0%	-4.0%	-4.0%	-4.0%
(3) Target Rate Change = (1) x [1.000 + (2)] - 1.000	-3.9%	-5.9%	-6.9%	-4.3%	4.0%
(4) Maximum Rate Change = (3) + 20.0%	16.1%	14.1%	13.1%	15.7%	24.0%
(5) Minimum Rate Change = (3) - 20.0%	-23.9%	-25.9%	-26.9%	-24.3%	-16.0%
(6) Present Average Rate	1.644	4.246	0.121	1.400	4.193
(7) Uncapped Rate Level Factor = [1.000 + (3)] x (6)	1.580	3.996	0.113	1.340	4.360
(8) Capped Rate Level Factor	1.592	3.990	0.113	1.342	4.366

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 7/1/2022 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) / 1.081 (9)
Manufacturing	412,518,899	446,393,194	1.082	8,892	12,000	0.861	1.082	1.001
Construction	1,309,053,476	1,387,801,890	1.060	13,443	12,000	1.000	1.060	0.980
Office & Clerical	422,958,163	442,463,718	1.046	10,706	12,000	0.945	1.048	0.969
Goods & Services	1,099,625,096	1,185,565,392	1.078	29,042	12,000	1.000	1.078	0.997
Miscellaneous	497,541,285	587,297,349	1.180	9,847	12,000	0.906	1.171	1.083
All	3,741,696,919	4,049,521,543	1.082			1.000	1.081	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
 7/1/2023

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	1.437	2.227	1.686	1.340	2.26
0008	1.468	1.698	1.541	1.340	2.06
0016	2.094	2.504	2.223	1.340	2.98
0034	1.658	1.830	1.712	1.340	2.29
0035	1.039	1.066	1.048	1.340	1.40
0036	1.658	1.830	1.712	1.340	2.29
0042	2.132	2.520	2.254	1.340	3.02
0046	1.768	2.642	2.043	1.340	2.74
0050	0.975	1.184	1.036	3.996	4.14
0079	1.742	1.734	1.740	1.340	2.33
0083	2.124	2.263	2.168	1.340	2.90
0106	1.570	2.376	1.810	4.360	7.89
0113	1.658	1.830	1.712	1.340	2.29
0170	1.658	1.830	1.712	1.340	2.29
0908	123.274	112.533	119.887	1.340	80.31
0909	267.405	446.064	323.740	1.340	216.86
0912	267.405	446.064	323.740	1.340	433.72
0913	123.274	112.533	119.887	1.340	160.62
0917	1.555	1.357	1.492	1.340	2.00
0918	0.325	0.179	0.279	1.340	0.37
1430	1.959	1.888	1.937	1.580	3.06
1438	1.994	1.746	1.917	1.580	3.03
1463	5.421	9.255	6.608	1.580	10.44
1624	0.865	0.966	0.895	4.360	3.90
1655	0.588	0.495	0.560	4.360	2.44
1701	2.551	1.863	2.338	1.580	3.69
1710	0.865	0.966	0.895	4.360	3.90
1747	1.296	1.076	1.228	1.580	1.94
1748	1.853	2.361	2.010	1.580	3.18
1853	0.793	0.450	0.687	1.580	1.08
1924	1.774	1.760	1.770	1.580	2.80
1925	1.681	6.751	3.250	1.580	5.14
2003	1.989	1.654	1.885	1.580	2.98
2014	2.123	2.097	2.115	1.580	3.34
2021	1.544	1.653	1.578	1.580	2.49
2039	2.365	2.397	2.375	1.580	3.75
2041	1.381	1.158	1.312	1.580	2.07
2070	2.065	1.565	1.910	1.580	3.02
2081	1.582	2.215	1.778	1.580	2.81
2089	1.486	1.372	1.451	1.580	2.29
2095	1.687	1.504	1.630	1.580	2.58
2101	1.486	1.372	1.451	1.580	2.29

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Section IX - Classification Pricing
Subsection I - Average Uncapped Rates
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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)		
2111	1.179	1.302	1.217	1.580	1.92
2114	1.486	1.372	1.451	1.580	2.29
2115	3.129	3.190	3.148	1.580	4.97
2121	0.742	0.817	0.765	1.580	1.21
2130	0.848	0.880	0.858	1.580	1.36
2131	1.587	1.958	1.702	1.580	2.69
2143	1.173	0.979	1.113	1.580	1.76
2150	1.952	2.162	2.017	1.580	3.19
2156	1.726	1.887	1.776	1.580	2.81
2157	2.477	1.837	2.279	1.580	3.60
2172	0.960	0.880	0.935	1.580	1.48
2211	2.929	3.159	3.000	1.580	4.74
2220	1.687	1.935	1.764	1.580	2.79
2260	2.904	2.325	2.725	1.580	4.31
2288	2.074	2.234	2.123	1.580	3.35
2305	1.319	1.360	1.332	1.580	2.10
2362	1.105	1.363	1.185	1.580	1.87
2380	0.838	1.075	0.911	1.580	1.44
2402	1.140	1.248	1.174	1.580	1.85
2413	1.513	1.587	1.536	1.580	2.43
2416	1.613	1.841	1.684	1.580	2.66
2417	0.886	0.674	0.820	1.580	1.30
2501	1.190	1.283	1.218	1.580	1.93
2503	0.570	0.579	0.573	1.580	0.90
2570	1.897	1.538	1.785	1.580	2.82
2576	1.114	1.135	1.120	1.580	1.77
2585	1.684	1.555	1.644	1.580	2.60
2586	1.164	1.350	1.221	1.580	1.93
2587	1.450	1.199	1.371	1.340	1.84
2623	2.273	2.486	2.339	1.580	3.70
2651	0.711	0.740	0.720	1.580	1.14
2660	1.048	1.054	1.050	1.580	1.66
2683	1.079	1.248	1.131	1.580	1.79
2688	1.081	1.186	1.113	1.580	1.76
2702	3.166	5.294	3.801	4.360	16.57
2710	3.305	3.329	3.313	1.580	5.23
2731	1.538	1.765	1.609	1.580	2.54
2747	3.045	2.807	2.972	1.580	4.69
2790	1.212	1.176	1.201	1.580	1.90
2802	1.901	2.091	1.960	1.580	3.10
2835	1.166	1.046	1.129	1.580	1.78
2836	1.501	1.159	1.395	1.580	2.20

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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	1.520	2.162	1.718	1.580	2.71
2883	1.637	1.621	1.632	1.580	2.58
2923	0.651	0.668	0.656	1.580	1.04
2942	0.847	0.862	0.852	1.580	1.35
3018	1.315	1.359	1.329	1.580	2.10
3022	1.745	2.126	1.863	1.580	2.94
3027	1.150	1.259	1.184	1.580	1.87
3028	1.614	1.732	1.651	1.580	2.61
3030	2.646	2.995	2.754	1.580	4.35
3040	3.373	2.824	3.203	1.580	5.06
3041	1.534	1.283	1.456	1.580	2.30
3042	1.748	1.552	1.687	1.580	2.67
3066	1.239	1.414	1.293	1.580	2.04
3076	1.559	1.463	1.529	1.580	2.42
3081	2.187	2.348	2.237	1.580	3.53
3082	2.187	2.348	2.237	1.580	3.53
3085	2.177	2.497	2.276	1.580	3.60
3110	4.060	3.479	3.880	1.580	6.13
3111	1.276	1.274	1.276	1.580	2.02
3113	0.943	0.925	0.938	1.580	1.48
3114	1.358	1.525	1.410	1.580	2.23
3118	0.732	0.767	0.743	1.580	1.17
3119	0.516	0.563	0.530	1.580	0.84
3120	0.710	0.542	0.658	1.580	1.04
3122	1.181	1.101	1.157	1.580	1.83
3127	1.206	1.098	1.172	1.580	1.85
3131	0.699	0.876	0.754	1.580	1.19
3132	1.092	1.203	1.126	1.580	1.78
3145	0.779	0.731	0.764	1.580	1.21
3146	1.067	1.115	1.082	1.580	1.71
3169	1.101	1.446	1.208	1.580	1.91
3179	0.611	0.571	0.599	1.580	0.95
3180	1.314	1.241	1.291	1.580	2.04
3188	1.112	1.141	1.121	1.580	1.77
3200	1.245	1.290	1.259	1.580	1.99
3220	1.221	1.159	1.202	1.580	1.90
3255	1.086	1.127	1.099	1.580	1.74
3257	1.233	1.603	1.347	1.580	2.13
3270	0.960	1.022	0.979	1.580	1.55
3300	1.691	2.367	1.900	1.580	3.00
3315	1.600	1.687	1.627	1.580	2.57
3336	1.348	1.174	1.294	1.580	2.04

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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	0.868	1.186	0.961	3.996	3.84
3372	1.229	1.213	1.224	1.580	1.93
3373	2.165	1.771	2.043	1.580	3.23
3381	0.971	0.872	0.940	1.580	1.49
3383	0.716	0.780	0.736	1.580	1.16
3385	0.459	0.554	0.489	1.580	0.77
3400	1.101	1.446	1.208	1.580	1.91
3507	1.521	1.378	1.477	1.580	2.33
3515	1.304	1.395	1.332	1.580	2.10
3558	0.328	0.517	0.387	1.580	0.61
3571	0.344	0.300	0.330	1.580	0.52
3574	0.874	0.895	0.881	1.580	1.39
3612	0.728	0.789	0.747	1.580	1.18
3620	1.799	1.608	1.740	1.580	2.75
3629	0.874	0.895	0.881	1.580	1.39
3632	0.874	0.895	0.881	1.580	1.39
3634	1.003	0.866	0.961	1.580	1.52
3635	0.940	1.541	1.126	1.580	1.78
3638	0.874	0.895	0.881	1.580	1.39
3642	0.699	0.642	0.681	1.580	1.08
3643	1.009	0.952	0.991	1.580	1.57
3647	1.231	1.146	1.205	1.580	1.90
3648	0.561	0.608	0.576	1.580	0.91
3681	0.331	0.298	0.321	1.580	0.51
3685	0.270	0.264	0.268	1.580	0.42
3724	0.899	0.992	0.926	3.996	3.70
3726	0.791	0.663	0.754	3.996	3.01
3807	1.101	1.446	1.208	1.580	1.91
3808	1.717	1.795	1.741	1.580	2.75
3821	3.009	3.729	3.236	1.340	4.34
3826	1.866	2.103	1.939	1.580	3.06
3830	0.874	0.895	0.881	1.580	1.39
3841	1.068	0.994	1.045	1.580	1.65
4000	1.184	1.259	1.206	4.360	5.26
4021	1.664	1.782	1.700	1.580	2.69
4024	2.051	1.815	1.978	1.580	3.13
4034	3.632	4.431	3.879	1.580	6.13
4036	0.986	0.986	0.986	1.580	1.56
4038	1.405	1.044	1.294	1.580	2.04
4053	1.866	1.195	1.658	1.580	2.62
4062	1.250	1.094	1.201	1.580	1.90
4112	0.167	0.190	0.174	1.580	0.27

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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	1.866	1.195	1.658	1.580	2.62
4114	1.903	1.573	1.801	1.580	2.85
4130	2.582	2.475	2.549	1.580	4.03
4133	1.046	1.095	1.061	1.580	1.68
4150	0.423	0.327	0.393	1.580	0.62
4239	1.528	1.626	1.558	1.580	2.46
4243	1.498	1.271	1.428	1.580	2.26
4244	1.613	1.987	1.729	1.580	2.73
4250	1.355	1.334	1.349	1.580	2.13
4251	1.686	1.285	1.562	1.580	2.47
4273	1.599	1.548	1.583	1.580	2.50
4279	1.380	1.370	1.377	1.580	2.17
4283	1.322	0.895	1.190	1.580	1.88
4299	0.980	0.873	0.947	1.580	1.50
4304	3.070	3.802	3.297	1.580	5.21
4307	0.713	0.860	0.758	1.580	1.20
4308	1.503	0.378	1.155	1.580	1.82
4351	0.540	0.492	0.525	1.580	0.83
4352	0.563	0.558	0.561	1.580	0.89
4360	0.346	0.302	0.332	1.580	0.53
4361	4.050	4.610	4.233	0.113	0.48
4362	0.309	0.279	0.300	1.340	0.40
4410	1.401	1.769	1.515	1.580	2.39
4432	0.443	0.452	0.445	1.580	0.70
4439	2.657	3.564	2.938	1.580	4.64
4452	1.681	1.640	1.668	1.580	2.64
4459	1.388	1.414	1.396	1.580	2.21
4470	1.026	0.957	1.005	1.580	1.59
4484	1.198	1.246	1.213	1.580	1.92
4493	1.176	1.062	1.141	1.580	1.80
4511	0.196	0.194	0.195	1.340	0.26
4512	0.053	0.048	0.051	1.340	0.07
4557	1.167	0.834	1.064	1.580	1.68
4558	1.130	1.354	1.199	1.580	1.89
4583	1.470	1.536	1.491	1.580	2.35
4611	0.450	0.414	0.439	1.580	0.69
4635	2.260	3.470	2.634	1.580	4.16
4653	1.172	1.096	1.149	1.580	1.81
4665	5.284	6.331	5.608	1.580	8.86
4692	0.290	0.269	0.283	1.580	0.45
4693	0.421	0.457	0.432	1.580	0.68
4720	0.939	1.047	0.972	1.580	1.54

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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	0.430	0.355	0.407	1.580	0.64
4741	1.981	1.816	1.930	1.580	3.05
4771	1.231	1.036	1.170	1.580	1.85
4777	1.470	1.536	1.491	1.580	2.35
4825	0.211	0.181	0.202	1.580	0.32
4828	0.548	0.563	0.553	1.580	0.87
4829	0.548	0.563	0.553	1.580	0.87
4902	0.847	0.862	0.852	1.580	1.35
4923	0.346	0.302	0.332	1.580	0.53
5020	1.065	0.739	0.970	3.996	3.88
5022	1.947	1.856	1.920	3.996	7.67
5037	2.664	2.487	2.612	3.996	10.44
5040	5.166	4.333	4.924	3.996	19.68
5057	3.378	5.317	3.942	3.996	15.75
5059	5.043	6.840	5.566	3.996	22.24
5102	1.459	1.247	1.397	3.996	5.58
5146	1.475	1.261	1.413	3.996	5.65
5160	0.834	0.690	0.792	3.996	3.16
5183	0.743	0.682	0.725	3.996	2.90
5188	0.850	0.689	0.803	3.996	3.21
5190	0.490	0.522	0.499	3.996	1.99
5191	0.450	0.480	0.460	1.340	0.62
5192	1.919	1.577	1.811	1.340	2.43
5213	1.803	1.632	1.753	3.996	7.01
5215	1.164	1.098	1.145	3.996	4.57
5221	1.500	1.348	1.456	3.996	5.82
5222	2.040	1.367	1.844	3.996	7.37
5223	0.804	0.754	0.789	3.996	3.15
5348	1.003	0.776	0.937	3.996	3.75
5402	1.286	1.083	1.227	3.996	4.90
5403	1.891	1.681	1.830	3.996	7.31
5437	0.774	0.717	0.757	3.996	3.03
5443	0.648	0.621	0.640	3.996	2.56
5445	1.388	1.006	1.277	3.996	5.10
5462	1.333	1.207	1.296	3.996	5.18
5472	1.884	1.593	1.799	3.996	7.19
5473	2.313	2.406	2.340	3.996	9.35
5474	0.980	1.025	0.993	3.996	3.97
5478	1.029	0.682	0.928	3.996	3.71
5479	1.135	1.179	1.148	3.996	4.59
5480	0.992	0.847	0.950	3.996	3.80
5506	1.168	1.070	1.139	3.996	4.55

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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	1.072	0.943	1.035	3.996	4.14
5508	0.975	1.184	1.036	3.996	4.14
5509	1.157	1.696	1.314	3.996	5.25
5538	0.827	0.872	0.840	3.996	3.36
5545	9.188	13.395	10.412	3.996	41.61
5547	2.187	2.656	2.323	3.996	9.28
5606	0.264	0.269	0.266	3.996	1.06
5610	1.419	0.975	1.290	3.996	5.15
5645	1.347	1.723	1.456	3.996	5.82
5701	3.285	3.777	3.428	3.996	13.70
5703	1.920	1.908	1.916	3.996	7.66
5705	2.279	2.141	2.239	3.996	8.95
6003	1.430	1.162	1.352	3.996	5.40
6005	0.975	1.184	1.036	3.996	4.14
6204	1.357	1.063	1.272	3.996	5.08
6217	0.983	0.884	0.954	3.996	3.81
6229	0.970	0.948	0.963	3.996	3.85
6233	0.473	0.333	0.433	3.996	1.73
6251	1.008	0.710	0.921	3.996	3.68
6252	0.849	0.769	0.825	3.996	3.30
6306	2.161	1.703	2.028	3.996	8.10
6319	0.541	0.544	0.542	3.996	2.16
6325	0.578	0.641	0.596	3.996	2.38
6400	0.948	1.153	1.008	3.996	4.03
6504	1.486	1.372	1.451	1.580	2.29
6834	0.440	0.577	0.481	4.360	2.10
6836	0.499	0.719	0.565	4.360	2.46
7219	1.524	1.502	1.517	4.360	6.62
7230	1.879	1.923	1.892	4.360	8.25
7231	2.389	2.149	2.317	4.360	10.10
7360	0.964	0.890	0.942	4.360	4.11
7370	0.924	1.013	0.950	4.360	4.14
7380	1.378	1.317	1.360	4.360	5.93
7382	0.752	0.727	0.745	4.360	3.25
7403	0.622	0.658	0.633	4.360	2.76
7405	0.292	0.249	0.279	4.360	1.22
7420	4.674	7.910	5.640	4.360	24.59
7421	0.249	0.139	0.216	4.360	0.94
7422	0.249	0.139	0.216	4.360	0.94
7425	0.622	0.539	0.597	4.360	2.60
7431	0.249	0.139	0.216	4.360	0.94
7502	0.441	0.356	0.416	4.360	1.81

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Section IX - Classification Pricing
 Subsection I - Average Uncapped Rates
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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)		
7515	0.343	0.822	0.486	4.360	2.12
7520	0.635	0.695	0.653	4.360	2.85
7538	0.726	0.715	0.723	3.996	2.89
7539	0.277	0.314	0.288	4.360	1.26
7580	0.659	0.575	0.634	4.360	2.76
7590	1.264	1.973	1.475	4.360	6.43
7600	0.995	0.760	0.925	4.360	4.03
7601	0.754	0.708	0.741	3.996	2.96
7610	4.268	3.026	3.863	0.113	0.44
7704	0.769	1.078	0.861	4.360	3.75
7720	0.328	0.326	0.327	4.360	1.43
7855	0.940	0.844	0.912	3.996	3.64
8001	1.077	1.360	1.167	1.340	1.56
8002	1.022	1.660	1.223	1.340	1.64
8006	0.673	0.671	0.673	1.340	0.90
8008	0.476	0.496	0.482	1.340	0.65
8010	0.918	1.042	0.957	1.340	1.28
8013	0.182	0.287	0.215	1.340	0.29
8017	0.651	0.680	0.660	1.340	0.88
8018	2.630	2.179	2.488	1.340	3.33
8021	2.325	2.191	2.282	1.340	3.06
8031	0.972	1.191	1.041	1.340	1.40
8032	0.847	0.853	0.849	1.340	1.14
8033	0.888	1.065	0.944	1.340	1.26
8034	2.009	1.426	1.825	1.340	2.45
8039	1.060	1.344	1.149	1.340	1.54
8044	1.739	1.853	1.775	1.340	2.38
8046	1.399	2.079	1.613	1.340	2.16
8048	1.566	1.507	1.547	1.340	2.07
8058	1.418	1.833	1.549	1.340	2.07
8103	1.904	1.810	1.874	1.340	2.51
8105	13.656	8.112	11.908	1.340	15.95
8106	2.774	3.318	2.945	1.340	3.95
8107	1.596	1.587	1.593	1.340	2.13
8111	1.704	1.971	1.788	1.340	2.40
8203	3.413	3.012	3.286	1.340	4.40
8204	2.929	2.907	2.922	1.340	3.91
8215	1.905	2.033	1.945	1.340	2.61
8227	1.199	1.530	1.295	3.996	5.17
8232	3.092	3.049	3.078	1.340	4.12
8233	3.509	3.808	3.603	1.340	4.83
8235	2.653	2.879	2.724	1.340	3.65

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Section IX - Classification Pricing
Subsection I - Average Uncapped Rates
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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)		
8263	3.084	3.229	3.130	1.340	4.19
8264	3.017	2.976	3.004	1.340	4.02
8265	3.509	3.808	3.603	1.340	4.83
8279	2.090	3.110	2.411	1.340	3.23
8291	2.420	3.394	2.727	1.340	3.65
8292	2.246	2.285	2.258	1.340	3.03
8293	4.190	4.638	4.331	1.340	5.80
8350	4.821	4.033	4.573	1.340	6.13
8380	1.626	1.584	1.613	1.340	2.16
8381	0.825	0.790	0.814	1.340	1.09
8385	2.457	2.416	2.444	1.340	3.27
8392	0.961	1.104	1.006	1.340	1.35
8393	0.901	0.762	0.857	1.340	1.15
8500	3.509	3.808	3.603	1.340	4.83
8601	1.634	1.618	1.629	0.113	0.18
8710	1.656	1.335	1.555	1.340	2.08
8719	1.656	1.335	1.555	1.340	2.08
8720	0.536	0.538	0.536	1.340	0.72
8721	1.374	1.388	1.379	0.113	0.16
8742	0.752	0.894	0.798	0.113	0.09
8745	3.310	3.596	3.400	1.340	4.55
8747	0.545	0.361	0.487	1.340	0.65
8748	4.497	3.704	4.239	0.113	0.48
8800	7.551	6.980	7.365	0.113	0.83
8803	0.339	0.307	0.328	0.113	0.04
8810	0.410	0.450	0.423	0.113	0.05
8820	0.436	0.441	0.438	0.113	0.05
8824	1.423	1.315	1.389	1.340	1.86
8826	1.002	1.062	1.021	1.340	1.37
8829	1.840	1.399	1.701	1.340	2.28
8831	0.420	1.083	0.629	1.340	0.84
8832	2.176	1.905	2.088	0.113	0.24
8833	9.695	7.220	8.888	0.113	1.00
8835	1.178	0.912	1.094	1.340	1.47
8868	5.855	6.084	5.929	0.113	0.67
8901	0.410	0.450	0.423	0.113	0.05
9014	1.318	1.366	1.333	1.340	1.79
9015	1.953	1.782	1.899	1.340	2.54
9016	0.830	1.232	0.957	1.340	1.28
9019	0.573	0.640	0.593	4.360	2.59
9033	1.766	1.510	1.685	1.340	2.26
9040	1.926	1.825	1.894	1.340	2.54

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Section IX - Classification Pricing
Subsection I - Average Uncapped Rates
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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)		
9052	1.010	0.984	1.002	1.340	1.34
9058	0.980	1.005	0.988	1.340	1.32
9060	0.591	0.792	0.655	1.340	0.88
9061	0.625	0.588	0.614	1.340	0.82
9063	0.328	0.508	0.385	1.340	0.52
9079	0.577	0.677	0.609	1.340	0.82
9089	0.391	0.452	0.411	1.340	0.55
9093	0.538	0.752	0.605	1.340	0.81
9101	2.528	2.517	2.524	1.340	3.38
9102	0.472	0.590	0.507	4.360	2.21
9154	0.357	0.420	0.376	4.360	1.64
9156	12.848	17.087	14.230	0.113	1.61
9178	1.224	5.684	2.555	4.360	11.14
9179	6.187	16.702	9.326	4.360	40.67
9180	0.706	1.224	0.861	4.360	3.75
9182	0.450	0.786	0.550	4.360	2.40
9186	0.706	1.224	0.861	4.360	3.75
9220	2.470	2.250	2.401	1.340	3.22
9402	0.856	0.848	0.853	4.360	3.72
9403	2.577	2.448	2.538	4.360	11.07
9410	2.288	2.549	2.370	1.340	3.18
9501	1.164	1.115	1.149	1.580	1.82
9505	1.164	1.115	1.149	1.580	1.82
9519	1.727	1.274	1.584	1.340	2.12
9521	1.950	2.124	2.004	1.580	3.17
9522	1.063	0.839	0.994	1.580	1.57
9533	4.356	3.451	4.093	3.996	16.35
9534	1.283	1.172	1.250	3.996	5.00
9549	0.889	0.674	0.827	3.996	3.30
9552	1.173	1.331	1.219	3.996	4.87
9586	0.210	0.190	0.204	1.340	0.27
9620	0.477	0.547	0.499	1.340	0.67

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
7/1/2023

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	2.21	2.26	2.26
0008	2.16	2.06	2.07
0016	3.12	2.98	2.98
0034	2.69	2.29	2.30
0035	1.48	1.40	1.41
0036	2.69	2.29	2.30
0042	3.01	3.02	3.03
0046	2.13	2.74	2.46
0050	3.86	4.14	4.13
0079	2.10	2.33	2.33
0083	3.22	2.90	2.91
0106	8.75	7.89	7.90
0113	2.69	2.29	2.30
0170	2.69	2.29	2.30
0908	76.14	80.31	80.45
0909	169.82	216.86	196.52
0912	339.64	433.72	393.04
0913	152.27	160.62	160.89
0917	2.11	2.00	2.00
0918	0.39	0.37	0.37
1430	4.51	3.06	3.43
1438	2.98	3.03	3.05
1463	10.87	10.44	10.52
1624	3.50	3.90	3.91
1655	2.29	2.44	2.45
1701	2.02	3.69	2.35
1710	3.50	3.90	3.91
1747	2.40	1.94	1.95
1748	2.90	3.18	3.20
1853	1.15	1.08	1.09
1924	2.00	2.80	2.33
1925	5.80	5.14	5.17
2003	3.27	2.98	3.00
2014	3.53	3.34	3.37
2021	2.34	2.49	2.51
2039	3.34	3.75	3.78
2041	2.07	2.07	2.09
2070	2.98	3.02	3.04
2081	2.38	2.81	2.76
2089	2.37	2.29	2.31
2095	2.45	2.58	2.59
2101	2.37	2.29	2.31
2111	1.95	1.92	1.94
2114	2.37	2.29	2.31
2115	5.08	4.97	5.01
2121	1.29	1.21	1.22
2130	1.32	1.36	1.37
2131	2.70	2.69	2.71

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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)
2143	2.17	1.76	1.77
2150	3.34	3.19	3.21
2156	3.54	2.81	2.83
2157	3.75	3.60	3.63
2172	1.56	1.48	1.49
2211	5.10	4.74	4.77
2220	2.22	2.79	2.57
2260	4.61	4.31	4.34
2288	3.38	3.35	3.38
2305	2.76	2.10	2.12
2362	1.60	1.87	1.86
2380	1.74	1.44	1.45
2402	2.00	1.85	1.87
2413	3.05	2.43	2.44
2416	2.04	2.66	2.37
2417	1.86	1.30	1.41
2501	1.94	1.93	1.94
2503	0.97	0.90	0.91
2570	3.81	2.82	2.90
2576	1.92	1.77	1.78
2585	2.47	2.60	2.62
2586	1.90	1.93	1.94
2587	2.21	1.84	1.84
2623	4.25	3.70	3.72
2651	1.39	1.14	1.15
2660	1.86	1.66	1.67
2683	1.98	1.79	1.80
2688	1.59	1.76	1.77
2702	11.86	16.57	14.70
2710	5.61	5.23	5.27
2731	2.58	2.54	2.56
2747	4.88	4.69	4.73
2790	1.64	1.90	1.90
2802	3.28	3.10	3.12
2835	1.46	1.78	1.70
2836	2.03	2.20	2.22
2841	3.32	2.71	2.74
2883	2.91	2.58	2.60
2923	1.32	1.04	1.04
2942	1.47	1.35	1.36
3018	2.18	2.10	2.12
3022	3.04	2.94	2.97
3027	3.49	1.87	2.65
3028	2.38	2.61	2.63
3030	4.89	4.35	4.38
3040	4.61	5.06	5.10
3041	2.45	2.30	2.32
3042	3.87	2.67	2.94

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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)
3066	2.10	2.04	2.06
3076	1.96	2.42	2.28
3081	4.29	3.53	3.56
3082	4.29	3.53	3.56
3085	4.17	3.60	3.62
3110	7.80	6.13	6.18
3111	1.84	2.02	2.03
3113	1.52	1.48	1.49
3114	2.55	2.23	2.24
3118	1.43	1.17	1.18
3119	0.75	0.84	0.84
3120	1.10	1.04	1.05
3122	2.01	1.83	1.84
3127	1.19	1.85	1.38
3131	1.15	1.19	1.20
3132	2.10	1.78	1.79
3145	1.44	1.21	1.22
3146	1.89	1.71	1.72
3169	2.33	1.91	1.92
3179	0.98	0.95	0.95
3180	2.19	2.04	2.06
3188	2.12	1.77	1.78
3200	1.92	1.99	2.00
3220	2.58	1.90	1.97
3255	1.69	1.74	1.75
3257	2.17	2.13	2.14
3270	1.94	1.55	1.56
3300	2.82	3.00	3.02
3315	2.63	2.57	2.59
3336	2.49	2.04	2.06
3365	4.21	3.84	3.83
3372	1.86	1.93	1.95
3373	3.24	3.23	3.25
3381	1.66	1.49	1.50
3383	1.36	1.16	1.17
3385	0.67	0.77	0.78
3400	2.33	1.91	1.92
3507	2.44	2.33	2.35
3515	2.38	2.10	2.12
3558	0.67	0.61	0.62
3571	0.59	0.52	0.53
3574	1.47	1.39	1.40
3612	1.15	1.18	1.19
3620	3.22	2.75	2.77
3629	1.47	1.39	1.40
3632	1.47	1.39	1.40
3634	1.31	1.52	1.52
3635	2.39	1.78	1.82

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Section IX - Classification Pricing
Subsection J - Average Rates and Proposed Premium Change
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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)
3638	1.47	1.39	1.40
3642	0.91	1.08	1.06
3643	1.38	1.57	1.58
3647	2.07	1.90	1.92
3648	1.05	0.91	0.92
3681	0.55	0.51	0.51
3685	0.52	0.42	0.43
3724	4.08	3.70	3.70
3726	5.51	3.01	4.08
3807	2.33	1.91	1.92
3808	2.93	2.75	2.77
3821	4.43	4.34	4.34
3826	3.90	3.06	3.09
3830	1.47	1.39	1.40
3841	1.36	1.65	1.58
4000	5.14	5.26	5.27
4021	2.91	2.69	2.71
4024	3.22	3.13	3.15
4034	5.35	6.13	6.17
4036	1.68	1.56	1.57
4038	2.46	2.04	2.06
4053	2.16	2.62	2.51
4062	1.72	1.90	1.91
4112	0.34	0.27	0.28
4113	2.16	2.62	2.51
4114	2.45	2.85	2.84
4130	2.89	4.03	3.36
4133	1.40	1.68	1.63
4150	0.72	0.62	0.63
4239	2.05	2.46	2.37
4243	2.41	2.26	2.27
4244	2.49	2.73	2.75
4250	1.70	2.13	1.98
4251	1.96	2.47	2.27
4273	2.76	2.50	2.52
4279	2.01	2.17	2.19
4283	1.41	1.88	1.64
4299	1.57	1.50	1.51
4304	4.03	5.21	4.68
4307	1.44	1.20	1.21
4308	1.60	1.82	1.84
4351	0.79	0.83	0.84
4352	1.05	0.89	0.89
4360	0.54	0.53	0.53
4361	0.54	0.48	0.48
4362	0.44	0.40	0.40
4410	2.80	2.39	2.41
4432	0.62	0.70	0.71

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Section IX - Classification Pricing
Subsection J - Average Rates and Proposed Premium Change
7/1/2023

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)
4439	4.11	4.64	4.68
4452	2.36	2.64	2.66
4459	2.58	2.21	2.22
4470	1.78	1.59	1.60
4484	1.84	1.92	1.93
4493	1.71	1.80	1.82
4511	0.28	0.26	0.26
4512	0.08	0.07	0.07
4557	1.62	1.68	1.69
4558	1.40	1.89	1.62
4583	2.27	2.35	2.37
4611	0.75	0.69	0.70
4635	4.43	4.16	4.19
4653	1.69	1.81	1.83
4665	8.54	8.86	8.93
4692	0.46	0.45	0.45
4693	0.72	0.68	0.69
4720	1.45	1.54	1.55
4740	0.78	0.64	0.65
4741	2.08	3.05	2.41
4771	4.47	1.85	3.40
4777	2.27	2.35	2.37
4825	0.38	0.32	0.32
4828	0.80	0.87	0.88
4829	0.80	0.87	0.88
4902	1.47	1.35	1.36
4923	0.54	0.53	0.53
5020	3.87	3.88	3.87
5022	9.20	7.67	7.66
5037	14.23	10.44	10.55
5040	19.11	19.68	19.65
5057	18.56	15.75	15.73
5059	19.93	22.24	22.21
5102	5.75	5.58	5.57
5146	6.17	5.65	5.64
5160	2.50	3.16	2.85
5183	2.86	2.90	2.89
5188	3.55	3.21	3.20
5190	2.18	1.99	1.99
5191	0.70	0.62	0.62
5192	2.50	2.43	2.43
5213	10.36	7.01	7.68
5215	3.86	4.57	4.40
5221	6.03	5.82	5.81
5222	8.37	7.37	7.36
5223	3.73	3.15	3.15
5348	4.24	3.75	3.74
5402	6.00	4.90	4.89

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Section IX - Classification Pricing
Subsection J - Average Rates and Proposed Premium Change
7/1/2023

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)
5403	8.22	7.31	7.30
5437	3.40	3.03	3.02
5443	3.26	2.56	2.55
5445	5.84	5.10	5.10
5462	5.07	5.18	5.17
5472	7.07	7.19	7.18
5473	8.24	9.35	9.34
5474	3.71	3.97	3.96
5478	3.21	3.71	3.67
5479	5.01	4.59	4.58
5480	4.24	3.80	3.79
5506	4.76	4.55	4.55
5507	5.02	4.14	4.13
5508	3.86	4.14	4.13
5509	4.56	5.25	5.21
5538	3.79	3.36	3.35
5545	41.47	41.61	41.54
5547	10.13	9.28	9.27
5606	1.17	1.06	1.06
5610	4.19	5.15	4.78
5645	6.13	5.82	5.81
5701	18.62	13.70	13.80
5703	10.23	7.66	7.65
5705	8.60	8.95	8.93
6003	6.99	5.40	5.39
6005	3.86	4.14	4.13
6204	4.83	5.08	5.07
6217	4.01	3.81	3.81
6229	3.55	3.85	3.84
6233	1.94	1.73	1.73
6251	3.97	3.68	3.68
6252	5.42	3.30	4.02
6306	7.38	8.10	8.09
6319	2.52	2.16	2.16
6325	2.36	2.38	2.38
6400	4.40	4.03	4.02
6504	2.37	2.29	2.31
6834	2.01	2.10	2.10
6836	2.84	2.46	2.47
7219	6.96	6.62	6.62
7230	7.95	8.25	8.26
7231	10.64	10.10	10.12
7360	3.87	4.11	4.11
7370	3.50	4.14	4.15
7380	5.48	5.93	5.94
7382	3.46	3.25	3.25
7403	3.20	2.76	2.76
7405	1.07	1.22	1.22

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Section IX - Classification Pricing
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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)
7420	7.97	24.59	9.89
7421	1.00	0.94	0.94
7422	1.00	0.94	0.94
7425	2.41	2.60	2.61
7431	1.00	0.94	0.94
7502	1.54	1.81	1.82
7515	2.86	2.12	2.40
7520	2.68	2.85	2.85
7538	5.16	2.89	3.83
7539	1.26	1.26	1.26
7580	3.09	2.76	2.77
7590	4.38	6.43	5.43
7600	3.40	4.03	4.04
7601	4.76	2.96	3.53
7610	0.30	0.44	0.34
7704	3.03	3.75	3.76
7720	1.36	1.43	1.43
7855	2.96	3.64	3.37
8001	1.51	1.56	1.57
8002	1.69	1.64	1.64
8006	1.08	0.90	0.90
8008	0.71	0.65	0.65
8010	1.50	1.28	1.28
8013	0.33	0.29	0.29
8017	0.89	0.88	0.89
8018	3.29	3.33	3.34
8021	3.10	3.06	3.06
8031	1.51	1.40	1.40
8032	1.18	1.14	1.14
8033	1.30	1.26	1.27
8034	2.70	2.45	2.45
8039	1.21	1.54	1.40
8044	2.49	2.38	2.38
8046	2.02	2.16	2.17
8048	2.21	2.07	2.08
8058	2.07	2.07	2.08
8103	2.41	2.51	2.52
8105	6.89	15.95	7.97
8106	4.69	3.95	3.95
8107	2.75	2.13	2.14
8111	2.46	2.40	2.40
8203	5.56	4.40	4.41
8204	5.62	3.91	4.25
8215	2.91	2.61	2.61
8227	4.69	5.17	5.17
8232	4.99	4.12	4.13
8233	5.01	4.83	4.84
8235	3.68	3.65	3.66

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Section IX - Classification Pricing
Subsection J - Average Rates and Proposed Premium Change
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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)
8263	4.55	4.19	4.20
8264	4.51	4.02	4.03
8265	5.01	4.83	4.84
8279	3.41	3.23	3.24
8291	3.11	3.65	3.60
8292	3.05	3.03	3.03
8293	6.96	5.80	5.81
8350	6.15	6.13	6.14
8380	2.35	2.16	2.16
8381	1.53	1.09	1.16
8385	3.15	3.27	3.28
8392	1.51	1.35	1.35
8393	1.12	1.15	1.15
8500	5.01	4.83	4.84
8601	0.18	0.18	0.18
8710	2.49	2.08	2.09
8719	2.49	2.08	2.09
8720	0.76	0.72	0.72
8721	0.21	0.16	0.16
8742	0.09	0.09	0.09
8745	5.57	4.55	4.56
8747	0.65	0.65	0.65
8748	0.61	0.48	0.48
8800	0.91	0.83	0.83
8803	0.04	0.04	0.04
8810	0.06	0.05	0.05
8820	0.06	0.05	0.05
8824	1.86	1.86	1.86
8826	1.40	1.37	1.37
8829	2.14	2.28	2.28
8831	0.95	0.84	0.84
8832	0.25	0.24	0.24
8833	0.99	1.00	1.01
8835	1.61	1.47	1.47
8868	0.67	0.67	0.67
8901	0.06	0.05	0.05
9014	1.87	1.79	1.79
9015	2.71	2.54	2.55
9016	1.58	1.28	1.28
9019	2.49	2.59	2.59
9033	2.18	2.26	2.26
9040	2.81	2.54	2.54
9052	1.33	1.34	1.34
9058	1.33	1.32	1.33
9060	0.92	0.88	0.88
9061	0.92	0.82	0.82
9063	0.55	0.52	0.52
9079	0.90	0.82	0.82

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Section IX - Classification Pricing
Subsection J - Average Rates and Proposed Premium Change
7/1/2023

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)
9089	0.65	0.55	0.55
9093	1.00	0.81	0.81
9101	3.39	3.38	3.39
9102	1.88	2.21	2.22
9154	1.42	1.64	1.64
9156	1.75	1.61	1.61
9178	12.25	11.14	11.16
9179	35.67	40.67	40.72
9180	4.14	3.75	3.76
9182	2.68	2.40	2.40
9186	4.14	3.75	3.76
9220	3.27	3.22	3.22
9402	3.58	3.72	3.73
9403	8.99	11.07	11.08
9410	3.26	3.18	3.18
9501	1.85	1.82	1.83
9505	1.85	1.82	1.83
9519	2.28	2.12	2.13
9521	2.71	3.17	3.15
9522	1.45	1.57	1.58
9533	13.81	16.35	15.76
9534	4.90	5.00	4.99
9549	3.66	3.30	3.30
9552	6.38	4.87	4.86
9586	0.29	0.27	0.27
9620	0.67	0.67	0.67

Notes:

(2) = (4) from Section IX - J, Exhibit 1 of the 7/1/2022 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
Subsection J - Average Rates and Proposed Premium Change
7/1/2023

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	562,569,564	540,492,162	-3.9%	-3.9%	1.592
Construction	1,783,088,781	1,678,317,284	-5.9%	-5.9%	3.990
Office & Clerical	574,543,933	534,644,720	-6.9%	-6.9%	0.113
Goods & Services	1,498,120,560	1,434,030,635	-4.3%	-4.3%	1.342
Miscellaneous	678,052,868	705,035,646	4.0%	4.0%	4.366
All Groups	5,096,375,706	4,892,520,447	-4.0%		

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
7/1/2023

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 =	1.055	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)
2016	66	Non Rated	100,811	44%	22,949,294	2%	22,942,833	1.000	
		Merit Rated	80,562	35%	157,240,875	13%	153,719,696	0.978	
		Intrastate Rated	23,432	10%	528,276,382	44%	528,014,888	1.000	
		Interstate Rated	23,394	10%	492,982,811	41%	453,866,701	0.921	
		Total	228,199	100%	1,201,449,362	100%	1,158,544,118	0.964	
2017	54	Non Rated	99,072	43%	23,303,246	2%	23,296,347	1.000	
		Merit Rated	79,701	35%	157,888,883	12%	154,354,600	0.978	
		Intrastate Rated	24,389	11%	561,058,894	44%	560,003,779	0.998	
		Interstate Rated	24,994	11%	537,978,516	42%	494,296,048	0.919	
		Total	228,156	100%	1,280,229,539	100%	1,231,950,774	0.962	
2018	42	Non Rated	102,500	44%	23,891,142	2%	23,884,610	1.000	
		Merit Rated	80,209	35%	158,072,049	13%	154,667,585	0.978	
		Intrastate Rated	24,340	10%	553,691,497	44%	553,312,120	0.999	
		Interstate Rated	24,959	11%	520,155,649	41%	481,568,874	0.926	
		Total	232,008	100%	1,255,810,337	100%	1,213,433,189	0.966	
2019	30	Non Rated	114,690	47%	26,085,719	2%	26,082,130	1.000	
		Merit Rated	80,634	33%	156,786,645	13%	153,512,584	0.979	
		Intrastate Rated	23,134	9%	522,395,202	43%	526,481,560	1.008	
		Interstate Rated	25,354	10%	503,477,016	42%	466,195,035	0.926	
		Total	243,812	100%	1,208,744,582	100%	1,172,271,309	0.970	
2020	18	Non Rated	119,285	48%	27,099,695	2%	27,093,436	1.000	
		Merit Rated	77,921	32%	151,720,244	13%	148,536,507	0.979	
		Intrastate Rated	22,526	9%	524,100,399	44%	525,657,359	1.003	
		Interstate Rated	27,133	11%	485,247,600	41%	456,132,331	0.940	
		Total	246,865	100%	1,188,167,938	100%	1,157,419,633	0.974	
Total		Non Rated	536,358	45%	123,329,096	2%	123,299,356	1.000	1.000
		Merit Rated	399,027	34%	781,708,696	13%	764,790,972	0.978	0.978
		Intrastate Rated	117,821	10%	2,689,522,374	44%	2,693,469,706	1.001	1.000
		Interstate Rated	125,834	11%	2,539,841,592	41%	2,352,058,989	0.926	1.000
		Total	1,179,040	100%	6,134,401,758	100%	5,933,619,023	0.967	0.997

Notes:

Unit Statistical Data, excluding Large Deductibles and SIGs.

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
 7/1/2023

Section IX - K
 Exhibit 3

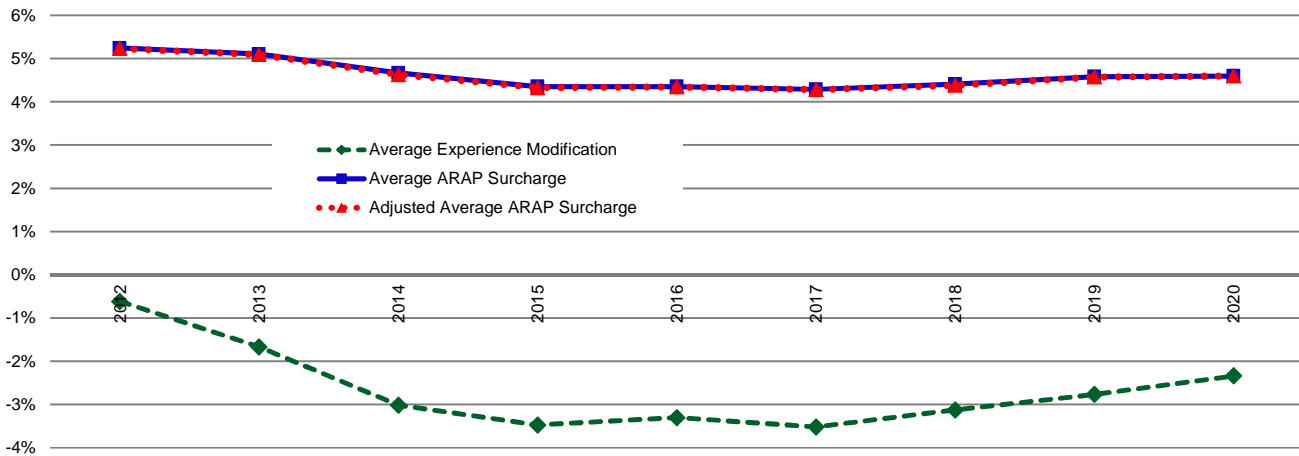
Offset for ARAP Estimate of Average ARAP Surcharge for Prospective Effective Period

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)
2012	943,287,347	937,486,005	49,160,747	49,039,380	5.2%	-0.6%	5.2%
2013	1,001,355,446	984,646,228	50,229,243	50,124,218	5.1%	-1.7%	5.1%
2014	1,075,349,858	1,042,954,084	48,662,995	48,285,459	4.7%	-3.0%	4.6%
2015	1,150,632,554	1,110,650,727	48,332,648	48,057,943	4.4%	-3.5%	4.3%
2016	1,198,097,609	1,158,544,118	50,437,471	50,311,555	4.4%	-3.3%	4.3%
2017	1,276,853,042	1,231,950,774	52,810,149	52,735,191	4.3%	-3.5%	4.3%
2018	1,252,556,201	1,213,433,189	53,492,392	53,171,925	4.4%	-3.1%	4.4%
2019	1,205,609,730	1,172,271,309	53,702,936	53,610,836	4.6%	-2.8%	4.6%
2020	1,185,127,097	1,157,419,633	53,189,600	53,180,731	4.6%	-2.3%	4.6%

Regression of Average ARAP Surcharge on Average Experience Modification

(9) R-Squared	0.915
(10) Slope	0.337
(11) Intercept	0.055
(12) Projected Average ARAP Surcharge = (11)	0.055



Notes:

- (2) - (4): Unit Statistical Data, excluding Large Deductibles and SIGs. 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
7/1/2023

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)
2019	429,521,402	16,511,380	3.8%
2020	431,182,401	16,143,456	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 and SIGs.

(4) = (3) / (2)

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Section IX - Classification Pricing
Subsection K - Adjustments to Derive Final Manual Rates
7/1/2023

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 7/1/22 and ending 6/30/23, absent insolvency loads	1,429,003,545
(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	1.033
(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	1,382,135,696
(9)	Indicated Loading for Recoupment of Insolvency Fund Assessments	0.00%

Notes:

(1): Page 2.

(2): When insolvency fund loading in 7/1/2022 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 7/1/2022 rates were in effect beyond 6/30/2023.

(3) = (1) x (2)

(4): 3.3% 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 2022.

(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
7/1/2023

Section IX - K
Exhibit 5
Page 2

Expected Workers' Compensation Written Premium in Prospective Effective Period

(1)	2021 Calendar Year Written Premium, absent insolvency loads	1,452,816,123
(2)	Estimated Exposure Growth Factor from Calendar Year 2021 to Policy Period ending 6/30/23	1.019
(3)	Rate Change from Calendar Year 2021 Written to the Policy Period ending 6/30/23	-3.46%
(4)	Estimated Written Premium for the Policy Period ending 6/30/23, absent Insolvency Loads = (1) x (2) x [1.0 + (3)]	1,429,003,545
(5)	Estimated Exposure Growth Factor from the Policy Period ending 6/30/23 to the Prospective Effective Period	1.008
(6)	Average Indicated Rate Change	-4.0%
(7)	Estimated Written Premium in Prospective Effective Period, absent insolvency loads = (4) x (5) x [1.0 + (6)]	1,382,135,696

Notes:

(1): Adjusted to remove any loading for recoupment of insolvency fund assessments.

(2): Assumes a 0.8% annual change (Section V-H, Exhibit 3) compounded for 2.5 years.

(3): Section I-A of 7/1/2022 Stipulation.

(5): Assumes a 0.8% annual change (from Section V-H, Exhibit 3) compounded for 1 year.

(6): Section I-A, Exhibit 1.

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Section IX - Classification Pricing
 Subsection L - Pricing Example
 7/1/2023

Section IX - L
 Exhibit 1
 Page 1

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	2016	0	0	0	0	0	0	427	0
	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	89,946	0	0	0
Medical	2016	0	0	0	0	0	0	749	2,254
	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	15,381	0	0	420

		(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	2016	0.860	0.834	0.874	0.918	0.890	0.850	0.824	0.000
	2017	0.857	0.830	0.869	0.909	0.880	0.848	0.821	0.000
	2018	0.931	0.906	0.943	0.982	0.956	0.923	0.898	0.000
	2019	1.186	1.133	1.199	1.245	1.189	1.177	1.124	0.000
	2020	1.888	1.615	1.905	1.968	1.684	1.875	1.605	0.000
Medical	2016	0.626	0.691	0.626	0.626	0.691	0.626	0.691	0.614
	2017	0.615	0.683	0.615	0.615	0.683	0.615	0.683	0.604
	2018	0.635	0.705	0.635	0.635	0.705	0.635	0.705	0.618
	2019	0.753	0.812	0.753	0.753	0.812	0.753	0.812	0.758
	2020	0.850	0.868	0.850	0.850	0.868	0.850	0.868	0.823

		(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	2016	0	0	0	0	0	0	352	0
	2017	0	0	0	0	0	0	869	0
	2018	0	0	0	0	0	0	23,186	0
	2019	0	0	0	0	0	0	0	0
	2020	0	0	0	0	151,510	0	0	0
Medical	2016	0	0	0	0	0	0	518	1,383
	2017	0	0	0	0	0	0	1,651	223
	2018	0	0	0	0	0	0	6,119	193
	2019	0	0	0	0	0	0	0	939
	2020	0	0	0	0	13,353	0	0	346

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Section IX - Classification Pricing
 Subsection L - Pricing Example
 7/1/2023

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	2016	0	0	0	0	0	0	53	0
	2017	0	0	0	0	0	0	131	0
	2018	0	0	0	0	0	0	3,495	0
	2019	0	0	0	0	0	0	0	0
	2020	0	0	0	0	22,840	0	0	0
Medical	2016	0	0	0	0	0	0	78	209
	2017	0	0	0	0	0	0	249	34
	2018	0	0	0	0	0	0	922	29
	2019	0	0	0	0	0	0	0	142
	2020	0	0	0	0	2,013	0	0	52

		(E). Adjusted Excess Losses							
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2016	0	0	0	0	0	0	37	0
	2017	0	0	0	0	0	0	92	0
	2018	0	0	0	0	0	0	2,447	0
	2019	0	0	0	0	0	0	0	0
	2020	0	0	0	0	15,988	0	0	0
Medical	2016	0	0	0	0	0	0	94	209
	2017	0	0	0	0	0	0	288	34
	2018	0	0	0	0	0	0	1,971	29
	2019	0	0	0	0	0	0	0	142
	2020	0	0	0	0	8,865	0	0	52

		(F). Secondary Conversion Factors				
		Fatal	Permanent Total	Permanent Partial	Temporary Total	Medical Only
Indemnity		0.822	0.724	1.273	1.295	0.000
Medical		1.183	0.723	1.272	1.293	1.183

		(G). Converted Unlimited Losses							
	Policy Year	Fatal		Permanent Total	Permanent Partial		Temporary Total		Medical Only
		LD	NLD		LD	NLD	LD	NLD	
Indemnity	2016	0	0	0	0	0	0	504	0
	2017	0	0	0	0	0	0	1,243	0
	2018	0	0	0	0	0	0	33,183	0
	2019	0	0	0	0	0	0	0	0
	2020	0	0	0	0	213,218	0	0	0
Medical	2016	0	0	0	0	0	0	791	1,883
	2017	0	0	0	0	0	0	2,508	303
	2018	0	0	0	0	0	0	10,462	263
	2019	0	0	0	0	0	0	0	1,278
	2020	0	0	0	0	28,251	0	0	471

		(H). Total				
Policy Year	Exposure	Indemnity			Medical	
		LD	NLD	LD	NLD	
2016	37,929	0	504	0	2,674	
2017	52,045	0	1,243	0	2,811	
2018	53,397	0	33,183	0	10,724	
2019	48,778	0	0	0	1,278	
2020	45,692	0	213,218	0	28,722	
Total	237,841	0	248,149	0	46,209	

	Indemnity	Medical
(I). Indicated Pure Premium	1.043	0.194
(J). Manufacturing Industry Group Pure Premium	0.901	0.404
(K). MA Indicated Relativity	1.158	0.481

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	0	13,112	0	28,110	0	1	11,286,751
Arkansas	3	16,180	56,671	46,496	181,790	3	15	65,346,396
Colorado	5	0	2,315	0	10,000	0	1	4,764,268
Connecticut	6	0	0	0	0	0	0	234,537
D.C.	8	0	0	0	0	0	0	0
Florida	9	0	0	0	5,339	0	0	5,273,738
Georgia	10	0	7,537	0	1,765	0	1	3,526,394
Idaho	11	0	1,875	0	9,036	0	1	1,045,395
Illinois	12	19,263	173,242	26,395	324,449	3	13	20,158,213
Indiana	13	0	50,302	0	54,745	0	2	786,044
Iowa	14	0	0	0	0	0	0	755,663
Kansas	15	0	0	0	0	0	0	0
Kentucky	16	0	0	0	0	0	0	321,119
Louisiana	17	0	2,085	0	1,737	0	1	82,678
Maine	18	549,594	1,120,698	261,253	1,465,653	7	59	136,074,818
Maryland	19	0	0	0	0	0	0	425,758
Michigan	21	0	8,018	0	88,456	0	2	36,724,183
Minnesota	22	0	1,175	0	30,139	0	2	6,949,317
Mississippi	23	0	0	0	0	0	0	815,449
Missouri	24	107,270	240,218	213,504	454,516	7	24	78,307,171
Montana	25	0	24,804	0	14,858	0	1	714,320
Nebraska	26	0	0	0	0	0	0	840,819
Nevada	27	0	0	0	0	0	0	340,113
New Hampshire	28	0	0	0	309	0	0	1,379,760
New Mexico	30	0	0	0	0	0	0	0
North Carolina	32	45,518	67,668	104,589	91,966	1	7	21,062,636
Oklahoma	35	0	0	0	0	0	0	31,403
Oregon	36	44,646	299,041	27,795	391,445	1	38	109,018,860
Rhode Island	38	0	0	0	482	0	0	150,405
South Carolina	39	0	0	0	995	0	0	234,847
South Dakota	40	0	0	0	0	0	0	0
Tennessee	41	0	12,477	0	53,266	0	3	24,121,782
Utah	43	0	1,615	0	23,697	0	1	5,489,401
Vermont	44	0	0	0	0	0	0	0
Virginia	45	0	1,101	0	17,601	0	2	6,148,439
West Virginia	47	0	0	0	0	0	0	892,632
Wisconsin	48	13,894	157,088	6,048	933,099	1	26	68,152,416
Hawaii	52	0	43	0	333	0	1	2,904,881
Alaska	54	0	0	0	0	0	0	0
Total		796,365	2,241,085	686,080	4,183,786	23	201	614,360,606

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	3.278	0.572	0.000	0.000	
Arizona	2	4.233	0.598	0.492	0.149	
Arkansas	3	3.244	0.945	0.362	0.330	
Colorado	5	1.927	0.588	0.094	0.123	
Connecticut	6	1.096	0.494	0.000	0.000	
D.C.	8	0.500	0.217	0.000	0.000	
Florida	9	2.095	0.473	0.000	0.048	
Georgia	10	1.697	0.765	0.363	0.038	
Idaho	11	1.619	0.445	0.290	0.384	
Illinois	12	1.148	0.457	1.096	0.796	
Indiana	13	4.050	0.641	25.914	4.462	
Iowa	14	1.579	0.374	0.000	0.000	
Kansas	15	2.538	0.540	0.000	0.000	
Kentucky	16	2.316	0.963	0.000	0.000	
Louisiana	17	2.004	0.556	5.054	1.168	
Maine	18	1.257	0.457	1.543	0.579	
Maryland	19	1.994	0.952	0.000	0.000	
Michigan	21	3.052	0.940	0.067	0.226	
Minnesota	22	1.645	0.703	0.028	0.305	
Mississippi	23	1.644	0.530	0.000	0.000	
Missouri	24	1.509	0.455	0.670	0.388	
Montana	25	1.341	0.392	4.655	0.815	
Nebraska	26	1.674	0.445	0.000	0.000	
Nevada	27	0.704	0.434	0.000	0.000	
New Hampshire	28	1.880	0.416	0.000	0.009	
New Mexico	30	1.344	0.359	0.000	0.000	
North Carolina	32	1.980	1.019	1.064	0.951	
Oklahoma	35	1.528	0.616	0.000	0.000	
Oregon	36	2.260	0.807	0.713	0.310	
Rhode Island	38	0.734	0.818	0.000	0.262	
South Carolina	39	1.015	0.595	0.000	0.252	
South Dakota	40	2.906	0.422	0.000	0.000	
Tennessee	41	2.877	0.720	0.149	0.159	
Utah	43	6.370	0.988	0.187	0.426	
Vermont	44	1.293	0.530	0.000	0.000	
Virginia	45	2.135	0.772	0.038	0.221	
West Virginia	47	3.035	0.912	0.000	0.000	
Wisconsin	48	2.233	0.402	0.560	0.554	
Hawaii	52	0.680	0.232	0.001	0.003	
Alaska	54	1.944	0.359	0.000	0.000	
(8)	Average of (5), (6) weighted by Payroll from Page 1, respectively			0.790	0.429	1.220
(9)	CW Manufacturing Pure Premium			0.804	0.358	1.161
(10)	CW Relativity = (8) / (9)			0.983	1.201	1.050
(11)	CW Relativity, balanced to unity			0.972	1.187	

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 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 Manufacturing Exposure
- (11): Relativities balanced to unity (weighted by MA exposure) over Manufacturing Industry Group.

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Section IX - Classification Pricing
 Subsection L - Pricing Example
 7/1/2023

Section IX - L
 Exhibit 3

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
1.158	0.481
0.972	1.187
1.083	1.214

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)]^{0.4}}

Injury Type	
Indemnity	Medical
1.066	1.192
0.818	0.408
0.872	0.486
207,322	115,697
29,750,000	5,600,000
14%	21%

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)]^{0.4}, 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
224	224
1,150	1,000
43%	40%
43%	39%
1.046	1.049
0.998	0.995

- (16) Balanced Formula Relativity

Injury Type		
Indemnity	Medical	Total
1.048	1.054	1.050

Notes:

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

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Section IX - Classification Pricing
Subsection L - Pricing Example
7/1/2023

Section IX - L
Exhibit 4

Pricing Example for Class 2660 Boot Or Shoe Mfg Noc

Calculation of Proposed Average Rate and Proposed Manual Rate:

(1) Total Balanced Formula Relativity	1.050
(2) Capped Rate Level Factor	1.592
(3) Proposed Average Capped Rate = (1) x (2)	1.67
(4) Offset for Merit Rating	0.997
(5) Offset for ARAP	1.055
(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) x (5) x (6)]} x {1.000 / [1.000 - (7)]}	1.59
(9) Minimum Premium	215
(10) Loss Constant	0
(11) Expected Loss Rate	0.80
(12) D-Ratio	0.17

Notes:

(1): Exhibit 3.

(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) x 35.0] + (10) + Expense Constant} subject to a maximum of \$500

Where Expense Constant = 159 if (8) x 35 + (10) < 200

= 250 if (8) x 35 + (10) >= 200 and < 1000.

= 338 if (8) x 35 + (10) >= 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.

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 in the derivation of 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-D.

Expected Losses for an 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-D. 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 Section X-A) for the hazard group containing the classification. We use 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, multiplication of 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-D.

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The procedure used here for the calculation of D-Ratios is the same general methodology as 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 (Section X-B). The loss data is taken from Unit Statistical Plan Data for three policy years (consistent with the data used elsewhere in this filing), and is 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.

We calculate final D-Ratios by class as a weighted average 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. D_i and D_m represent the associated partial D-Ratios. The resulting D-Ratios by classification are shown in Section X-D.

Section X-C – Expected Loss Rates for F-Class

The calculations for F-Class rates differ from the state classifications because F-Classes are subject to different benefit provisions than the state classifications. Changes in F-Class rates include a separate calculation for the Ratio of Experience Rating ELR to Average Rate, shown in Section X-C, by excluding the loss based assessment from the

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Section X – Experience Rating
Subsection A - Summary
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Section X - A
Page 4

federal indemnity losses. Additionally, the law factors and loss development factors are weighted by losses to reflect that F-Class benefits can be paid either under state or federal laws. The remaining calculations mirror the calculations for the state classifications from Section X-A.

Section X-D – Manual Pages

Section X-D 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 or Table of Ballast Values. The Table of Weighting Values manual page is included to show the proposed USL&HW Act-Expected Loss Factor that was calculated in Section VIII-J.

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 7/1/2021 to 6/30/2022	A	0.624	0.021	1.017	0.929	1.524	1.009	1.059	0.397
	B	0.624	0.034	1.017	0.929	1.551	1.013	1.060	0.383
	C	0.624	0.063	1.017	0.929	1.564	1.014	1.047	0.373
	D	0.624	0.078	1.017	0.929	1.556	1.010	1.061	0.365
	E	0.624	0.087	1.017	0.929	1.567	1.014	1.042	0.364
	F	0.624	0.128	1.017	0.929	1.563	1.009	1.009	0.362
	G	0.624	0.148	1.017	0.929	1.566	1.010	0.984	0.362
2nd Report 7/1/2020 to 6/30/2021	A	0.624	0.034	1.037	0.895	1.179	1.009	1.059	0.516
	B	0.624	0.055	1.037	0.895	1.200	1.013	1.060	0.493
	C	0.624	0.103	1.037	0.895	1.210	1.014	1.047	0.470
	D	0.624	0.126	1.037	0.895	1.203	1.010	1.061	0.456
	E	0.624	0.140	1.037	0.895	1.212	1.014	1.042	0.451
	F	0.624	0.208	1.037	0.895	1.209	1.009	1.009	0.433
	G	0.624	0.239	1.037	0.895	1.211	1.010	0.984	0.425
3rd Report 7/1/2019 to 6/30/2020	A	0.624	0.034	1.050	0.862	1.062	1.009	1.059	0.587
	B	0.624	0.054	1.050	0.862	1.081	1.013	1.060	0.562
	C	0.624	0.102	1.050	0.862	1.090	1.014	1.047	0.535
	D	0.624	0.124	1.050	0.862	1.084	1.010	1.061	0.519
	E	0.624	0.139	1.050	0.862	1.092	1.014	1.042	0.514
	F	0.624	0.205	1.050	0.862	1.089	1.009	1.009	0.494
	G	0.624	0.236	1.050	0.862	1.091	1.010	0.984	0.485
1st - 3rd Report Average	A								0.500
	B								0.479
	C								0.459
	D								0.447
	E								0.443
	F								0.429
	G								0.424

Notes:

- (1): Unit Stat Reports 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, (7).
- (10) = { (3) x [1.0 - (4)] } / [(5) x (6) x (7) x (8) x (9)]

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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	61,090,364	2,663,085	0.044	78,403,193	0.044	0.35	0.25
B	233,530,374	8,418,848	0.036	286,886,818	0.036	0.29	0.40
C	455,350,956	43,078,790	0.095	571,854,807	0.095	0.75	0.75
D	219,898,127	25,447,469	0.116	285,851,764	0.116	0.92	0.92
E	311,544,575	40,262,590	0.129	429,807,299	0.129	1.03	1.03
F	418,184,792	80,019,606	0.191	569,725,511	0.191	1.52	1.52
G	78,585,661	19,618,934	0.250	110,965,671	0.250	1.99	1.75
Total	1,778,184,848	219,509,322	0.123	2,333,495,062	0.126	1.00	1.00

Loss Elimination Ratio by Hazard Group

Hazard Group	First Report	Second Report	Third Report
(9)	(10)	(11)	(12)
A	0.021	0.034	0.034
B	0.034	0.055	0.054
C	0.063	0.103	0.102
D	0.078	0.126	0.124
E	0.087	0.140	0.139
F	0.128	0.208	0.205
G	0.148	0.239	0.236
Total	0.084	0.137	0.135

Notes:

- (2): Unit Statistical Plan losses, PYs 2018 - 2020. Adjusted by factors from Section X - B, Exhibit 1, Page 2.
- (3): Adjusted losses above per claim limit of \$350,000
- (5): PYs 2018 - 2020, 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)

900000 X

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	6,703,370	3,066,614	0.457
1st	Permanent Total	8,484,145	5,968,628	0.704
1st	Permanent Partial	124,861,517	12,629,176	0.101
1st	Temporary Total	262,845,827	13,935,090	0.053
1st	Medical Only	19,274,288	0	0.000
1st	Total	422,169,147	35,599,508	0.084
2nd	Fatal	14,448,110	8,388,682	0.581
2nd	Permanent Total	61,709,478	48,794,257	0.791
2nd	Permanent Partial	251,915,551	20,030,727	0.080
2nd	Temporary Total	275,349,136	8,440,561	0.031
2nd	Medical Only	24,040,895	0	0.000
2nd	Total	627,463,170	85,654,226	0.137
3rd	Fatal	9,440,234	3,850,004	0.408
3rd	Permanent Total	84,326,022	45,399,244	0.538
3rd	Permanent Partial	304,911,029	35,415,214	0.116
3rd	Temporary Total	302,519,572	13,591,126	0.045
3rd	Medical Only	27,355,674	0	0.000
3rd	Total	728,552,530	98,255,587	0.135

Notes:

Unit Statistical Plan 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

X 000007

X 000008

Section X - Experience Rating
 Subsection A - Expected Loss Rates
 7/1/2023

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	10,925,472	0.977	0.976	1.524
1st to 10th	B	51,955,021	0.994	0.994	1.551
1st to 10th	C	103,803,051	1.002	1.002	1.564
1st to 10th	D	57,595,254	0.997	0.997	1.556
1st to 10th	E	65,308,990	1.004	1.004	1.567
1st to 10th	F	89,308,537	1.002	1.002	1.563
1st to 10th	G	19,764,175	1.004	1.004	1.566
1st to 10th	Total	398,660,500	1.000	1.000	1.560
2nd to 10th	A	21,677,802	0.977	0.977	1.179
2nd to 10th	B	76,531,800	0.994	0.994	1.200
2nd to 10th	C	145,794,466	1.002	1.002	1.210
2nd to 10th	D	67,320,496	0.997	0.997	1.203
2nd to 10th	E	110,730,659	1.004	1.004	1.212
2nd to 10th	F	151,390,582	1.002	1.002	1.209
2nd to 10th	G	21,577,689	1.004	1.004	1.211
2nd to 10th	Total	595,023,494	1.000	1.000	1.207
3rd to 10th	A	25,362,109	0.977	0.977	1.062
3rd to 10th	B	92,776,260	0.994	0.994	1.081
3rd to 10th	C	181,422,824	1.002	1.002	1.090
3rd to 10th	D	83,447,192	0.997	0.997	1.084
3rd to 10th	E	118,060,466	1.004	1.004	1.092
3rd to 10th	F	154,839,682	1.002	1.002	1.089
3rd to 10th	G	33,484,751	1.004	1.004	1.091
3rd to 10th	Total	689,393,284	1.000	1.000	1.087

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

Relativities for State Classification Rates

Hazard Group (1)	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	0.988	0.949	0.977	0.977
B	0.996	0.994	0.993	0.994	0.994
C	0.998	1.004	1.005	1.002	1.002
D	0.998	1.000	0.993	0.997	0.997
E	1.004	1.006	1.002	1.004	1.004
F	1.003	0.994	1.008	1.002	1.002
G	1.002	1.013	0.996	1.004	1.004

Relativities for F-Class Rates

Hazard Group (7)	Development			Average Relativity (11)	Selected (12)
	3rd Report to 10th Report (8)	2nd Report to 10th Report (9)	1st Report to 10th Report (10)		
C	0.996	1.002	1.000	1.000	1.000
E	1.003	1.005	0.998	1.002	1.002
F	1.002	0.993	1.004	0.999	0.999
G	1.001	1.011	0.991	1.001	1.001

Notes:

(2) - (4): Pages 3 through 5. = [(12) for Hazard Group] / [(12) for Hazard Groups A-G Total]

(5): Average of (2) - (4)

(8) - (10): Pages 3 through 5. = [(12) for Hazard Group] / [(12) for Hazard Groups C,E,F,G Total]

(11): Average of (8) - (10)

60000 X

Loss Development of Schedule Z to Tenth Report by Hazard Group

Policy Year 2020 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	1,360,666	2,866,346	3,987,085	7,117,539	1,084,156	1,475,998	4,493,565	4,714,567	10,925,472	16,174,450	1.480
B	9,243,507	19,472,149	18,947,849	33,824,726	7,342,597	9,996,401	16,421,068	17,228,687	51,955,021	80,521,963	1.550
C	20,158,697	42,465,825	39,898,536	71,224,814	10,013,366	13,632,455	33,732,452	35,391,477	103,803,051	162,714,572	1.568
D	9,884,845	20,823,176	20,430,563	36,471,590	10,652,169	14,502,138	16,627,677	17,445,457	57,595,254	89,242,362	1.549
E	9,769,353	20,579,884	29,659,495	52,946,605	4,710,586	6,413,113	21,169,556	22,210,715	65,308,990	102,150,317	1.564
F	14,184,452	29,880,625	38,551,701	68,820,514	11,101,930	15,114,454	25,470,454	26,723,139	89,308,537	140,538,732	1.574
G	3,176,459	6,691,452	7,280,347	12,996,501	4,054,597	5,520,033	5,252,772	5,511,113	19,764,175	30,719,099	1.554
A, B, C, D, E, F, G	67,777,979	142,779,457	158,755,576	283,402,289	48,959,401	66,654,592	123,167,544	129,225,156	398,660,500	622,061,495	1.560
C, E, F, G	47,288,961	99,617,786	115,390,079	205,988,435	29,880,479	40,680,055	85,625,234	89,836,444	278,184,753	436,122,720	1.568

Notes:

(2), (4), (6), (8): Unit Statistical Plan Data.

(3), (5), (7), (9): Unit Statistical Plan 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 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	3,152,148	4,249,809	10,076,479	12,843,608	1,963,740	2,192,521	6,485,435	6,568,649	21,677,802	25,854,587	1.193
B	14,873,210	20,052,452	33,126,388	42,223,315	5,924,223	6,614,410	22,607,979	22,898,061	76,531,800	91,788,238	1.199
C	35,045,422	47,249,158	59,409,670	75,724,320	16,728,041	18,676,899	34,611,333	35,055,430	145,794,466	176,705,806	1.212
D	14,334,602	19,326,287	29,211,241	37,233,019	6,148,014	6,864,273	17,626,639	17,852,806	67,320,496	81,276,384	1.207
E	24,595,310	33,160,043	47,374,557	60,384,212	16,324,882	18,226,771	22,435,910	22,723,784	110,730,659	134,494,810	1.215
F	28,509,341	38,437,042	57,275,861	73,004,540	36,826,716	41,117,119	28,778,664	29,147,922	151,390,582	181,706,623	1.200
G	5,273,884	7,110,389	9,502,772	12,112,354	2,510,893	2,803,418	4,290,140	4,345,187	21,577,689	26,371,348	1.222
A, B, C, D, E, F, G	125,783,917	169,585,179	245,976,968	313,525,367	86,426,509	96,495,410	136,836,100	138,591,839	595,023,494	718,197,795	1.207
C, E, F, G	93,423,957	125,956,631	173,562,860	221,225,426	72,390,532	80,824,207	90,116,047	91,272,322	429,493,396	519,278,586	1.209

Notes:

(2), (4), (6), (8): Unit Statistical Plan Data.

(3), (5), (7), (9): Unit Statistical Plan Data x Loss Development Factors to 10th report from Exhibit 5, Page 5.

X 000011

Loss Development of Schedule Z to Tenth Report by Hazard Group

Policy Year 2018 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	4,498,237	5,121,797	11,447,437	12,708,687	1,780,639	1,869,667	7,635,796	7,680,290	25,362,109	27,380,440	1.080
B	21,383,140	24,347,339	38,621,286	42,876,481	7,114,066	7,469,753	25,657,768	25,807,275	92,776,260	100,500,849	1.083
C	45,754,898	52,097,589	69,897,705	77,598,857	22,512,585	23,638,164	43,257,636	43,509,697	181,422,824	196,844,306	1.085
D	20,385,316	23,211,194	31,724,776	35,220,131	13,261,673	13,924,727	18,075,427	18,180,752	83,447,192	90,536,804	1.085
E	35,846,098	40,815,199	46,317,730	51,420,900	12,843,768	13,485,927	23,052,870	23,187,199	118,060,466	128,909,225	1.092
F	41,772,430	47,563,058	65,098,818	72,271,240	18,236,676	19,148,469	29,731,758	29,905,004	154,839,682	168,887,771	1.091
G	10,157,282	11,565,317	11,174,137	12,405,275	6,805,345	7,145,597	5,347,987	5,379,150	33,484,751	36,495,339	1.090
A, B, C, D, E, F, G	179,797,401	204,721,493	274,281,889	304,501,571	82,554,752	86,682,304	152,759,242	153,649,366	689,393,284	749,554,734	1.087
C, E, F, G	133,530,708	152,041,163	192,488,390	213,696,272	60,398,374	63,418,157	101,390,251	101,981,050	487,807,723	531,136,641	1.089

Notes:

(2), (4), (6), (8): Unit Statistical Plan Data.

(3), (5), (7), (9): Unit Statistical Plan Data x Loss Development Factors to 10th report from Exhibit 5, Page 5.

X 000012

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	12,237,952	32,669,834	5,538,185	18,963,506	1.009	1.009
B	63,871,941	118,924,522	24,080,564	65,934,023	1.013	1.013
C	141,812,572	224,547,991	55,947,517	113,956,604	1.014	1.014
D	63,360,657	108,924,740	35,291,137	53,479,015	1.010	1.010
E	94,555,125	164,751,717	38,125,812	68,121,697	1.014	1.014
F	115,880,725	214,096,294	75,380,042	85,776,065	1.009	1.009
G	25,367,158	37,514,130	15,469,048	15,235,449	1.010	1.010
TOTAL	517,086,129	901,429,227	249,832,306	421,466,361	1.012	1.012

Notes:

(2) - (5): Exhibit 4, Pages 3-5.

(6): Weighted Average of Development Factors from Page 2.

(Likely to Dev. Ind. 1.074, Not Likely to Dev. Ind. 1.011, Likely to Dev. Med. 0.926, Not Likely to Dev. Med. 0.989)

(7): Factors are balanced to the total development factor from Page 2.

X 000013

X 000014

Section X - Experience Rating
 Subsection A - Expected Loss Rates
 7/1/2023

Section X - A
 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)
Indemnity					
2020	426,181,747	1.011	1.023	440,551,753	1.034
2019	483,110,546	1.011	1.023	499,400,079	1.034
2018	509,223,064	1.011	1.023	526,393,059	1.034
Total	1,418,515,357			1,466,344,891	1.034
Medical					
2020	195,879,748	0.966	1.000	189,173,471	0.966
2019	235,087,248	0.966	1.000	227,038,636	0.966
2018	240,331,670	0.966	1.000	232,103,506	0.966
Total	671,298,666			648,315,612	0.966
Ind.+ Med.					
2020	622,061,495			629,725,224	1.012
2019	718,197,795			726,438,715	1.011
2018	749,554,734			758,496,565	1.012
Total	2,089,814,023			2,114,660,504	1.012

(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	517,086,129	1.074	a. Likely to Develop	249,832,306	0.926
b. Not Likely to Develop	901,429,227	1.011	b. Not Likely to Develop	421,466,361	0.989
c. Total	1,418,515,357	1.034	c. Total	671,298,666	0.966

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 000015

Section X - Experience Rating
Subsection A - Expected Loss Rates
7/1/2023

Section X - A
Exhibit 5
Page 3

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	0.949
(2) Est. Ultimate Losses (Prior to Escalation Adj.) based on Paid + Case Develop. Method		
(a) PY2018	505,041,225	216,854,269
(b) PY2019	486,241,283	212,296,910
(c) Average	495,641,254	214,575,589
(3) Est. Ultimate Losses (Prior to Escalation Adj.) based on Paid Develop. Method		
(a) PY2018	488,299,517	233,205,499
(b) PY2019	474,310,433	211,059,093
(c) Average	481,304,975	222,132,296
(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)	0.986	1.018
(5) Development Factor to bring Unit Statistical Plan Data 10th report to Aggregate Financial Ultimate Level = (1) x (4)	1.011	0.966

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)
2020	Likely	67,777,979	48,959,401	142,779,457	66,654,592
2020	Not Likely	158,755,576	123,167,544	283,402,289	129,225,156
2020	TOTALS	226,533,555	172,126,945	426,181,747	195,879,748
2019	Likely	125,783,917	86,426,509	169,585,179	96,495,410
2019	Not Likely	245,976,968	136,836,100	313,525,367	138,591,839
2019	TOTALS	371,760,885	223,262,609	483,110,546	235,087,248
2018	Likely	179,797,401	82,554,752	204,721,493	86,682,304
2018	Not Likely	274,281,889	152,759,242	304,501,571	153,649,366
2018	TOTALS	454,079,290	235,313,994	509,223,064	240,331,670

Notes:

(3),(4): Sum of Unit Statistical Plan Data.

(5),(6): Unit Statistical Plan Data x Loss Development Factors to 10th report from Exhibit 5,
 Page 5.

X 000016

X 000017

Section X - Experience Rating
 Subsection A - Expected Loss Rates
 7/1/2023

Section X - A
 Exhibit 5
 Page 5

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
		(1) Indemnity Paid + Case Losses								
5yr Weighted Average		1.562	1.184	1.068	1.034	1.011	1.009	1.002	1.005	1.006
Cumulative		2.107	1.348	1.139	1.066	1.031	1.021	1.012	1.010	1.006
		(2) Medical Paid + Case Losses								
5yr Weighted Average		1.219	1.063	1.012	1.004	0.994	1.007	1.004	0.991	1.037
Cumulative		1.361	1.117	1.050	1.038	1.034	1.040	1.032	1.028	1.037
		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
		(3) Indemnity Paid + Case Losses								
5yr Weighted Average		1.401	1.148	1.068	1.023	1.011	1.000	1.003	1.001	1.002
Cumulative		1.785	1.275	1.110	1.039	1.017	1.005	1.006	1.003	1.002
		(4) Medical Paid + Case Losses								
5yr Weighted Average		1.036	1.007	1.006	1.002	1.001	1.000	1.001	0.997	0.999
Cumulative		1.049	1.013	1.006	1.000	0.998	0.997	0.998	0.996	0.999

Notes:
 (1),(2): Page 6.
 (3),(4): Page 7.

X 000018

Section X - Experience Rating
 Subsection A - Expected Loss Rates
 7/1/2023

Section X - A
 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	
2015	81,368,712	122,604,545	1.507	72,569,566	77,899,536	1.073
2016	78,834,561	120,266,686	1.526	57,239,886	64,611,306	1.129
2017	77,352,852	122,802,649	1.588	58,770,045	77,081,324	1.312
2018	80,748,388	126,057,617	1.561	58,041,805	70,141,963	1.208
2019	71,012,584	116,568,493	1.642	60,476,291	84,730,421	1.401
Weighted Average			1.562			1.219
	30	42		30	42	
2014	142,054,038	166,831,515	1.174	89,964,746	93,935,821	1.044
2015	129,492,000	149,890,119	1.158	79,758,759	84,374,321	1.058
2016	129,003,641	148,628,981	1.152	72,050,221	78,635,842	1.091
2017	135,388,086	162,648,042	1.201	80,655,748	86,037,816	1.067
2018	134,106,302	165,390,233	1.233	72,583,275	77,048,248	1.062
Weighted Average			1.184			1.063
	42	54		42	54	
2013	138,775,323	147,774,397	1.065	64,493,747	64,038,378	0.993
2014	174,408,707	184,384,515	1.057	96,554,230	96,543,459	1.000
2015	158,008,072	167,048,151	1.057	87,202,065	86,473,669	0.992
2016	158,992,129	168,629,129	1.061	84,043,138	85,394,270	1.016
2017	172,022,308	188,679,182	1.097	89,993,266	94,892,911	1.054
Weighted Average			1.068			1.012
	54	66		54	66	
2012	159,136,429	163,097,441	1.025	90,037,493	88,800,504	0.986
2013	155,851,518	158,605,036	1.018	66,141,778	67,453,126	1.020
2014	193,596,056	197,392,720	1.020	99,005,956	100,260,240	1.013
2015	176,843,716	182,827,121	1.034	89,600,117	89,585,750	1.000
2016	180,312,064	193,250,019	1.072	88,700,393	88,938,944	1.003
Weighted Average			1.034			1.004
	66	78		66	78	
2011	160,897,993	164,204,456	1.021	85,707,542	86,617,929	1.011
2012	170,435,890	173,224,973	1.016	90,820,737	86,688,670	0.955
2013	161,794,540	161,853,919	1.000	68,829,997	68,885,418	1.001
2014	201,482,167	202,658,202	1.006	101,485,144	102,193,461	1.007
2015	188,062,922	190,098,153	1.011	93,459,417	93,309,931	0.998
Weighted Average			1.011			0.994
	78	90		78	90	
2010	148,210,917	148,736,251	1.004	75,547,228	77,945,948	1.032
2011	165,791,735	166,058,037	1.002	86,905,227	86,036,938	0.990
2012	174,498,820	176,087,143	1.009	86,986,124	88,981,571	1.023
2013	163,247,954	164,164,871	1.006	69,106,392	68,231,395	0.987
2014	204,142,214	208,213,105	1.020	102,758,678	103,247,088	1.005
Weighted Average			1.009			1.007
	90	102		90	102	
2009	150,055,803	149,762,061	0.998	67,681,748	68,053,950	1.005
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	175,992,730	176,041,147	1.000	88,926,598	90,423,007	1.017
2013	164,803,643	164,876,207	1.000	69,016,494	69,525,736	1.007
Weighted Average			1.002			1.004
	102	114		102	114	
2008	148,613,968	149,257,000	1.004	59,604,481	59,447,227	0.997
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	176,041,147	177,856,158	1.010	90,423,007	89,524,143	0.990
Weighted Average			1.005			0.991
	114	126		114	126	
2007	168,286,340	169,602,704	1.008	80,638,159	94,835,773	1.176
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
Weighted Average			1.006			1.037

Note:
 Unit Statistical Plan Data, Excluding Large Deductible Policies.

X 000019

Section X - Experience Rating
Subsection A - Expected Loss Rates
7/1/2023

Section X - A
Exhibit 5
Page 7

Calculation of Not-Likely to Develop Development Factors Industry

Policy Year	Not-Likely to Develop					
	Unlimited Indemnity Paid + Case Losses			Unlimited Medical Paid + Case Losses		
	Evaluated at month	Link Ratio		Evaluated at month	Link Ratio	
	18	30		18	30	
2015	168,070,317	224,414,721	1.335	141,031,123	144,510,779	1.025
2016	161,552,737	224,356,213	1.389	142,388,964	150,088,951	1.054
2017	176,861,810	252,148,160	1.426	149,511,647	153,251,589	1.025
2018	178,756,554	250,981,068	1.404	154,374,096	160,143,389	1.037
2019	176,633,904	255,192,392	1.445	133,356,208	138,532,188	1.039
Weighted Average			1.401			1.036
	30	42		30	42	
2014	200,449,045	228,147,848	1.138	138,961,565	140,192,912	1.009
2015	217,527,266	243,553,029	1.120	142,651,556	142,872,623	1.002
2016	215,619,258	246,248,390	1.142	142,650,036	146,094,462	1.024
2017	239,562,723	274,763,435	1.147	149,677,165	149,311,382	0.998
2018	242,932,383	288,689,057	1.188	157,702,077	158,265,746	1.004
Weighted Average			1.148			1.007
	42	54		42	54	
2013	206,873,564	219,732,322	1.062	134,539,382	136,182,442	1.012
2014	220,570,656	233,191,823	1.057	137,574,503	138,846,814	1.009
2015	235,435,076	251,805,206	1.070	140,044,879	141,184,221	1.008
2016	235,885,242	252,430,993	1.070	140,687,166	140,574,023	0.999
2017	265,389,169	286,169,593	1.078	145,355,932	145,376,987	1.000
Weighted Average			1.068			1.006
	54	66		54	66	
2012	200,599,747	206,270,421	1.028	128,400,004	126,672,711	0.987
2013	211,655,201	218,247,114	1.031	134,079,042	135,456,525	1.010
2014	223,980,282	228,016,655	1.018	136,384,317	137,406,213	1.007
2015	242,009,641	245,818,601	1.016	138,057,773	138,596,291	1.004
2016	240,748,058	245,914,786	1.021	137,267,900	137,285,473	1.000
Weighted Average			1.023			1.002
	66	78		66	78	
2011	208,408,607	209,429,884	1.005	128,127,569	127,575,872	0.996
2012	198,931,972	202,376,015	1.017	124,652,478	124,623,582	1.000
2013	215,057,610	217,430,743	1.011	134,079,654	134,660,448	1.004
2014	223,927,208	227,111,568	1.014	136,181,309	137,030,860	1.006
2015	240,256,648	242,487,720	1.009	134,540,744	134,541,655	1.000
Weighted Average			1.011			1.001
	78	90		78	90	
2010	197,502,598	196,982,144	0.997	124,896,447	125,339,594	1.004
2011	207,842,605	208,435,941	1.003	127,288,574	127,287,951	1.000
2012	201,102,168	200,310,015	0.996	124,326,128	124,180,074	0.999
2013	216,036,708	216,080,248	1.000	134,439,474	133,815,609	0.995
2014	225,627,556	225,934,846	1.001	136,465,643	136,470,667	1.000
Weighted Average			1.000			1.000
	90	102		90	102	
2009	179,726,493	179,929,108	1.001	119,257,319	119,432,521	1.001
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	124,235,047	125,274,712	1.008
2013	215,441,476	216,763,408	1.006	133,030,510	131,911,605	0.992
Weighted Average			1.003			1.001
	102	114		102	114	
2008	186,940,531	187,245,197	1.002	116,303,590	116,528,878	1.002
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	125,274,712	124,291,549	0.992
Weighted Average			1.001			0.997
	114	126		114	126	
2007	179,728,191	180,208,721	1.003	123,029,750	122,785,675	0.998
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
Weighted Average			1.002			0.999

Note:
Unit Statistical Plan 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	2020	1.000
	2019	1.000
	2018	1.000
Paid	2020	1.045
	2019	1.045
	2018	1.045
Average of Paid and Paid Plus Case	2020	1.023
	2019	1.023
	2018	1.023

Notes:

(3): Section II-D, Exhibit 1, Page 1 and Exhibit 2, Page 1.

X 000020

X 000021

Section X - Experience Rating
 Subsection A - Expected Loss Rates
 7/1/2023

Section X - A
 Exhibit 6

Investment Income Offset

Hazard Code (1)	Injury Type (2)	Indemnity		Medical		Total Investment Income Offset (7)
		Developed Losses at Ultimate (3)	Investment Income Offset (4)	Developed Losses at Ultimate (5)	Investment Income Offset (6)	
A	Fatal	1,267,474	0.695	3,481	1.000	
A	Permanent Total	1,895,608	0.612	399,700	0.611	
A	Permanent Partial	16,364,635	1.076	5,520,638	1.075	
A	Temporary Total	26,645,046	1.094	13,260,095	1.093	
A	Medical Only	0		4,699,354	1.000	
A	TOTAL	46,172,762	1.057	23,883,267	1.062	1.059
B	Fatal	3,566,243	0.695	321,607	1.000	
B	Permanent Total	6,113,555	0.612	4,103,353	0.611	
B	Permanent Partial	70,901,920	1.076	18,017,398	1.075	
B	Temporary Total	108,249,438	1.094	49,152,283	1.093	
B	Medical Only	0		15,912,710	1.000	
B	TOTAL	188,831,156	1.064	87,507,351	1.049	1.060
C	Fatal	7,091,560	0.695	174,494	1.000	
C	Permanent Total	17,728,793	0.612	17,289,303	0.611	
C	Permanent Partial	160,626,312	1.076	45,044,366	1.075	
C	Temporary Total	193,878,056	1.094	78,147,088	1.093	
C	Medical Only	0		23,855,232	1.000	
C	TOTAL	379,324,721	1.057	164,510,483	1.024	1.047
D	Fatal	2,649,877	0.695	1,191,466	1.000	
D	Permanent Total	5,721,704	0.612	4,540,039	0.611	
D	Permanent Partial	74,383,988	1.076	25,830,444	1.075	
D	Temporary Total	95,416,688	1.094	46,407,326	1.093	
D	Medical Only	0		7,601,064	1.000	
D	TOTAL	178,172,258	1.065	85,570,339	1.052	1.061
E	Fatal	7,520,327	0.695	564,450	1.000	
E	Permanent Total	16,491,956	0.612	10,141,354	0.611	
E	Permanent Partial	102,356,590	1.076	30,481,519	1.075	
E	Temporary Total	141,747,317	1.094	52,361,536	1.093	
E	Medical Only	0		9,128,001	1.000	
E	TOTAL	268,116,190	1.046	102,676,860	1.031	1.042
F	Fatal	10,500,141	0.695	137,856	1.000	
F	Permanent Total	30,223,863	0.612	39,322,587	0.611	
F	Permanent Partial	159,466,224	1.076	52,838,398	1.075	
F	Temporary Total	140,717,024	1.094	55,158,820	1.093	
F	Medical Only	0		7,176,785	1.000	
F	TOTAL	340,907,252	1.031	154,634,447	0.960	1.009
G	Fatal	3,133,745	0.695	69,012	1.000	
G	Permanent Total	10,100,020	0.612	7,064,680	0.611	
G	Permanent Partial	30,139,754	1.076	11,803,478	1.075	
G	Temporary Total	21,797,594	1.094	9,553,218	1.093	
G	Medical Only	0		901,811	1.000	
G	TOTAL	65,171,113	0.992	29,392,198	0.967	0.984

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).

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	128,346,473	1,026,717,503	0.125
Medical	147,133,966	531,958,023	0.277

Notes:

Data at the individual claim level for PYs 2018 - 2020 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 000022

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

2018	1.064	1.064	1.064	1.064	1.015	1.015	1.015	1.015	1.007
2019	1.045	1.045	1.045	1.045	1.032	1.032	1.032	1.032	1.043
2020	1.045	1.045	1.045	1.045	1.032	1.032	1.032	1.032	1.043

(2) State Benefit Level Adjustment Factors

2018	1.011	1.013	1.020	1.009	1.000	1.000	1.000	1.000	1.000
2019	1.016	1.020	1.031	1.014	1.000	1.000	1.000	1.000	1.000
2020	1.026	1.032	1.054	1.022	1.000	1.000	1.000	1.000	1.000

(3) Combined Severity Trend and State Benefit Level Adjustment Factors

2018	1.075	1.078	1.084	1.073	1.015	1.015	1.015	1.015	1.007
2019	1.061	1.066	1.077	1.059	1.032	1.032	1.032	1.032	1.043
2020	1.072	1.079	1.101	1.068	1.032	1.032	1.032	1.032	1.043

Notes:

(1): Exhibit 2.

(2): Section IV-A, Exhibit 1. PY 2018 to CPY 2019_07. PY 2019 to CPY 2020_07. PY 2020 to CPY 2021_07.

(3) = (1) x (2)

X 000023

Severity Trend Factors

(1)			(2) Historical Values		
Schedule Z Policy Year			Indemnity Severity	Lost Time Medical Severity	Medical Only Severity
01/01/2018	-	12/31/2018	33,510	12,182	982
01/01/2019	-	12/31/2019	35,127	12,242	976
01/01/2020	-	12/31/2020			
(3) Selected Annual Trend			3.0%	2.1%	2.9%
(4) Trend Period Length [Years between (1) and (5)]				1.497	

(5)			(6) Trend Factors from Sched Z PYs to Pol Eff Periods		
Policy Effective Period			Indemnity Severity	Lost Time Medical Severity	Medical Only Severity
07/01/2019	-	06/30/2020	1.064	1.015	1.007
07/01/2020	-	06/30/2021	1.045	1.032	1.043
07/01/2021	-	06/30/2022	1.045	1.032	1.043

Notes:

(2): Section V-A Exhibit 2, Pages 1, 2, and 3.

(3): Section V-A Exhibit 1, Page 1.

(6): For 7/1/2019 effective period, 1/1/2019 divided by 1/1/2018, then trended by (3) for [(4) - 1.000] years.
 For 7/1/2020 and 7/1/2021 effective periods, (3) for (4).

X 000024

Calculation of ELR Factors

Unit Report / Policy Effective Dates (1)	Hazard Group (2)	Permissible Loss and LBA Ratio (3)	Weighted LBA (4)	Exp Rating LER by Hazard Group (5)	Law Factor (6)	Loss Trend / Payroll Trend (7)	Loss Development to Ultimate Report (8)	Investment Income Offset (9)	Ratio of Exp Rating ELR to Average Rate (10)
1st Report 7/1/2021 to 6/30/2022	C	0.624	0.054	0.063	1.004	0.929	1.703	1.047	0.334
	E	0.624	0.054	0.087	1.004	0.929	1.704	1.042	0.326
	F	0.624	0.054	0.128	1.004	0.929	1.703	1.009	0.322
	G	0.624	0.054	0.148	1.004	0.929	1.704	0.984	0.323
2nd Report 7/1/2020 to 6/30/2021	C	0.624	0.054	0.103	1.006	0.895	1.279	1.047	0.441
	E	0.624	0.054	0.140	1.006	0.895	1.280	1.042	0.424
	F	0.624	0.054	0.208	1.006	0.895	1.279	1.009	0.404
	G	0.624	0.054	0.239	1.006	0.895	1.280	0.984	0.397
3rd Report 7/1/2019 to 6/30/2020	C	0.624	0.054	0.102	1.008	0.862	1.155	1.047	0.506
	E	0.624	0.054	0.139	1.008	0.862	1.156	1.042	0.487
	F	0.624	0.054	0.205	1.008	0.862	1.155	1.009	0.464
	G	0.624	0.054	0.236	1.008	0.862	1.156	0.984	0.457
1st - 3rd Report Average	C								0.427
	E								0.412
	F								0.397
	G								0.393

Notes:

(1): Unit Stat Reports used to experience rate a policy taking effect during the prospective effective period.

(3), (5), (7), (9): Section X-A, Exhibit 1.

(4): Loss Based Assessment weighted by federal indemnity losses as a % of losses.

(6): State Factors from Section IV-A, Exhibit 1 and Federal Factors from Section IV-F, Exhibit 1 weighted by Adjusted Reported Losses from Section VIII-C, Exhibit 1, Pages 2 and 4. Federal losses are 100% of total reported indemnity losses and 100% of total reported medical losses.

(8): Exhibit 2.

(10) = $[(3) / \{ 1.0 + (4) \}] \times [1.0 - (5)] / [(6) \times (7) \times (8) \times (9)]$

X 000025

X 000026

Section X - Experience Rating
 Subsection C - Expected Loss Rates for F-Class
 7/1/2023

Section X - C
 Exhibit 2

Hazard Group Development Factors to Ultimate

Development to Ultimate (1)	Hazard Group (2)	Losses at Latest Report (3)	Selected Relativity (4)	Balanced Relativity = (4) / TT(4) (5)	Selected Dev. Factor to Ultimate (6)
1st	C	103,803,051	1.000	0.999	1.703
1st	E	65,308,990	1.002	1.002	1.704
1st	F	89,308,537	0.999	0.999	1.703
1st	G	19,764,175	1.001	1.001	1.704
1st	Total	278,184,753	1.000	1.000	1.703
2nd	C	145,794,466	1.000	0.999	1.279
2nd	E	110,730,659	1.002	1.002	1.280
2nd	F	151,390,582	0.999	0.999	1.279
2nd	G	21,577,689	1.001	1.001	1.280
2nd	Total	429,493,396	1.000	1.000	1.279
3rd	C	181,422,824	1.000	0.999	1.155
3rd	E	118,060,466	1.002	1.002	1.156
3rd	F	154,839,682	0.999	0.999	1.155
3rd	G	33,484,751	1.001	1.001	1.156
3rd	Total	487,807,723	1.000	1.000	1.155

Notes:

(3): See Section X-A, Exhibit 4, Page 1.

(4): See Section X-A, Exhibit 4, Page 2 for F-Classes 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) = 1.00 + (5) x (Total LDF from Exhibit 3 - 1.00)

Loss Development Factors For Use in Calculation of Reciprocals

Report (1)	Benefit Type (2)	Injury Type (3)	State Loss Development Factor to Ultimate (4)	Federal Loss Development Factor to Ultimate (5)	Average Loss Development Factor to Ultimate (6)	Distribution of Ultimate Losses (7)	Adjusted Distribution = (7) / (6) (8)	LDF to Ultimate to Derive ELR = TT(7) / TT(8) (9)
1st	Indemnity	Likely to Develop	2.262	2.325	2.325	32.3%	13.9%	
1st	Indemnity	Not Likely to Develop	1.804	1.810	1.810	37.5%	20.7%	
1st	Medical	Likely to Develop	1.261	1.527	1.527	11.2%	7.3%	
1st	Medical	Not Likely to Develop	1.038	1.135	1.135	19.0%	16.8%	
1st	Total					100.0%	58.7%	1.703
2nd	Indemnity	Likely to Develop	1.448	1.481	1.481	32.3%	21.8%	
2nd	Indemnity	Not Likely to Develop	1.288	1.254	1.254	37.5%	29.9%	
2nd	Medical	Likely to Develop	1.034	1.316	1.316	11.2%	8.5%	
2nd	Medical	Not Likely to Develop	1.002	1.060	1.060	19.0%	18.0%	
2nd	Total					100.0%	78.2%	1.279
3rd	Indemnity	Likely to Develop	1.223	1.281	1.281	32.3%	25.2%	
3rd	Indemnity	Not Likely to Develop	1.122	1.109	1.109	37.5%	33.8%	
3rd	Medical	Likely to Develop	0.973	1.250	1.250	11.2%	9.0%	
3rd	Medical	Not Likely to Develop	0.995	1.024	1.024	19.0%	18.6%	
3rd	Total					100.0%	86.5%	1.155

Notes:

(4): Section X-A, Exhibit 5, Page 5 and Section X-A, Exhibit 5, Page 2.

(5): Section VIII-E, Exhibit 1, Page 1.

(6): Average of (4) and (5) weighted by % of Total Reported Losses from Section VIII-C, Exhibit 1 Page 2 and Page 4.

Federal losses are 100.0% of total reported indemnity losses and 100.0% of total reported medical losses.

(7): Section IV-E, Exhibit 2, Page 2.

X 000027

EXPERIENCE RATING PLAN MANUAL

MASSACHUSETTS

Proposed Effective July 1, 2023

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	1.04	.19	2115	2.22	.17	3041	1.06	.17	3634	0.73	.17	4439	2.07	.18
0008	0.92	.18	2121	0.56	.18	3042	1.32	.17	3635	0.84	.19	4452	1.22	.17
0016	1.32	.18	2130	0.63	.17	3066	0.94	.18	3638	0.67	.17	4459	1.02	.17
0034	1.05	.18	2131	1.24	.18	3076	1.09	.17	3642	0.49	.17	4470	0.73	.17
0035	0.67	.17	2143	0.85	.17	3081D	1.58	.17	3643	0.72	.17	4484	0.89	.17
0036	1.05	.18	2150	1.47	.18	3082D	1.58	.17	3647	0.86	.17	4493	0.83	.17
0042	1.35	.18	2156	1.30	.18	3085D	1.60	.18	3648	0.44	.17	4511	0.12	.17
0046	1.13	.19	2157	1.66	.16	3110	2.83	.17	3681	0.24	.17	4512	0.03	.17
0050	1.90	.18	2172	0.67	.17	3111	0.93	.17	3685	0.20	.17	4557	0.81	.16
0059D	.	.	2211	2.12	.17	3113	0.68	.17	3724	1.59	.17	4558	0.74	.18
0065D	.	.	2220	1.18	.18	3114	1.03	.18	3726	1.73	.16	4583	1.02	.17
0066D	.	.	2260	1.92	.17	3118	0.57	.17	3807	0.92	.18	4611	0.33	.17
0067D	.	.	2288	1.62	.17	3119	0.42	.17	3808	1.24	.17	4635	1.78	.19
0079	1.03	.17	2305	0.95	.17	3120	0.52	.16	3821	1.94	.18	4653	0.88	.17
0083	1.34	.18	2362	0.85	.18	3122	0.88	.17	3826	1.42	.18	4665	3.95	.18
0106	3.39	.18	2380	0.67	.18	3127	0.63	.17	3830	0.63	.17	4692	0.22	.17
0113	1.05	.18	2402	0.83	.18	3131	0.55	.18	3841	0.73	.17	4693	0.32	.17
0170	1.05	.18	2413	1.12	.17	3132	0.82	.18	4000	2.26	.17	4720	0.71	.18
0771	.	.	2416	1.09	.18	3145	0.56	.17	4021	1.20	.17	4740	0.29	.17
0908	36.92	.17	2417	0.65	.16	3146	0.79	.17	4024	1.39	.17	4741	1.11	.17
0909	94.13	.19	2501	0.89	.17	3169	0.88	.18	4034	2.74	.18	4771	1.44	.17
0912	188.27	.19	2503	0.44	.17	3179	0.46	.17	4036	0.70	.17	4777	1.01	.17
0913	73.85	.17	2570	1.39	.17	3180	0.98	.17	4038	1.03	.16	4825	0.14	.17
0917	0.96	.17	2576	0.85	.17	3188	0.85	.17	4053	1.15	.16	4828	0.39	.17
0918	0.17	.16	2585	1.25	.17	3200	0.92	.17	4062	0.88	.17	4829	0.38	.17
1430	1.52	.17	2586	0.89	.18	3220	0.90	.17	4112	0.13	.18	4902	0.65	.17
1438	1.31	.17	2587	0.88	.17	3223	(a)	(a)	4113	1.15	.16	4923	0.24	.17
1463	4.51	.19	2623	1.66	.18	3255	0.87	.17	4114	1.31	.17	5020	1.72	.16
1624D	1.68	.17	2651	0.55	.17	3257	0.98	.18	4130	1.54	.17	5022	3.29	.17
1655	1.08	.17	2660	0.80	.17	3270	0.72	.17	4133	0.78	.17	5037	4.47	.17
1701	1.04	.16	2683	0.86	.18	3300	1.39	.18	4150	0.31	.16	5040	8.33	.16
1710D	1.73	.17	2688	0.85	.18	3305	(a)	(a)	4239	1.05	.17	5057	6.67	.18
1747	0.87	.17	2702	6.23	.19	3315	1.24	.17	4243	1.04	.17	5059	9.42	.18
1748	1.42	.18	2710	2.26	.17	3336	0.91	.17	4244	1.26	.18	5102	2.39	.16
1853	0.49	.16	2731	1.13	.18	3365	1.70	.18	4250	0.91	.17	5146	2.50	.16
1924	1.11	.17	2747	2.36	.17	3372	0.87	.17	4251	1.04	.16	5160	1.22	.16
1925	2.31	.22	2790	0.91	.17	3373	1.49	.17	4273	1.16	.17	5183	1.28	.17
2003	1.38	.17	2802	1.39	.18	3381	0.69	.17	4279	1.01	.17	5188	1.42	.16
2014	1.49	.17	2835	0.85	.17	3383	0.56	.17	4283	0.75	.16	5190	0.88	.17
2021	1.12	.17	2836	1.11	.16	3385	0.37	.18	4299	0.72	.17	5191	0.28	.18
2039	1.81	.17	2841	1.31	.18	3400	0.86	.18	4304	2.09	.18	5192	1.12	.17
2041	1.00	.17	2883	1.19	.17	3507	1.08	.17	4307	0.60	.18	5213	3.29	.17
2070	1.40	.16	2923	0.50	.17	3515	0.97	.17	4308	0.88	.14	5215	1.97	.17
2081	1.27	.18	2942	0.68	.17	3558	0.28	.19	4351	0.38	.17	5221	2.57	.17
2089	1.06	.17	3018	0.94	.17	3571	0.25	.17	4352	0.43	.17	5222	3.16	.16
2095	1.19	.17	3022	1.42	.18	3574	0.67	.17	4360	0.25	.17	5223	1.39	.17
2101	1.11	.17	3027	1.17	.18	3612	0.53	.17	4361	0.23	.18	5348	1.66	.16
2105	(a)	(a)	3028	1.21	.17	3620	1.23	.17	4362	0.18	.17	5402	2.34	.16
2111	0.93	.18	3030	1.94	.18	3629	0.67	.17	4410	1.11	.18	5403	3.13	.17
2114	1.11	.17	3040	2.26	.17	3632	0.63	.17	4432	0.35	.17	5437	1.34	.17

(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, 2023

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	1.17	.17	7016M	1.12	.79	7704	1.61	.18	8719	0.88	.17	9179	19.50	.21
5445	2.19	.16	7024M	1.40	.79	7720	0.63	.17	8720	0.32	.17	9180	1.67	.19
5462	2.29	.17	7038M	2.12	.76	7855	1.49	.17	8721	0.07	.17	9182	1.10	.19
5472	3.04	.16	7046M	3.02	.58	8001	0.75	.18	8726F	1.75	.18	9186	1.61	.19
5473	3.96	.17	7047M	1.76	.69	8002	0.75	.19	8734M	0.21	.54	9220	1.44	.17
5474	1.70	.17	7050M	3.32	.67	8006	0.41	.17	8737M	0.17	.54	9402	1.65	.17
5478	1.62	.16	7090M	2.65	.76	8008	0.31	.17	8738M	0.26	.53	9403	4.75	.17
5479	2.05	.17	7098M	3.55	.58	8010	0.62	.18	8742	0.04	.18	9410	1.46	.18
5480	1.63	.16	7099M	4.45	.51	8013	0.13	.19	8745	2.04	.18	9501	0.82	.17
5506	1.93	.17	7133	(a)	(a)	8017	0.42	.17	8747	0.31	.16	9505	0.82	.17
5507	1.77	.17	7151M	3.96	.52	8018	1.60	.17	8748	0.21	.17	9519	0.94	.16
5508D	1.83	.18	7152M	6.22	.52	8021	1.41	.17	8800	0.42	.17	9521	1.40	.17
5509	2.23	.18	7153M	4.96	.52	8031	0.64	.18	8803	0.02	.17	9522	0.73	.16
5538	1.48	.17	7219	2.84	.17	8032	0.55	.17	8805M	0.09	.60	9533	6.76	.16
5545	17.61	.18	7230	3.69	.17	8033	0.58	.18	8810	0.02	.18	9534	2.14	.17
5547	3.93	.18	7231	4.52	.17	8034	1.12	.16	8814M	0.07	.60	9549	1.46	.16
5606	0.45	.17	7309F	4.61	.18	8039	0.67	.18	8815M	0.11	.59	9552	2.15	.17
5610	2.20	.16	7313F	6.26	.16	8044	1.07	.18	8820	0.02	.17	9586	0.14	.17
5645	2.49	.18	7317F	5.29	.17	8046	0.99	.19	8824	0.86	.17	9620	0.30	.18
5701	5.85	.17	7327F	7.80	.17	8048	0.99	.17	8826	0.66	.17			
5703	3.39	.17	7333M	4.51	.70	8058	0.95	.18	8829	1.05	.16			
5705	3.96	.17	7335M	5.30	.70	8103	1.12	.17	8831	0.39	.21			
6003	2.39	.16	7337M	6.65	.61	8105	3.82	.16	8832	0.11	.17			
6005	1.83	.18	7350F	6.45	.16	8106	1.75	.18	8833	0.46	.17			
6204	2.18	.16	7360	1.82	.17	8107	0.95	.17	8835	0.67	.16			
6217	1.63	.17	7370	1.90	.17	8111	1.10	.18	8837	(a)	(a)			
6229	1.65	.17	7380	2.65	.17	8203	2.02	.17	8868	0.32	.18			
6233	0.74	.16	7382	1.49	.17	8204	1.88	.17	8901	0.02	.18			
6251D	1.58	.16	7394M	5.80	.84	8215	1.16	.18	9014	0.82	.17			
6252D	1.70	.17	7395M	7.41	.84	8227	2.19	.18	9015	1.17	.17			
6306	3.47	.16	7398M	9.29	.74	8232	1.83	.17	9016	0.59	.19			
6319	0.93	.17	7403	1.22	.17	8233	2.14	.18	9019	1.15	.17			
6325	1.02	.17	7405	0.54	.17	8235	1.68	.18	9033	1.04	.17			
6400	1.80	.18	7420	4.19	.19	8263	1.88	.17	9040	1.22	.17			
6504	1.11	.17	7421	0.41	.15	8264	1.79	.17	9044	0.58	.17			
6702M	(a)	(a)	7422	0.40	.15	8265	2.07	.18	9052	0.64	.17			
6703M	(a)	(a)	7425	1.11	.17	8279	1.39	.19	9058	0.66	.17			
6704M	(a)	(a)	7431	0.40	.15	8291	1.61	.18	9060	0.42	.18			
6801F	2.16	.17	7445	.	.	8292	1.39	.17	9061	0.41	.17			
6811	1.94	.17	7453	.	.	8293	2.58	.18	9062	0.41	.17			
6824F	2.63	.19	7502	0.80	.16	8350	2.63	.17	9063	0.25	.19			
6826F	1.73	.17	7515	1.02	.20	8380	0.97	.17	9077F	2.91	.21			
6834	0.94	.18	7520	1.31	.17	8381	0.52	.17	9079	0.41	.18			
6836	1.09	.18	7538	1.62	.17	8385	1.45	.17	9089	0.26	.18			
6843F	4.94	.17	7539	0.54	.17	8392	0.62	.18	9093	0.39	.18			
6854	4.45	.17	7580	1.23	.17	8393	0.53	.17	9101	1.62	.17			
6872F	4.63	.19	7590	2.43	.19	8500	2.14	.18	9102	1.02	.18			
6874F	6.11	.17	7600	1.79	.16	8601	0.08	.17	9154	0.75	.18			
6882	4.17	.19	7601	1.51	.17	8709F	1.77	.18	9156	0.72	.18			
6884	5.50	.17	7610	0.15	.16	8710	0.92	.17	9178	5.58	.23			

(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).

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EXPERIENCE RATING PLAN MANUAL

Effective July 1, 2022

TABLE OF WEIGHTING VALUES

Expected Losses	Weighting Values	Expected Losses	Weighting Values	Expected Losses	Weighting Values
0 - 2,931	0.04	829,408 - 894,882	0.24	3,418,995 - 3,696,438	0.44
2,932 - 11,851	0.05	894,883 - 963,836	0.25	3,696,439 - 4,005,844	0.45
11,852 - 20,962	0.06	963,837 - 1,036,559	0.26	4,005,845 - 4,353,074	0.46
20,963 - 86,018	0.07	1,036,560 - 1,113,376	0.27	4,353,075 - 4,745,517	0.47
86,019 - 125,216	0.08	1,113,377 - 1,194,645	0.28	4,745,518 - 5,192,622	0.48
125,217 - 162,596	0.09	1,194,646 - 1,280,770	0.29	5,192,623 - 5,706,665	0.49
162,597 - 200,061	0.10	1,280,771 - 1,372,202	0.30	5,706,666 - 6,303,899	0.50
200,062 - 238,261	0.11	1,372,203 - 1,469,451	0.31	6,303,900 - 7,006,299	0.51
238,262 - 277,532	0.12	1,469,452 - 1,573,094	0.32	7,006,300 - 7,844,326	0.52
277,533 - 318,093	0.13	1,573,095 - 1,683,786	0.33	7,844,327 - 8,861,466	0.53
318,094 - 360,117	0.14	1,683,787 - 1,802,272	0.34	8,861,467 - 10,122,016	0.54
360,118 - 403,757	0.15	1,802,273 - 1,929,410	0.35	10,122,017 - 11,725,231	0.55
403,758 - 449,157	0.16	1,929,411 - 2,066,185	0.36	11,725,232 - 13,832,817	0.56
449,158 - 496,463	0.17	2,066,186 - 2,213,738	0.37	13,832,818 - 16,727,225	0.57
496,464 - 545,823	0.18	2,213,739 - 2,373,398	0.38	16,727,226 - 20,950,201	0.58
545,824 - 597,396	0.19	2,373,399 - 2,546,720	0.39	20,950,202 - 27,688,977	0.59
597,397 - 651,350	0.20	2,546,721 - 2,735,538	0.40	27,688,978 - 40,145,480	0.60
651,351 - 707,868	0.21	2,735,539 - 2,942,030	0.41	40,145,481 - 70,958,899	0.61
707,869 - 767,148	0.22	2,942,031 - 3,168,801	0.42	70,958,900 - 274,327,342	0.62
767,149 - 829,407	0.23	3,168,802 - 3,418,994	0.43	274,327,343 - 999,999,999	0.63

(a) State Per Claim Accident Limitation	\$350,000
(b) State Multiple Claim Accident Limitation	\$700,000
(c) U.S. Longshore and Harbor Workers' Act Per Claim Accident Limitation	\$130,000
(d) U.S. Longshore and Harbor Workers' Act Multiple Claim Accident Limitation	\$260,000
(e) Employers Liability Accident Limitation	\$55,000
(f) USL&HW Act-Expected Loss Factor-Non-F Classes	11.1% †
(g) Cap on Modifications = 1 + (0.00005) [(Expected Losses) + (2) (Expected Losses) / (14)]	

† **The USL&HW Act-Expected Loss Factor-Non-F Classes updated to reflect proposed July 1, 2023 rate revision**

XI 000001

Miscellaneous Rating Values

In this section, we discuss recommended modifications to various miscellaneous rating values, including the following:

- 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 the sum of medical and indemnity losses. Deductible levels of \$500, \$1,000, \$2,000, \$2,500 and \$5,000 are offered to every employer. Insureds that elect a deductible obtain a premium reduction reflective of 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 2016, 2015, 2014, 2013, and 2012 at fifth report. Each loss is multiplied by appropriate trend, law amendment and development factors. Claim costs are trended to 7/1/2024, the average accident date (assuming the proposed small and medium deductible credits will be in effect for one year starting 7/1/2023). These factors are shown in Section XI-D, Exhibit 1 and they 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, insureds that elect a small or medium deductible are more likely to benefit from having the deductible than an insured chosen at random. This is referred to as adverse selection and is exacerbated by the requirement in Massachusetts (211 CMR 115.04) mandating that all risks be offered a policy with a deductible. 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. Additionally, the exposure insured by the insurance carrier is more risky 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
7/1/2023

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	2.1%	0.624	0.90	0.204	0.001	1.5%
1,000	3.5%	0.624	0.90	0.204	0.001	2.5%
2,000	5.4%	0.624	0.90	0.204	0.001	3.8%
2,500	6.2%	0.624	0.90	0.204	0.001	4.4%
5,000	9.5%	0.624	0.90	0.204	0.001	6.7%

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 the sum of medical and indemnity losses. However, unlike the Massachusetts Benefits Deductible Program, the losses retained by the insured are subject to a maximum, the aggregate limit. Only one deductible option is available with the Massachusetts Benefits Claim and Aggregate Deductible Program. Insureds may elect a \$2,500 deductible with an aggregate limit equal to the greater of \$10,000 or 5% of the “Basis for the Aggregate Limit at Policy Inception” which is 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 4.4% is estimated for a \$2,500 per claim deductible (not subject to an aggregate limit). The 4.4% will serve 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”

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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 credit proposed 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 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 2016, 2015, 2014, 2013, and 2012 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.

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Section XI - Miscellaneous Rating Values
Subsection C - Massachusetts Benefits Claim and Aggregate Deductible Program Credits
7/1/2023

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) / \$30,963 (2)	Aggregate Limit (3)	Selected Adjustment Factor for Aggregate Limit (4)	Premium Credit = (4) x 4.4% (5)
0 - 75,000	1.2	\$10,000	0.98	4.3%
75,000 - 100,000	2.8	\$10,000	0.96	4.2%
100,000 - 125,000	3.6	\$10,000	0.93	4.1%
125,000 - 150,000	4.4	\$10,000	0.90	4.0%
150,000 - 200,000	5.7	\$10,000	0.86	3.8%
Over 200,000	7 or more	5% of the 'Basis for the Aggregate Limit at Policy Inception'	0.80	3.5%

Notes:

(2): Based on \$30,963 in standard premium (no ARAP) per expected claim.

(4): Selected based on the simulation results shown in Exhibit 2.

(5): The 4.4% is based on the \$2,500 per claim deductible without any aggregate limit, from Section XI-B, Exhibit 1.

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Section XI - Miscellaneous Rating Values
 Subsection C - Massachusetts Benefits Claim and Aggregate Deductible Program Credits
 7/1/2023

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	6.19%	6.19%	3.49%	1.00	0.56
2	1,000,000	6.24%	6.22%	4.58%	1.00	0.73
3	1,000,000	6.27%	6.19%	4.98%	0.99	0.79
4	1,000,000	6.24%	6.05%	5.20%	0.97	0.83
5	1,000,000	6.24%	5.88%	5.37%	0.94	0.86
6	1,000,000	6.22%	5.64%	5.47%	0.91	0.88
7	1,000,000	6.25%	5.39%	5.58%	0.86	0.89
8	1,000,000	6.24%	5.09%	5.65%	0.82	0.91
9	1,000,000	6.24%	4.79%	5.70%	0.77	0.91
10	1,000,000	6.24%	4.48%	5.74%	0.72	0.92
12	1,000,000	6.23%	3.92%	5.81%	0.63	0.93
14	1,000,000	6.25%	3.45%	5.90%	0.55	0.94
16	1,000,000	6.24%	3.04%	5.93%	0.49	0.95
18	1,000,000	6.24%	2.72%	5.97%	0.44	0.96
20	1,000,000	6.24%	2.45%	5.99%	0.39	0.96
25	1,000,000	6.25%	1.97%	6.06%	0.32	0.97
30	1,000,000	6.24%	1.64%	6.09%	0.26	0.98
40	1,000,000	6.24%	1.23%	6.14%	0.20	0.98
50	1,000,000	6.23%	0.98%	6.16%	0.16	0.99
75	1,000,000	6.23%	0.65%	6.20%	0.10	1.00
100	1,000,000	6.24%	0.49%	6.22%	0.08	1.00
150	1,000,000	6.24%	0.33%	6.23%	0.05	1.00
200	1,000,000	6.24%	0.25%	6.24%	0.04	1.00
300	1,000,000	6.24%	0.16%	6.24%	0.03	1.00
400	1,000,000	6.24%	0.12%	6.24%	0.02	1.00
500	1,000,000	6.24%	0.10%	6.24%	0.02	1.00

Notes:

(5): The Aggregate Limit is based on the average claim severity of the simulated losses, \$20,381 and the permissible loss ratio of 0.624. One claim is assumed to be expected for each \$30,963 of standard premium.

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Section XI - Miscellaneous Rating Values
 Subsection C - Massachusetts Benefits Claim and Aggregate Deductible Program Credits
 7/1/2023

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 2012	1.099	1.110	1.181	1.072	1.000
PY 2013	1.096	1.107	1.175	1.071	1.000
PY 2014	1.091	1.103	1.168	1.068	1.000
PY 2015	1.079	1.096	1.156	1.065	1.000
PY 2016	1.073	1.089	1.144	1.060	1.000

(2) Loss Development Factors - Fifth Report to Ultimate

Loss Development Category	Indemnity	Medical
Likely to Develop	1.076	0.864
Not Likely to Develop	1.015	0.977

(3) Severity Trend Factors

We apply three distinct trend factors.

Trend to PY 2016 is based on empirical USR data at 5th report.

Trend from PY 2016 to PY 2019 is based on severities from Section V-A, Exhibit 2.

Trend from PY 2019 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 2012	PY 2016	1.125	1.046	1.068
PY 2013	PY 2016	1.128	1.123	1.040
PY 2014	PY 2016	1.027	0.975	1.036
PY 2015	PY 2016	1.030	1.012	1.018
PY 2016	PY 2019	1.111	1.065	1.067
PY 2019	Prosp. Eff. Period	1.140	1.098	1.135

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.

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MASSACHUSETTS WORKERS COMPENSATION AND EMPLOYERS LIABILITY INSURANCE MANUAL	RATES
<i>Proposed Effective July 1, 2023</i>	Page RA-5

MISCELLANEOUS VALUES

Basis of Premium applicable in accordance with the footnote instructions for Code 7370 - "Taxicab Co.":	
Employee operated vehicles.....	\$137,700.00
Leased or rented vehicles.....	\$91,800.00
Basis of Premium 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.....	
	\$64,300.00
Payroll Limitations:	
For Executive Officers - in accordance with Rule IX-A-3-a and b	
Minimum individual payroll for an executive officer per week.....	\$280.00
Maximum individual payroll for an executive officer per week.....	\$1,410.00
For Spouses of Individuals, Co-Partners or Corporate Officers - in accordance with Rule IX-A-4	
Minimum individual payroll for a spouse per week.....	\$280.00
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.....	\$280.00
Maximum individual payroll for an elected or appointed officer per week.....	\$1,410.00
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.....	\$420.00
Code 9179 - Athletic Sports Or Park: Contact Sports.....	\$420.00
Code 9178 - Athletic Sports Or Park: Non-Contact Sports.....	\$420.00
Terrorism Insurance Program —Certified Loss:.....	0.03

BENEFITS DEDUCTIBLE COVERAGE PROGRAM

Medical and Indemnity Deductible Amount	Premium Reduction Percentage
\$500	1.5%
\$1,000	2.5%
\$2,000	3.8%
\$2,500	4.4%
\$5,000	6.7%

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	4.3%
\$75,001 to \$100,000	\$2,500	\$10,000	4.2%
\$100,001 to \$125,000	\$2,500	\$10,000	4.1%
\$125,001 to \$150,000	\$2,500	\$10,000	4.0%
\$150,001 to \$200,000	\$2,500	\$10,000	3.8%
over \$200,000	\$2,500	5% of Basis for the Aggregate Limit	3.5%

Expense Constant 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.

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RATES		MASSACHUSETTS WORKERS COMPENSATION AND EMPLOYERS LIABILITY INSURANCE MANUAL	
Page RA-6		Proposed Effective July 1, 2023	
Premium Discount Percentages —(See Basic Manual Rule VII). The following premium discounts are applicable to Standard Premiums. Note: Premium Discount is not applicable to Assigned Risk policies.			
		Type A Discount	Type B Discount
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%
United States Longshore and Harbor Workers' Compensation Coverage 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)			
EXPERIENCE RATING ELIGIBILITY			
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.

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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.

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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.

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**RETROSPECTIVE RATING PLAN MANUAL
 STATE SPECIAL RATING VALUES**

**MASSACHUSETTS
 RR1**

Proposed Effective July 1, 2023

1. Hazard Group Differentials

A	B	C	D	E	F	G
1.74	1.48	1.27	1.08	0.89	0.70	0.56

2. Tax Multipliers

- a. State (non-F Classes) 1.041*
 - b. Federal Classes, or non-F classes 1.079*
- where rate is increased by the
 USL&HW Act Percentage
- * Includes 1.38% residual market subsidy provision
 and 0% insolvency fund assessment provision

3. Expected Loss Ratio

0.611

Expected Loss and Allocated Loss Adjustment Expense Ratio (ALAE Option)

0.663

4. Loss Conversion Factor

1.183

Loss Conversion Factor for Allocated Loss Adjustment Expense Option (ALAE Option)

1.090

5. Table of Expense Ratios Excluding Taxes and Including Profit

Type A Company

Massachusetts
 Effective July 1, 2023

Type B Company

Massachusetts
 Effective July 1, 2023

Table of Expense Ratios Excluding Allocated Loss Adjustment Expense and Taxes and Including Profit (ALAE Option)

Type A Company

Massachusetts
 Effective July 1, 2023

Type B Company

Massachusetts
 Effective July 1, 2023

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	0.402	0.425	0.448	0.467	0.485	0.512	0.541
30,000	0.385	0.410	0.433	0.453	0.473	0.501	0.532
35,000	0.370	0.395	0.420	0.442	0.461	0.491	0.525
40,000	0.357	0.383	0.407	0.431	0.451	0.481	0.517
50,000	0.333	0.360	0.386	0.411	0.432	0.463	0.504
75,000	0.286	0.314	0.342	0.372	0.394	0.427	0.476
100,000	0.251	0.279	0.308	0.340	0.363	0.396	0.451
125,000	0.223	0.250	0.279	0.314	0.336	0.369	0.429
150,000	0.201	0.225	0.255	0.290	0.312	0.344	0.409
175,000	0.181	0.204	0.233	0.269	0.291	0.322	0.390
200,000	0.165	0.186	0.215	0.251	0.272	0.302	0.372
250,000	0.138	0.156	0.184	0.219	0.239	0.267	0.340
300,000	0.118	0.134	0.159	0.193	0.212	0.238	0.312
500,000	0.071	0.081	0.100	0.127	0.141	0.162	0.231
1,000,000	0.033	0.039	0.049	0.064	0.072	0.084	0.132
2,000,000	0.015	0.017	0.022	0.030	0.034	0.041	0.067
3,000,000	0.009	0.011	0.014	0.019	0.022	0.026	0.044
4,000,000	0.006	0.007	0.010	0.013	0.015	0.018	0.032
5,000,000	0.005	0.006	0.007	0.010	0.012	0.014	0.024

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**MASSACHUSETTS
 RR2**

**RETROSPECTIVE RATING PLAN MANUAL
 STATE SPECIAL RATING VALUES**

Proposed Effective July 1, 2023

**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	0.443	0.469	0.493	0.512	0.532	0.561	0.590
30,000	0.426	0.452	0.477	0.499	0.519	0.549	0.582
35,000	0.410	0.437	0.463	0.486	0.507	0.539	0.574
40,000	0.396	0.424	0.450	0.475	0.496	0.528	0.566
50,000	0.371	0.400	0.427	0.454	0.476	0.510	0.553
75,000	0.321	0.351	0.381	0.413	0.436	0.472	0.523
100,000	0.284	0.314	0.345	0.379	0.404	0.439	0.498
125,000	0.253	0.283	0.315	0.351	0.376	0.411	0.475
150,000	0.229	0.256	0.288	0.327	0.351	0.386	0.454
175,000	0.208	0.233	0.266	0.304	0.328	0.362	0.434
200,000	0.189	0.213	0.245	0.284	0.307	0.341	0.415
250,000	0.160	0.181	0.211	0.250	0.272	0.304	0.382
300,000	0.137	0.156	0.184	0.222	0.242	0.272	0.352
500,000	0.084	0.096	0.118	0.148	0.164	0.188	0.264
1,000,000	0.040	0.046	0.058	0.076	0.085	0.099	0.154
2,000,000	0.018	0.021	0.027	0.036	0.041	0.048	0.079
3,000,000	0.011	0.013	0.017	0.023	0.026	0.031	0.052
4,000,000	0.008	0.009	0.012	0.016	0.018	0.022	0.038
5,000,000	0.006	0.007	0.009	0.012	0.014	0.017	0.029

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 & Subsequent</u>	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th & 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.

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Section XII - Retrospective Rating
Subsection A - Expenses
7/1/2023

Section XII - A
Exhibit 3

Expense Provisions Underlying the Proposed Retrospective Rating Plans

Total Expenses:

(1) Commission and Other Acquisition Expenses	12.6%
(2) Fixed Expenses	5.4%
(3) Premium Discount	5.6%
(4) Underwriting Profit Provision	<u>0.1%</u>
(5) Total Expenses Excluding Taxes and Assessments (= (1) + (2) + (3) + (4))	23.8%
(6) Current Premium Tax Rate	2.28%
(7) Miscellaneous Taxes	0.30%
(8) Retro Provision for the Residual Market Subsidy	1.38%
(9) Insolvency Fund Assessment	<u>0.00%</u>
(10) Tax Multiplier (= $1.0 / \{ 1.0 - [(6) + (7) + (8) + (9)] \}$)	1.041
(11) Expected Loss and LAE Ratio (adjusted for Residual Market Subsidy) (= $[1.0 / (10)] - (5)$)	72.3%
(12) Loss Adjustment Expense (as percentage of losses)	18.3%
(13) Loss Conversion Factor (= $1.0 + (12)$)	1.183
(14) Expected Loss without LAE (= $(11) / (13)$)	61.1%
(15) Expenses excluding Premium Taxes but including LAE (= $(5) + [(12) \times (14)]$)	34.9%

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).

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Section XII - Retrospective Rating
Subsection A - Expenses
7/1/2023

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)	61.1%
(2) Selected Three Year Average Defense and Cost Containment Expense Ratio (as percentage of losses)	8.4%
(3) Expected Loss plus ALAE Ratio (= (1) x [1.0 + (2)])	66.3%
(4) Loss Adjustment Expense (as percentage of losses)	18.3%
(5) Loss Conversion Factor (= [1.0 + (4)] / [1.0 + (2)])	1.090
(6) Tax Multiplier	1.041
(7) Expenses excluding Premium Taxes but including LAE (as percentage of Standard Premium plus ARAP)	34.9%
(8) Expenses including all AO Expenses but excluding ALAE Expenses and Premium Taxes (= (7) - [(1) x (2)])	29.8%

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)

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Section XII - Retrospective Rating
Subsection B - Residual Market Subsidy
7/1/2023

Section XII - B
Exhibit 1

Calculation of the Provision for the Residual Market Subsidy

(1) Voluntary Market Implied Rate Factor Equivalent	0.983
(2) Factor to Take into Account Basic Premium	0.800
(3) Retro Provision for the Residual Market Subsidy	1.38%

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, 2023

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	0.349	18,245	- 18,632	0.309	110,431	- 126,398	0.269
10,059	- 10,175	0.348	18,633	- 19,038	0.308	126,399	- 147,763	0.268
10,176	- 10,294	0.347	19,039	- 19,462	0.307	147,764	- 177,821	0.267
10,295	- 10,417	0.346	19,463	- 19,905	0.306	177,822	- 203,632	0.266
10,418	- 10,543	0.345	19,906	- 20,369	0.305	203,633	- 212,099	0.265
10,544	- 10,671	0.344	20,370	- 20,855	0.304	212,100	- 221,301	0.264
10,672	- 10,803	0.343	20,856	- 21,365	0.303	221,302	- 231,337	0.263
10,804	- 10,938	0.342	21,366	- 21,900	0.302	231,338	- 242,327	0.262
10,939	- 11,077	0.341	21,901	- 22,463	0.301	242,328	- 254,414	0.261
11,078	- 11,219	0.340	22,464	- 23,055	0.300	254,415	- 267,769	0.260
11,220	- 11,365	0.339	23,056	- 23,680	0.299	267,770	- 282,605	0.259
11,366	- 11,515	0.338	23,681	- 24,339	0.298	282,606	- 299,180	0.258
11,516	- 11,669	0.337	24,340	- 25,036	0.297	299,181	- 317,821	0.257
11,670	- 11,826	0.336	25,037	- 25,774	0.296	317,822	- 338,940	0.256
11,827	- 11,989	0.335	25,775	- 26,557	0.295	338,941	- 363,065	0.255
11,990	- 12,155	0.334	26,558	- 27,389	0.294	363,066	- 390,887	0.254
12,156	- 12,327	0.333	27,390	- 28,275	0.293	390,888	- 423,327	0.253
12,328	- 12,503	0.332	28,276	- 29,221	0.292	423,328	- 461,639	0.252
12,504	- 12,684	0.331	29,222	- 30,231	0.291	461,640	- 507,575	0.251
12,685	- 12,871	0.330	30,232	- 31,314	0.290	507,576	- 563,664	0.250
12,872	- 13,064	0.329	31,315	- 32,477	0.289	563,665	- 633,689	0.249
13,065	- 13,262	0.328	32,478	- 33,731	0.288	633,690	- 723,581	0.248
13,263	- 13,466	0.327	33,732	- 35,084	0.287	723,582	- 843,192	0.247
13,467	- 13,677	0.326	35,085	- 36,551	0.286	843,193	- 1,010,178	0.246
13,678	- 13,894	0.325	36,552	- 38,146	0.285	1,010,179	- 1,259,637	0.245
13,895	- 14,118	0.324	38,147	- 39,887	0.284	1,259,638	- 1,672,704	0.244
14,119	- 14,350	0.323	39,888	- 41,794	0.283	1,672,705	- 1,879,919	0.243
14,351	- 14,590	0.322	41,795	- 43,892	0.282	1,879,920	- 2,056,344	0.242
14,591	- 14,837	0.321	43,893	- 46,213	0.281	2,056,345	- 2,269,313	0.241
14,838	- 15,094	0.320	46,214	- 48,792	0.280	2,269,314	- 2,531,491	0.240
15,095	- 15,359	0.319	48,793	- 51,677	0.279	2,531,492	- 2,862,162	0.239
15,360	- 15,633	0.318	51,678	- 54,923	0.278	2,862,163	- 3,292,199	0.238
15,634	- 15,918	0.317	54,924	- 58,606	0.277	3,292,200	- 3,874,310	0.237
15,919	- 16,213	0.316	58,607	- 62,817	0.276	3,874,311	- 4,706,489	0.236
16,214	- 16,520	0.315	62,818	- 67,681	0.275	4,706,490	- 5,993,956	0.235
16,521	- 16,838	0.314	67,682	- 73,360	0.274	5,993,957	- 8,251,040	0.234
16,839	- 17,169	0.313	73,361	- 80,081	0.273	8,251,041	- 13,234,697	0.233
17,170	- 17,513	0.312	80,082	- 88,157	0.272	13,234,698	- 33,421,245	0.232
17,514	- 17,871	0.311	88,158	- 98,044	0.271	33,421,246	- OVER	0.231
17,872	- 18,244	0.310	98,045	- 110,430	0.270			

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

0.611

Tax Multiplier

1.041

MASSACHUSETTS **RETROSPECTIVE RATING PLAN MANUAL**
RR6 **STATE SPECIAL RATING VALUES**
Proposed Effective July 1, 2023

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	- 10,103	0.349	20,005	- 20,855	0.324	245,723	- 266,302	0.299
10,104	- 10,316	0.348	20,856	- 21,782	0.323	266,303	- 290,644	0.298
10,317	- 10,538	0.347	21,783	- 22,796	0.322	290,645	- 319,884	0.297
10,539	- 10,769	0.346	22,797	- 23,908	0.321	319,885	- 355,665	0.296
10,770	- 11,011	0.345	23,909	- 25,135	0.320	355,666	- 400,460	0.295
11,012	- 11,265	0.344	25,136	- 26,494	0.319	400,461	- 458,163	0.294
11,266	- 11,530	0.343	26,495	- 28,009	0.318	458,164	- 535,296	0.293
11,531	- 11,808	0.342	28,010	- 29,707	0.317	535,297	- 643,656	0.292
11,809	- 12,099	0.341	29,708	- 31,625	0.316	643,657	- 807,022	0.291
12,100	- 12,406	0.340	31,626	- 33,807	0.315	807,023	- 1,081,523	0.290
12,407	- 12,728	0.339	33,808	- 36,313	0.314	1,081,524	- 1,639,020	0.289
12,729	- 13,067	0.338	36,314	- 39,220	0.313	1,639,021	- 1,895,523	0.288
13,068	- 13,425	0.337	39,221	- 42,633	0.312	1,895,524	- 2,094,088	0.287
13,426	- 13,804	0.336	42,634	- 46,697	0.311	2,094,089	- 2,339,122	0.286
13,805	- 14,204	0.335	46,698	- 51,617	0.310	2,339,123	- 2,649,099	0.285
14,205	- 14,628	0.334	51,618	- 57,696	0.309	2,649,100	- 3,053,782	0.284
14,629	- 15,078	0.333	57,697	- 65,397	0.308	3,053,783	- 3,604,399	0.283
15,079	- 15,557	0.332	65,398	- 75,472	0.307	3,604,400	- 4,397,253	0.282
15,558	- 16,067	0.331	75,473	- 89,215	0.306	4,397,254	- 5,637,275	0.281
16,068	- 16,612	0.330	89,216	- 109,079	0.305	5,637,276	- 7,851,349	0.280
16,613	- 17,195	0.329	109,080	- 140,322	0.304	7,851,350	- 12,929,481	0.279
17,196	- 17,821	0.328	140,323	- 196,645	0.303	12,929,482	- 36,605,101	0.278
17,822	- 18,493	0.327	196,646	- 212,828	0.302	36,605,102	- OVER	0.277
18,494	- 19,219	0.326	212,829	- 228,095	0.301			
19,220	- 20,004	0.325	228,096	- 245,722	0.300			

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

0.611

Tax Multiplier

1.041

RETROSPECTIVE RATING PLAN MANUAL **MASSACHUSETTS**
STATE SPECIAL RATING VALUES **RR7**
Proposed Effective July 1, 2023

**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	0.298	18,245	- 18,632	0.258	110,431	- 126,398	0.218
10,059	- 10,175	0.297	18,633	- 19,038	0.257	126,399	- 147,763	0.217
10,176	- 10,294	0.296	19,039	- 19,462	0.256	147,764	- 177,821	0.216
10,295	- 10,417	0.295	19,463	- 19,905	0.255	177,822	- 203,632	0.215
10,418	- 10,543	0.294	19,906	- 20,369	0.254	203,633	- 212,099	0.214
10,544	- 10,671	0.293	20,370	- 20,855	0.253	212,100	- 221,301	0.213
10,672	- 10,803	0.292	20,856	- 21,365	0.252	221,302	- 231,337	0.212
10,804	- 10,938	0.291	21,366	- 21,900	0.251	231,338	- 242,327	0.211
10,939	- 11,077	0.290	21,901	- 22,463	0.250	242,328	- 254,414	0.210
11,078	- 11,219	0.289	22,464	- 23,055	0.249	254,415	- 267,769	0.209
11,220	- 11,365	0.288	23,056	- 23,680	0.248	267,770	- 282,605	0.208
11,366	- 11,515	0.287	23,681	- 24,339	0.247	282,606	- 299,180	0.207
11,516	- 11,669	0.286	24,340	- 25,036	0.246	299,181	- 317,821	0.206
11,670	- 11,826	0.285	25,037	- 25,774	0.245	317,822	- 338,940	0.205
11,827	- 11,989	0.284	25,775	- 26,557	0.244	338,941	- 363,065	0.204
11,990	- 12,155	0.283	26,558	- 27,389	0.243	363,066	- 390,887	0.203
12,156	- 12,327	0.282	27,390	- 28,275	0.242	390,888	- 423,327	0.202
12,328	- 12,503	0.281	28,276	- 29,221	0.241	423,328	- 461,639	0.201
12,504	- 12,684	0.280	29,222	- 30,231	0.240	461,640	- 507,575	0.200
12,685	- 12,871	0.279	30,232	- 31,314	0.239	507,576	- 563,664	0.199
12,872	- 13,064	0.278	31,315	- 32,477	0.238	563,665	- 633,689	0.198
13,065	- 13,262	0.277	32,478	- 33,731	0.237	633,690	- 723,581	0.197
13,263	- 13,466	0.276	33,732	- 35,084	0.236	723,582	- 843,192	0.196
13,467	- 13,677	0.275	35,085	- 36,551	0.235	843,193	- 1,010,178	0.195
13,678	- 13,894	0.274	36,552	- 38,146	0.234	1,010,179	- 1,259,637	0.194
13,895	- 14,118	0.273	38,147	- 39,887	0.233	1,259,638	- 1,672,704	0.193
14,119	- 14,350	0.272	39,888	- 41,794	0.232	1,672,705	- 1,879,919	0.192
14,351	- 14,590	0.271	41,795	- 43,892	0.231	1,879,920	- 2,056,344	0.191
14,591	- 14,837	0.270	43,893	- 46,213	0.230	2,056,345	- 2,269,313	0.190
14,838	- 15,094	0.269	46,214	- 48,792	0.229	2,269,314	- 2,531,491	0.189
15,095	- 15,359	0.268	48,793	- 51,677	0.228	2,531,492	- 2,862,162	0.188
15,360	- 15,633	0.267	51,678	- 54,923	0.227	2,862,163	- 3,292,199	0.187
15,634	- 15,918	0.266	54,924	- 58,606	0.226	3,292,200	- 3,874,310	0.186
15,919	- 16,213	0.265	58,607	- 62,817	0.225	3,874,311	- 4,706,489	0.185
16,214	- 16,520	0.264	62,818	- 67,681	0.224	4,706,490	- 5,993,956	0.184
16,521	- 16,838	0.263	67,682	- 73,360	0.223	5,993,957	- 8,251,040	0.183
16,839	- 17,169	0.262	73,361	- 80,081	0.222	8,251,041	- 13,234,697	0.182
17,170	- 17,513	0.261	80,082	- 88,157	0.221	13,234,698	- 33,421,245	0.181
17,514	- 17,871	0.260	88,158	- 98,044	0.220	33,421,246	- OVER	0.180
17,872	- 18,244	0.259	98,045	- 110,430	0.219			

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)

0.663

Tax Multiplier

1.041

XII 000011

MASSACHUSETTS	RETROSPECTIVE RATING PLAN MANUAL
RR8	STATE SPECIAL RATING VALUES
<i>Proposed Effective July 1, 2023</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	- 10,103	0.298	20,005	- 20,855	0.273	245,723	- 266,302	0.248
10,104	- 10,316	0.297	20,856	- 21,782	0.272	266,303	- 290,644	0.247
10,317	- 10,538	0.296	21,783	- 22,796	0.271	290,645	- 319,884	0.246
10,539	- 10,769	0.295	22,797	- 23,908	0.270	319,885	- 355,665	0.245
10,770	- 11,011	0.294	23,909	- 25,135	0.269	355,666	- 400,460	0.244
11,012	- 11,265	0.293	25,136	- 26,494	0.268	400,461	- 458,163	0.243
11,266	- 11,530	0.292	26,495	- 28,009	0.267	458,164	- 535,296	0.242
11,531	- 11,808	0.291	28,010	- 29,707	0.266	535,297	- 643,656	0.241
11,809	- 12,099	0.290	29,708	- 31,625	0.265	643,657	- 807,022	0.240
12,100	- 12,406	0.289	31,626	- 33,807	0.264	807,023	- 1,081,523	0.239
12,407	- 12,728	0.288	33,808	- 36,313	0.263	1,081,524	- 1,639,020	0.238
12,729	- 13,067	0.287	36,314	- 39,220	0.262	1,639,021	- 1,895,523	0.237
13,068	- 13,425	0.286	39,221	- 42,633	0.261	1,895,524	- 2,094,088	0.236
13,426	- 13,804	0.285	42,634	- 46,697	0.260	2,094,089	- 2,339,122	0.235
13,805	- 14,204	0.284	46,698	- 51,617	0.259	2,339,123	- 2,649,099	0.234
14,205	- 14,628	0.283	51,618	- 57,696	0.258	2,649,100	- 3,053,782	0.233
14,629	- 15,078	0.282	57,697	- 65,397	0.257	3,053,783	- 3,604,399	0.232
15,079	- 15,557	0.281	65,398	- 75,472	0.256	3,604,400	- 4,397,253	0.231
15,558	- 16,067	0.280	75,473	- 89,215	0.255	4,397,254	- 5,637,275	0.230
16,068	- 16,612	0.279	89,216	- 109,079	0.254	5,637,276	- 7,851,349	0.229
16,613	- 17,195	0.278	109,080	- 140,322	0.253	7,851,350	- 12,929,481	0.228
17,196	- 17,821	0.277	140,323	- 196,645	0.252	12,929,482	- 36,605,101	0.227
17,822	- 18,493	0.276	196,646	- 212,828	0.251	36,605,102	- OVER	0.226
18,494	- 19,219	0.275	212,829	- 228,095	0.250			
19,220	- 20,004	0.274	228,096	- 245,722	0.249			

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)

0.663

Tax Multiplier

1.041

XII 000012

Section XII - Retrospective Rating
 Subsection D - NCCI's Item R-1413
 7/1/2023

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

**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.

<u>Step 1</u>	<u>Hazard Group</u>	<u>Michigan</u>	<u>Countrywide</u>
Severities	A	27,361	37,292
	B	33,796	45,889
	C	36,053	51,116
	D	42,306	60,165
	E	49,253	71,093
	F	58,989	87,212
	G	65,830	100,004
 <u>Step 2</u>	Claim Count	=	78,533
	Credibility	=	$(78,533 / 155,000)^{0.5} = 0.712$
 <u>Step 3</u>	<u>Hazard Group</u>	<u>Michigan</u>	
Credibility Weighted Severities	A	30,223	= $(0.712)(27,361) + (0.288)(37,292)$
	B	37,223	
	C	40,394	
	D	47,453	
	E	55,547	
	F	67,122	
	G	75,679	
	Countrywide Overall:	59,736	
 <u>Step 4</u>	<u>Hazard Group</u>	<u>Differentials</u>	
Differentials	A	1.98	= $59,736 / 30,223$
	B	1.60	
	C	1.48	
	D	1.26	
	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
 7/1/2023

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	34,033
B	32,631	45,689	41,696
C	44,639	51,116	46,649
D	51,837	60,165	54,907
E	67,980	71,093	64,880
F	98,504	87,212	79,591
G	151,243	100,004	91,265
Overall	54,516	59,736	54,516

Step 2, Credibility:

(5) Massachusetts Claim Count =	41,430
(6) Requirement for Full Credibility =	155,000
(7) Massachusetts Credibility = = [(5) / (6)] ^{0.5}	0.52

Step 3, Credibility Weighted Severities:

Hazard Group (8)	Massachusetts Credibility Weighted Severities (9)
A	34,494
B	38,938
C	47,767
D	55,859
E	69,484
F	93,050
G	126,495

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	1.76	1.74	1.74
B	1.53	1.43	1.48	1.48
C	1.25	1.28	1.27	1.27
D	1.07	1.09	1.08	1.08
E	0.86	0.92	0.89	0.89
F	0.64	0.75	0.70	0.70
G	0.47	0.65	0.56	0.56

Notes:

- (2), (5): Lost Time Claim Data for Policy Years 2020 at 1st report, 2019
 at 2nd report, 2018 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, 2023. The proposed ELFs for the seven hazard groups¹ 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 61.1%, 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 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, 2023 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

¹ 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 and 2022 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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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 66.3%, 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:

$$R(\$500,000) = \frac{\text{HG3 Losses Excess of } \$500,000}{\text{HG3 Losses Excess of } \$150,000} \times \frac{\text{HG3 Losses Excess of } \$150,000}{\text{Total HG3 Losses}}$$

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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:

$$\begin{aligned} R(L) &= \frac{\int_L^{\infty} (x - L) f(x) dx}{\int_0^{\infty} x f(x) dx} \\ &= \frac{p \int_L^{\infty} (x - L) g(x) dx + (1-p) \int_L^{\infty} (x - L) h(x) dx}{pm_g + (1-p)m_h} \end{aligned}$$

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$$= \frac{pm_g R_g(L) + (1-p)m_h R_h(L)}{pm_g + (1-p)m_h}$$

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: θ is the scale parameter.

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Exhibit 1
Page 1

Excess Loss Factors Proposed to be Effective 07/01/2023

Accident Limit	Hazard Group						
	A	B	C	D	E	F	G
\$25,000	0.402	0.425	0.448	0.467	0.485	0.512	0.541
\$30,000	0.385	0.410	0.433	0.453	0.473	0.501	0.532
\$35,000	0.370	0.395	0.420	0.442	0.461	0.491	0.525
\$40,000	0.357	0.383	0.407	0.431	0.451	0.481	0.517
\$50,000	0.333	0.360	0.386	0.411	0.432	0.463	0.504
\$75,000	0.286	0.314	0.342	0.372	0.394	0.427	0.476
\$100,000	0.251	0.279	0.308	0.340	0.363	0.396	0.451
\$125,000	0.223	0.250	0.279	0.314	0.336	0.369	0.429
\$150,000	0.201	0.225	0.255	0.290	0.312	0.344	0.409
\$175,000	0.181	0.204	0.233	0.269	0.291	0.322	0.390
\$200,000	0.165	0.186	0.215	0.251	0.272	0.302	0.372
\$250,000	0.138	0.156	0.184	0.219	0.239	0.267	0.340
\$300,000	0.118	0.134	0.159	0.193	0.212	0.238	0.312
\$500,000	0.071	0.081	0.100	0.127	0.141	0.162	0.231
\$1,000,000	0.033	0.039	0.049	0.064	0.072	0.084	0.132
\$2,000,000	0.015	0.017	0.022	0.030	0.034	0.041	0.067
\$3,000,000	0.009	0.011	0.014	0.019	0.022	0.026	0.044
\$4,000,000	0.006	0.007	0.010	0.013	0.015	0.018	0.032
\$5,000,000	0.005	0.006	0.007	0.010	0.012	0.014	0.024

Note:

Exhibit 3, page 1 times the Expected Loss Ratio without LAE of 61.1% from Section XII-A, Exhibit 3.

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Exhibit 1
Page 2

Excess Loss and ALAE Factors Proposed to be Effective 07/01/2023

Accident Limit	Hazard Group						
	A	B	C	D	E	F	G
\$25,000	0.443	0.469	0.493	0.512	0.532	0.561	0.590
\$30,000	0.426	0.452	0.477	0.499	0.519	0.549	0.582
\$35,000	0.410	0.437	0.463	0.486	0.507	0.539	0.574
\$40,000	0.396	0.424	0.450	0.475	0.496	0.528	0.566
\$50,000	0.371	0.400	0.427	0.454	0.476	0.510	0.553
\$75,000	0.321	0.351	0.381	0.413	0.436	0.472	0.523
\$100,000	0.284	0.314	0.345	0.379	0.404	0.439	0.498
\$125,000	0.253	0.283	0.315	0.351	0.376	0.411	0.475
\$150,000	0.229	0.256	0.288	0.327	0.351	0.386	0.454
\$175,000	0.208	0.233	0.266	0.304	0.328	0.362	0.434
\$200,000	0.189	0.213	0.245	0.284	0.307	0.341	0.415
\$250,000	0.160	0.181	0.211	0.250	0.272	0.304	0.382
\$300,000	0.137	0.156	0.184	0.222	0.242	0.272	0.352
\$500,000	0.084	0.096	0.118	0.148	0.164	0.188	0.264
\$1,000,000	0.040	0.046	0.058	0.076	0.085	0.099	0.154
\$2,000,000	0.018	0.021	0.027	0.036	0.041	0.048	0.079
\$3,000,000	0.011	0.013	0.017	0.023	0.026	0.031	0.052
\$4,000,000	0.008	0.009	0.012	0.016	0.018	0.022	0.038
\$5,000,000	0.006	0.007	0.009	0.012	0.014	0.017	0.029

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.

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 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	0.657	0.696	0.733	0.764	0.794	0.839	0.885
\$30,000	0.630	0.670	0.708	0.742	0.774	0.820	0.871
\$35,000	0.606	0.647	0.687	0.723	0.755	0.803	0.858
\$40,000	0.584	0.626	0.667	0.705	0.738	0.787	0.847
\$50,000	0.545	0.589	0.631	0.673	0.707	0.758	0.825
\$75,000	0.469	0.514	0.560	0.609	0.644	0.698	0.779
\$100,000	0.411	0.456	0.504	0.557	0.594	0.648	0.739
\$125,000	0.365	0.409	0.457	0.513	0.550	0.603	0.703
\$150,000	0.328	0.368	0.417	0.475	0.511	0.563	0.669
\$175,000	0.296	0.334	0.382	0.441	0.476	0.527	0.638
\$200,000	0.269	0.304	0.351	0.410	0.444	0.494	0.609
\$250,000	0.226	0.256	0.300	0.358	0.390	0.437	0.556
\$300,000	0.192	0.219	0.260	0.316	0.346	0.390	0.511
\$500,000	0.116	0.133	0.164	0.208	0.231	0.265	0.377
\$1,000,000	0.055	0.063	0.080	0.105	0.118	0.138	0.216
\$2,000,000	0.025	0.028	0.037	0.050	0.056	0.066	0.110
\$3,000,000	0.015	0.017	0.023	0.031	0.035	0.042	0.072
\$4,000,000	0.010	0.012	0.016	0.022	0.025	0.030	0.052
\$5,000,000	0.008	0.009	0.012	0.017	0.019	0.023	0.040

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	0.104	0.903	0.101	0.906	0.090	0.916	0.076	0.928	0.072	0.931	0.068	0.935	0.048	0.953
\$200,000	0.208	0.821	0.202	0.825	0.179	0.842	0.152	0.863	0.145	0.869	0.136	0.877	0.097	0.910
\$250,000	0.415	0.688	0.404	0.694	0.358	0.721	0.304	0.754	0.290	0.763	0.271	0.776	0.193	0.831
\$300,000	0.623	0.586	0.606	0.594	0.537	0.625	0.456	0.665	0.435	0.677	0.407	0.692	0.290	0.763
\$500,000	1.453	0.354	1.413	0.362	1.253	0.393	1.064	0.438	1.014	0.452	0.949	0.470	0.677	0.564
\$1,000,000	3.529	0.167	3.431	0.171	3.043	0.192	2.585	0.222	2.462	0.232	2.305	0.245	1.644	0.323
\$2,000,000	7.681	0.075	7.468	0.077	6.622	0.088	5.626	0.105	5.359	0.110	5.017	0.118	3.578	0.165
\$3,000,000	11.832	0.046	11.504	0.047	10.201	0.054	8.666	0.065	8.255	0.069	7.729	0.074	5.512	0.107
\$4,000,000	15.984	0.032	15.541	0.033	13.781	0.038	11.707	0.046	11.152	0.049	10.440	0.053	7.446	0.077
\$5,000,000	20.136	0.024	19.578	0.025	17.360	0.029	14.748	0.035	14.048	0.037	13.152	0.040	9.380	0.060

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 \$154,050 for HGA, \$158,438 for HGB, \$178,679 for HGC, \$210,327 for HGD, \$220,799 for HGE, \$235,844 for HGF and \$330,677 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).

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Page 3

Excess Ratios Based on Adjusted Data

Accident Limit	Hazard Group						
	A	B	C	D	E	F	G
\$25,000	0.657	0.696	0.733	0.764	0.794	0.839	0.885
\$30,000	0.630	0.670	0.708	0.742	0.774	0.820	0.871
\$35,000	0.606	0.647	0.687	0.723	0.755	0.803	0.858
\$40,000	0.584	0.626	0.667	0.705	0.738	0.787	0.847
\$50,000	0.545	0.589	0.631	0.673	0.707	0.758	0.825
\$75,000	0.469	0.514	0.560	0.609	0.644	0.698	0.779
\$100,000	0.411	0.456	0.504	0.557	0.594	0.648	0.739
\$125,000	0.365	0.409	0.457	0.513	0.550	0.603	0.703
\$150,000	0.328	0.368	0.417	0.475	0.511	0.563	0.669
\$175,000	0.297	0.334	0.382	0.441	0.476	0.527	0.639
\$200,000	0.271	0.305	0.352	0.411	0.444	0.494	0.611
\$250,000	0.228	0.258	0.302	0.361	0.389	0.434	0.561
\$300,000	0.195	0.222	0.263	0.321	0.344	0.385	0.518
\$500,000	0.119	0.138	0.169	0.219	0.222	0.250	0.395
\$1,000,000	0.056	0.060	0.089	0.135	0.110	0.121	0.253
\$2,000,000	0.023	0.025	0.049	0.093	0.050	0.057	0.151
\$3,000,000	0.010	0.016	0.036	0.080	0.032	0.035	0.094
\$4,000,000	0.003	0.014	0.030	0.075	0.025	0.024	0.068
\$5,000,000	0.001	0.013	0.026	0.071	0.022	0.017	0.048

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.

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 Exhibit 4

Mixed Pareto-Exponential Distribution

Parameters:

Pareto shape = s	2.3285
Pareto scale = b	1.4950
Exponential scale = θ	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 = θ	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.

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Exhibit 5

Total Severity Trend & Benefit Change Adjustment

	Indemnity	Lost Time Medical	Medical Only	Total
(1) PY 9/1/2008 Average Severity	27,552	10,209	799	
(2) PY 2019 Average Severity	35,127	12,242	976	
(3) Annual Severity Trend - From PY 2019 to Prospective Effective Period	3.0%	2.1%	2.9%	
(4) Trend Factor from PY 9/1/2008 to Prospective Effective Period = [(2) / (1)] x [1.000 + (3)] ^ 4.5	1.454	1.316	1.386	
(5) Injury Type Weight at Ultimate	69.74%	26.64%	3.62%	
(6) Total Severity Trend Factor from PY 9/1/2008 to Prospective Effective Period = (4) Weighted by (5)				1.415
(7) Total Benefit Level Change Factor from PY 9/1/2008 to Prospective Effective Period				1.105
(8) Combined Trend and Benefit Factor from PY 9/1/2008 to Prospective Effective Period = (6) x (7)				1.564

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) x PY2008 + (2/3) x 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 to be anomalous but may in fact 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 by individual data reporter 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. Additionally, 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 again subject to a number of validations. Records that fail validation are flagged for explanation or correction by the carrier who submitted the data.

In 2005, the Commissioner ordered the WCRIBMA to develop a number of 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 fell outside of tolerance are required to provide an explanation for why the data are correct as reported or they are required to submit corrections. Carriers who do not comply are subject to potential further review by an independent audit firm if the Commissioner deems it to be necessary.

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In preparation for this rate filing, WCRIBMA actuarial staff assessed the available data to determine what it deemed 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. As a consequence, the Aggregate Financial data for several carriers were excluded from certain sections of the filing or excluded from use in the rate filing entirely as explained below.

As has been done since the 2003 rate filing, this filing excludes Aggregate Financial losses associated with the catastrophic events of September 11, 2001. In this filing, losses reported with Catastrophe Number 12 (COVID-19 Coronavirus Pandemic) have been excluded from Aggregate Financial losses and Unit Statistical losses. Additionally, in this filing, loss data from Travelers Group for a single large loss with a Calendar Year change in excess of \$10 million, has been excluded from the Aggregate Financial Data. Had the WCRIBMA not excluded this one claim of the Travelers Group from Aggregate Financial Data, the rate indication would have been slightly lower.

In this filing, loss data from Hartford Fire & Casualty Group for a single large loss with a Calendar Year change in excess of \$10 million, has been excluded from the Aggregate Financial Data for the estimation of loss development factors. This single loss was included in the Policy Year 2019 estimation of ultimate losses. The impact on the rate indication of excluding this one claim from the estimation of loss development factors is negligible.

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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.

Aggregate Financial data from Travelers Group was excluded from the estimation of expenses. Adjusting and other expenses reported by Travelers are considered outliers. For calendar year 2019, Travelers Group's reported adjusting and other expense ratio was an outlier compared to the balance of the industry. Had the WCRIBMA not excluded the data of the Travelers Group from expenses, the rate indication would have been lower.

Aggregate Financial data reported by AIG was not used in the expense section of this filing. For calendar year 2019, 2020 and 2021, AIG's commission and brokerage ratio were outliers compared to the balance of the industry. Had the WCRIBMA not

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excluded the data of AIG Group from expenses, the rate indication would have been lower.

Aggregate Financial data from Zurich Insurance Group was excluded from the estimation of premium development factors because the data for certain valuation 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.

Aggregate Financial data from Zurich Insurance Group was not used in the expense section of this filing. For calendar years 2019 and 2020, Zurich Insurance Group's reported negative values for general expenses on their Expense Call. Had the WCRIBMA not excluded the data of Zurich Insurance Group from expenses, the rate indication would have been lower.

Aggregate Financial data from Chubb Limited Group was not used in the expense section of this filing. For calendar year 2019, Chubb Limited Group's reported adjusting and other expenses were an outlier compared to the balance of the industry. Had the WCRIBMA not excluded the data of Chubb Limited Group from expenses, the rate indication would have been higher.

Aggregate Financial data from Atlantic Charter Insurance Group was not used in the expense section of this filing. For calendar year 2019, 2020 and 2021, Atlantic Charter Insurance Group's reported adjusting and other expenses were an outlier compared to the balance of the industry. Had the WCRIBMA not excluded the data of Atlantic Charter Insurance Group from expenses, the rate indication would have been higher.