MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY

Address: 1295 State Street, Springfield, MA 01111

200, 300, and 400 Series Actuarial Memorandum

December 3, 2024

Product	Number
200 Series	
Tax-Qualified Long-Term Care Policy Form	MM-200-P-MD et al.
300 Series	
Tax-Qualified Long-Term Care Policy Form	MM-300-P-MD et al.
400 Series	
Tax-Qualified Long-Term Care Policy Form	MM-400-P-MD et al.

Massachusetts Mutual Life Insurance Company (MassMutual) is requesting a rate increase on the above-listed long-term care policy forms. The company issued these policy forms in Maryland between September 23, 2000 and November 15, 2008.

Nationwide, the company intends to pursue actuarially equivalent rate levels (based on lifetime loss ratios) in all jurisdictions, except where required due to regulatory and jurisdiction-specific requirements. Unless otherwise specified, the nationwide request captures all MassMutual long-term care products from the 200, 300, and 400 Series that are no longer being marketed in any jurisdiction. This actuarial memorandum captures the pooled experience of the above-listed policy forms and similar policy forms issued nationwide across the three rate series.

In prior rate filings these forms were pooled with other rate series. The company is now managing the block of business separately by rate series when reviewing experience and determining when a rate increase is needed to be pursued.

As indicated in the enclosed cover letter, the company acknowledges that the requested rate increase exceeds the 15% annual maximum required by COMAR 31.14.01.04.A(5). Once the company and the Department have come to an agreement regarding the requested rate increase, an actuarially equivalent phased-in rate increase pursuant to COMAR 31.14.01.04.A(5) will be determined.

This actuarial memorandum reflects the nationwide requested rate increase, except the jurisdiction-specific requested rate increase is reflected in Section 19 and certain experience provided in the supplement to the actuarial memorandum. The nationwide requested rate increase is described in Section 2 below and the jurisdiction-specific request is described in the enclosed cover letter.

1. **Purpose of Filing**

    This actuarial memorandum has been prepared for the purpose of demonstrating that the requested rate increase meets the minimum requirements of the 2014 National Association of Insurance Commissioners (NAIC) Long-Term Care Insurance Model Regulation (Model Regulation). The supplement to the actuarial memorandum demonstrates compliance with the applicable regulatory requirements of this jurisdiction to the extent that they differ from the Model Regulation. It may not be suitable for other purposes.

2. **Requested Rate Increase**

    The company is requesting a premium rate increase on the above-listed forms, including all associated riders. These forms need a premium rate increase due to emerging and projected experience running more adversely than originally expected.

    This rate increase request is the second nationwide filing on these policy forms. The first nationwide request in 2018 sought to achieve a rate level consistent with that on the company's 513 Series product, which was capped at a maximum increase of 100%, except where required due to regulatory and jurisdiction-specific requirements. In jurisdictions that did not approve the initial increase as requested, the company requested follow-up increases to target a lifetime loss ratio actuarially equivalent to the 2018 request. The 2018 nationwide request did not certify to rate stability.

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The company intends to pursue actuarially equivalent rate levels (based on lifetime loss ratios) in all jurisdictions, except where required due to regulatory and jurisdiction-specific requirements. The rate levels vary by rate series and inflation option and were developed with consideration for the prior rate increase history of each jurisdiction.

Table 2.1 provides the average prior approved increase, the average requested increase, and the resulting average cumulative rate increase based on the nationwide increase request for each rate series by inflation option. Because the prior nationwide request included rate caps based on the 513 Series rates that were applied on a seriatim basis, the nationwide rate increase may vary by rate series and all available options and riders. The enclosed cover letter provides similar information to Table 2.1 based on the prior approved increases for this jurisdiction.

Table 2.1
Nationwide Rate Increase Summary by Series and Inflation Option[1]

Series	Inflation Option	Average Prior Approved Increase[2]	Average Requested Increase	Average Cumulative Increase
200	Auto	94%	209%	500%
	None	77	186	405
	All	93	206	490
300	Auto	72	242	490
	None	62	131	275
	All	72	234	474
400	Auto	75	149	335
	None	66	77	195
	All	74	140	318
All	All	79	193	425

[1] Values based on insureds in force as of 12/31/2023; excludes policies assumed to be paid up prior to the rate increase implementation date.
[2] Reflects the full implementation of rate increases approved through January 2024.

While this current rate increase request is being sought to help alleviate the adverse performance on this business, approving this rate increase as requested will not constitute a rate guarantee, as the company reserves the right to request additional increases in the future.

Upon reaching an agreement with the Department on the increase, the company will provide the corresponding rate tables.

As the company is not currently marketing new standalone long-term care products, the required statement that the renewal premium rate schedules are not greater than the new business premium rate schedules is not applicable.

Options for Reducing Benefits

The company offers insureds affected by the premium increase the option of reducing their policy benefits to provide flexibility of choice for those insureds who wish to maintain a premium level reasonably close to what they were paying prior to the rate increase. The company's notification letter outlines several available reduced benefit options (RBO) including:

- reducing the benefit period;
- reducing the maximum daily benefit amount;
- extending the elimination period;
- removing or reducing inflation protection; and
- removing or reducing other optional riders.

The company administers the reduction or removal of inflation protection in a consumer-friendly manner that exceeds industry norms. Insureds who elect to reduce or remove their inflation protection keep their inflated (current) daily benefit amounts and their premium rates are determined using the reduced

inflation option factor and their uninflated (original) daily benefit. This allows for these insureds to significantly mitigate a rate increase, as their premiums are based on their uninflated daily benefit, while maintaining meaningful long-term care coverage, as they will retain all daily benefit inflation accrued to-date.

3. **Description of Benefits**

The 200, 300, and 400 Series are existing tax-qualified policy forms that provide long-term care coverage. They are individually and jointly underwritten and provide either comprehensive coverage or facility-only coverage on a reimbursement basis. These policy forms also included a rider to convert to coverage on an indemnity basis. These forms have benefit eligibility requirements that involve activities of daily living (ADL) deficiencies or cognitive impairment. Waiver of premium is provided when certain benefits are being paid.

A daily benefit amount, benefit period, and elimination period were selected at issue. The available choices for benefit period and elimination period varied by rate series and are shown in Section 21.

At issue, the policyowner may have had the option to choose one of the following inflation options, the availability of which varied by rate series as shown in Section 21: no inflation, simple 5% inflation, or compound 5% inflation. The simple inflation option provides for benefit levels that increase on each anniversary date by 5% of the daily benefit amount chosen at issue for the life of the insured. The compound inflation option provides for benefit levels that increase on each anniversary date by 5% compounded annually for the life of the insured. These automatic increasing benefits apply even when the insured is in claim status.

Premiums are paid for the life of the policy, unless the policyowner elected at issue a limited premium payment period, as shown in Section 21. An additional option was available for all premium payment periods in which the policyowner could pay a higher first year premium followed by discounted (reduced) renewal premium thereafter (a.k.a., discounted renewal).

At issue, the policyowner may have been offered the option of selecting riders (e.g., restoration of benefits, shortened benefit period nonforfeiture rider) that provide the types of coverage, which vary by rate series, as shown in the enclosed rate tables.

The 200, 300, and 400 Series offered joint coverage policies. Joint coverage provides equal coverage for two persons if both apply and are issued coverage under the policy. When one of the joint lives dies or exhausts their benefits or terminates, coverage continues for the remaining insured. The new premium rate will be the premium that would have been charged for an individual policy at the original issue age and risk class of the remaining insured.

Most jurisdictions included Partnership-eligible policy forms or options for each rate series, subject to the individual Partnership requirements of each jurisdiction. Most jurisdictions issued the 200 Series under one policy form but issued two sets of rates based on issue date. The first set of rates was originally priced in 2000 and the second was subsequently repriced in 2001, where the issue date range of each set is jurisdiction-specific.

The options to reduce benefits, like those described in Section 2, are available any time and not only at the time of a rate increase.

A contingent benefit upon lapse (CBUL) will be available to all insureds affected by the rate increase, even if the increase is not considered substantial.

In some jurisdictions, the benefits made available to insureds were limited relative to what was offered nationwide and described above.

4. **Renewability**

   These policies are guaranteed renewable for life.

5. **Applicability**

   This rate increase applies to all policies issued on the above-listed policy forms in this jurisdiction. The rate changes will apply to the premium of the base policy form and all associated options and riders.

6. **Actuarial Assumptions**

   The following assumptions are used to project the experience shown in this filing (current assumptions). As described in Appendix A to this memorandum, experience on all of MassMutual's standalone long-term care products available at the time of development was combined in determining the assumptions such that not all product attributes described in Appendix A may apply to this filing as highlighted below.

   a. Active Assumptions

      i. <u>Claim Incidence Probabilities</u> were developed using the 2017 Milliman *Long-Term Care Guidelines* (*Guidelines*) incidence curves with adjustments for retrospective improvement. The incidence curves were developed based on starting site of care—assisted living facility (ALF), home health care (HHC), or skilled nursing facility (SNF)—and further adjusted based on historical experience for sex, partner status at issue, benefit period, inflation option, payment type, underwriting, rate series, and attained age.

      ii. <u>Voluntary Lapse Probabilities</u> vary by policy duration (ultimate for 9+), attained age (ultimate for 70+), inflation option, benefit period, payment method, and partner status at issue (i.e., partnered versus non-partnered). Exhibit A-2a of Appendix A to this memorandum summarizes the ultimate lapse probabilities by key characteristics.

      iii. <u>Active Mortality Probabilities</u> were developed using the 2012 Individual Annuitant Mortality (IAM) Basic table with adjustments to make it applicable to an active life exposure base and reflect retrospective active mortality improvement. These mortality probabilities were then adjusted based on historical mortality experience by sex, partner status at issue, underwriting, policy duration, and attained age. The mortality adjustment factors can be found in Exhibit A-3a of Appendix A to this memorandum.

   b. Disabled Assumptions

      i. <u>Disabled Mortality Probabilities</u> reflect disabled mortality tables developed in conjunction with the *Guidelines*. These mortality probabilities were then adjusted based on historical experience by starting site of care, sex, benefit period, partner status at issue, payment type, claim duration, and incurred age.

      ii. <u>Implied Recovery Probabilities</u> were developed from the composite claim terminations and the disabled mortality assumption with adjustments to ensure the resulting recovery probabilities were reasonable by claim month and across key claimant characteristics. Appendix A to this memorandum provides the formula used to develop the implied recovery probabilities.

   c. Utilization Assumption

      i. <u>Policy Duration Utilization</u> was developed using the *Guidelines* with adjustments to reflect recent utilization experience and cost of care trends. The policy duration utilization assumption also captures how utilization by site of care changes over time due to (1) inflation of the daily benefit and (2) cost of care trends.

ii. <u>Claim Duration Utilization</u> was developed based on the policy duration utilization assumption described above with adjustments for actual claim experience by starting site of care. These adjustments were based on historical utilization experience by benefit period, inflation option, and incurred age. The claim duration adjustment factors can be found in Exhibit A-8a of Appendix A to this memorandum.

d. <u>Insured Behavior Due to the Rate Increase</u>

At the time of a rate increase, insureds have the option to elect a CBUL or RBO. An increase in morbidity for adverse selection due to the rate increase is assumed based on the percentage of insureds that elect a CBUL and RBO.

Insureds who elect a CBUL are modeled as a lapse (i.e., the CBUL benefit is not modeled), which results in a slightly lower lifetime loss ratio than if the CBUL benefit had been modeled.

CBUL and RBO election rates are determined as a function of the rate increase magnitude. Adverse selection associated with the requested increase is a function of CBUL and RBO election and is applied to the claim incidence probabilities. These assumptions are applied on a seriatim basis. The following provides approximate averages for these assumptions based on the nationwide experience in this filing and the average requested increase described in Section 2: 11% CBUL election rate, 24% RBO election rate, and 6% morbidity increase due to adverse selection.

e. <u>Prospective Improvement</u> is not assumed for any assumption.

f. <u>Interest Rate</u> consistent with the maximum valuation interest rate applicable to the year of issue (ranges from 4.0% to 4.5% and averages 4.3%) is used to demonstrate compliance with the minimum loss ratio requirements.

g. <u>Expenses</u> have not been explicitly projected. Originally filed expense assumptions are assumed to remain appropriate, except that commissions are not paid on the increased premium.

The above assumptions are based on the experience of the above-listed policy forms and similar forms issued by MassMutual, industry experience, and actuarial judgment. These assumptions are based on the nationwide experience of all standalone long-term care business issued by MassMutual at the time of development, which includes the 200-513 Series. The assumptions above are deemed reasonable for the policy forms in this filing and for the purpose of this filing are considered "current" and "best estimate" (most likely without explicit margin) based on the experience used to develop the assumptions.

In establishing the assumptions described in this section, the policy design, underwriting, and claims adjudication practices for the above-listed policy forms were taken into consideration. Appendix A to this memorandum provides a description of the development of and justification for the assumptions used in this filing.

The company is not currently marketing standalone long-term care products. As a result, the requirement to reflect on any assumptions that deviate from those used for pricing other forms currently available for sale is not applicable.

7. **Marketing Method**

These policy forms were marketed by agents of MassMutual and/or by independent brokers.

8. **Underwriting Description**

These policies were individually underwritten with the use of various underwriting tools in addition to the application, which may have included medical records, medical history questionnaires, paramedical

functional assessments, cognitive screenings, phone interviews, face-to-face interviews, and/or attending physician statements.

9. **Premiums**

Premiums are unisex and payable for life unless the insured selected a limited premium payment period option. The premiums may vary by policy form, issue age, elimination period, benefit period, uninflated (original) daily benefit amount, inflation option, premium payment option, underwriting class, discounts (e.g., partner status), home care coverage, and the selection of any riders.

10. **Issue Age Range**

Issue ages are from 18 to 84.

11. **Area Factors**

Area factors are not used for these products.

12. **Premium Modalization Rules**

The following modal factors and percent distributions (based on the nationwide in-force insured count as of December 31, 2023) are applied to the annual premium (AP):

Table 12.1
Nationwide Modal Factors and Distribution

Premium Mode	Modal Factors	Percent Distribution
Annual	1.000*AP	42%
Semi-Annual	0.520*AP	4
Quarterly	0.270*AP	9
Monthly[1]	0.088*AP	45

[1] Factor may vary based on policy form and payment option.

13. **Reserves**

Active life reserves and reserves for the election of a CBUL have not been used in the experience exhibits for this rate increase analysis, except as described in the supplement to the actuarial memorandum. Claim reserves as of December 31, 2023 have been discounted to the incurral date of each respective claim and included in historical incurred claims. An incurred but not reported (IBNR) reserve balance as of December 31, 2023 has been allocated to the 2023 calendar year and included in historical incurred claims.

14. **Trend Assumptions**

As this is not medical insurance, an explicit medical cost trend is not included in the projections.

15. **Demonstration of Satisfaction of Loss Ratio Requirements**

The nationwide experience used in this filing includes experience on MassMutual long-term care products from the 200, 300, and 400 Series. These products are no longer being marketed in any jurisdiction. Pooling these forms' experience is appropriate as the policy forms have similar benefits and combining experience increases credibility.

Exhibit I provides actual and projected experience using the assumptions described in Section 6. Actual experience is provided from inception through 2023 and then projected on a seriatim basis for 60 years. The actual and projected experience is based on nationwide premiums reflecting the full implementation

of rate increases approved through January 2024. The after-increase projected experience reflects the additional increases needed to achieve the cumulative increases shown in Section 2 on a seriatim basis.

Values in Exhibit I are shown (a) before and (b) after the requested rate increase. Included are calendar year earned premiums, incurred claims, end of year lives, and annual loss ratios. As shown in Exhibit I, the anticipated lifetime loss ratio with the requested rate increase exceeds the minimum loss ratio required by pre-rate stability regulation.

Table 15.1 demonstrates that the lifetime loss ratios by rate series also exceed the minimum loss ratio required by pre-rate stability regulation. While compliance with the minimum loss ratio requirement is evaluated on a series-specific basis, additional splits by inflation option are included in Table 15.1 for reference. The 'All' Series row corresponds to that shown in Exhibit I.

Table 15.1
Lifetime Loss Ratios by Series and Inflation Option
Using Maximum Valuation Interest

Series	Inflation Option	Before Increase[1]	After Increase
200	Auto	188%	128%
	None	101	81
	All	176	122
300	Auto	200	129
	None	93	75
	All	192	125
400	Auto	148	102
	None	80	67
	All	141	98
All	All	170	116

[1] Reflects full implementation of rate increases approved through January 2024.

The majority of insureds in this jurisdiction subject to the rate increase will trigger a substantial rate increase and are eligible for a contingent benefit upon lapse. Because of this, an alternative version of the 58%/85% test, which uses the greater of 58% and the original anticipated lifetime loss ratio, is required by rate stability regulation. As the original anticipated lifetime loss ratios for the rate series in this filing do not exceed 58%, as seen in Table 16.1, an alternative 58%/85% is not provided.

Exhibit II provides a demonstration that the requested rate increase nationwide meets the 58%/85% minimum loss ratio test under moderately adverse conditions as required by rate stability regulation. Exhibit II shows that the sum of the accumulated value of incurred claims, without the inclusion of active life reserves, and the present value of projected incurred claims, without the inclusion of active life reserves, will not be less than the sum of the following:

1. Accumulated value of the initial earned premium times 58%,
2. 85% of the accumulated value of prior premium rate schedule increases,
3. Present value of projected initial earned premium times 58%, and
4. 85% of the present value of projected premium in excess of the projected initial earned premium.

Moderately adverse conditions are defined as any combination of deterioration in experience and/or assumptions that results in a deterioration in future experience. The projected incurred claims in Exhibit II were increased by 10% from the assumptions described above in Section 6 to reflect assumptions that include moderately adverse conditions.

Table 15.2 demonstrates that the 58%/85% test is passed by rate series. While compliance with this test is evaluated on a series-specific basis, additional splits by inflation option are included in Table 15.2 for reference. The 'All' Series row corresponds to that shown in Exhibit II.

Table 15.2
58%/85% Test by Series and Inflation Option ($ in millions)

Series	Inflation Option	Item 5[1]	Item 7[2]	Result[3]
200	Auto	$1,047	$2,243	Pass
	None	142	197	Pass
	All	1,189	2,440	Pass
300	Auto	1,026	2,211	Pass
	None	75	97	Pass
	All	1,101	2,307	Pass
400	Auto	946	1,598	Pass
	None	110	125	Pass
	All	1,056	1,723	Pass
All	All	3,346	6,470	Pass

[1] Item 5 is the Lifetime Earned Premium Times Prescribed Factor. Reflects full implementation of rate increases approved through January 2024.
[2] Item 7 is Lifetime Incurred Claims with Rate Increase.
[3] Test of whether Item 7 is not less than Item 5.

16. Actual-to-Expected Experience

The following table provides a comparison of actual and projected experience using the assumptions described in Section 6 to that expected using original pricing assumptions. Values in the following table are shown (a) before and (b) after the requested rate increase.

Table 16.1
Actual and Expected Loss Ratios by Series and Inflation Option

Series	Inflation Option	Lifetime Loss Ratio			Actual-to-Expected	
		Before Increase[1]	After Increase[1]	Expected[2]	Before Increase	After Increase
200	Auto	171%	119%	55%	3.12	2.16
	None	95	77	48	1.98	1.61
	All	161	113	54	2.99	2.10
300	Auto	181	119	57	3.18	2.08
	None	87	70	48	1.81	1.46
	All	174	115	56	3.09	2.04
400	Auto	124	87	55	2.25	1.57
	None	71	59	45	1.57	1.32
	All	118	84	54	2.18	1.55
All	All	152	105	55	2.78	1.92

[1] Reflects full implementation of rate increases approved through January 2024 and uses a current interest assumption on a basis that is consistent with original pricing, which differs from that used in Exhibit I.
[2] Projected actual policies sold from issue using original pricing assumptions.

Actual and projected experience in the above table is identical to that described in Exhibit I, except uses a current earnings interest rate assumption of 5.0%. This basis is consistent with original pricing that used an earnings interest rate basis.

Expected experience uses the actual policies sold and projects from issue on a seriatim basis using the original pricing assumptions for each rate series. Exhibit III provides a summary of the original pricing assumptions for each rate series that underlie the expected experience.

17. History of Previous Rate Revisions

Prior rate increase(s) have been approved and implemented on the above-listed forms.

Exhibit IV provides a status of the rate increase filings nationwide. The status is shown for each jurisdiction in which there is business in force as of December 31, 2023. Also included are the number of insureds and annualized premium based on insureds in force as of December 31, 2023. These values exclude insureds assumed to be paid up prior to the requested rate increase implementation date. Annualized premium in Exhibit IV reflects full implementation of rate increases approved through January 2024. The status listing provides the status of all prior and current requested increases and is grouped by the year in which each batch of filings was first submitted.

18. Analysis Performed to Consider a Rate Increase

This rate increase request is part of a second nationwide filing on these policy forms. At the time of the first nationwide request in 2018 an analysis of the business was performed which confirmed that a rate increase could be considered as experience had been more adverse than expected in original pricing.

For the business subject to rate stability regulation, an analysis was performed at the time of the 2018 nationwide request demonstrating that the projected loss ratio compared to that assumed at the time of original pricing revealed that experience unfolded more than moderately adverse and crossed the original pricing threshold for which the company could consider a rate increase.

Table 16.1 demonstrates that experience continues to be more adverse than that expected using original pricing assumptions as the actual-to-expected (A:E) loss ratios exceed 1.0. The adverse experience is primarily driven by higher-than-expected persistency and morbidity.

19. Average Annual Premium

Table 19.1 shows the number of insureds and the corresponding average annual premium that will be affected by this rate increase filing based on insureds in force as of December 31, 2023.

Table 19.1
Number of Insureds and Average Annual Premium[1]

Series	Inflation Option	Number of Insureds	Before Increase Premium[2]	After Increase Premium
		Maryland		
200	Auto	887	$2,661	$11,444
	None	64	1,526	8,774
	All	951	2,585	11,265
300	Auto	873	2,844	11,803
	None	61	1,520	6,309
	All	934	2,758	11,445
400	Auto	710	4,115	12,550
	None	62	1,640	5,329
	All	772	3,916	11,970
All	All	2,657	3,032	11,533
		Nationwide		
200	Auto	12,747	$2,911	$8,984
	None	1,917	2,101	6,009
	All	14,664	2,805	8,595
300	Auto	11,078	2,962	10,134
	None	1,151	2,121	4,902
	All	12,229	2,883	9,642
400	Auto	8,763	3,973	9,881
	None	1,718	2,649	4,696
	All	10,481	3,756	9,031
All	All	37,374	3,098	9,060

[1] Excludes insureds assumed to be paid up prior to the rate increase implementation date.
[2] Reflects full implementation of rate increases approved through January 2024.

20. Proposed Effective Date

This rate increase will apply to policies on their next policy anniversary date following at least a 60-day policyowner notification period following approval, but no sooner than five years after the first phase-in of the prior rate increase was effective. No policyowner will receive more than one increase during a 12-month period.

21. Distribution of Business

Table 21.1 provides distributions of business based on insureds in force as of December 31, 2023.

Table 21.1
Nationwide Distributions of Business

Issue Ages	Percent Distribution			
	All	200	300	400
<40	2%	1%	3%	2%
40-44	5	4	6	5
45-49	12	11	14	12
50-54	25	24	25	26
55-59	31	32	31	29
60-64	18	19	16	18
65-69	6	7	4	6
70-74	1	1	1	1
75-79	<1	<1	<1	<1
80+	<1	0	0	<1
Average Issue Age	55	56	54	55

Elimination Period	Percent Distribution			
	All	200	300	400
0-Day	1%	1%	1%	<1%
30-Day	10	12	11	6
60-Day	4	4	4	4
90-Day	81	83	78	82
180-Day	4	<1	6	8

Benefit Period	Percent Distribution			
	All	200	300	400
3 Years	12%	15%	9%	11%
4 Years	3	N/A	6	4
5 Years	2	N/A	N/A	6
6 Years	11	15	10	9
10 Years	1	N/A	N/A	4
Lifetime	70	70	75	66

Inflation Option	Percent Distribution			
	All	200	300	400
None	12%	12%	9%	15%
Simple 5%	36	39	32	37
Compound 5%	52	49	59	49

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Premium Payment Duration	Percent Distribution			
	All	200	300	400
Ten-Pay	16%	12%	19%	17%
Twenty-Pay	1	1	1	1
Lifetime-Pay	83	87	80	81

Premium Payment Option	Percent Distribution			
	All	200	300	400
No Discounted Renewal	94%	95%	95%	93%
Discounted Renewal	6	5	5	7

Coverage Type	Percent Distribution			
	All	200	300	400
Facility Only	1%	1%	1%	1%
Comprehensive	99	99	99	99

Benefit Type	Percent Distribution			
	All	200	300	400
Reimbursement	63%	78%	54%	55%
Indemnity	37	22	46	45

Underwriting Class[1]	Percent Distribution			
	All	200	300	400
Preferred	66%	76%	62%	59%
Standard	29	20	33	37
Substandard	4	4	5	5

[1] At issue, the labels may have differed, but were grouped into these three generic labels.

Partner Status at Issue	Percent Distribution			
	All	200	300	400
Partnered	74%	75%	73%	75%
Non-Partnered	26	25	27	25

22. Number of Insureds and Annualized Premium

Table 22.1 shows the number of insureds and annualized premium that will be affected by this rate increase filing based on insureds in force as of December 31, 2023.

Table 22.1
Number of Insureds and Annualized Premium[1]

Series	Inflation Option	Number of Insureds	Annualized Premium[2]
	Maryland		
200	Auto	887	$2,360,743
	None	64	97,653
	All	951	2,458,396
300	Auto	873	2,482,980
	None	61	92,738
	All	934	2,575,718
400	Auto	710	2,921,518
	None	62	101,670
	All	772	3,023,188
All	All	2,657	8,057,302
	Nationwide		
200	Auto	12,747	$37,107,809
	None	1,917	4,027,007
	All	14,664	41,134,816
300	Auto	11,078	32,813,735
	None	1,151	2,441,257
	All	12,229	35,254,992
400	Auto	8,763	34,812,338
	None	1,718	4,550,723
	All	10,481	39,363,062
All	All	37,374	115,752,871

[1] Excludes insureds assumed to be paid up prior to the rate increase implementation date.
[2] Reflects full implementation of rate increases approved through January 2024.

23. Actuarial Certification

I am a Principal and Consulting Actuary for Milliman, Inc. and retained by MassMutual to render an opinion with regard to long-term care insurance rates. I am a member of the American Academy of Actuaries. I meet the Academy's qualification standards to render this actuarial opinion and am familiar with the requirements for filing long-term care insurance premiums and rate increases.

This memorandum has been prepared in conformity with all applicable Actuarial Standards of Practice, including Actuarial Standards of Practice No. 8, "Regulatory Filings for Health Benefits, Accident and Health Insurance, and Entities Providing Health Benefits" and 18, "Long-Term Care" and other applicable standards.
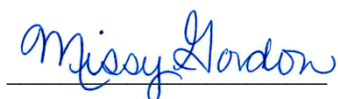
I hereby certify that, to the best of my knowledge and judgment, this rate submission is in compliance with the applicable laws and regulations of this jurisdiction and the rules of the Department. In my opinion, the rates are not excessive or unfairly discriminatory, and bear reasonable relationship to the benefits based on the loss ratio standards of this jurisdiction. This filing will enhance premium adequacy but may not be sufficient to prevent future rate action. Therefore, the certification that rates will remain stable under moderately adverse conditions cannot be made.

In forming my opinion, I have used actuarial assumptions and actuarial methods (which gave consideration to policy design, underwriting, and claim adjudication) and such tests of the actuarial calculations as I considered necessary. Based on these assumptions, or statutory requirements where necessary, the premium rate filing is in compliance with the loss ratio standards of this jurisdiction.

Certain models were developed to estimate the values included in this filing. The intent of the models was to estimate future experience. I have reviewed the models for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice.

I have relied on data and information provided by MassMutual and its third-party administrator to develop this filing, including but not limited to management's view of when a rate change may be considered, policy design, underwriting and claim adjudication process, seriatim in-force data, claim data, and the company's long-term earnings rate. I have not audited or verified this data and information. If the underlying data or information is inaccurate or incomplete, the results of this filing may likewise be inaccurate or incomplete.

The basis for statutory contract reserves has been previously filed and is not impacted by this filing.

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Missy Gordon, FSA, MAAA
Principal and Consulting Actuary

Date: December 3, 2024

This filing has been prepared solely for the use and benefit of MassMutual. Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit any third-party recipient of its work product, even if Milliman consents to the release of its work product to such third party.

Milliman's work is being delivered to the Department, in accordance with its statutory and regulatory requirements. Milliman recognizes that materials it delivers to the Department may be public records subject to disclosure to third parties, however, Milliman does not intend to benefit and assumes no duty or liability to any third parties, including the Department, who receive Milliman's work and may include disclaimer language on its work product so stating. The Department agrees not to remove any such disclaimer language from Milliman's work. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, the Department agrees that it shall not disclose Milliman's work product to third parties without Milliman's prior written consent; provided, however, that the Department may distribute Milliman's work to (i) its professional service providers who are subject to a duty of confidentiality and who agree to not use Milliman's work product for any purpose other than to provide services to the Department, or (ii) any applicable regulatory or governmental agency, as required.

A limited review was performed of the data used directly in this filing for reasonableness and consistency and no material defects in the data were found. If there are material defects in the data, it is possible that they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent. Such a review was beyond the scope of this assignment.

Differences between the projections in this filing and actual amounts depend on the extent to which future experience conforms to the assumptions made for this analysis. It is certain that actual experience will not conform exactly to the assumptions used in this analysis. Actual amounts will differ from projected amounts to the extent that actual experience deviates from expected experience.

Milliman recommends recipient be aided by its own actuary or other qualified professional when reviewing the Milliman work product.

| | | Without Interest | | | | With Max. Val. Interest | | |
| | | A | B | C = B / A | D | E | F | G = F / E |
	Calendar Year	Earned Premium	Incurred Claims	Incurred Loss Ratio	End of Year Lives	Earned Premium	Incurred Claims	Incurred Loss Ratio
	2000	617,541	0	0%	1,775	1,737,396	0	0%
	2001	8,435,983	64,652	1%	7,632	22,711,834	174,060	1%
	2002	21,438,417	524,994	2%	15,489	55,232,277	1,352,553	2%
	2003	38,430,026	1,705,560	4%	24,542	94,744,637	4,204,855	4%
	2004	58,613,238	1,498,692	3%	34,031	138,281,277	3,535,739	3%
	2005	88,658,407	6,377,985	7%	45,055	200,157,236	14,399,084	7%
	2006	108,301,391	4,228,642	4%	50,044	232,302,000	9,135,578	4%
	2007	121,945,648	9,682,950	8%	54,375	247,941,635	19,957,182	8%
	2008	136,143,338	9,391,322	7%	57,434	263,324,185	18,437,995	7%
	2009	137,545,336	14,640,774	11%	56,463	254,563,576	27,496,084	11%
	2010	134,545,499	18,477,071	14%	55,557	238,686,656	33,364,744	14%
Historical	2011	131,032,427	18,203,915	14%	54,877	222,776,817	31,333,496	14%
Experience	2012	127,099,473	22,115,828	17%	54,274	207,060,732	36,514,404	18%
	2013	122,461,619	22,063,445	18%	53,745	191,136,997	34,835,166	18%
	2014	115,997,690	31,691,540	27%	53,201	173,410,159	47,993,255	28%
	2015	104,838,375	43,660,267	42%	52,636	150,020,693	63,204,217	42%
	2016	96,738,963	37,606,895	39%	52,025	132,707,933	52,217,470	39%
	2017	90,673,253	58,521,710	65%	51,455	119,355,406	77,704,011	65%
	2018	84,623,058	59,656,146	70%	50,817	106,867,378	75,711,292	71%
	2019	81,990,984	65,310,472	80%	49,821	99,268,064	79,360,646	80%
	2020	83,194,267	79,411,774	95%	48,749	96,535,407	92,444,431	96%
	2021	85,736,342	100,054,148	117%	47,450	95,345,523	111,448,695	117%
	2022	93,315,155	113,114,243	121%	45,865	99,457,836	120,703,247	121%
	2023	98,429,634	140,467,283	143%	44,882	100,543,299	143,543,898	143%
	2024	99,261,577	149,458,489	151%	43,830	97,176,572	146,259,980	151%
	2025	101,283,207	172,896,823	171%	42,746	95,037,060	162,036,363	170%
	2026	99,621,234	199,013,633	200%	41,605	89,596,530	178,625,671	199%
	2027	96,104,600	227,343,675	237%	40,396	82,847,875	195,433,714	236%
	2028	92,104,259	257,742,986	280%	39,122	76,107,479	212,218,935	279%
	2029	87,966,442	290,342,588	330%	37,774	69,678,373	228,989,627	329%
	2030	83,800,923	324,559,473	387%	36,352	63,635,436	245,210,647	385%
	2031	79,468,960	359,284,247	452%	34,856	57,855,482	260,048,299	449%
	2032	75,002,625	392,727,260	524%	33,290	52,353,931	272,345,259	520%
	2033	70,429,769	424,834,873	603%	31,658	47,139,607	282,297,037	599%
	2034	65,783,229	455,671,748	693%	29,967	42,221,621	290,159,757	687%
	2035	61,102,355	484,297,020	793%	28,228	37,609,952	295,548,433	786%
	2036	56,426,217	509,094,375	902%	26,453	33,311,037	297,767,088	894%
	2037	51,794,544	527,999,834	1,019%	24,654	29,328,686	296,022,190	1,009%
Projected	2038	47,244,904	542,194,338	1,148%	22,846	25,662,866	291,414,730	1,136%
Future	2039	42,813,250	552,396,148	1,290%	21,043	22,310,598	284,653,463	1,276%
Experience	2040	38,532,744	557,157,485	1,446%	19,263	19,265,865	275,277,176	1,429%
	2041	34,438,452	556,103,275	1,615%	17,521	16,522,356	263,454,163	1,595%
	2042	30,560,441	548,516,040	1,795%	15,833	14,070,290	249,188,697	1,771%
	2043	26,920,431	535,767,346	1,990%	14,211	11,895,602	233,425,053	1,962%
	2044	23,533,575	518,564,434	2,204%	12,668	9,981,593	216,693,758	2,171%
	2045	20,412,755	496,703,319	2,433%	11,214	8,311,274	199,076,278	2,395%
	2046	17,566,386	471,793,116	2,686%	9,857	6,866,703	181,379,548	2,641%
	2047	14,996,324	443,603,879	2,958%	8,603	5,628,513	163,589,981	2,906%
	2048	12,699,385	413,343,973	3,255%	7,456	4,576,946	146,221,573	3,195%
	2049	10,666,908	381,741,701	3,579%	6,417	3,691,949	129,550,714	3,509%
	2050	8,886,749	349,795,211	3,936%	5,483	2,954,080	113,869,719	3,855%
	2051	7,343,004	318,333,213	4,335%	4,653	2,344,526	99,403,755	4,240%
	2052	6,017,169	287,034,482	4,770%	3,920	1,845,491	85,978,979	4,659%
	2053	4,890,217	256,512,286	5,245%	3,280	1,440,854	73,711,380	5,116%
	2054	3,941,710	226,773,391	5,753%	2,726	1,115,772	62,532,261	5,604%
	2055	3,151,502	198,694,134	6,305%	2,250	857,088	52,574,638	6,134%
	2056	2,499,855	172,594,961	6,904%	1,845	653,206	43,827,356	6,710%
	2057	1,967,742	148,727,833	7,558%	1,503	494,015	36,236,851	7,335%
	2058	1,537,582	126,865,467	8,251%	1,217	370,909	29,656,872	7,996%
	2059-2063	3,752,574	384,752,104	10,253%	3,262	821,517	80,839,942	9,840%
	2064-2068	892,226	138,235,274	15,493%	965	160,880	23,740,372	14,757%
	2069-2073	164,844	40,138,769	24,350%	254	24,604	5,640,677	22,926%
	2074-2078	20,511	10,012,379	48,814%	65	2,554	1,145,210	44,843%
	2079-2083	1,468	2,463,104	167,783%	18	153	225,105	147,092%
History		2,170,806,066	858,470,308	40%		3,544,168,954	1,099,072,103	31%
Future		1,485,602,650	13,454,084,684	906%		1,035,769,846	6,706,271,250	647%
Lifetime		3,656,408,716	14,312,554,993	391%		4,579,938,799	7,805,343,353	170%

	Calendar Year	Without Interest			End of Year Lives	With Max. Val. Interest		
		A Earned Premium	B Incurred Claims	C = B / A Incurred Loss Ratio	D	E Earned Premium	F Incurred Claims	G = F / E Incurred Loss Ratio
Historical Experience	2000	617,541	0	0%	1,775	1,737,396	0	0%
	2001	8,435,983	64,652	1%	7,632	22,711,834	174,060	1%
	2002	21,438,417	524,994	2%	15,489	55,232,277	1,352,553	2%
	2003	38,430,026	1,705,560	4%	24,542	94,744,637	4,204,855	4%
	2004	58,613,238	1,498,692	3%	34,031	138,281,277	3,535,739	3%
	2005	88,658,407	6,377,985	7%	45,055	200,157,236	14,399,084	7%
	2006	108,301,391	4,228,642	4%	50,044	232,302,000	9,135,578	4%
	2007	121,945,648	9,682,950	8%	54,375	247,941,635	19,957,182	8%
	2008	136,143,338	9,391,322	7%	57,434	263,324,185	18,437,995	7%
	2009	137,545,336	14,640,774	11%	56,463	254,563,576	27,496,084	11%
	2010	134,545,499	18,477,071	14%	55,557	238,686,656	33,364,744	14%
	2011	131,032,427	18,203,915	14%	54,877	222,776,817	31,333,496	14%
	2012	127,099,473	22,115,828	17%	54,274	207,060,732	36,514,404	18%
	2013	122,461,619	22,063,445	18%	53,745	191,136,997	34,835,166	18%
	2014	115,997,690	31,691,540	27%	53,201	173,410,159	47,993,255	28%
	2015	104,838,375	43,660,267	42%	52,636	150,020,693	63,204,217	42%
	2016	96,738,963	37,606,895	39%	52,025	132,707,933	52,217,470	39%
	2017	90,673,253	58,521,710	65%	51,455	119,355,406	77,704,011	65%
	2018	84,623,058	59,656,146	70%	50,817	106,867,378	75,711,292	71%
	2019	81,990,984	65,310,472	80%	49,821	99,268,064	79,360,646	80%
	2020	83,194,267	79,411,774	95%	48,749	96,535,407	92,444,431	96%
	2021	85,736,342	100,054,148	117%	47,450	95,345,523	111,448,695	117%
	2022	93,315,155	113,114,243	121%	45,865	99,457,836	120,703,247	121%
	2023	98,429,634	140,467,283	143%	44,882	100,543,299	143,543,898	143%
Projected Future Experience	2024	99,261,577	144,677,389	146%	43,830	97,176,572	141,581,254	146%
	2025	101,203,738	167,200,733	165%	42,746	94,962,502	156,698,180	165%
	2026	139,651,153	158,653,734	114%	37,803	125,576,336	142,413,050	113%
	2027	169,694,296	156,114,758	92%	36,668	146,215,769	134,243,214	92%
	2028	162,190,958	177,258,635	109%	35,484	133,936,622	146,007,873	109%
	2029	154,516,550	200,032,644	129%	34,247	122,297,598	157,840,510	129%
	2030	146,826,226	224,060,864	153%	32,951	111,391,986	169,381,612	152%
	2031	138,863,165	248,552,592	179%	31,590	100,988,587	180,025,279	178%
	2032	130,687,274	272,299,344	208%	30,167	91,113,457	188,982,266	207%
	2033	122,351,811	295,249,357	241%	28,681	81,781,422	196,367,253	240%
	2034	113,919,022	317,445,561	279%	27,144	73,007,714	202,347,241	277%
	2035	105,461,251	338,273,931	321%	25,563	64,808,029	206,670,472	319%
	2036	97,051,253	356,611,030	367%	23,951	57,192,316	208,840,606	365%
	2037	88,761,501	371,031,808	418%	22,317	50,164,993	208,301,847	415%
	2038	80,658,983	382,332,369	474%	20,677	43,722,859	205,796,436	471%
	2039	72,806,891	390,891,788	537%	19,043	37,857,249	201,747,108	533%
	2040	65,262,089	395,730,552	606%	17,431	32,553,726	195,848,728	602%
	2041	58,084,342	396,585,846	683%	15,855	27,797,508	188,215,649	677%
	2042	51,323,032	392,802,410	765%	14,328	23,567,365	178,781,044	759%
	2043	45,012,162	385,400,725	856%	12,862	19,834,709	168,238,355	848%
	2044	39,173,871	374,667,974	956%	11,468	16,566,681	156,876,913	947%
	2045	33,825,402	360,584,095	1,066%	10,154	13,729,995	144,818,246	1,055%
	2046	28,975,915	344,291,541	1,188%	8,929	11,290,094	132,640,305	1,175%
	2047	24,623,096	325,408,539	1,322%	7,798	9,210,387	120,259,618	1,306%
	2048	20,755,630	304,910,666	1,469%	6,762	7,453,938	108,095,257	1,450%
	2049	17,353,417	283,087,442	1,631%	5,824	5,983,948	96,278,418	1,609%
	2050	14,390,806	260,914,122	1,813%	4,981	4,765,158	85,118,886	1,786%
	2051	11,836,226	238,931,130	2,019%	4,230	3,763,854	74,769,244	1,987%
	2052	9,654,681	216,745,894	2,245%	3,567	2,948,629	65,063,028	2,207%
	2053	7,810,761	194,909,654	2,495%	2,988	2,291,239	56,127,895	2,450%
	2054	6,267,416	173,315,151	2,765%	2,486	1,765,978	47,892,771	2,712%
	2055	4,988,740	152,804,015	3,063%	2,054	1,350,278	40,517,534	3,001%
	2056	3,940,025	133,547,513	3,390%	1,686	1,024,411	33,984,960	3,318%
	2057	3,088,267	115,787,232	3,749%	1,375	771,329	28,271,454	3,665%
	2058	2,403,149	99,358,092	4,134%	1,115	576,596	23,276,707	4,037%
	2059-2063	5,805,544	306,073,916	5,272%	3,000	1,263,838	64,421,710	5,097%
	2064-2068	1,348,851	113,485,622	8,414%	895	241,604	19,524,401	8,081%
	2069-2073	240,904	34,475,186	14,311%	239	35,702	4,849,467	13,583%
	2074-2078	28,542	9,203,404	32,246%	62	3,530	1,051,632	29,790%
	2079-2083	1,942	2,400,763	123,613%	17	201	219,085	108,764%
History		2,170,806,066	858,470,308	40%		3,544,168,954	1,099,072,103	31%
Future		2,380,100,458	9,816,108,023	412%		1,620,984,711	4,882,385,509	301%
Lifetime		4,550,906,524	10,674,578,331	235%		5,165,153,665	5,981,457,612	116%

Projected incurred claims in 2024 and 2025 are different from those in the before increase projections due to an immaterial modeling simplification in the application of the assumed reduced benefit option elections.

Exhibit II
Demonstration that the Requested Rate Increase Passes the 58%/85% Loss Ratio Minimum
Massachusetts Mutual Life Insurance Company
200, 300, and 400 Series Combined Nationwide Experience

1	Accumulated value of initial earned premium	3,459,038,099	x	58%	=	2,006,242,098
2a	Accumulated value of earned premium	3,544,168,954				
2b	Accumulated value of prior premium rate schedule increases (2a - 1)	85,130,855	x	85%	=	72,361,227
3	Present value of future projected initial earned premium	408,149,604	x	58%	=	236,726,770
4a	Present value of future projected premium	1,620,984,711				
4b	Present value of future projected premium in excess of the projected initial earned premiums (4a - 3)	1,212,835,107	x	85%	=	1,030,909,841
5	Lifetime Earned Premium Times Prescribed Factor: Sum of 1, 2b, 3, and 4b					3,346,239,936
6a	Accumulated value of incurred claims without the inclusion of active life reserves					1,099,072,103
6b	Present value of future projected incurred claims without the inclusion of active life reserves					5,370,624,060
7	Lifetime Incurred Claims with Rate Increase: Sum 6a and 6b					6,469,696,163
8	Test: 7 is not less than 5					Pass

Items 2a, 4a, and 6a are consistent with the accumulated and present values shown in Exhibit I-b.
All accumulated or present values use the maximum valuation interest rate for contract reserves applicable to the year of issue, which ranges from 4.0% to 4.5% and averages 4.3%.
Item 3 reflects the impact of CBUL and RBO to align persistency with that in Item 4a.
Item 6b is 10% higher than incurred claims shown in Exhibit I-b to reflect moderately adverse conditions.

Exhibit III
Massachusetts Mutual Life Insurance Company
Original Pricing Assumptions
200, 300, and 400 Series

	Morbidity
200 Series 300 Series 400 Series	Claim costs were developed using The Reports of the Society of Actuaries and actuarial judgment. The following are durational morbidity factors:

Duration	Factor
1	0.10
2	0.20
3	0.40
4	0.60
5	0.80
6+	1.00

	Mortality
200 Series 300 Series	1975-80 Select and Ultimate mortality table.
400 Series	1994 Group Annuity Mortality (GAM) Static gender-distinct table.

	Lapse Rates
200 Series 300 Series	Lapse rates vary by duration. Lapse rates for the lifetime-payment option are provided in the table below.

Duration	Lapse Rates
1	8.00%
2	6.00%
3	5.00%
4	4.00%
5+	3.50%

For limited-pay policies, 2.00% lapse is assumed during the premium payment period.

400 Series	Lapse rates vary by duration.

Duration	Lapse Rates		
	Lifetime	10 Pay	20 Pay
1	7.00%	2.00%	2.00%
2	4.00%	2.00%	2.00%
3	3.00%	2.00%	2.00%
4	2.50%	2.00%	2.00%
5	2.00%	2.00%	2.00%
6	2.00%	1.50%	1.50%
7	2.00%	1.25%	1.25%
8	2.00%	1.00%	1.00%
9	2.00%	1.00%	1.00%
10	2.00%	0.00%	1.00%
11	2.00%	0.00%	1.00%
12	2.00%	0.00%	1.00%
13	2.00%	0.00%	1.00%
14	2.00%	0.00%	1.00%
15	2.00%	0.00%	1.00%
16+	2.00%	0.00%	0.00%

Exhibit III
Massachusetts Mutual Life Insurance Company
Original Pricing Assumptions
200, 300, and 400 Series

	Benefit Expiry Rates
All	An explicit benefit expiry assumption was not included in the original pricing memoranda.

	Interest Rate
200 Series	6.5% earnings rate
300 Series	6.0% earnings rate
400 Series	5.0% earnings rate

	Improvement
All	An annual improvement assumption was not included in pricing.

Exhibit IV
Massachusetts Mutual Life Insurance Company
Status of Filings as of November 20, 2024
All Jurisdictions in Which These Forms Are in Force
200, 300, and 400 Series

Jurisdiction	Rate Series	12/31/2023 Insureds In Force[1]	12/31/2023 Annualized Premium[1]	Percent of Total Premium	2018 Avg Req Incr[2]	2018 Disp Date	2018 Incr to be Impl[2][4]	2019 Avg Req Incr[2]	2019 Disp Date	2019 Incr to be Impl[2][4]	2020 Avg Req Incr[2]	2020 Disp Date	2020 Incr to be Impl[2][4]	2021 Avg Req Incr[2]	2021 Disp Date	2021 Incr to be Impl[2][4]	2023 Avg Req Incr[2]	2023 Disp Date	2023 Incr to be Impl[2][4]	2024 Avg Req Incr[2]	2024 Status[3][5][6]	2024 Date Submitted	2024 Disp Date	2024 Incr to be Impl[2][4]	Avg Cumulative Incr to be Impl[2][4]
Alabama	200 Series	18	$58,053	0.1%	103%	2/5/2021	15%							15%	3/16/2022	15%	15%	12/11/2023	15%		Not Yet Filed				52%
	300 Series	79	$192,912	0.2%	124%	2/5/2021	15%							15%	3/16/2022	15%	15%	12/11/2023	15%		Not Yet Filed				52%
	400 Series	80	$268,657	0.2%	108%	2/5/2021	15%							15%	3/16/2022	15%	15%	12/11/2023	15%		Not Yet Filed				52%
Arkansas	200 Series	23	$26,880	0.0%	94%	8/1/2018	0%	124%	3/31/2020	15%	92%	2/1/2021	15%	55%	5/12/2022	14%	245%	4/11/2024	15%		Not Yet Filed				74%
	300 Series	20	$51,742	0.0%	100%	8/1/2018	0%	124%	3/31/2020	15%	93%	2/1/2021	15%	60%	5/12/2022	15%	249%	4/11/2024	15%		Not Yet Filed				75%
	400 Series	17	$27,131	0.0%	80%	8/1/2018	0%	91%	3/31/2020	15%	65%	2/1/2021	15%	51%	5/12/2022	14%	155%	4/11/2024	15%		Not Yet Filed				74%
Arizona	200 Series	128	$280,253	0.2%	91%	12/26/2019	65%				21%	9/8/2023	14%				171%				TBD				88%
	300 Series (LR)	160	$472,429	0.4%	94%	12/26/2019	67%				23%	9/8/2023	19%				157%				TBD				99%
	400 Series (LR)	1	$2,328	0.0%	100%	12/26/2019	70%				1%	9/8/2023	0%				59%				TBD				70%
	300 Series (RS)	7	$25,516	0.0%	85%	12/26/2019	60%				27%	1/14/2022	27%				134%				TBD				102%
	400 Series (RS)	138	$504,084	0.4%	88%	12/26/2019	65%				19%	1/14/2022	19%				86%				TBD				97%
California	200 Series	1,862	$7,837,623	6.8%	307%	6/29/2021	160%														Not Yet Filed				160%
	400 Series	814	$4,198,204	3.6%	177%	6/29/2021	126%														Not Yet Filed				126%
Colorado	200 Series	154	$435,222	0.4%	302%	3/11/2022	108%														Not Yet Filed				108%
	300 Series	280	$857,838	0.7%	320%	3/11/2022	108%														Not Yet Filed				108%
	400 Series	193	$774,110	0.7%	233%	3/11/2022	108%														Not Yet Filed				108%
Connecticut	200 Series	109	$414,395	0.4%	83%	8/22/2018	44%							46%	7/25/2022	36%					Not Yet Filed				95%
	300 Series	231	$983,835	0.8%	96%	8/22/2018	44%							50%	7/25/2022	36%					Not Yet Filed				95%
	400 Series	188	$909,938	0.8%	86%	8/22/2018	44%							43%	7/25/2022	36%					Not Yet Filed				95%
District of Columbia	200 Series	55	$141,547	0.1%	169%	8/24/2018	10%	133%	9/29/2020	10%				10%	7/22/2022	10%	314%	12/19/2023	10%		Not Yet Filed				46%
	300 Series	114	$345,460	0.3%	198%	8/24/2018	10%	148%	9/29/2020	10%				10%	7/22/2022	10%	315%	12/19/2023	10%		Not Yet Filed				46%
	400 Series	73	$332,203	0.3%	167%	8/24/2018	10%	132%	9/29/2020	10%				10%	7/22/2022	10%	211%	12/19/2023	10%		Not Yet Filed				46%
Delaware	200 Series	18	$48,274	0.0%	100%	7/11/2019	88%										167%	7/19/2024	41%		Not Yet Filed				166%
	300 Series	3	$13,206	0.0%	92%	7/11/2019	86%										115%	7/19/2024	31%		Not Yet Filed				145%
	400 Series	14	$43,341	0.0%	96%	7/11/2019	87%										88%	7/19/2024	25%		Not Yet Filed				134%
Florida	200 Series	436	$1,235,231	1.1%	359%	12/10/2020	99%														Not Filed				99%
	300 Series	438	$1,486,706	1.3%	361%	12/10/2020	99%														Not Filed				99%
	400 Series	172	$807,459	0.7%	207%	12/10/2020	96%														Not Filed				96%
Georgia	200 Series	526	$1,492,045	1.3%	97%	9/6/2018	18%	78%	4/1/2020	13%	67%	3/24/2021	14%	40%	5/19/2022	22%	178%	12/29/2023	12%		Not Filed				108%
	300 Series	592	$1,931,341	1.7%	96%	9/6/2018	18%	77%	4/1/2020	13%	66%	3/24/2021	14%	41%	5/19/2022	23%	175%	12/29/2023	12%		Not Filed				109%
	400 Series	457	$1,804,279	1.6%	95%	9/6/2018	18%	75%	4/1/2020	13%	63%	3/24/2021	14%	34%	5/19/2022	11%	129%	12/29/2023	12%		Not Filed				88%
Hawaii	200 Series	98	$313,610	0.3%	97%	8/10/2020	97%														Not Yet Filed				97%
	300 Series	91	$293,738	0.3%	100%	8/10/2020	100%														Not Yet Filed				100%
	400 Series	43	$177,870	0.2%	89%	8/10/2020	89%														Not Yet Filed				89%
Iowa	200 Series	125	$270,196	0.2%	95%	9/25/2018	15%	80%	6/10/2020	38%				34%	10/7/2022	15%	203%	8/23/2024	30%		Not Filed				138%
	300 Series	151	$401,213	0.3%	96%	9/25/2018	15%	81%	6/10/2020	38%				34%	10/7/2022	15%	197%	8/23/2024	30%		Not Filed				138%
	400 Series	90	$292,048	0.3%	94%	9/25/2018	15%	77%	6/10/2020	38%				30%	10/7/2022	15%	124%	8/23/2024	30%		Not Filed				138%
Idaho	200 Series	14	$32,354	0.0%	113%	3/5/2021	50%										276%				TBD				50%
	300 Series	30	$67,851	0.1%	135%	3/5/2021	50%										246%				TBD				50%
	400 Series	20	$58,242	0.1%	121%	3/5/2021	50%										177%				TBD				50%
Illinois	200 Series	310	$817,731	0.7%	116%	7/24/2020	116%										129%	8/13/2024	142%		Not Filed				423%
	300 Series	406	$1,271,169	1.1%	120%	7/24/2020	120%										121%	8/13/2024	124%		Not Filed				393%
	400 Series	270	$1,019,674	0.9%	102%	7/24/2020	102%										88%	8/13/2024	80%		Not Filed				262%
Indiana	200 Series	70	$145,476	0.1%	96%	11/25/2019	10%				101%	4/30/2021	10%				352%	9/23/2024	35%		Not Filed				62%
	300 Series	76	$158,994	0.1%	98%	11/25/2019	10%				105%	4/30/2021	10%				363%	9/23/2024	35%		Not Filed				62%
	400 Series	57	$140,706	0.1%	91%	11/25/2019	10%				89%	4/30/2021	10%				241%	9/23/2024	21%		Not Filed				45%
Kansas	200 Series	75	$169,053	0.1%	94%	10/4/2019	94%										152%				TBD				94%
	300 Series	90	$223,175	0.2%	93%	10/4/2019	93%										148%				TBD				93%
	400 Series	71	$231,718	0.2%	79%	10/4/2019	79%										108%				TBD				79%
Kentucky	200 Series	82	$170,124	0.1%	92%	6/16/2019	92%										164%	6/6/2024	120%		Not Filed				322%
	300 Series	62	$172,177	0.1%	94%	6/16/2019	94%										156%	6/6/2024	118%		Not Filed				323%
	400 Series	68	$229,720	0.2%	72%	6/16/2019	72%										113%	6/6/2024	104%		Not Filed				251%
Louisiana	200 Series	106	$188,822	0.2%	96%	4/30/2019	20%				83%	5/12/2021	23%				259%	7/22/2024	29%		Not Filed				92%
	300 Series	73	$165,488	0.2%	98%	4/30/2019	20%				87%	5/12/2021	23%				255%	7/22/2024	30%		Not Filed				92%
	400 Series	68	$175,131	0.2%	97%	4/30/2019	20%				84%	5/12/2021	23%				169%	7/22/2024	29%		Not Filed				92%
Massachusetts	200 Series	477	$1,199,742	1.0%	92%	4/26/2019	40%										287%	4/19/2024	73%		Not Filed				142%
	300 Series	382	$1,130,778	1.0%	93%	4/26/2019	40%										283%	4/19/2024	73%		Not Filed				142%
	400 Series	253	$1,009,525	0.9%	89%	4/26/2019	40%										193%	4/19/2024	73%		Not Filed				142%
Maryland	200 Series	951	$2,458,396	2.1%	131%	8/25/2020	49%													336%	Not Yet Filed				49%
	300 Series	934	$2,575,718	2.2%	135%	8/25/2020	48%													315%	Not Yet Filed				48%
	400 Series	772	$3,023,188	2.6%	122%	8/25/2020	48%													206%	Not Yet Filed				48%
Maine	200 Series	55	$117,958	0.1%	90%	6/13/2019	69%										61%	8/2/2024	61%		Not Filed				172%
	300 Series (LR)	22	$54,029	0.0%	96%	6/13/2019	69%										65%	8/2/2024	65%		Not Filed				179%
	300 Series (RS)	11	$32,767	0.0%	100%	8/28/2019	69%										217%	5/31/2024	73%		Not Filed				192%
	400 Series	16	$68,606	0.1%	93%	8/28/2019	69%										132%	5/31/2024	72%		Not Filed				190%
Michigan	200 Series	320	$736,650	0.6%	89%	8/27/2018	89%										144%				TBD				89%
	300 Series	457	$1,194,685	1.0%	89%	8/27/2018	89%										133%				TBD				89%
	400 Series	261	$794,473	0.7%	78%	8/27/2018	78%										97%				TBD				78%
Minnesota	200 Series	148	$342,163	0.3%	91%	4/30/2019	71%										208%	9/6/2024	83%		Not Filed				213%
	300 Series	86	$224,291	0.2%	95%	4/30/2019	73%										204%	9/6/2024	89%		Not Filed				226%
	400 Series	99	$284,917	0.2%	84%	4/30/2019	68%										138%	9/6/2024	26%		Not Filed				113%
Missouri	200 Series	135	$302,141	0.3%	115%	3/23/2020	115%										136%				TBD				115%
	300 Series (LR)	69	$182,902	0.2%	111%	3/23/2020	111%										137%				TBD				111%
	300 Series (RS)	105	$272,863	0.2%	122%	3/23/2020	122%										129%				TBD				122%
	400 Series	163	$475,754	0.4%	95%	3/23/2020	95%										95%				TBD				95%
Mississippi	200 Series	188	$442,146	0.4%	110%	4/26/2019	25%	71%	4/7/2021	24%				22%	7/7/2023	14%	25%				TBD				77%
	300 Series	195	$496,371	0.4%	111%	4/26/2019	25%	72%	4/7/2021	24%				23%	7/7/2023	14%	25%				TBD				78%
	400 Series	138	$448,741	0.4%	104%	4/26/2019	25%	66%	4/7/2021	25%				21%	7/7/2023	13%	25%				TBD				77%
Montana	200 Series	16	$41,604	0.0%	77%	2/3/2020	76%										37%	9/4/2024	29%		Not Filed				128%
	300 Series	15	$42,148	0.0%	97%	2/3/2020	90%										48%	9/4/2024	46%		Not Filed				178%
	400 Series	11	$32,351	0.0%	82%	2/3/2020	58%										37%	9/4/2024	23%		Not Filed				95%

Exhibit IV
Massachusetts Mutual Life Insurance Company
Status of Filings as of November 20, 2024
All Jurisdictions in Which These Forms Are in Force
200, 300, and 400 Series

Jurisdiction	Rate Series	12/31/2023 Insureds In Force[1]	12/31/2023 Annualized Premium[1]	Percent of Total Premium	2018 Avg Req Incr[2]	2018 Disp Date	2018 Avg Incr Impl[2][4]	2019 Avg Req Incr[2]	2019 Disp Date	2019 Avg Incr Impl[2][4]	2020 Avg Req Incr[2]	2020 Disp Date	2020 Avg Incr Impl[2][4]	2021 Avg Req Incr[2]	2021 Disp Date	2021 Avg Incr Impl[2][4]	2023 Avg Req Incr[2]	2023 Disp Date	2023 Avg Incr Impl[2][4]	2024 Avg Req Incr[2]	2024 Status[3][5][6]	2024 Date Submitted	2024 Disp Date	2024 Avg Incr Impl[2][4]	Avg Cumulative Incr Impl[2][4]
North Carolina	200 Series	580	$1,219,078	1.1%	109%	4/9/2020	54%										246%				TBD				54%
	300 Series	751	$1,845,236	1.6%	112%	4/9/2020	53%										248%				TBD				53%
	400 Series	409	$1,229,311	1.1%	100%	4/9/2020	52%										167%				TBD				52%
North Dakota	300 Series	8	$12,797	0.0%	76%	8/15/2018	0%										415%	4/10/2024	0%		Not Filed				0%
Nebraska	200 Series	250	$559,182	0.5%	344%	12/2/2019	117%										122%				TBD				117%
	300 Series	285	$697,837	0.6%	319%	12/2/2019	119%										118%				TBD				119%
	400 Series	200	$604,795	0.5%	204%	12/2/2019	110%										76%				TBD				110%
New Hampshire	200 Series	62	$220,416	0.2%	91%	5/19/2020	31%										299%	12/27/2023	73%		Not Filed				127%
	300 Series	66	$297,233	0.3%	96%	5/19/2020	41%										286%	12/27/2023	73%		Not Filed				143%
	400 Series	41	$225,049	0.2%	67%	5/19/2020	40%										183%	12/27/2023	73%		Not Filed				141%
New Jersey	200 Series	456	$1,139,041	1.0%	126%	3/29/2023	33%														Not Filed				33%
	300 Series	732	$2,055,079	1.8%	122%	3/29/2023	33%														Not Filed				33%
	400 Series (LR)	65	$236,830	0.2%	107%	3/29/2023	33%														Not Filed				33%
	400 Series (RS)	367	$1,242,350	1.1%	107%	3/29/2023	33%														Not Filed				33%
New Mexico	200 Series	31	$77,979	0.1%	99%	8/22/2018	10%	94%	3/20/2020	16%	78%	1/13/2021	13%	48%	5/9/2022	48%									113%
	300 Series	34	$109,893	0.1%	93%	8/22/2018	10%	85%	3/20/2020	16%	68%	1/13/2021	13%	42%	5/9/2022	42%									106%
	400 Series	46	$194,096	0.2%	90%	8/22/2018	10%	81%	3/20/2020	16%	61%	1/13/2021	13%	33%	5/9/2022	33%									92%
Nevada	200 Series	66	$164,053	0.1%	112%	5/20/2019	92%										170%	8/15/2024	189%		Not Filed				454%
	300 Series	68	$234,928	0.2%	115%	5/20/2019	103%										145%	8/15/2024	178%		Not Filed				465%
	400 Series	39	$170,461	0.1%	99%	5/20/2019	98%										93%	8/15/2024	92%		Not Filed				280%
New York	200 Series	605	$1,548,234	1.3%	92%	4/11/2019	5%	95%	10/12/2021	10%							377%				TBD				16%
	300 Series	1,007	$2,875,650	2.5%	95%	4/11/2019	5%	102%	10/12/2021	5%							408%				TBD				10%
	400 Series	711	$2,546,320	2.2%	88%	4/11/2019	5%	90%	10/12/2021	5%							274%				TBD				10%
Ohio	200 Series	279	$519,048	0.4%	115%	2/4/2019	15%	85%	10/29/2021	15%							298%				TBD				32%
	300 Series	317	$654,986	0.6%	128%	2/4/2019	15%	96%	10/29/2021	15%							309%				TBD				32%
	400 Series	287	$777,259	0.7%	106%	2/4/2019	15%	77%	10/29/2021	15%							204%				TBD				32%
Oklahoma	200 Series	192	$422,903	0.4%	95%	8/22/2018	10%	88%	3/16/2020	32%				45%	4/20/2022	15%	216%	12/4/2023	13%		Not Yet Filed				89%
	300 Series	239	$565,666	0.5%	93%	8/22/2018	10%	86%	3/16/2020	32%				48%	4/20/2022	14%	221%	12/4/2023	13%		Not Yet Filed				87%
	400 Series	237	$745,422	0.6%	89%	8/22/2018	10%	81%	3/16/2020	31%				42%	4/20/2022	13%	142%	12/4/2023	12%		Not Yet Filed				84%
Oregon	200 Series	61	$89,523	0.1%	462%																TBD				0%
	300 Series	157	$289,961	0.3%	472%																TBD				0%
	400 Series	127	$300,730	0.3%	326%																TBD				0%
Pennsylvania	200 Series	2,557	$7,637,411	6.6%	92%	12/18/2018	52%							41%	10/14/2022	44%					Not Yet Filed				118%
	400 Series	706	$3,214,956	2.8%	79%	12/18/2018	49%							39%	10/14/2022	42%					Not Yet Filed				111%
Puerto Rico	200 Series	18	$50,131	0.0%	123%	11/9/2020	123%										120%				TBD				123%
	300 Series	34	$70,737	0.1%	110%	11/9/2020	110%										101%				TBD				110%
	400 Series	133	$391,420	0.3%	96%	11/9/2020	96%										52%				TBD				96%
Rhode Island	200 Series	48	$131,958	0.1%	93%	4/21/2022	93%														Not Filed				93%
	300 Series	46	$166,334	0.1%	76%	4/21/2022	76%														Not Filed				76%
	400 Series	41	$174,307	0.2%	78%	4/21/2022	78%														Not Filed				78%
South Carolina	200 Series	284	$507,650	0.4%	94%	12/12/2018	20%	71%	3/23/2021	18%				48%	6/13/2022	11%	233%	5/24/2024	20%		Not Yet Filed				89%
	300 Series	511	$1,117,628	1.0%	96%	12/12/2018	20%	74%	3/23/2021	19%				48%	6/13/2022	11%	227%	5/24/2024	20%		Not Yet Filed				90%
	400 Series	319	$940,578	0.8%	90%	12/12/2018	20%	67%	3/23/2021	19%				45%	6/13/2022	11%	153%	5/24/2024	20%		Not Yet Filed				89%
South Dakota	200 Series	1	$2,164	0.0%	100%	8/22/2018	100%										142%	6/4/2024	142%		Not Filed				383%
	300 Series	4	$12,406	0.0%	66%	8/22/2018	66%										133%	6/4/2024	133%		Not Filed				286%
	400 Series	4	$16,637	0.0%	100%	8/22/2018	100%										87%	6/4/2024	87%		Not Filed				274%
Tennessee	200 Series	378	$978,050	0.8%	92%	1/7/2019	61%				32%	3/8/2021	19%	7%	8/31/2022	8%	136%	7/31/2024	169%		Not Filed				456%
	300 Series	535	$1,549,624	1.3%	95%	1/7/2019	62%				34%	3/8/2021	20%	6%	8/31/2022	9%	129%	7/31/2024	159%		Not Filed				447%
	400 Series	266	$972,281	0.8%	86%	1/7/2019	60%				25%	3/8/2021	16%	8%	8/31/2022	6%	88%	7/31/2024	89%		Not Filed				270%
Texas	200 Series	910	$2,463,697	2.1%	355%	9/1/2020	123%										131%				TBD				123%
	300 Series	704	$2,303,768	2.0%	369%	9/1/2020	131%										117%				TBD				131%
	400 Series	785	$3,002,007	2.6%	184%	9/1/2020	109%										79%				TBD				109%
Utah	200 Series	75	$125,222	0.1%	83%	12/19/2018	83%										163%	7/10/2024	161%		Not Filed				377%
	300 Series	73	$166,549	0.1%	91%	12/19/2018	91%										147%	7/10/2024	146%		Not Filed				369%
	400 Series	44	$115,843	0.1%	83%	12/19/2018	83%										85%	7/10/2024	82%		Not Filed				233%
Virginia	200 Series	1,034	$2,754,836	2.4%	116%	5/18/2021	93%										169%				TBD				93%
	300 Series	1,004	$3,036,828	2.6%	120%	5/18/2021	96%										164%				TBD				96%
	400 Series	840	$3,072,455	2.7%	106%	5/18/2021	88%										107%				TBD				88%
Vermont	200 Series	13	$41,051	0.0%	152%	1/13/2022	152%														Not Yet Filed				152%
	300 Series	8	$41,262	0.0%	143%	1/13/2022	143%														Not Yet Filed				143%
	400 Series	13	$59,461	0.1%	121%	1/13/2022	121%														Not Yet Filed				121%
Washington	200 Series	155	$352,580	0.3%	100%	12/15/2020	26%							26%	3/17/2022	26%	209%	7/11/2024	31%		Not Filed				107%
	300 Series	246	$583,640	0.5%	100%	12/15/2020	26%							26%	3/17/2022	26%	209%	7/11/2024	31%		Not Filed				107%
	400 Series	135	$406,541	0.4%	100%	12/15/2020	26%							26%	3/17/2022	26%	209%	7/11/2024	31%		Not Filed				107%
Wisconsin	200 Series	52	$281,819	0.2%	58%	8/29/2018	58%										117%	12/5/2023	117%		Not Filed				243%
	300 Series	162	$1,104,398	1.0%	95%	8/29/2018	95%										135%	12/5/2023	135%		Not Filed				357%
	400 Series	85	$466,724	0.4%	88%	8/29/2018	88%										82%	12/5/2023	82%		Not Filed				242%
West Virginia	200 Series	29	$54,263	0.0%	90%	3/19/2019	90%										145%	9/24/2024	50%		Not Filed				185%
	300 Series	48	$121,829	0.1%	83%	3/19/2019	83%										151%	9/24/2024	50%		Not Filed				174%
	400 Series	31	$112,801	0.1%	84%	3/19/2019	84%										102%	9/24/2024	48%		Not Filed				173%
Wyoming	200 Series	29	$76,838	0.0%	96%	9/12/2018	96%										146%	8/27/2024	196%		Not Filed				480%
	300 Series	11	$19,380	0.0%	97%	9/12/2018	97%										131%	8/27/2024	172%		Not Filed				437%
	400 Series	3	$10,028	0.0%	81%	9/12/2018	81%										108%	8/27/2024	127%		Not Filed				310%

[1] Excludes policies assumed to be paid up prior to January 1, 2026. Reflects increases approved through January 2024.
[2] Average rate increase percentages are based on the distribution of business in force as of December 31, 2023 and reflect the most recent request made in the filing, which may have been updated from the initial request over the course of the filing.
[3] "Approved" is used in a generic sense to indicate that a rate increase has been approved, accepted, filed for use, etc., by a jurisdiction.
[4] Certain jurisdictions may have approved a multi-year increase, which results in a slightly higher rate level than requested.
[5] Where "Not Filed" is indicated, the company is not currently requesting an increase as part of the referenced filing due to prior rate guarantees, phase-ins, or other state-specific requirements.
[6] "TBD" (to be determined) is used in jurisdictions where the prior filing is still pending.

Appendix A
Development and Justification of Assumptions Used in this Filing

This appendix describes the development of, and justification for, the actuarial assumptions used in this filing.

The persistency and morbidity assumptions were developed using historical experience of MassMutual policies. Where actual experience had low credibility or did not exist, industry experience and actuarial judgment was also used. Historical experience through 2018 was used in the assumption development and morbidity experience included claim runout through 2019. Experience on all of MassMutual's standalone long-term care (LTC) products available at the time of development was combined in determining the assumptions described herein. Due to this pooling, not all product attributes and related assumptions described below may apply to this filing.

The persistency and morbidity assumptions were developed on a first principles basis. In this context, "first principles" means developing key assumptions (namely, morbidity and mortality) at the component level and modeling active and disabled lives separately. Separate assumptions were developed for: (1) claim incidence, (2) voluntary lapse, (3) active mortality, (4) claim termination (including separate assumptions for disabled mortality and recovery), and (5) utilization. For each assumption except utilization, experience from 2009 through 2018 with runout through 2019 was used. The utilization assumption was developed based on historical experience from 2015 through September 30, 2019 with runout through December 31, 2019 to capture more recent information as cost of care and utilization trends can fluctuate over short periods of time. Experience adjustment factors were developed using predictive analytics as described in the Predictive Analytics section below.

As an additional consideration, the COVID-19 pandemic has created uncertainty regarding future LTC experience. However, due to the long duration nature of LTC insurance, minor deviations in experience over a relatively small number of calendar years are not expected to have a significant impact on lifetime projections. Therefore, no adjustments were made to these assumptions to capture anticipated impacts of the pandemic. However, emerging experience and trends will continue to be monitored so that adjustments can be included in the future if believed to be representative of long-term trends.

The rate increase dependent assumptions were developed using historical experience and actuarial judgment where experience was limited or did not exist. A nationwide rate increase was filed for 200-511 Series beginning in 2018 and for the 513 Series beginning in 2022 such that this experience and considerations for these prior rate increases are described as applicable in the sections that follow.

The sections that follow provide more detail on the development of and justification for the assumptions used in the projections in this filing.

Active Assumptions

The assumptions for active (i.e., healthy) lives were developed based on MassMutual's historical experience from 2009 through 2018, with runout through 2019. Experience adjustment factors were developed using predictive analytics as described in the Predictive Analytics section below. The active assumptions include (1) claim incidence (the probability that an active life becomes disabled), (2) voluntary lapse, and (3) active mortality.

Claim Incidence

Claim incidence probabilities (i.e., the probability of an insured becoming disabled) were developed using the 2017 Milliman *Long-Term Care Guidelines* (*Guidelines*) incidence curves with adjustments for retrospective morbidity improvement. These assumptions were developed based on the following three starting sites of care—assisted living facility (ALF), home health care (HHC), or skilled nursing facility (SNF).

Exhibit A-1 provides a summary of actual-to-expected (A:E) experience by site of care for claim incidence in policy durations 7 and later for each characteristic by which the claim incidence assumption varies. The following items are included:

- Exposure [A] reflects the length of time a covered life is exposed to the risk of becoming disabled (i.e., an exact exposure basis).

- Claim counts [B] are based on historical claim experience and are provided by situs.

- A:E ratios are calculated as actual claim incidence probabilities to the *Guidelines* with a retrospective morbidity improvement adjustment [C] and to the assumption used in this filing [D]. This fit will not be perfect (i.e., ratios deviate from 1.0) because the main goal is to develop an assumption that generalizes well to new data by balancing assumption complexity and fit on the historical experience.

Appendix A
Development and Justification of Assumptions Used in this Filing

Lifetime Payment Voluntary Lapse

The voluntary lapse assumption for policies with a lifetime payment option, without a discounted renewal payment option, uses the base lapse probabilities underlying the all-lives assumption used in the company's 2018 rate increase filings, which varied by policy duration and partner status at issue (i.e., partnered versus non-partnered). This prior assumption was developed for use with an all-lives exposure base (i.e., including both active and disabled insureds); however, it is considered an appropriate expected basis for an active assumption because lapses due to benefit expiry were explicitly removed from the prior study and the ultimate lapse probability was assumed to be constant (rather than decreasing).

The attained age adjustment factors developed from the predictive model produced a U-shaped pattern (i.e., decreased and then increased) by attained age. However, the attained age adjustment factors are held constant for attained ages less than 50 and for attained ages 70 and older to produce an ultimate voluntary lapse assumption that is constant rather than increasing by attained age. The adjustments are held constant after this point as this increasing lapse trend may be due to miscoding of deaths or underreporting of deaths in the Social Security Death Master File. An additional attained age adjustment to mortality was developed (Exhibit A-3a) to capture these terminations (i.e., higher lapses at older attained ages) such that the combined mortality and voluntary lapse assumption better aligns with actual experience as shown in Exhibit A-4.

Exhibit A-2 supports the voluntary lapse assumption and provides the following information by benefit period (non-lifetime or lifetime), inflation protection option (auto or none), payment method (with or without discounted renewal payment option), and attained age.

- Exhibit A-2a provides the ultimate voluntary lapse probabilities after all experience adjustments. These ultimate voluntary lapse probabilities are applicable for attained ages 70 and older in policy durations 9 and later.

- Exhibit A-2b provides A:E experience and includes the following:

  - Exposure [A] reflects the length of time a covered life is exposed to the risk of voluntary lapse (i.e., exact exposure basis).

  - Actual lapses [B].

  - A:E ratios are calculated as actual lapse probabilities to the unadjusted voluntary lapse assumption used in the company's nationwide 2018 rate increase filings [C], the assumption with experience adjustments directly from the predictive model (i.e., without the attained age caps) [D], and the assumption used in this filing (i.e., with the attained age caps) [E]. This fit will not be perfect (i.e., ratios deviate from 1.0) because the main goal is to develop an assumption that generalizes well to new data by balancing assumption complexity and fit on the historical experience. Additionally, the A:E in column [E] is greater than 1.0 due to the reallocation of lapses at higher attained ages as described above.

The experience underlying Exhibit A-2b captures policies with a lifetime payment option, without a discounted renewal payment option, for policy durations 9 and later to focus on the fit of the ultimate voluntary lapse assumption and excludes "shock" lapses. For all cohorts except the 513 Series, there have been prior rate increases in the underlying experience, and thus the option to lapse with a contingent benefit (a.k.a., shock lapse). Policyowners that elected a contingent benefit upon lapse (CBUL) were not counted as a voluntary lapse; however, their annual policy exposure was valued up to the date of election. That said, the number of rate increases approved prior to December 31, 2018 is limited and considered immaterial to the development of this assumption.

Discounted Renewal or Limited Payment Voluntary Lapse

For policies with a discounted renewal payment option and/or limited payment option, the voluntary lapse assumption is a function of the voluntary lapse probabilities for policies with a lifetime payment option, without a discounted renewal payment option. The discounted renewal payment option and limited payment option lapse adjustments are unchanged from the all-lives assumption used in the company's 2018 rate increase filings and were validated using sensitivity testing analysis in lieu of leveraging predictive analytics or traditional A:E studies. Based on this sensitivity testing, the impact of adjustments to the discounted renewal payment option and limited payment option voluntary lapse assumptions on the projections is immaterial.

Appendix A
Development and Justification of Assumptions Used in this Filing

Active Mortality

Active mortality was developed based on the 2012 Individual Annuity Mortality table (2012IAM) with adjustments to make it applicable to an active-life exposure base and reflect retrospective active mortality improvement. Experience adjustment factors were developed using predictive analytics with additional adjustments to increase mortality for ages 70 and older commensurate with the capping applied for voluntary lapse mentioned above.

Exhibit A-3 supports the active mortality assumption and provides the following information by policy duration, sex, partner status at issue, attained age, and underwriting class:

- Exhibit A-3a provides the adjustment factors that are to be applied to the 2012IAM hazard rates; the adjusted hazard rates are converted back into mortality probabilities to create the adjusted mortality assumption. The attained age adjustment factors are applicable to policy durations 7 and later.

- Exhibit A-3b provides A:E results for business in policy durations 7 and later, and includes the following:

  - Exposure [A] reflects the length of time a covered life is exposed to the risk of death (i.e., exact exposure basis).

  - Actual deaths of active insureds [B].

  - A:E ratios are calculated as actual mortality probabilities to the unadjusted active 2012IAM mortality probabilities with a retrospective mortality improvement adjustment [C], the assumption with experience adjustments directly from the predictive model (i.e., without the composite termination attained age adjustments) [D], and the assumption used in this filing (i.e., with the composite termination attained age adjustments) [E]. This fit will not be perfect (i.e., ratio deviates from 1.0) because the main goal is to develop an assumption that generalizes well to new data by balancing assumption complexity and fit on the historical experience. Additionally, the A:E in column [E] is less than 1.0 due to the reallocation of lapses at higher attained ages as described above.

Composite Policy Terminations

Exhibit A-4 supports the active composite termination (i.e., active mortality and voluntary lapse combined) assumption. It provides an A:E comparison of the composite termination experience and includes the following:

- Exposure [A] reflects the length of time a covered life is exposed to the risk of termination (i.e., exact exposure basis).

- Actual composite terminations of active insureds [B].

- A:E ratios are calculated as actual termination probabilities to the expected composite termination probabilities [C]. The A:E provides an indication of fit. This fit will not be perfect (i.e., ratios deviate from 1.0) because the main goal is to develop an assumption that generalizes well to new data by balancing assumption complexity and fit on the historical experience.

The experience underlying Exhibit A-4 reflects policies with a lifetime payment option, without a discounted renewal payment option, for policy durations 9 and later to focus on the fit of the ultimate composite termination assumption. It also excludes "shock" lapses as described above for Exhibit A-2b.

Disabled Assumptions

The assumptions for disabled (i.e., on-claim) lives were developed based on detailed historical experience from 2009 through 2018 with runout through 2019. Experience adjustment factors were developed using predictive analytics as described in the Predictive Analytics section below. The disabled assumptions include (1) disabled mortality and (2) recovery. A composite claim termination assumption was also developed and used to derive an implied recovery assumption, as described below.

Disabled Mortality

Disabled mortality probabilities were developed based on the disabled mortality tables developed in conjunction with the *Guidelines* with adjustments to reflect experience from 2009 through 2018 with runout through 2019. The

experience adjustment factors were developed using predictive analytics as described in the Predictive Analytics section below.

Exhibit A-5 provides a summary of A:E results for experience in claim months 4 through 96 for each characteristic by which the disabled mortality assumption varies (starting site of care, sex, benefit period, partner status at issue, payment type, claim duration, and incurred age) and includes the following:

- Exposure [A] reflects the length of time a disabled insured is exposed to the risk of death (i.e., exact exposure basis).

- Actual deaths [B] of disabled insureds.

- A:E ratios are calculated as actual deaths of disabled insureds to the unadjusted disabled mortality tables developed in conjunction with the *Guidelines* [C] and the disabled mortality assumption used in this filing [D]. The A:E provides an indication of fit. This fit will not be perfect (i.e., ratios deviate from 1.0) because the main goal is to develop an assumption that generalizes well to new data by balancing assumption complexity and fit on the historical experience.

Implied Recovery

Implied recovery probabilities were developed from the composite claim termination (described below) and disabled mortality assumptions using the following formula:

Implied Recovery Probability = 1 – [(1 – Claim Termination Probability) / (1 – Disabled Mortality Probability)]

Minor smoothing was applied to ensure that the resulting recovery probabilities were reasonable by claim month and across key claimant characteristics.

Exhibit A-6 provides a summary of A:E results for experience in claim months 4 through 96 for each characteristic by which the implied recovery assumption varies (starting site of care, sex, benefit period, partner status at issue, payment type, claim duration, and incurred age) and includes the following:

- Exposure [A] reflects the length of time a disabled insured is exposed to the opportunity of recovery (i.e., exact exposure basis).

- Actual recoveries [B] of disabled insureds.

- A:E ratios are calculated as actual recoveries of disabled insureds to the recovery tables developed in conjunction with the *Guidelines* [C] and the implied recovery assumption used in this filing [D]. The *Guidelines* A:E result is included for illustrative purposes only as this expected basis was not directly used in developing the implied recovery assumption.

Composite Claim Terminations

Composite claim termination probabilities were developed using the *Guidelines* with adjustments to reflect experience from 2009 through 2018 with runout through 2019. The experience adjustment factors were developed using predictive analytics as described in the Predictive Analytics section below.

Exhibit A-7 provides a summary of A:E results for experience in claim months 4 through 96 for each characteristic by which the composite claim termination assumption varies (starting site of care, sex, benefit period, partner status at issue, payment type, claim duration, and incurred age) and includes the following:

- Exposure [A] reflects the length of time a disabled insured is exposed to the risk of claim termination (i.e., exact exposure basis).

- Actual terminations [B] of disabled insureds.

- A:E ratios are calculated as actual claim terminations to the unadjusted *Guidelines* claim termination tables [C] and the claim termination assumption used in this filing [D]. The A:E provides an indication of fit. This fit will not be perfect (i.e., ratios deviate from 1.0) because the main goal is to develop an assumption that generalizes well to new data by balancing assumption complexity and fit on the historical experience.

Appendix A
Development and Justification of Assumptions Used in this Filing

Utilization Assumption

Utilization recognizes that less than the full potential benefit may be paid for an LTC claim due to services received less frequently than daily ("day" utilization) or actual charges less than the daily maximum ("dollar" utilization). The utilization assumption is a "total" utilization assumption—that is, it captures the impact of both day and dollar utilization. The utilization assumption was developed based on historical experience from 2015 through September 30, 2019 with runout through December 31, 2019.

For MassMutual's in-force business that pays services on a reimbursement basis, total utilization was split into two components (1) policy duration utilization and (2) claim duration utilization.

Policy Duration Utilization

Total policy duration utilization was developed using the *Guidelines* utilization projection model with inputs based on MassMutual's actual utilization percentages and cost of care trends.

The policy duration utilization assumption also captures how utilization by site of care changes over time due to (1) inflation of the daily benefit and (2) cost of care trends.

The policy duration utilization assumption produced using these assumptions and the *Guidelines* utilization projection model were then used as the underlying expectation for the claim duration utilization analysis described below.

Claim Duration Utilization

Total utilization by claim duration was developed based on the policy duration utilization assumption described above with adjustments for MassMutual's actual claim experience by starting site of care. Experience adjustment factors were developed using predictive analytics as described in the Predictive Analytics section below, with additional adjustments to trend the utilization assumption towards an ultimate level in late claim durations where experience was limited.

Exhibit A-8 supports the claim duration total utilization assumption for policies that pay for services on a reimbursement basis and provides the following information by starting site of care, claim duration month, benefit period (non-lifetime or lifetime), inflation protection option (auto or none), and incurred age.

- Exhibit A-8a provides the claim duration adjustment factors described above.

- Exhibit A-8b provides A:E results for experience in claim months 4 through 96 and includes the following:

  - Actual paid claims [A].

  - A:E ratios are shown separately for the policy duration utilization assumption described above [B] and the utilization assumption used in this filing [C]. This fit will not be perfect (i.e., ratios deviate from 1.0) because the main goal is to develop an assumption that generalizes well to new data by balancing assumption complexity and fit on the historical experience. Additionally, as seen in Exhibit A-8b, the trend adjustments applied move the overall fit for claim years 5 and later further from 1.00 as this is the point at which the trend adjustments are applied to the assumption.

For MassMutual's in-force business that pays for services on an indemnity basis, an explicit day utilization assumption was developed based on the days of care used only. Indemnity business has dollar utilization of 100%; therefore, its total utilization assumption is equal to the day utilization. Exhibit A-9 provides information like Exhibit A-8, except for policies that pay services on an indemnity basis.

Prospective Improvement

No prospective improvement is assumed for any assumption.

Appendix A
Development and Justification of Assumptions Used in this Filing

Rate Increase Dependent Assumptions

At the time of a rate increase, policyowners have options to elect a CBUL or reduced benefit options (RBO). Adverse selection is assumed relative to CBUL and RBO elections. These policyowner behavior assumptions are provided below and were developed primarily based on MassMutual's actual CBUL and RBO election rate experience and actuarial judgment—particularly at the higher rate increase magnitudes where limited experience exists.

Contingent Benefit Upon Lapse Election Rates

A CBUL election rate is determined as a function of the magnitude of the rate increase. The assumption is applied on a seriatim basis based on the cumulative increase, as shown in the following table. The CBUL election rate is then prorated between that for the cumulative increase and, if applicable, the prior approved increase.

Cumulative Rate Increase	CBUL Election Assumption
15-80%	Cumulative Rate Increase x 6%
80%+	(80% x 6%) + (Cumulative Rate Increase - 80%) x 3%

No CBUL elections are assumed for cumulative increases less than 15% or for policies with a limited payment option.

Reduced Benefit Options

The RBO election rate and its impact on premium is determined as a function of the magnitude of the rate increase. The assumption is applied on a seriatim basis based on the cumulative increase, as shown in the following table. The RBO election rate and impact for the requested increase is then prorated between that for the cumulative increase and, if applicable, the prior approved increase. The percent reduction in premium is assumed to correspond to an equivalent percent reduction in claims.

Cumulative Rate Increase	RBO Election Assumption
5-80%	5% + (Cumulative Rate Increase x 20%)
80%+	5% + (80% x 20%) + (Cumulative Rate Increase - 80%) x 7%

No RBO is assumed for cumulative increases less than 5% or for policies with a limited payment option. The RBO election rate is capped at 40%.

Based on the RBO election function, the reduction to premium and claims can then be determined as follows:

Reduction to premium and claims due to the election of RBO
= 1 – (Average premium level after the cumulative rate increase with RBO election / Premium level after the full cumulative rate increase without any RBO election), where

Average premium level after the cumulative rate increase with RBO election
= weighted average premium level of the assumed percentage of policyowners electing RBO with the percentage assumed to accept the full cumulative rate increase

Adverse Selection

The adverse selection assumption is a function of the CBUL and RBO election rates such that the relative increase to morbidity due to adverse selection varies by the cumulative rate increase's magnitude. The percentage increase in morbidity due to adverse selection was developed from the following formula and actuarial judgment. It is assumed that at the time of the rate increase, policyowners that elect a CBUL will be selective in that their relative morbidity is 25% lower than that of the remaining pool. Similarly, it is assumed that at the time of the rate increase, policyowners that elect an RBO will be selective in that their relative morbidity is 12.5% lower than that of the remaining pool.

PoolMorb = AdvSelMorb x (1 – CBUL – RBO) + [(1 – 25%) x AdvSelMorb] x CBUL + [(1 – 12.5%) x AdvSelMorb] x RBO, where

PoolMorb =	morbidity of the pool before the rate increase = 1.0
AdvSelMorb =	adverse morbidity of the remaining pool after the rate increase due to selective lapses
CBUL =	percentage of policyowners that elect CBUL
RBO =	percentage of policyowners that elect RBO

Solving the above for the adverse selection component results in the following formula:

Adverse Selection = 1 / (1 – 25% x CBUL – 12.5% x RBO)

Predictive Analytics

In developing the experience adjustment factors described above, predictive analytics was employed in the form of a penalized generalized linear model (GLM) as well as a gradient boosting machine (GBM) model.

Penalized Generalized Linear Model

A penalized GLM was used to develop adjustments for (1) situs-specific incidence, (2) lifetime payment option voluntary lapse, (3) active mortality, (4) on-claim utilization, and (5) day utilization.

A penalized GLM is like a traditional GLM. The key difference is that it adds an additional constraint that penalizes the size of the model's coefficients to control overfitting the model to the historical data. This penalty placed on the coefficients can be seen as a credibility lever which controls how much weight is given to the company's actual experience. A high penalty would give no weight to the data, leaving the benchmark assumption (e.g., *Guidelines*) unadjusted. No penalty would give full weight to the company's historical data, potentially making large adjustments to the benchmark assumption, which could be overfitting the historical experience. Therefore, when using a penalized GLM it is important to choose a penalty that gives the right amount of weight to the actual data to avoid underfitting or overfitting the experience. A standard approach for choosing such a penalty is to use a k-fold cross-validation (described below) to test a series of penalty values.

Gradient Boosting Machine

GBM models were used to develop adjustments for (1) composite claim termination and (2) disabled mortality. As part of our experience analyses, GBM models were also used to explore key drivers for certain assumptions which informed our decisions regarding assumption complexity, the predictive modeling technique(s) to use in developing adjustments, and the variables to capture in the experience analyses.

A GBM model is a nonparametric algorithm that uses an ensemble of decision trees to develop predictions which automatically create key interactions of the independent variables in the model to minimize the prediction error of the model (i.e., the difference between the actual versus predicted counts). At each decision point in the trees, the model cycles through each variable and chooses the optimal data split that minimizes the prediction error. This process determines variable importance and how to partition variables such that the model can navigate complex interactions in an automated fashion.

A GBM model includes several inputs that control the model complexity and learning process, which are referred to as hyperparameters. These inputs are used to produce a model that determines the amount of weight to place on the historical data (i.e., not overfitting or underfitting) such that it will generalize well to future experience. A standard approach for tuning such hyperparameters is to use a k-fold cross-validation (described below).

K-Fold Cross-Validation

A k-fold cross-validation is an automated process by which model hyperparameters can be selected and evaluated. This process splits the data into "k" subsets and iteratively trains and tests the model independently on each subset of the data. This process gives an estimation of how well a model will generalize to new data that was not used to develop assumptions. Through the k-fold cross-validation the impact that hyperparameters had on a model's ability to predict on the unseen data was evaluated by testing a range of hyperparameters. Hyperparameters were selected to balance minimizing the k-fold cross-validation prediction error with the generalizability of the model. This allows for a robust and automated approach to determine the amount of weight to give actual experience versus the benchmark assumptions.

Hazard Rates and Probabilities

Each assumption consists of a base assumption and experience adjustment factors. The base assumption was converted to a hazard rate for use in predictive modeling. The experience adjustment factors are applied to the base hazard rate. The assumption is then converted back to a probability for use in projection. Adjustment factors were developed to be applied to hazard rates as part of the predictive modeling process described above. Hazard rates are converted from the base probability assumption and equal –LN[1-probability]. After applying all applicable

adjustments, adjusted hazard rates are converted back to probabilities to create the assumption, where probability = 1 – EXP[–hazard rate].

A hazard rate represents the instantaneous likelihood (rate per unit of time) of an event (i.e., incidence, death, lapse, or recovery) at different times, whereas the probability is the likelihood that an event will occur within a specific time interval (e.g., one policy year). Because exact exposure is used in the predictive model, hazard rates were used in the development. They are then converted to probabilities for use in the projection models. Please note that this conversion of probabilities to hazard rates is only applicable for assumptions that follow a Poisson distribution (i.e., whether an event occurs) and as such are not applicable to the claim duration utilization assumption and indemnity day utilization assumption, which are non-binary (i.e., based on dollars and days, respectively, versus events).

Policy or Insured Characteristic	Exposure [A]	ALF Claim Count [B]	ALF A:E 2017 Guidelines [C]	ALF A:E Expected[1] [D]	HHC Claim Count [B]	HHC A:E 2017 Guidelines [C]	HHC A:E Expected[1] [D]	SNF Claim Count [B]	SNF A:E 2017 Guidelines [C]	SNF A:E Expected[1] [D]	Total Claim Count [B]	Total A:E 2017 Guidelines [C]	Total A:E Expected[1] [D]
Sex													
Female	259,872	309	1.00	0.96	839	1.07	1.03	139	0.39	0.69	1,286	0.88	0.95
Male	205,434	180	1.22	1.12	520	1.08	1.01	114	0.46	0.81	814	0.92	0.99
Partner Status													
Partnered	341,646	210	0.98	0.96	811	1.21	1.09	119	0.39	0.70	1,140	0.96	1.00
Non-Partnered	123,660	279	1.15	1.07	547	0.92	0.93	133	0.44	0.77	960	0.83	0.93
Benefit Period													
Lifetime	329,616	261	1.00	0.97	899	1.13	1.06	149	0.42	0.75	1,310	0.92	0.99
Non-Lifetime	135,691	228	1.16	1.07	459	0.97	0.96	103	0.42	0.73	790	0.85	0.94
Inflation Option													
Auto	416,899	339	1.10	1.03	1,044	1.08	1.04	166	0.39	0.71	1,549	0.91	0.98
None	48,407	150	1.01	0.98	314	1.04	0.97	86	0.48	0.79	551	0.86	0.93
Payment Type													
Indemnity	152,745	71	0.78	0.81	394	1.28	1.18	70	0.54	0.89	535	1.01	1.07
Reimbursement	312,562	418	1.14	1.06	964	1.01	0.97	183	0.38	0.69	1,565	0.86	0.94
Underwriting													
Preferred	305,777	295	1.02	0.97	801	0.99	0.96	143	0.37	0.66	1,239	0.83	0.91
Standard	136,705	155	1.08	1.03	457	1.16	1.08	88	0.48	0.82	701	0.97	1.02
Substandard	22,824	39	1.55	1.45	100	1.60	1.44	22	0.69	1.11	161	1.34	1.38
Rate Series													
200 Series	197,434	335	1.20	1.10	857	1.22	1.08	162	0.45	0.80	1,355	1.00	1.03
300+ Series	267,872	154	0.86	0.87	501	0.89	0.93	90	0.37	0.65	745	0.75	0.87
Attained Age													
<65	200,211	19	0.82	0.87	141	0.98	1.03	16	0.40	0.55	177	0.85	0.94
65 - 69	124,121	50	1.14	1.07	176	0.80	0.94	24	0.33	0.61	250	0.74	0.92
70 - 74	87,189	88	1.01	0.99	288	0.97	1.00	51	0.41	0.79	427	0.84	0.97
75 - 79	38,217	123	1.04	0.99	325	1.13	1.00	66	0.44	0.81	515	0.92	0.97
80 - 84	12,137	117	1.11	1.06	279	1.41	1.08	57	0.47	0.80	453	1.05	1.02
85+	3,431	92	1.17	1.03	149	1.24	1.07	38	0.42	0.68	279	0.93	0.95
Total	465,306	489	1.07	1.02	1,358	1.07	1.02	252	0.42	0.74	2,100	0.90	0.97

[1] Expected = assumption used in this filing reflecting all experience adjustments.

Exhibit A-2a
Ultimate Voluntary Lapse Probabilities
Lifetime Payment Option for Attained Age 70 and Older and Policy Durations 9+
All Rate Series

Inflation Option	Benefit Period	Lifetime Payment		Discounted Renewal Lifetime Payment	
		Non-Partnered	Partnered	Non-Partnered	Partnered
None	Non-Lifetime	0.9%	0.5%	0.7%	0.4%
	Lifetime	0.7%	0.4%	0.5%	0.3%
Auto	Non-Lifetime	0.6%	0.4%	0.5%	0.3%
	Lifetime	0.5%	0.3%	0.4%	0.2%

Exhibit A-2b
Actual-to-Expected Voluntary Lapse Experience 2009-2018
Lifetime Payment Option[1] for Policy Durations 9+
All Rate Series Combined

Policy or Insured Characteristic	Policy Year Exposure [A]	Actual Lapses [B]	Actual-to-Expected Lapse Probability		
			Unadjusted[2] [C]	Modeled [D]	Expected[3] [E]
Benefit Period and Inflation Option					
Lifetime and Auto	178,652	841	0.77	0.96	0.99
Lifetime and None	18,095	122	1.04	1.11	1.22
Non-Lifetime and Auto	66,603	364	0.88	1.01	1.07
Non-Lifetime and None	14,132	199	2.12	1.64	1.94
Attained Age					
<65	89,326	672	1.25	1.17	1.15
65 - 69	78,049	318	0.67	0.97	0.97
70 - 74	64,439	285	0.72	0.98	1.08
75 - 79	31,826	133	0.65	0.82	0.94
80 - 84	10,689	86	1.18	1.08	1.56
85+	3,152	32	1.37	1.11	1.63
Total	277,482	1,526	0.89	1.04	1.10

[1] Excludes experience for policies with Discounted Renewal Payment Option.

[2] All-lives lapse assumption from the 2018 rate increase filings.

[3] Expected = assumption used in this filing reflecting all experience adjustments.

Exhibit A-3a
Active Mortality Hazard Rate Adjustment Factors
All Rate Series

Attained Age[1]	Preferred Underwriting Female Partnered	Female Non-Partnered	Male Partnered	Male Non-Partnered	Standard Underwriting Female Partnered	Female Non-Partnered	Male Partnered	Male Non-Partnered	Substandard Underwriting Female Partnered	Female Non-Partnered	Male Partnered	Male Non-Partnered
<50	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
50	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
51	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
52	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
53	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
54	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
55	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
56	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
57	0.97	0.98	0.97	0.97	0.98	0.99	0.98	0.98	0.99	0.99	0.98	0.99
58	0.95	0.96	0.94	0.95	0.97	0.98	0.96	0.97	0.97	0.98	0.97	0.98
59	0.93	0.94	0.92	0.94	0.95	0.96	0.94	0.96	0.96	0.97	0.95	0.97
60	0.90	0.92	0.90	0.92	0.92	0.95	0.92	0.95	0.94	0.96	0.94	0.96
61	0.86	0.89	0.86	0.89	0.89	0.92	0.89	0.92	0.90	0.94	0.91	0.94
62	0.85	0.89	0.85	0.89	0.87	0.91	0.88	0.92	0.89	0.94	0.90	0.94
63	0.82	0.87	0.83	0.88	0.85	0.91	0.86	0.91	0.88	0.93	0.88	0.94
64	0.81	0.87	0.81	0.87	0.84	0.90	0.85	0.91	0.87	0.93	0.87	0.94
65	0.80	0.86	0.80	0.87	0.83	0.90	0.84	0.91	0.86	0.93	0.87	0.94
66	0.81	0.88	0.82	0.89	0.85	0.92	0.87	0.93	0.88	0.95	0.90	0.97
67	0.83	0.88	0.85	0.90	0.87	0.93	0.89	0.95	0.91	0.97	0.93	0.99
68	0.86	0.90	0.89	0.94	0.89	0.94	0.93	0.98	0.93	0.98	0.97	1.02
69	0.88	0.92	0.93	0.97	0.92	0.96	0.97	1.01	0.95	0.99	1.00	1.05
70	0.92	0.95	0.98	1.02	0.95	0.99	1.02	1.06	0.98	1.01	1.05	1.08
71	0.94	0.97	1.01	1.04	0.98	1.01	1.05	1.09	0.99	1.02	1.07	1.11
72	0.96	0.99	1.04	1.07	1.00	1.04	1.08	1.12	1.01	1.05	1.09	1.13
73	0.98	1.02	1.06	1.09	1.04	1.07	1.12	1.15	1.03	1.06	1.11	1.14
74	1.02	1.03	1.09	1.11	1.06	1.07	1.14	1.15	1.05	1.07	1.13	1.15
75	1.03	1.03	1.09	1.10	1.06	1.07	1.13	1.14	1.06	1.06	1.13	1.13
76	1.04	1.04	1.09	1.09	1.07	1.06	1.12	1.12	1.07	1.06	1.12	1.12
77	1.04	1.02	1.07	1.06	1.06	1.05	1.10	1.09	1.07	1.05	1.11	1.09
78	1.02	1.02	1.03	1.03	1.05	1.05	1.06	1.06	1.06	1.06	1.07	1.07
79	1.02	1.02	1.01	1.01	1.06	1.06	1.05	1.05	1.06	1.07	1.06	1.06
80	1.02	1.03	1.01	1.02	1.07	1.08	1.05	1.07	1.07	1.09	1.06	1.07
81	1.02	1.04	1.01	1.02	1.07	1.09	1.05	1.07	1.07	1.09	1.06	1.07
82	1.02	1.04	1.01	1.03	1.07	1.09	1.06	1.08	1.07	1.09	1.06	1.08
83	1.02	1.03	1.03	1.04	1.07	1.08	1.08	1.09	1.06	1.07	1.07	1.09
84	1.02	1.03	1.04	1.05	1.06	1.06	1.08	1.09	1.05	1.06	1.08	1.09
85	1.00	1.01	1.03	1.03	1.04	1.04	1.07	1.07	1.04	1.04	1.07	1.07
86	1.01	1.01	1.04	1.04	1.04	1.04	1.07	1.07	1.04	1.04	1.07	1.07
87	1.01	1.01	1.04	1.04	1.04	1.04	1.07	1.07	1.04	1.04	1.06	1.06
88	1.02	1.02	1.04	1.04	1.05	1.05	1.06	1.06	1.05	1.05	1.06	1.06
89	1.03	1.03	1.04	1.04	1.05	1.05	1.06	1.06	1.05	1.05	1.06	1.06
90	1.05	1.05	1.05	1.05	1.06	1.06	1.06	1.06	1.05	1.06	1.06	1.06
91	1.05	1.05	1.05	1.05	1.06	1.06	1.06	1.06	1.05	1.05	1.06	1.06
92	1.05	1.05	1.05	1.05	1.06	1.06	1.06	1.06	1.05	1.05	1.05	1.05
93	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
94	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
95	1.04	1.04	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
96	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
97	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
98	1.03	1.03	1.03	1.03	1.03	1.03	1.04	1.04	1.03	1.03	1.03	1.03
99	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
100	1.02	1.02	1.02	1.02	1.02	1.02	1.03	1.03	1.02	1.02	1.03	1.03
101	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
102	1.01	1.01	1.02	1.02	1.02	1.02	1.02	1.02	1.01	1.01	1.02	1.02
103	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
104	1.00	1.00	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
105+	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Policy Duration	Duration Adjustment
1	0.94
2	0.90
3	0.86
4	0.83
5	0.81
6	0.84
7	0.87
8	0.89
9	0.91
10	0.93
11	0.94
12	0.96
13	0.98
14	1.00
15	1.02
16	1.02
17	1.02
18	1.01
19	1.01
20	1.00
21	1.01
22+	1.00

[1] Attained age adjustments are applicable to policy durations 7+.

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Exhibit A-3b
Actual-to-Expected Active Mortality Experience 2009-2018
Policy Durations 7+
All Rate Series Combined

</div>

Policy or Insured Characteristic	Policy Year Exposure [A]	Actual Deaths [B]	Actual-to-Expected Active Mortality Probability		
			Unadjusted [C]	Modeled [D]	Expected[1] [E]
Sex					
Female	259,872	917	0.82	0.92	0.89
Male	205,434	1,107	0.93	1.02	0.99
Partner Status					
Partnered	341,646	1,338	0.83	0.93	0.91
Non-Partnered	123,660	686	0.97	1.05	1.02
Underwriting Class					
Preferred	305,777	1,214	0.79	0.88	0.86
Standard	136,705	629	0.95	1.04	1.01
Substandard	22,824	181	1.64	1.78	1.73
Policy Duration					
7 - 9	185,581	537	0.77	0.93	0.92
10 - 14	228,952	1,057	0.88	0.97	0.94
15+	50,774	430	1.02	1.03	0.99
Attained Age					
<65	200,211	322	0.74	0.90	0.90
65 - 69	124,121	402	0.75	0.91	0.91
70 - 74	87,189	541	0.96	1.01	0.98
75 - 79	38,217	400	0.98	1.01	0.96
80 - 84	12,137	238	1.03	1.06	1.01
85+	3,431	121	0.90	0.93	0.88
Total	465,306	2,024	0.88	0.97	0.95

[1] Expected = assumption used in this filing reflecting all experience adjustments.

Exhibit A-4
Actual-to-Expected Composite[1] Termination Experience 2009-2018
Lifetime Payment Option[2] for Policy Durations 9+
All Rate Series Combined

Attained Age	Policy Year Exposure [A]	Actual Terminations [B]	Actual-to-Expected Composite Termination Probability [C]
<65	89,326	844	1.12
65 - 69	78,049	575	0.94
70 - 74	64,439	698	1.03
75 - 79	31,826	482	0.98
80 - 84	10,689	300	1.14
85+	3,152	142	0.97
Total	277,482	3,041	1.03

[1] Combination of active mortality and voluntary lapse.

[2] Excludes experience for policies with Discounted Renewal Payment Option.

Policy or Insured Characteristic	ALF Starting Site of Care Exposure [A]	Actual Deaths [B]	Actual-to-Expected (A:E) 2017 Guidelines [C]	Expected[1] [D]	HHC Starting Site of Care Exposure [A]	Actual Deaths [B]	A:E 2017 Guidelines [C]	Expected[1] [D]	SNF Starting Site of Care Exposure [A]	Actual Deaths [B]	A:E 2017 Guidelines [C]	Expected[1] [D]	Total Exposure [A]	Actual Deaths [B]	A:E 2017 Guidelines [C]	Expected[1] [D]
Sex																
Female	8,222	91	0.79	0.93	18,755	231	0.86	0.97	2,281	45	0.98	1.09	29,259	367	0.86	0.97
Male	4,523	72	0.74	0.88	10,859	218	0.97	1.03	1,803	45	0.88	0.98	17,185	335	0.90	0.99
Benefit Period																
Lifetime	7,405	80	0.74	0.90	21,074	290	0.89	0.98	2,683	52	0.89	1.01	31,162	422	0.86	0.97
Non-Lifetime	5,340	83	0.80	0.91	8,540	159	0.95	1.02	1,401	38	0.98	1.07	15,282	280	0.90	0.99
Partner Status																
Partnered	4,976	73	0.83	0.95	16,867	280	0.95	1.01	1,737	50	1.13	1.22	23,580	403	0.94	1.02
Non-Partnered	7,769	90	0.73	0.88	12,747	169	0.85	0.97	2,347	40	0.75	0.87	22,863	299	0.80	0.93
Payment Type																
Indemnity	2,080	27	0.81	1.08	9,529	106	0.68	0.83	1,141	22	0.80	0.97	12,751	155	0.72	0.88
Reimbursement	10,665	136	0.76	0.88	20,085	343	1.01	1.06	2,943	68	0.98	1.05	33,693	547	0.93	1.01
Claim Duration (Annual)																
1	3,446	42	0.62	0.76	7,403	133	0.75	0.88	1,322	45	0.99	1.11	12,170	220	0.76	0.89
2	3,346	45	0.93	1.09	7,584	90	0.82	0.90	1,029	22	1.11	1.23	11,960	157	0.88	0.99
3	2,376	24	0.66	0.77	5,256	90	1.26	1.28	725	6	0.45	0.49	8,358	120	0.99	1.05
4	1,605	22	0.86	0.99	3,556	53	1.10	1.12	470	8	0.95	1.04	5,630	83	1.01	1.07
5	889	15	1.00	1.17	2,340	35	1.03	1.07	261	3	0.60	0.65	3,490	53	0.98	1.05
6+	1,083	15	0.77	0.90	3,475	48	0.91	0.97	277	6	1.18	1.34	4,836	69	0.89	0.98
Incurred Age																
<65	1,026	10	0.66	0.83	5,236	74	0.87	0.99	474	7	0.69	0.81	6,736	91	0.83	0.96
65 - 69	2,349	25	0.70	0.87	4,339	69	0.96	1.08	579	9	0.62	0.72	7,267	103	0.84	0.98
70 - 74	2,542	23	0.55	0.69	5,600	91	0.99	1.09	1,021	14	0.58	0.69	9,163	128	0.81	0.93
75 - 79	3,101	40	0.81	0.97	6,671	89	0.82	0.90	998	26	1.17	1.28	10,770	155	0.86	0.97
80 - 84	2,007	30	0.88	1.02	5,312	86	0.95	1.00	723	22	1.28	1.34	8,042	138	0.97	1.04
85+	1,719	35	0.97	1.01	2,456	40	0.88	0.90	289	12	1.31	1.32	4,465	87	0.96	0.99
Total	12,745	163	0.77	0.91	29,614	449	0.91	0.99	4,084	90	0.93	1.03	46,443	702	0.87	0.98

[1] Expected = assumption used in this filing reflecting all experience adjustments.

Policy or Insured Characteristic	ALF Starting Site of Care				HHC Starting Site of Care				SNF Starting Site of Care				Total			
	Exposure [A]	Actual Recoveries [B]	Actual-to-Expected (A:E) 2017 Guidelines[1] [C]	Expected[2] [D]	Exposure [A]	Actual Recoveries [B]	A:E 2017 Guidelines[1] [C]	Expected[2] [D]	Exposure [A]	Actual Recoveries [B]	A:E 2017 Guidelines[1] [C]	Expected[2] [D]	Exposure [A]	Actual Recoveries [B]	A:E 2017 Guidelines[1] [C]	Expected[2] [D]
Sex																
Female	8,222	17	1.04	0.93	18,755	121	0.84	0.90	2,281	16	1.44	1.24	29,259	154	0.90	0.93
Male	4,523	5	0.41	0.38	10,859	57	1.01	1.06	1,803	12	1.33	1.10	17,185	74	0.95	0.95
Benefit Period																
Lifetime	7,405	9	0.61	0.52	21,074	115	0.91	0.96	2,683	15	1.23	1.01	31,162	139	0.91	0.91
Non-Lifetime	5,340	13	0.95	0.92	8,540	63	0.84	0.93	1,401	13	1.64	1.46	15,282	89	0.92	0.98
Partner Status																
Partnered	4,976	4	0.34	0.37	16,867	85	0.74	0.82	1,737	12	1.36	1.26	23,580	101	0.75	0.82
Non-Partnered	7,769	18	1.07	0.87	12,747	93	1.08	1.09	2,347	16	1.41	1.12	22,863	127	1.11	1.06
Payment Type																
Indemnity	2,080	3	0.66	0.46	9,529	75	1.21	1.09	1,141	10	1.81	1.27	12,751	88	1.22	1.06
Reimbursement	10,665	19	0.80	0.76	20,085	103	0.74	0.86	2,943	18	1.23	1.13	33,693	140	0.79	0.87
Claim Duration (Annual)																
1	3,446	6	0.69	0.53	7,403	110	1.10	1.08	1,322	13	1.39	1.08	12,170	129	1.09	1.03
2	3,346	7	1.02	0.94	7,584	34	0.68	0.74	1,029	10	2.10	1.84	11,960	51	0.83	0.86
3	2,376	3	0.58	0.59	5,256	15	0.65	0.81	725	3	1.03	1.01	8,358	21	0.67	0.79
4	1,605	1	0.26	0.29	3,556	9	0.67	0.89	470	1	0.55	0.57	5,630	11	0.57	0.71
5	889	2	1.15	1.08	2,340	4	0.59	0.76	261	0	0.00	0.00	3,490	6	0.66	0.76
6+	1,083	3	1.46	1.42	3,475	6	0.80	0.95	277	1	1.50	1.21	4,836	10	0.98	1.08
Incurred Age																
<65	1,026	0	0.00	0.00	5,236	54	1.41	1.30	474	4	1.87	1.36	6,736	58	1.37	1.23
65 - 69	2,349	2	0.39	0.32	4,339	40	1.27	1.26	579	3	1.03	0.79	7,267	45	1.14	1.08
70 - 74	2,542	4	0.68	0.56	5,600	33	0.82	0.89	1,021	9	1.82	1.36	9,163	46	0.90	0.91
75 - 79	3,101	7	1.01	0.93	6,671	28	0.62	0.70	998	4	0.79	0.72	10,770	39	0.68	0.74
80 - 84	2,007	8	1.78	1.87	5,312	15	0.46	0.58	723	5	1.34	1.41	8,042	28	0.68	0.83
85+	1,719	1	0.26	0.29	2,456	8	0.61	0.65	289	3	2.18	2.18	4,465	12	0.65	0.70
Total	12,745	22	0.77	0.70	29,614	178	0.89	0.95	4,084	28	1.39	1.18	46,443	228	0.91	0.94

[1] The 2017 *Guidelines* is included for illustrative purposes only as this expected basis was not directly used in developing the implied recovery assumption.

[2] Expected = assumption used in this filing reflecting all experience adjustments.

| | ALF Starting Site of Care | | | | HHC Starting Site of Care | | | | SNF Starting Site of Care | | | | Total | | | |
| | | Claim | Actual-to-Expected (A:E) | | | Claim | A:E | | | Claim | A:E | | | Claim | A:E | |
Policy or Insured Characteristic	Exposure [A]	Terminations [B]	2017 Guidelines [C]	Expected[1] [D]	Exposure [A]	Terminations [B]	2017 Guidelines [C]	Expected[1] [D]	Exposure [A]	Terminations [B]	2017 Guidelines [C]	Expected[1] [D]	Exposure [A]	Terminations [B]	2017 Guidelines [C]	Expected[1] [D]
Sex																
Female	8,222	108	0.82	0.93	18,755	352	0.85	0.94	2,281	61	1.06	1.13	29,259	521	0.86	0.96
Male	4,523	77	0.71	0.81	10,859	275	0.97	1.03	1,803	57	0.94	1.00	17,185	409	0.90	0.98
Benefit Period																
Lifetime	7,405	89	0.72	0.84	21,074	405	0.89	0.98	2,683	67	0.94	1.01	31,162	561	0.87	0.95
Non-Lifetime	5,340	96	0.81	0.91	8,540	222	0.91	0.99	1,401	51	1.09	1.15	15,282	369	0.90	0.99
Partner Status																
Partnered	4,976	77	0.77	0.88	16,867	365	0.88	0.96	1,737	62	1.17	1.23	23,580	504	0.89	0.97
Non-Partnered	7,769	108	0.77	0.88	12,747	262	0.92	1.01	2,347	56	0.86	0.93	22,863	426	0.87	0.96
Payment Type																
Indemnity	2,080	30	0.79	0.95	9,529	181	0.83	0.92	1,141	32	0.96	1.05	12,751	243	0.84	0.94
Reimbursement	10,665	155	0.76	0.87	20,085	446	0.93	1.01	2,943	86	1.02	1.07	33,693	687	0.89	0.98
Claim Duration (Annual)																
1	3,446	48	0.63	0.72	7,403	243	0.87	0.96	1,322	58	1.05	1.11	12,170	349	0.85	0.94
2	3,346	52	0.94	1.07	7,584	124	0.78	0.85	1,029	32	1.30	1.37	11,960	208	0.87	0.95
3	2,376	27	0.65	0.74	5,256	105	1.11	1.18	725	9	0.55	0.59	8,358	141	0.92	1.00
4	1,605	23	0.78	0.89	3,556	62	1.00	1.07	470	9	0.88	0.95	5,630	94	0.92	1.01
5	889	17	1.02	1.16	2,340	39	0.96	1.02	261	3	0.53	0.56	3,490	59	0.93	1.01
6+	1,083	18	0.83	0.95	3,475	54	0.90	0.97	277	7	1.21	1.32	4,836	79	0.90	0.99
Incurred Age																
<65	1,026	10	0.58	0.68	5,236	128	1.03	1.10	474	11	0.89	0.95	6,736	149	0.97	1.05
65 - 69	2,349	27	0.66	0.78	4,339	109	1.05	1.14	579	12	0.69	0.74	7,267	148	0.91	1.01
70 - 74	2,542	27	0.56	0.67	5,600	124	0.93	1.03	1,021	23	0.79	0.86	9,163	174	0.83	0.92
75 - 79	3,101	47	0.83	0.97	6,671	117	0.76	0.84	998	30	1.10	1.16	10,770	194	0.82	0.91
80 - 84	2,007	38	0.98	1.13	5,312	101	0.81	0.90	723	27	1.29	1.35	8,042	166	0.90	1.00
85+	1,719	36	0.90	0.94	2,456	48	0.81	0.85	289	15	1.42	1.44	4,465	99	0.90	0.94
Total	12,745	185	0.77	0.88	29,614	627	0.90	0.98	4,084	118	1.00	1.06	46,443	930	0.88	0.97

[1] Expected = assumption used in this filing reflecting all experience adjustments.

Exhibit A-8a
Claim Duration Utilization Adjustment Factors
All Rate Series
Reimbursement Payment Type
ALF Starting Site of Care

Claim Duration Month	Non-Lifetime Benefit Period No Inflation <75	75-84	85+	Auto Inflation <75	75-84	85+	Lifetime Benefit Period No Inflation <75	75-84	85+	Auto Inflation <75	75-84	85+
1	0.89	0.88	0.96	0.86	0.86	0.94	0.83	0.83	0.90	0.81	0.81	0.88
2	0.89	0.88	0.96	0.86	0.86	0.94	0.83	0.83	0.90	0.81	0.81	0.88
3	0.89	0.88	0.96	0.86	0.86	0.94	0.83	0.83	0.90	0.81	0.81	0.88
4	0.89	0.88	0.96	0.86	0.86	0.94	0.83	0.83	0.90	0.81	0.81	0.88
5	0.88	0.88	0.96	0.86	0.87	0.95	0.82	0.82	0.89	0.80	0.81	0.88
6	0.88	0.88	0.97	0.87	0.88	0.96	0.81	0.82	0.89	0.80	0.81	0.89
7	0.90	0.91	0.97	0.90	0.92	0.98	0.84	0.86	0.91	0.85	0.87	0.92
8	0.91	0.92	0.97	0.94	0.94	0.99	0.88	0.89	0.93	0.90	0.91	0.95
9	0.94	0.94	0.98	0.97	0.97	1.00	0.92	0.92	0.96	0.94	0.95	0.98
10	0.97	0.96	0.99	1.00	0.99	1.02	0.96	0.95	0.98	0.99	0.99	1.02
11	0.97	0.96	0.98	1.00	0.99	1.01	0.98	0.97	0.99	1.02	1.00	1.03
12	0.98	0.95	0.98	1.00	0.98	1.01	1.00	0.97	1.00	1.03	1.00	1.03
13	0.98	0.96	0.99	1.01	0.99	1.02	1.01	0.99	1.02	1.04	1.01	1.05
14	0.99	0.98	1.01	1.02	1.01	1.04	1.02	1.00	1.03	1.05	1.03	1.06
15	1.00	0.99	1.02	1.03	1.02	1.05	1.02	1.01	1.04	1.05	1.05	1.08
16	1.00	1.00	1.03	1.04	1.04	1.06	1.02	1.02	1.05	1.06	1.06	1.09
17	1.01	1.02	1.04	1.05	1.05	1.08	1.02	1.02	1.05	1.06	1.06	1.09
18	1.02	1.02	1.04	1.05	1.06	1.08	1.02	1.02	1.05	1.06	1.06	1.08
19	1.02	1.02	1.04	1.06	1.05	1.08	1.02	1.02	1.04	1.06	1.06	1.08
20	1.02	1.01	1.04	1.05	1.05	1.07	1.02	1.02	1.04	1.05	1.05	1.08
21	1.02	1.01	1.03	1.05	1.04	1.07	1.03	1.02	1.05	1.06	1.05	1.08
22	1.01	1.00	1.03	1.05	1.04	1.06	1.04	1.03	1.05	1.07	1.06	1.09
23	1.01	1.00	1.02	1.04	1.03	1.05	1.05	1.03	1.05	1.08	1.07	1.09
24	1.00	0.99	1.01	1.04	1.02	1.04	1.05	1.03	1.05	1.09	1.07	1.09
25	1.00	0.98	1.00	1.04	1.02	1.04	1.05	1.03	1.05	1.10	1.08	1.10
26	1.00	0.98	1.00	1.05	1.03	1.04	1.06	1.04	1.05	1.11	1.08	1.10
27	1.01	0.98	1.00	1.06	1.04	1.05	1.06	1.03	1.05	1.11	1.09	1.10
28	1.01	0.99	1.00	1.07	1.04	1.05	1.06	1.03	1.05	1.11	1.09	1.10
29	1.02	0.99	1.00	1.08	1.05	1.06	1.06	1.03	1.05	1.13	1.09	1.11
30	1.03	1.00	1.01	1.09	1.06	1.07	1.07	1.04	1.05	1.13	1.10	1.11
31	1.03	1.00	1.01	1.10	1.06	1.07	1.07	1.03	1.05	1.14	1.10	1.11
32	1.03	1.00	1.01	1.10	1.06	1.07	1.07	1.03	1.04	1.13	1.10	1.11
33	1.03	0.99	1.01	1.10	1.06	1.07	1.07	1.03	1.04	1.14	1.10	1.11
34	1.03	0.99	1.00	1.10	1.05	1.07	1.07	1.03	1.04	1.14	1.09	1.11
35	1.03	0.98	1.00	1.09	1.04	1.06	1.07	1.02	1.03	1.13	1.08	1.10
36	1.03	0.98	0.99	1.09	1.04	1.05	1.07	1.01	1.03	1.13	1.08	1.09
37	1.02	0.97	0.98	1.09	1.03	1.04	1.07	1.01	1.02	1.13	1.08	1.08
38	1.02	0.96	0.96	1.09	1.03	1.03	1.07	1.01	1.01	1.14	1.08	1.08
39	1.01	0.96	0.95	1.09	1.03	1.02	1.06	1.00	0.99	1.14	1.08	1.07
40	1.01	0.95	0.94	1.09	1.03	1.01	1.06	1.00	0.98	1.14	1.08	1.06
41	1.00	0.95	0.93	1.08	1.03	1.01	1.05	1.00	0.97	1.14	1.08	1.06
42	1.00	0.95	0.92	1.08	1.03	1.00	1.04	1.00	0.97	1.13	1.08	1.05
43	1.00	0.96	0.93	1.08	1.03	1.00	1.04	1.00	0.97	1.13	1.08	1.05
44	1.00	0.96	0.94	1.08	1.03	1.01	1.04	1.00	0.97	1.12	1.07	1.05
45	1.01	0.97	0.95	1.08	1.04	1.01	1.04	1.00	0.98	1.11	1.07	1.05
46	1.01	0.97	0.96	1.07	1.04	1.02	1.04	1.00	0.98	1.10	1.07	1.05
47	1.02	0.98	0.97	1.07	1.04	1.02	1.04	1.00	0.99	1.10	1.06	1.05
48	1.01	0.98	0.97	1.07	1.03	1.02	1.04	1.01	1.00	1.09	1.06	1.05
49	1.01	0.98	0.97	1.05	1.03	1.01	1.04	1.01	1.00	1.09	1.06	1.04
50	1.01	0.99	0.97	1.05	1.03	1.01	1.04	1.02	1.01	1.09	1.06	1.05
51	1.01	0.99	0.97	1.04	1.02	1.01	1.05	1.03	1.01	1.08	1.06	1.05
52	1.01	0.99	0.98	1.04	1.02	1.00	1.05	1.04	1.02	1.08	1.07	1.05
53	1.01	1.00	0.98	1.03	1.02	1.00	1.06	1.04	1.03	1.08	1.07	1.05
54	1.02	1.00	0.99	1.04	1.02	1.01	1.06	1.05	1.03	1.09	1.07	1.05
55	1.03	1.01	1.00	1.05	1.03	1.02	1.07	1.05	1.04	1.09	1.07	1.06
56	1.03	1.01	1.01	1.04	1.03	1.02	1.06	1.05	1.04	1.08	1.06	1.05
57	1.03	1.02	1.01	1.04	1.03	1.02	1.06	1.04	1.04	1.07	1.05	1.05
58	1.03	1.02	1.02	1.04	1.03	1.02	1.05	1.04	1.04	1.05	1.05	1.04
59	1.03	1.02	1.02	1.03	1.03	1.02	1.04	1.04	1.04	1.04	1.04	1.04
60	1.02	1.02	1.02	1.02	1.02	1.02	1.03	1.04	1.03	1.04	1.04	1.03
61	1.02	1.02	1.02	1.02	1.02	1.02	1.03	1.04	1.03	1.03	1.04	1.03
62	1.01	1.02	1.01	1.02	1.02	1.02	1.03	1.04	1.03	1.03	1.04	1.03
63	1.01	1.02	1.01	1.02	1.03	1.01	1.03	1.04	1.03	1.04	1.05	1.04
64	1.00	1.02	1.00	1.02	1.03	1.01	1.03	1.05	1.03	1.04	1.06	1.04
65	1.00	1.02	1.00	1.01	1.03	1.01	1.03	1.05	1.03	1.05	1.06	1.04
66	1.00	1.02	0.99	1.01	1.03	1.01	1.03	1.05	1.03	1.05	1.07	1.04
67	0.99	1.01	0.99	1.01	1.03	1.01	1.03	1.05	1.03	1.05	1.07	1.04
68	0.99	1.01	0.99	1.01	1.03	1.00	1.03	1.05	1.02	1.04	1.06	1.04
69	0.99	1.01	0.98	1.00	1.02	1.00	1.02	1.04	1.02	1.04	1.06	1.03
70	0.99	1.00	0.98	1.00	1.01	0.99	1.02	1.03	1.01	1.03	1.05	1.03
71	0.99	1.00	0.98	1.00	1.01	0.99	1.02	1.03	1.01	1.03	1.04	1.02
72	0.99	0.99	0.98	1.00	1.00	0.99	1.01	1.02	1.01	1.02	1.03	1.02
73	0.99	0.99	0.98	0.99	1.00	0.99	1.01	1.01	1.00	1.02	1.02	1.01
74	0.98	0.99	0.98	0.99	0.99	0.98	1.01	1.01	1.00	1.02	1.02	1.01
75	0.98	0.98	0.97	0.99	0.99	0.98	1.00	1.00	0.99	1.01	1.01	1.00
76	0.98	0.98	0.97	0.99	0.99	0.98	1.00	1.00	0.99	1.01	1.01	1.00
77	0.97	0.97	0.96	0.98	0.99	0.97	1.00	1.00	0.99	1.01	1.01	1.00
78	0.96	0.97	0.95	0.98	0.99	0.97	0.99	1.00	0.99	1.01	1.02	1.00
79	0.96	0.97	0.95	0.97	0.98	0.97	1.00	1.00	0.99	1.01	1.02	1.00
80	0.96	0.96	0.95	0.97	0.98	0.96	1.00	1.00	0.99	1.02	1.02	1.01
81	0.96	0.96	0.94	0.97	0.98	0.96	1.00	1.01	0.99	1.02	1.03	1.01
82	0.96	0.96	0.94	0.98	0.98	0.96	1.00	1.01	0.99	1.02	1.03	1.01
83	0.96	0.96	0.94	0.98	0.98	0.96	1.01	1.01	0.99	1.03	1.03	1.01
84	0.97	0.97	0.95	0.99	0.99	0.97	1.01	1.01	0.99	1.03	1.03	1.01
85	0.97	0.97	0.95	0.99	0.99	0.97	1.01	1.01	0.99	1.04	1.04	1.01
86	0.97	0.97	0.95	1.00	1.00	0.98	1.01	1.01	0.99	1.04	1.04	1.02
87	0.98	0.98	0.95	1.00	1.00	0.98	1.02	1.01	0.99	1.04	1.04	1.02
88	0.98	0.98	0.96	1.01	1.01	0.98	1.02	1.01	0.99	1.05	1.04	1.02
89	0.98	0.98	0.96	1.01	1.01	0.99	1.02	1.01	0.99	1.05	1.04	1.02
90	0.98	0.98	0.96	1.01	1.01	0.99	1.02	1.01	0.99	1.05	1.04	1.02
91	0.98	0.98	0.96	1.01	1.01	0.99	1.02	1.01	0.99	1.05	1.04	1.02
92	0.99	0.98	0.96	1.01	1.01	0.99	1.01	1.01	0.99	1.04	1.04	1.02
93	0.99	0.99	0.97	1.01	1.01	0.99	1.01	1.01	0.99	1.03	1.03	1.01
94	0.99	0.99	0.98	1.01	1.00	0.99	1.01	1.00	0.99	1.02	1.02	1.01
95	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.01	1.01
96+	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.01	1.00

Claim Duration Month	Non-Lifetime Benefit Period						Lifetime Benefit Period					
	No Inflation			Auto Inflation			No Inflation			Auto Inflation		
	Incurred Age Band											
	<75	75-84	85+	<75	75-84	85+	<75	75-84	85+	<75	75-84	85+
1	0.92	0.89	1.01	0.88	0.85	0.96	0.91	0.88	1.00	0.87	0.84	0.95
2	0.92	0.89	1.01	0.88	0.85	0.96	0.91	0.88	1.00	0.87	0.84	0.95
3	0.92	0.89	1.01	0.88	0.85	0.96	0.91	0.88	1.00	0.87	0.84	0.95
4	0.92	0.89	1.01	0.88	0.85	0.96	0.91	0.88	1.00	0.87	0.84	0.95
5	0.90	0.87	1.01	0.84	0.81	0.95	0.88	0.85	1.00	0.83	0.80	0.93
6	0.89	0.85	1.02	0.82	0.79	0.94	0.87	0.84	1.00	0.80	0.77	0.92
7	0.90	0.88	1.04	0.83	0.81	0.96	0.89	0.86	1.02	0.82	0.79	0.94
8	0.92	0.91	1.07	0.85	0.84	0.98	0.91	0.90	1.05	0.84	0.82	0.96
9	0.95	0.95	1.09	0.88	0.88	1.01	0.93	0.94	1.07	0.86	0.87	1.00
10	0.97	1.00	1.11	0.91	0.93	1.04	0.96	0.99	1.10	0.90	0.92	1.03
11	1.00	1.05	1.14	0.95	0.99	1.08	1.00	1.04	1.14	0.95	0.99	1.08
12	1.03	1.09	1.17	0.99	1.04	1.12	1.04	1.09	1.18	0.99	1.05	1.13
13	1.05	1.11	1.20	1.01	1.07	1.16	1.06	1.12	1.21	1.02	1.08	1.17
14	1.06	1.12	1.21	1.03	1.09	1.18	1.08	1.14	1.23	1.05	1.11	1.20
15	1.08	1.13	1.23	1.05	1.10	1.20	1.10	1.15	1.25	1.07	1.12	1.22
16	1.10	1.14	1.25	1.07	1.11	1.22	1.12	1.16	1.28	1.10	1.14	1.25
17	1.11	1.15	1.26	1.09	1.13	1.24	1.14	1.17	1.29	1.12	1.16	1.27
18	1.13	1.15	1.28	1.12	1.14	1.26	1.16	1.18	1.31	1.14	1.16	1.29
19	1.16	1.17	1.29	1.15	1.15	1.28	1.19	1.19	1.32	1.17	1.18	1.30
20	1.18	1.18	1.31	1.18	1.17	1.30	1.21	1.21	1.33	1.20	1.20	1.32
21	1.21	1.20	1.32	1.21	1.20	1.32	1.24	1.23	1.35	1.24	1.23	1.35
22	1.23	1.22	1.33	1.25	1.23	1.35	1.26	1.24	1.36	1.27	1.26	1.37
23	1.25	1.23	1.34	1.27	1.25	1.36	1.28	1.25	1.36	1.30	1.27	1.39
24	1.26	1.23	1.34	1.28	1.26	1.37	1.29	1.26	1.37	1.31	1.28	1.40
25	1.26	1.23	1.34	1.29	1.26	1.37	1.29	1.27	1.38	1.32	1.30	1.41
26	1.25	1.23	1.33	1.29	1.26	1.37	1.30	1.27	1.38	1.33	1.31	1.42
27	1.25	1.23	1.33	1.29	1.27	1.37	1.30	1.28	1.39	1.34	1.32	1.43
28	1.23	1.22	1.32	1.27	1.26	1.36	1.31	1.30	1.39	1.35	1.34	1.44
29	1.23	1.23	1.31	1.27	1.28	1.35	1.31	1.32	1.40	1.36	1.37	1.45
30	1.22	1.24	1.30	1.27	1.29	1.35	1.32	1.34	1.41	1.37	1.40	1.46
31	1.21	1.24	1.29	1.26	1.30	1.35	1.32	1.36	1.41	1.38	1.41	1.47
32	1.21	1.25	1.29	1.26	1.30	1.34	1.32	1.36	1.41	1.38	1.43	1.47
33	1.21	1.25	1.28	1.26	1.30	1.33	1.32	1.37	1.40	1.38	1.43	1.46
34	1.21	1.25	1.27	1.26	1.30	1.33	1.33	1.37	1.39	1.38	1.43	1.45
35	1.22	1.25	1.26	1.27	1.30	1.32	1.34	1.37	1.39	1.39	1.43	1.45
36	1.22	1.25	1.26	1.27	1.30	1.31	1.35	1.38	1.39	1.40	1.43	1.44
37	1.23	1.26	1.25	1.28	1.30	1.30	1.37	1.39	1.39	1.41	1.44	1.44
38	1.25	1.27	1.26	1.28	1.31	1.29	1.38	1.40	1.39	1.42	1.45	1.43
39	1.25	1.28	1.26	1.29	1.32	1.29	1.38	1.41	1.38	1.41	1.45	1.42
40	1.26	1.30	1.26	1.29	1.32	1.28	1.38	1.42	1.38	1.41	1.45	1.41
41	1.25	1.30	1.25	1.28	1.32	1.28	1.37	1.42	1.37	1.40	1.45	1.40
42	1.24	1.29	1.24	1.27	1.32	1.27	1.36	1.41	1.36	1.39	1.45	1.39
43	1.23	1.28	1.23	1.26	1.31	1.26	1.35	1.40	1.35	1.38	1.44	1.38
44	1.22	1.27	1.21	1.26	1.31	1.25	1.35	1.40	1.34	1.39	1.45	1.38
45	1.21	1.26	1.19	1.26	1.31	1.24	1.35	1.41	1.34	1.41	1.47	1.39
46	1.20	1.25	1.17	1.26	1.31	1.23	1.36	1.41	1.33	1.43	1.48	1.39
47	1.20	1.24	1.16	1.27	1.31	1.23	1.37	1.42	1.32	1.44	1.50	1.40
48	1.21	1.24	1.15	1.28	1.32	1.22	1.38	1.42	1.31	1.47	1.51	1.40
49	1.21	1.24	1.14	1.29	1.33	1.22	1.38	1.42	1.30	1.48	1.52	1.39
50	1.20	1.23	1.12	1.29	1.32	1.20	1.37	1.41	1.28	1.48	1.51	1.38
51	1.19	1.21	1.11	1.28	1.30	1.19	1.36	1.39	1.27	1.47	1.49	1.36
52	1.18	1.20	1.10	1.26	1.28	1.18	1.35	1.37	1.26	1.45	1.47	1.35
53	1.16	1.18	1.08	1.24	1.26	1.16	1.34	1.36	1.25	1.43	1.45	1.33
54	1.14	1.16	1.07	1.20	1.22	1.13	1.32	1.35	1.25	1.40	1.42	1.32
55	1.12	1.15	1.07	1.17	1.20	1.11	1.31	1.34	1.25	1.37	1.40	1.30
56	1.11	1.15	1.07	1.15	1.18	1.10	1.31	1.35	1.25	1.35	1.39	1.30
57	1.10	1.15	1.06	1.13	1.18	1.10	1.30	1.35	1.26	1.34	1.39	1.29
58	1.10	1.15	1.06	1.13	1.18	1.09	1.30	1.36	1.26	1.33	1.40	1.30
59	1.09	1.15	1.06	1.12	1.18	1.09	1.30	1.37	1.26	1.33	1.41	1.30
60	1.09	1.15	1.06	1.12	1.18	1.09	1.29	1.37	1.26	1.34	1.41	1.30
61	1.08	1.14	1.06	1.12	1.19	1.10	1.28	1.36	1.26	1.34	1.41	1.31
62	1.07	1.13	1.05	1.12	1.18	1.10	1.27	1.34	1.25	1.34	1.41	1.31
63	1.06	1.11	1.04	1.12	1.17	1.10	1.26	1.32	1.24	1.33	1.40	1.31
64	1.05	1.10	1.04	1.12	1.16	1.10	1.25	1.30	1.23	1.33	1.38	1.30
65	1.05	1.09	1.03	1.11	1.16	1.10	1.23	1.28	1.22	1.31	1.36	1.30
66	1.04	1.08	1.03	1.11	1.15	1.10	1.22	1.27	1.21	1.30	1.35	1.29
67	1.04	1.07	1.03	1.10	1.14	1.10	1.21	1.25	1.21	1.29	1.33	1.29
68	1.04	1.07	1.03	1.10	1.13	1.10	1.21	1.24	1.21	1.28	1.32	1.28
69	1.03	1.06	1.03	1.09	1.12	1.09	1.20	1.24	1.20	1.28	1.31	1.28
70	1.03	1.05	1.03	1.09	1.11	1.09	1.20	1.23	1.20	1.27	1.30	1.27
71	1.03	1.05	1.03	1.09	1.10	1.08	1.22	1.24	1.21	1.28	1.30	1.28
72	1.03	1.04	1.02	1.08	1.09	1.07	1.22	1.23	1.21	1.28	1.30	1.27
73	1.02	1.03	1.01	1.07	1.08	1.06	1.22	1.23	1.21	1.27	1.29	1.26
74	1.02	1.03	1.01	1.06	1.07	1.05	1.21	1.23	1.20	1.26	1.27	1.25
75	1.02	1.03	1.01	1.05	1.06	1.04	1.21	1.23	1.20	1.25	1.27	1.24
76	1.01	1.03	1.01	1.04	1.06	1.03	1.20	1.22	1.19	1.24	1.25	1.23
77	1.01	1.03	1.00	1.03	1.05	1.02	1.19	1.21	1.18	1.21	1.24	1.21
78	1.00	1.02	1.00	1.02	1.04	1.02	1.18	1.21	1.18	1.20	1.23	1.20
79	1.00	1.02	1.00	1.02	1.04	1.01	1.18	1.20	1.17	1.20	1.22	1.19
80	1.01	1.02	0.99	1.03	1.04	1.01	1.19	1.20	1.17	1.21	1.22	1.20
81	1.01	1.01	0.99	1.04	1.04	1.02	1.20	1.19	1.17	1.22	1.22	1.20
82	1.02	1.01	1.00	1.05	1.04	1.02	1.21	1.19	1.17	1.24	1.22	1.20
83	1.03	1.01	1.00	1.06	1.04	1.02	1.22	1.19	1.18	1.25	1.22	1.21
84	1.05	1.01	1.00	1.07	1.04	1.03	1.23	1.19	1.18	1.26	1.22	1.21
85	1.06	1.02	1.01	1.09	1.04	1.03	1.25	1.19	1.18	1.27	1.21	1.21
86	1.08	1.02	1.01	1.09	1.04	1.03	1.25	1.18	1.18	1.27	1.20	1.20
87	1.08	1.02	1.02	1.10	1.03	1.03	1.25	1.18	1.18	1.27	1.19	1.19
88	1.09	1.02	1.02	1.10	1.03	1.03	1.25	1.17	1.17	1.27	1.18	1.19
89	1.09	1.01	1.02	1.10	1.03	1.03	1.25	1.16	1.17	1.27	1.18	1.18
90	1.09	1.01	1.02	1.10	1.03	1.03	1.25	1.16	1.17	1.26	1.17	1.18
91	1.09	1.01	1.02	1.10	1.02	1.03	1.25	1.16	1.17	1.26	1.17	1.18
92	1.07	1.01	1.02	1.08	1.02	1.03	1.20	1.13	1.14	1.21	1.14	1.15
93	1.06	1.01	1.01	1.07	1.02	1.02	1.16	1.11	1.11	1.17	1.12	1.12
94	1.04	1.01	1.01	1.05	1.01	1.02	1.12	1.08	1.08	1.13	1.09	1.09
95	1.03	1.01	1.01	1.03	1.01	1.01	1.08	1.05	1.06	1.08	1.06	1.06
96+	1.02	1.00	1.00	1.02	1.00	1.01	1.04	1.03	1.03	1.04	1.03	1.03

Claim Duration Month	Non-Lifetime Benefit Period						Lifetime Benefit Period					
	No Inflation			Auto Inflation			No Inflation			Auto Inflation		
	<75	75-84	85+	<75	75-84	85+	<75	75-84	85+	<75	75-84	85+
1	0.89	0.90	0.91	0.86	0.86	0.88	0.90	0.90	0.91	0.86	0.86	0.88
2	0.89	0.90	0.91	0.86	0.86	0.88	0.90	0.90	0.91	0.86	0.86	0.88
3	0.89	0.90	0.91	0.86	0.86	0.88	0.90	0.90	0.91	0.86	0.86	0.88
4	0.89	0.90	0.91	0.86	0.86	0.88	0.90	0.90	0.91	0.86	0.86	0.88
5	0.88	0.89	0.90	0.84	0.85	0.86	0.88	0.89	0.91	0.85	0.86	0.87
6	0.86	0.88	0.89	0.83	0.85	0.85	0.87	0.89	0.90	0.84	0.85	0.86
7	0.88	0.90	0.90	0.85	0.87	0.87	0.89	0.91	0.91	0.86	0.88	0.88
8	0.89	0.92	0.92	0.87	0.90	0.89	0.90	0.94	0.93	0.88	0.91	0.91
9	0.91	0.95	0.93	0.89	0.93	0.91	0.92	0.96	0.95	0.90	0.94	0.93
10	0.92	0.97	0.95	0.91	0.95	0.94	0.94	0.98	0.97	0.92	0.96	0.95
11	0.93	0.98	0.96	0.91	0.96	0.95	0.94	0.99	0.97	0.92	0.97	0.95
12	0.93	0.99	0.97	0.91	0.96	0.95	0.93	0.98	0.97	0.91	0.96	0.95
13	0.94	0.99	0.98	0.92	0.97	0.95	0.93	0.98	0.97	0.91	0.96	0.94
14	0.95	1.00	0.99	0.92	0.98	0.96	0.93	0.98	0.97	0.90	0.96	0.94
15	0.95	1.01	0.99	0.93	0.98	0.97	0.92	0.98	0.97	0.90	0.96	0.94
16	0.96	1.02	1.00	0.94	0.99	0.98	0.92	0.98	0.97	0.91	0.96	0.95
17	0.96	1.02	1.00	0.94	1.00	0.98	0.93	0.98	0.97	0.91	0.96	0.95
18	0.96	1.01	1.00	0.95	1.00	0.99	0.93	0.98	0.97	0.92	0.97	0.96
19	0.95	1.00	0.99	0.95	1.00	0.99	0.93	0.97	0.96	0.92	0.97	0.96
20	0.95	1.00	0.99	0.94	0.99	0.98	0.92	0.97	0.96	0.92	0.97	0.96
21	0.95	0.99	0.99	0.94	0.99	0.98	0.92	0.97	0.96	0.92	0.97	0.96
22	0.94	0.99	0.98	0.94	0.99	0.98	0.92	0.96	0.96	0.92	0.96	0.96
23	0.94	0.98	0.98	0.94	0.98	0.98	0.92	0.96	0.96	0.92	0.96	0.95
24	0.95	0.99	0.98	0.94	0.98	0.98	0.92	0.96	0.96	0.92	0.96	0.95
25	0.95	0.99	0.99	0.95	0.98	0.98	0.93	0.97	0.96	0.92	0.96	0.96
26	0.96	0.99	0.99	0.95	0.98	0.98	0.94	0.97	0.97	0.93	0.96	0.96
27	0.97	1.00	1.00	0.95	0.98	0.98	0.95	0.97	0.97	0.93	0.96	0.96
28	0.98	1.01	1.00	0.96	0.99	0.98	0.95	0.98	0.98	0.94	0.96	0.96
29	0.98	1.01	1.00	0.96	0.99	0.99	0.95	0.98	0.98	0.94	0.97	0.96
30	0.98	1.01	1.01	0.96	1.00	0.99	0.95	0.98	0.97	0.93	0.97	0.96
31	0.98	1.02	1.01	0.96	1.00	0.99	0.95	0.98	0.97	0.93	0.97	0.96
32	0.98	1.02	1.01	0.96	1.00	0.99	0.94	0.98	0.97	0.93	0.97	0.96
33	0.97	1.02	1.01	0.96	1.00	0.99	0.94	0.98	0.97	0.92	0.97	0.95
34	0.97	1.02	1.00	0.95	1.00	0.99	0.94	0.98	0.97	0.92	0.96	0.95
35	0.97	1.01	1.00	0.95	1.00	0.98	0.94	0.98	0.97	0.92	0.96	0.95
36	0.96	1.01	0.99	0.94	0.99	0.97	0.93	0.98	0.97	0.92	0.96	0.95
37	0.96	1.00	0.99	0.93	0.98	0.96	0.93	0.98	0.96	0.91	0.95	0.94
38	0.95	1.00	0.98	0.92	0.97	0.95	0.93	0.98	0.96	0.91	0.95	0.94
39	0.94	0.99	0.97	0.92	0.96	0.95	0.93	0.98	0.96	0.91	0.95	0.94
40	0.94	0.99	0.97	0.91	0.96	0.94	0.93	0.98	0.96	0.91	0.95	0.93
41	0.94	0.99	0.97	0.91	0.96	0.94	0.94	0.98	0.96	0.91	0.95	0.93
42	0.95	0.99	0.97	0.92	0.96	0.95	0.94	0.98	0.97	0.91	0.95	0.94
43	0.96	0.99	0.98	0.93	0.97	0.96	0.95	0.98	0.97	0.92	0.96	0.95
44	0.96	1.00	0.99	0.94	0.97	0.97	0.95	0.99	0.98	0.93	0.96	0.95
45	0.97	1.00	1.00	0.95	0.98	0.97	0.96	0.99	0.98	0.94	0.97	0.96
46	0.98	1.01	1.00	0.96	0.99	0.98	0.97	0.99	0.98	0.95	0.97	0.97
47	0.99	1.01	1.01	0.97	0.99	0.99	0.97	0.99	0.99	0.95	0.97	0.97
48	0.99	1.01	1.01	0.98	0.99	0.99	0.98	0.99	0.99	0.96	0.98	0.98
49	0.99	1.01	1.01	0.98	0.99	0.99	0.98	0.99	0.99	0.96	0.98	0.98
50	0.99	1.00	1.01	0.97	0.99	0.99	0.98	0.99	0.99	0.96	0.98	0.98
51	0.99	1.00	1.00	0.97	0.99	0.99	0.98	0.99	0.99	0.96	0.98	0.98
52	0.99	1.00	1.00	0.97	0.99	0.99	0.98	0.99	0.99	0.96	0.97	0.98
53	0.99	1.00	1.00	0.97	0.98	0.99	0.97	0.99	0.99	0.96	0.97	0.97
54	0.98	1.00	1.00	0.97	0.98	0.99	0.97	0.98	0.99	0.96	0.97	0.97
55	0.99	1.00	1.00	0.97	0.98	0.99	0.97	0.98	0.99	0.96	0.97	0.97
56	0.99	1.00	1.00	0.97	0.98	0.99	0.97	0.98	0.99	0.96	0.97	0.97
57	0.99	1.00	1.00	0.97	0.98	0.99	0.98	0.98	0.99	0.96	0.97	0.97
58	0.99	1.00	1.00	0.98	0.99	0.99	0.98	0.99	0.99	0.97	0.97	0.98
59	0.99	1.00	1.00	0.98	0.99	0.99	0.98	0.99	0.99	0.97	0.98	0.98
60	0.99	1.00	1.00	0.98	0.99	0.99	0.99	1.00	1.00	0.98	0.99	0.99
61	0.99	1.00	1.00	0.98	0.99	0.99	0.99	1.00	1.00	0.98	0.99	0.99
62	0.99	1.00	1.00	0.98	0.99	0.99	0.99	1.00	1.00	0.98	1.00	0.99
63	0.99	1.00	1.00	0.98	0.99	0.99	0.99	1.01	1.01	0.99	1.00	1.00
64	0.99	1.00	1.00	0.98	1.00	0.99	1.00	1.01	1.01	0.99	1.00	1.00
65	0.99	1.00	1.00	0.98	1.00	0.99	1.00	1.01	1.01	0.99	1.01	1.00
66	0.99	1.00	1.00	0.99	1.00	0.99	1.00	1.01	1.01	0.99	1.01	1.00
67	0.99	1.00	1.00	0.98	1.00	0.99	1.00	1.01	1.00	0.99	1.00	1.00
68	0.99	1.00	1.00	0.98	1.00	0.99	1.00	1.01	1.00	0.99	1.00	1.00
69	0.99	1.00	1.00	0.98	0.99	0.99	0.99	1.01	1.00	0.99	1.00	1.00
70	0.99	1.00	0.99	0.98	0.99	0.99	0.99	1.01	1.00	0.99	1.00	0.99
71	0.98	1.00	0.99	0.98	0.99	0.99	0.99	1.00	1.00	0.98	1.00	0.99
72	0.98	0.99	0.99	0.98	0.99	0.99	0.99	1.00	1.00	0.98	1.00	0.99
73	0.98	0.99	0.99	0.98	0.99	0.99	0.99	1.00	1.00	0.99	1.00	0.99
74	0.98	0.99	0.99	0.98	0.99	0.99	0.99	1.00	1.00	0.99	1.00	1.00
75	0.99	0.99	0.99	0.98	0.99	0.99	0.99	1.00	1.00	0.99	1.00	1.00
76	0.99	0.99	0.99	0.99	0.99	0.99	0.99	1.00	1.00	0.99	1.00	1.00
77	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00
78	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00
79	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00
80	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00
81	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00
82	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00
83	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00
84	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00
85	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
86	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
87	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
88	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
89	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00
90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00
91	1.00	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	0.99	0.99
92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00
93	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00
94	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
96+	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Policy or Insured Characteristic	ALF Starting Site of Care Paid Claims [A]	Actual-to-Expected (A:E) Policy Duration [B]	Expected[1] [C]	HHC Starting Site of Care Paid Claims [A]	A:E Policy Duration [B]	Expected[1] [C]	SNF Starting Site of Care Paid Claims [A]	A:E Policy Duration [B]	Expected[1] [C]	Total Paid Claims [A]	A:E Policy Duration [B]	Expected[1] [C]
Inflation Option												
Auto	33,114,855	1.04	1.00	43,673,599	1.23	1.01	7,177,014	0.86	0.92	83,965,467	1.11	0.99
None	6,877,349	0.94	0.95	11,484,533	1.34	1.08	2,901,278	0.93	0.96	21,263,161	1.12	1.02
Benefit Period												
Lifetime	24,909,371	1.04	1.00	38,534,998	1.31	1.04	6,800,301	0.87	0.92	70,244,670	1.15	1.01
Non-Lifetime	15,082,834	0.98	0.97	16,623,134	1.12	0.98	3,277,990	0.90	0.95	34,983,958	1.03	0.97
Incurral Age												
<75	18,875,970	1.05	1.00	22,061,201	1.22	0.99	3,252,523	0.77	0.83	44,189,693	1.10	0.98
75-84	16,838,435	0.99	0.98	26,935,259	1.23	1.01	5,692,446	0.95	1.00	49,466,140	1.10	1.00
85+	4,277,799	0.99	0.99	6,161,672	1.49	1.21	1,133,323	0.91	0.95	11,572,795	1.19	1.09
Claim Duration (Annual)												
1	9,451,948	0.88	0.96	9,355,082	0.88	0.98	2,890,881	0.82	0.91	21,697,911	0.87	0.96
2	10,879,620	1.05	1.01	13,999,327	1.20	1.02	2,554,593	0.91	0.95	27,433,540	1.11	1.01
3	7,618,306	1.09	1.01	11,415,469	1.41	1.06	2,074,441	0.92	0.96	21,108,216	1.22	1.03
4	5,425,831	1.09	1.02	8,138,340	1.51	1.09	1,333,358	0.87	0.92	14,897,529	1.26	1.05
5	3,210,531	1.07	1.00	5,046,337	1.51	1.06	787,707	0.92	0.93	9,044,575	1.26	1.03
6+	3,405,969	1.03	0.92	7,203,576	1.38	0.91	437,312	0.92	0.87	11,046,857	1.23	0.91
Total	39,992,204	1.02	0.99	55,158,132	1.25	1.02	10,078,292	0.88	0.93	105,228,628	1.11	1.00

[1] Expected = assumption used in this filing reflecting all experience adjustments.

Exhibit A-9a
Day Utilization Adjustment Factors
All Rate Series
Indemnity Payment Type

| Attained | Starting Site of Care | | |
Age	ALF	HHC	SNF
<70	0.96	0.80	0.89
70	0.96	0.80	0.89
71	0.96	0.80	0.89
72	0.96	0.80	0.89
73	0.96	0.80	0.89
74	0.96	0.80	0.89
75	0.96	0.80	0.89
76	0.96	0.81	0.89
77	0.96	0.81	0.89
78	0.96	0.81	0.91
79	0.96	0.81	0.92
80	0.96	0.81	0.92
81	0.96	0.81	0.93
82	0.96	0.81	0.93
83	0.96	0.82	0.93
84	0.96	0.83	0.93
85	0.96	0.84	0.93
86	0.96	0.86	0.93
87	0.96	0.88	0.93
88	0.96	0.90	0.93
89	0.96	0.91	0.93
90	0.96	0.91	0.93
91	0.96	0.91	0.93
92	0.96	0.92	0.94
93	0.96	0.93	0.95
94	0.96	0.94	0.96
95	0.96	0.96	0.97
96	0.96	0.97	0.98
97	0.96	0.97	0.98
98	0.96	0.97	0.99
99	0.96	0.97	0.99
100	0.97	0.97	0.99
101	0.98	0.97	0.99
102	0.98	0.97	0.99
103	0.98	0.97	0.99
104	0.98	0.97	0.99
105+	0.98	0.97	0.99

	ALF Starting Site of Care			HHC Starting Site of Care			SNF Starting Site of Care			Total		
	Days	Actual-to-Expected (A:E)		Days	A:E		Days	A:E		Days	A:E	
	Paid	Unadjusted[2]	Expected[3]	Paid	Unadjusted[2]	Expected[3]	Paid	Unadjusted[2]	Expected[3]	Paid	Unadjusted[2]	Expected[3]
Attained Age	[A]	[B]	[C]	[A]	[B]	[C]	[A]	[B]	[C]	[A]	[B]	[C]
<65	2,930	0.85	0.89	22,663	0.91	1.11	1,610	0.88	0.99	27,203	0.90	1.07
65-69	5,640	0.94	0.97	20,034	0.71	0.86	2,613	0.67	0.75	28,286	0.74	0.87
70-74	13,484	1.01	1.05	37,587	0.87	1.07	3,234	0.69	0.76	54,305	0.89	1.04
75-79	14,505	0.97	1.00	38,297	0.90	1.08	4,733	0.77	0.84	57,534	0.90	1.03
80-84	9,145	0.95	0.98	28,267	0.87	1.04	2,392	0.75	0.80	39,804	0.88	1.01
85+	3,522	0.84	0.86	25,240	0.96	1.05	2,853	0.65	0.70	31,615	0.91	0.98
Total	49,225	0.95	0.99	172,088	0.87	1.04	17,435	0.72	0.79	238,748	0.87	1.01

[1] Excludes experience from policies with a caregiver indemnity rider.

[2] Actual days utilization experience.

[3] Expected = assumption used in this filing reflecting all experience adjustments.