MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY

Address: 1295 State Street, Springfield, MA 01111

513 Series Actuarial Memorandum

October 12, 2022

Product	Number
513 Series	
Tax-Qualified Comprehensive Long-Term Care Policy Form	MM500-P-2-MD et al.
Tax-Qualified Facility Only Long-Term Care Policy Form	MM501-P-2-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 January 17, 2013 and March 22, 2019.

Nationwide, the company is requesting the same rate increase, except where required due to regulatory requirements and jurisdiction-specific requirements.

As indicated in the enclosed cover letter, in Maryland, the company is requesting a rate increase phased in over two years pursuant to COMAR 31.14.01.04.A(5). This actuarial memorandum reflects the nationwide requested increase, except the requested rate increase in Maryland is reflected in Section 19, the proposed rate tables, and the supplement to the actuarial memorandum. The nationwide and Maryland-specific requests are described in Section 2.

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 enclosed 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 previously expected.

    Nationwide, the company is requesting a 30% rate increase for insureds with automatic inflation. No rate increase is being requested for insureds without automatic inflation. Nationwide, the average rate increase request is 25%.

    In Maryland, the company is requesting a cumulative 31% rate increase for insureds with an automatic inflation option, phased in over two years such that no insured will receive a rate increase of more than 15% in a single calendar year. Please note that the actual rate increases implemented may be immaterially higher than 15% in the first year and 31% cumulatively for a small portion of insureds due to administrative rounding algorithms. No rate increase is being requested for insureds without an automatic inflation option. This phased-in request targets a lifetime loss ratio that is actuarially equivalent to the nationwide request. In Maryland, the average rate increase request is 28%.

    Corresponding rate tables reflecting the current and proposed rate levels are enclosed with this filing. An Excel version of the rate tables is also enclosed and represents the rate basis the administrator will use in implementing this rate increase. Actual rates implemented may vary from those in the enclosed rate tables due to implementation rounding algorithms.

    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; and

- removing or reducing 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 drop 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. Generally, the industry treats these reduced benefit option elections less favorably by determining premium rates using a recalculated uninflated daily benefit that would result in the inflated daily benefit based on the elected inflation protection option.

The table below provides an illustration of the different treatment of removing a 3% compound inflation protection option for an issue age 50 insured with a 5-year benefit period. This illustration is based on common benefit characteristics and MassMutual's nationwide rates for the 513 Series. The premiums before and after RBO election reflecting Industry Treatment are also based on MassMutual's nationwide rates for the 513 Series. In this illustration, MassMutual's consumer-friendly treatment of the inflation RBO results in 23% lower premiums (= $788 / $1,028 – 1 = $100 / $130 – 1) compared to industry norms.

Table 2.1
Illustration of Inflation RBO Treatment Comparison
Issue Age 50 with RBO Election to Remove Inflation Protection in Duration 10

Treatment of Inflation RBO	Daily Benefit Amount (DBA)		Premium Before RBO Election[2]	Premium After RBO Election[2]
	Uninflated DBA	Inflated DBA[1]		
MassMutual Treatment	$100	$130	$2,228	$788[3]
Industry Treatment	100	130	2,228	1,028[4]

[1] $130 = $100 x (1+3%)$^{10-1}$
[2] Actual premium rates may vary due to rounding algorithms
[3] Proposed premium based on uninflated DBA ($100) and no inflation premium rate factor; after RBO retains $130 DBA
[4] Proposed premium based on inflated DBA ($130) and no inflation premium rate factor; after RBO retains $130 DBA

3. **Description of Benefits**

These are existing tax-qualified policy forms that provide long-term care coverage on a reimbursement basis. They are individually underwritten and provide either comprehensive coverage or facility-only coverage. 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.

At issue, the policyowner may have had the option to choose one of the following inflation options: no inflation, compound 3% inflation, compound 3.5% inflation, or compound 5% inflation. The compound inflation options provide for benefit levels that increase on each anniversary date by 3%, 3.5%, or 5%

compounded annually for the life of the insured. These automatic increasing benefits apply even when the insured is in claim status.

The available choices for benefit period, elimination period, and inflation option are shown in Section 21.

Premiums are paid for the life of the policy.

At issue, the policyowner may have been offered the option of selecting riders (e.g., restoration of benefits, shared care) that provide the types of coverage shown in the enclosed rate tables.

These are participating policy forms. Explicit dividend margin was incorporated into the pricing for the business in this filing that was to be released to policyowners if experience emerged as originally expected in pricing. However, as emerging experience is worse than that expected with the dividend margin, no dividends have been paid historically nor are expected to be paid going forward on the long-term care business in this filing.

Most jurisdictions included a Partnership-eligible policy form or option, subject to the individual Partnership requirements of each jurisdiction.

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 policyowners at the time of 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 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, 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. The non-lifetime benefit

period and lifetime payment option are the only characteristics applicable to the 513 Series as shown in Section 21.

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, 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, 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. The non-lifetime benefit period is the only characteristic applicable to the 513 Series as shown in Section 21.

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. In the year of rate increase implementation, 1.2% of in-force insureds with automatic inflation are assumed to elect a CBUL benefit. An additional 7.2% of in-force insureds with automatic inflation are assumed to reduce benefits to offset the requested rate increase, resulting in a 1.7% reduction in premium and claims. Adverse selection associated with the requested increase is a function of CBUL and RBO election. A cumulative 1.2% increase in morbidity is assumed due to adverse selection from the requested rate increase for insureds with automatic inflation. The assumption is applied on a seriatim basis and based on the requested rate increase described in Section 2.

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 3.5% to 4.0% and averages 3.5%) 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.

h. <u>Dividends</u> are not projected in the current experience as the company has not historically paid a dividend and does not anticipate paying a dividend in the future on its long-term care business in this filing.

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 above assumptions are deemed reasonable for the policy forms in this filing and 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 cognitive screenings, phone interviews, face-to-face interviews, prescription drug profiles, motor vehicle records, paramedical exams, and attending physician statements.

9. **Premiums**

Premiums are unisex and payable for life. The premiums may vary by issue age, elimination period, benefit period, uninflated daily benefit amount, inflation option, payment mode, 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, 2020) 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	54%
Semi-Annual	0.520*AP	4
Quarterly	0.265*AP	7
Monthly	0.088*AP	35

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. Claim reserves as of December 31, 2020 have been discounted to the incurral date of each respective claim and included in historical incurred claims. Incurred but not reported (IBNR) reserves have not been used as the incurred claims include paid claim runout through 2021.

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**

Exhibit I provides actual and projected experience using the assumptions described in Section 6. Actual experience is provided from inception through 2020 (with claim runout through 2021) and then projected on a seriatim basis for 60 years. The actual and projected experience is based on nationwide premiums. The after-increase projected experience reflects the requested increase 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.

The following table demonstrates that the lifetime loss ratios by inflation option also exceed the minimum loss ratio required by pre-rate stability regulation. The 'All' row corresponds to that shown in Exhibit I.

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

Inflation Option	Before Increase	After Increase
All	75%	65%
Auto	77	65
None	65	65

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 14% (equivalent to a 12.5% reduction to premiums) from the assumptions described above in Section 6 to reflect assumptions that include moderately adverse conditions.

The following table demonstrates that the 58%/85% test is passed by inflation option. The 'All' row corresponds to that shown in Exhibit II.

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

Inflation Option	Item 5[1]	Item 7[2]	Result[3]
All	$740	$890	Pass
Auto	648	773	Pass
None	92	117	Pass

[1] Item 5 is the Lifetime Earned Premium Times Prescribed Factor.
[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 Inflation Option

Inflation Option	Lifetime Loss Ratio			Actual-to-Expected	
	Before Increase	After Increase	Expected[1]	Before Increase	After Increase
All	75%	65%	65%	1.16	1.00
Auto	77	65	65	1.19	1.00
None	65	65	64	1.01	1.01

[1] Projected actual policies sold from issue using original pricing assumptions. The expected loss ratio at the time of original pricing based on assumed sales mix and moderately adverse conditions was 60%.

Actual and projected experience in the above table is identical to that described in Exhibit I. Expected experience uses the actual policies sold and projects from issue on a seriatim basis using the original pricing assumptions. Consistent with the original pricing projections, the expected experience based on original pricing assumptions includes an adjustment for dividend margin assumed in pricing.

Exhibit III provides a summary of the original pricing assumptions that underlie the expected experience described above.

17. History of Previous Rate Revisions

Nationwide, this is the first request for a rate increase on this block of business. No prior rate increases have been implemented on the above-listed policy forms.

18. **Analysis Performed to Consider a Rate Increase**

Table 16.1 demonstrates that experience has been 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 driven by higher-than-expected persistency and morbidity.

To comply with rate stability regulation, an analysis of the projected loss ratio compared to that assumed at the time of original pricing revealed that experience has unfolded more than moderately adverse and crossed the original pricing threshold for which the company could consider a rate increase.

The original pricing threshold for which the company could consider a rate increase was a 60% lifetime loss ratio. The 60% lifetime loss ratio threshold reflects the original pricing assumptions based on the assumed sales mix under moderately adverse conditions. At the time of pricing, moderately adverse conditions were defined as deviations from pricing in any combination of morbidity, mortality, and lapse assumptions that result in an increase in the expected present value of the benefits by no more than 12.5% of the expected present value of premium (equivalent to a 14% increase in claims). Table 16.1 demonstrates the lifetime loss ratio is in excess of this 60% threshold.

19. **Average Annual Premium (Based on December 31, 2020 In-Force)**

The number of insureds and the corresponding average annual premium that will be affected by this rate increase filing are shown in the table below.

Table 19.1
Average Annual Premium

Inflation Option	Number of Insureds	Before Increase Premium	After Increase Premium[1]
Maryland			
Auto	454	$3,386	$4,436
None	79	2,280	2,280
All	533	3,222	4,117
Nationwide			
Auto	14,119	$3,209	$4,171
None	3,451	2,485	2,485
All	17,570	3,067	3,840

[1] Maryland-specific after increase premium reflects the cumulative phased-in Maryland-specific rate increase request, as described in the enclosed cover letter.

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 being filed for use by the department. Should a phased-in rate increase to be approved, the company will notify policyowners of the remaining approved rate increases at the time of each annual rate increase. No policyowner would receive more than one increase during a 12-month period.

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21. Distribution of Business as of December 31, 2020 (Based on Nationwide In-Force Insured Count)

Table 21.1
Nationwide Distributions of Business

Issue Ages	Percent Distribution		
	All	Auto	None
<40	1%	1%	1%
40-44	3	3	2
45-49	8	8	5
50-54	18	18	15
55-59	28	29	24
60-64	27	27	28
65-69	13	11	19
70-74	2	1	5
75-79	<1	<1	1
80+	0	0	0
Average Issue Age	58	57	59

Elimination Period	Percent Distribution		
	All	Auto	None
30-Day	1%	1%	3%
60-Day	1	1	2
90-Day	92	93	89
180-Day	5	5	6

Benefit Period	Percent Distribution		
	All	Auto	None
2 Years	8%	8%	11%
3 Years	33	34	31
4 Years	17	18	14
5 Years	16	16	13
6 Years	25	24	31

Inflation Option	Percent Distribution		
	All	Auto	None
None	20%	0%	100%
Compound 3%	75	94	0
Compound 3.5%	1	1	0
Compound 5%	4	5	0

Premium Payment Duration	Percent Distribution		
	All	Auto	None
Lifetime Payment	100%	100%	100%
Limited Payment	N/A	N/A	N/A

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Premium Payment Option	Percent Distribution		
	All	Auto	None
No Discounted Renewal	100%	100%	100%
Discounted Renewal	N/A	N/A	N/A

Coverage Type	Percent Distribution		
	All	Auto	None
Facility Only	1%	1%	2%
Comprehensive	99	99	98

Benefit Type	Percent Distribution		
	All	Auto	None
Reimbursement	100%	100%	100%
Indemnity	N/A	N/A	N/A

Underwriting Class[1]	Percent Distribution		
	All	Auto	None
Preferred	33%	34%	31%
Standard	52	52	52
Substandard	15	14	18

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

Partner Status at Issue	Percent Distribution		
	All	Auto	None
Partnered	82%	82%	80%
Non-Partnered	18	18	20

22. **Number of Insureds and Annualized Premium (Based on December 31, 2020 In-Force)**

The number of insureds and annualized premium that will be affected by this rate increase filing are shown in the table below.

Table 22.1
Number of Insureds and Annualized Premium

Inflation Option	Number of Insureds	Annualized Premium
Maryland		
Auto	454	$1,537,424
None	79	180,086
Total	533	1,717,511
Nationwide		
Auto	14,119	$45,305,066
None	3,451	8,577,252
Total	17,570	53,882,317

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.
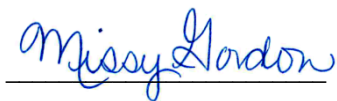
I hereby certify that, to the best of my knowledge and judgment, this rate submission is in compliance with the applicable laws and regulations of this jurisdiction and the rules of the department of insurance. In my opinion, the rates are not excessive or unfairly discriminatory, and bear reasonable relationship to the benefits based on the loss ratio standards of this jurisdiction. If the requested premium rate schedule increase is implemented and the underlying assumptions, with moderately adverse conditions reflected, are realized, no further premium rate schedule increases are anticipated. Under moderately adverse conditions, a lifetime loss ratio of 74% is anticipated and becomes the threshold that must be crossed before additional rate increases may be considered in the future.

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, dividend expectation, 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 contract reserves has been previously filed and there is no anticipation of any changes.

Missy Gordon, FSA, MAAA
Principal and Consulting Actuary

Date: October 12, 2022

	Calendar Year	Without Interest			End of Year Lives	With Max. Val. Interest		
		A	B	C = B / A	D	E	F	G = F / E
		Earned Premium	Incurred Claims	Incurred Loss Ratio		Earned Premium	Incurred Claims	Incurred Loss Ratio
Historical Experience	2012	624	0	0%	4	871	0	0%
	2013	2,099,316	0	0%	1,818	2,717,790	0	0%
	2014	9,683,841	399,158	4%	4,776	12,110,887	499,180	4%
	2015	19,563,441	6,250	0%	8,271	23,638,715	7,552	0%
	2016	30,078,471	277,312	1%	11,501	35,114,855	323,743	1%
	2017	38,389,838	861,484	2%	13,909	43,302,168	971,714	2%
	2018	45,656,804	526,091	1%	16,063	49,757,398	573,340	1%
	2019	51,395,990	653,236	1%	17,282	54,117,840	687,830	1%
	2020	53,371,273	1,426,681	3%	17,570	54,297,265	1,451,434	3%
Projected Future Experience	2021	53,306,876	2,059,715	4%	17,256	52,397,774	2,024,586	4%
	2022	52,332,944	2,672,693	5%	16,991	49,700,869	2,538,262	5%
	2023	51,484,974	3,426,550	7%	16,763	47,242,027	3,144,145	7%
	2024	50,721,602	4,326,285	9%	16,555	44,967,653	3,835,473	9%
	2025	50,000,847	5,383,890	11%	16,355	42,829,583	4,611,671	11%
	2026	49,288,306	6,613,691	13%	16,158	40,791,495	5,473,492	13%
	2027	48,554,288	8,049,698	17%	15,954	38,825,099	6,436,630	17%
	2028	47,781,261	9,719,408	20%	15,738	36,914,915	7,508,916	20%
	2029	46,954,013	11,655,457	25%	15,509	35,049,052	8,700,117	25%
	2030	46,063,053	13,898,028	30%	15,264	33,221,222	10,023,216	30%
	2031	45,100,999	16,482,147	37%	15,000	31,427,396	11,484,869	37%
	2032	44,062,574	19,439,932	44%	14,717	29,665,488	13,087,767	44%
	2033	42,943,239	22,792,140	53%	14,412	27,934,176	14,825,703	53%
	2034	41,738,823	26,545,704	64%	14,084	26,232,564	16,683,364	64%
	2035	40,446,168	30,683,172	76%	13,731	24,560,514	18,631,567	76%
	2036	39,063,994	35,153,152	90%	13,351	22,919,033	20,624,022	90%
	2037	37,592,500	39,882,268	106%	12,943	21,309,854	22,607,320	106%
	2038	36,033,879	44,837,131	124%	12,505	19,735,582	24,556,631	124%
	2039	34,392,435	49,911,407	145%	12,039	18,199,587	26,411,360	145%
	2040	32,675,296	55,002,921	168%	11,544	16,706,208	28,121,418	168%
	2041	30,892,799	59,920,153	194%	11,021	15,260,732	29,599,518	194%
	2042	29,057,790	64,523,168	222%	10,473	13,868,851	30,795,526	222%
	2043	27,184,633	68,740,540	253%	9,903	12,536,063	31,699,009	253%
	2044	25,288,595	72,409,542	286%	9,315	11,267,361	32,261,810	286%
	2045	23,386,460	75,404,496	322%	8,713	10,067,504	32,460,150	322%
	2046	21,495,854	77,704,576	361%	8,102	8,940,706	32,319,154	361%
	2047	19,633,997	79,147,700	403%	7,489	7,890,158	31,806,197	403%
	2048	17,817,688	79,700,345	447%	6,878	6,918,121	30,945,230	447%
	2049	16,062,364	79,416,495	494%	6,276	6,025,680	29,792,307	494%
	2050	14,381,867	78,260,992	544%	5,688	5,212,807	28,366,065	544%
	2051	12,788,034	76,375,245	597%	5,119	4,478,370	26,746,441	597%
	2052	11,290,503	73,670,632	653%	4,576	3,820,227	24,926,848	652%
	2053	9,897,160	70,375,494	711%	4,061	3,235,536	23,006,697	711%
	2054	8,612,791	66,526,275	772%	3,578	2,720,441	21,012,896	772%
	2055	7,440,135	62,285,101	837%	3,130	2,270,576	19,008,032	837%
	2056-2060	23,440,565	241,598,954	1,031%	10,206	6,535,160	67,029,015	1,026%
	2061-2065	9,110,762	133,578,726	1,466%	4,253	2,144,074	31,293,694	1,460%
	2066-2070	2,908,842	58,729,115	2,019%	1,474	577,869	11,621,896	2,011%
	2071-2075	757,970	20,161,334	2,660%	421	127,107	3,370,335	2,652%
	2076-2080	162,068	5,418,363	3,343%	100	22,931	764,660	3,335%
History		250,239,599	4,150,213	2%		275,057,788	4,514,791	2%
Future		1,202,148,947	1,952,482,634	162%		784,550,362	790,156,009	101%
Lifetime		1,452,388,546	1,956,632,846	135%		1,059,608,150	794,670,800	75%

	Calendar Year	Without Interest				With Max. Val. Interest		
		A	B	C = B / A	D	E	F	G = F / E
		Earned Premium	Incurred Claims	Incurred Loss Ratio	End of Year Lives	Earned Premium	Incurred Claims	Incurred Loss Ratio
Historical Experience	2012	624	0	0%	4	871	0	0%
	2013	2,099,316	0	0%	1,818	2,717,790	0	0%
	2014	9,683,841	399,158	4%	4,776	12,110,887	499,180	4%
	2015	19,563,441	6,250	0%	8,271	23,638,715	7,552	0%
	2016	30,078,471	277,312	1%	11,501	35,114,855	323,743	1%
	2017	38,389,838	861,484	2%	13,909	43,302,168	971,714	2%
	2018	45,656,804	526,091	1%	16,063	49,757,398	573,340	1%
	2019	51,395,990	653,236	1%	17,282	54,117,840	687,830	1%
	2020	53,371,273	1,426,681	3%	17,570	54,297,265	1,451,434	3%
	2021	53,306,876	2,048,066	4%	17,256	52,397,774	2,013,136	4%
	2022	52,332,944	2,657,224	5%	16,991	49,700,869	2,523,570	5%
	2023	53,146,820	3,402,879	6%	16,681	48,766,920	3,122,426	6%
	2024	60,787,154	4,274,373	7%	16,394	53,891,340	3,789,451	7%
	2025	61,077,599	5,314,578	9%	16,196	52,317,668	4,552,301	9%
	2026	60,214,049	6,527,348	11%	16,000	49,833,740	5,402,035	11%
	2027	59,325,456	7,943,224	13%	15,798	47,437,957	6,351,494	13%
	2028	58,389,734	9,588,972	16%	15,584	45,110,813	7,408,146	16%
	2029	57,388,130	11,496,499	20%	15,357	42,837,638	8,581,465	20%
	2030	56,308,809	13,704,976	24%	15,113	40,610,572	9,883,989	24%
	2031	55,142,718	16,248,740	29%	14,851	38,424,682	11,322,231	29%
	2032	53,883,167	19,159,044	36%	14,570	36,277,271	12,898,664	36%
	2033	52,524,437	22,456,041	43%	14,268	34,166,645	14,607,081	43%
	2034	51,061,259	26,146,005	51%	13,942	32,091,641	16,432,165	51%
Projected Future Experience	2035	49,489,577	30,211,262	61%	13,591	30,052,020	18,345,015	61%
	2036	47,807,640	34,600,930	72%	13,214	28,048,963	20,300,042	72%
	2037	46,015,586	39,242,359	85%	12,808	26,084,594	22,244,591	85%
	2038	44,115,978	44,102,370	100%	12,374	24,162,101	24,154,218	100%
	2039	42,113,965	49,075,946	117%	11,911	22,285,615	25,969,269	117%
	2040	40,018,215	54,062,172	135%	11,419	20,460,485	27,640,445	135%
	2041	37,841,323	58,873,080	156%	10,900	18,693,228	29,082,287	156%
	2042	35,599,044	63,371,426	178%	10,357	16,990,889	30,245,830	178%
	2043	33,309,020	67,487,124	203%	9,792	15,360,291	31,121,014	203%
	2044	30,990,036	71,060,440	229%	9,208	13,807,641	31,660,728	229%
	2045	28,662,688	73,969,081	258%	8,611	12,338,834	31,842,237	258%
	2046	26,348,636	76,193,530	289%	8,006	10,959,108	31,690,678	289%
	2047	24,069,080	77,575,594	322%	7,398	9,672,447	31,174,436	322%
	2048	21,844,708	78,083,350	357%	6,792	8,481,701	30,317,403	357%
	2049	19,694,525	77,771,136	395%	6,196	7,388,258	29,175,069	395%
	2050	17,635,590	76,605,706	434%	5,614	6,392,140	27,766,101	434%
	2051	15,682,507	74,726,630	476%	5,052	5,492,013	26,169,101	476%
	2052	13,847,177	72,048,087	520%	4,514	4,685,297	24,377,853	520%
	2053	12,139,340	68,794,582	567%	4,005	3,968,540	22,489,877	567%
	2054	10,564,911	65,002,358	615%	3,527	3,337,039	20,531,556	615%
	2055	9,127,287	60,830,638	666%	3,084	2,785,460	18,564,163	666%
	2056-2060	28,763,505	235,655,358	819%	10,051	8,019,126	65,382,038	815%
	2061-2065	11,185,009	129,996,190	1,162%	4,182	2,632,201	30,455,365	1,157%
	2066-2070	3,571,610	57,011,153	1,596%	1,447	709,536	11,282,328	1,590%
	2071-2075	930,174	19,517,051	2,098%	413	155,986	3,262,747	2,092%
	2076-2080	198,871	5,232,308	2,631%	98	28,138	738,418	2,624%
	History	250,239,599	4,150,213	2%		275,057,788	4,514,791	2%
	Future	1,436,455,155	1,912,067,831	133%		926,857,180	774,870,961	84%
	Lifetime	1,686,694,755	1,916,218,044	114%		1,201,914,968	779,385,752	65%

Projected incurred claims in 2021 and 2022 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
513 Series Nationwide Experience

1	Accumulated value of initial earned premium	275,057,788 x	58%	=	159,533,517
2a	Accumulated value of earned premium	275,057,788			
2b	Accumulated value of prior premium rate schedule increases (2a - 1)	0 x	85%	=	0
3	Present value of future projected initial earned premium	768,275,604 x	58%	=	445,599,850
4a	Present value of future projected premium	926,857,180			
4b	Present value of future projected premium in excess of the projected initial earned premiums (4a - 3)	158,581,576 x	85%	=	134,794,340
5	Lifetime Earned Premium Times Prescribed Factor: Sum of 1, 2b, 3, and 4b				739,927,707
6a	Accumulated value of incurred claims without the inclusion of active life reserves				4,514,791
6b	Present value of future projected incurred claims without the inclusion of active life reserves				885,566,813
7	Lifetime Incurred Claims with Rate Increase: Sum 6a and 6b				890,081,604
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 3.5% to 4.0% and averages 3.5%.
Item 3 reflects the impact of CBUL and RBO to align persistency with that in Item 4a.
Item 6b is 14% higher than incurred claims shown in Exhibit I-b to reflect moderately adverse conditions.

Morbidity
The morbidity assumption was derived using industry experience as reported in the Intercompany Study 1984-2004 published by the Society of Actuaries Long Term Care Experience Committee (2004 Study) and adjusted, to the extent credible, by the aggregate experience of the company's reinsurer.

Mortality
A2000 Mortality table is used for active lives along with adjustments by attained age and gender. The disabled mortality assumption is derived using industry experience as reported in the 2004 Study.

Lapse Rates
Voluntary lapse rates vary by duration and issue age.

Lifetime-Payment Lapse Rates

Issue Ages

Duration	<40	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+
1	8.60%	4.50%	3.70%	3.55%	2.85%	3.50%	3.50%	3.85%	4.05%	3.55%
2	5.55%	4.15%	3.60%	2.90%	2.40%	2.35%	2.75%	3.15%	3.00%	3.10%
3	3.55%	3.00%	2.25%	2.10%	1.80%	1.85%	1.95%	1.95%	2.05%	2.05%
4	3.30%	2.05%	2.15%	1.70%	1.50%	1.55%	1.60%	1.80%	1.85%	1.75%
5	2.15%	1.95%	1.70%	1.35%	1.05%	1.00%	1.20%	1.15%	1.20%	1.35%
6	2.15%	1.95%	1.60%	1.10%	1.00%	1.00%	1.10%	1.15%	1.15%	1.25%
7	2.15%	1.95%	1.60%	1.10%	1.00%	1.00%	1.10%	1.15%	1.15%	1.25%
8	1.35%	1.35%	1.25%	1.05%	0.95%	0.90%	0.95%	1.05%	1.00%	1.00%
9	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%
10	0.70%	0.70%	0.70%	0.70%	0.70%	0.70%	0.70%	0.70%	0.70%	0.70%
11+	0.55%	0.55%	0.55%	0.55%	0.55%	0.55%	0.55%	0.55%	0.55%	0.55%

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

Interest Rate
3.5% maximum valuation rate

Improvement
An annual improvement assumption was not included in pricing.

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 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 because an increasing attained age lapse trend is not widely used in the industry, and 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, 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, 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, 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, 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, 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.

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 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 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 total CBUL election rate is then prorated between the prior approved increase, if applicable, and the requested increase.

Cumulative Rate Increase	CBUL Assumption
0-14%	0.0%
15-100%	Rate Increase x 4.0%
>100%	(Rate Increase -100%) x 2.0% + 4.0%

No CBUL elections are assumed for policies with a limited payment option.

Reduced Benefit Options

It is assumed that those electing RBO will reduce their benefits so that premiums after the increase are closer to those before the increase. The percent reduction in premium is assumed to correspond to an equivalent percent reduction in claims. The RBO election rate is based on the CBUL election rate. The RBO election rate is assumed to be 6 times the CBUL election rate (i.e., 6.0 multiplied by CBUL election) for cumulative rate increases greater than 15%. Because the RBO election rate is based on the CBUL election rate; no RBO is assumed for cumulative increases less than or equal to 15% or for policies with a limited payment option. The RBO election rate is then 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).

Exhibit A-1
Actual-to-Expected Claim Incidence Experience 2009-2018
Policy Durations 7+
All Rate Series Combined

Policy or Insured Characteristic	Exposure	ALF			HHC			SNF			Total		
		Claim Count	Actual-to-Expected (A:E)		Claim Count	A:E		Claim Count	A:E		Claim Count	A:E	
			2017 Guidelines	Expected[1]		2017 Guidelines	Expected[1]		2017 Guidelines	Expected[1]		2017 Guidelines	Expected[1]
	[A]	[B]	[C]	[D]	[B]	[C]	[D]	[B]	[C]	[D]	[B]	[C]	[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%

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				Standard Underwriting				Substandard Underwriting				Duration	Policy Duration Adjustment
	Female		Male		Female		Male		Female		Male			
	Partnered	Non-Partnered	Partnered	Non-Partnered	Partnered	Non-Partnered	Partnered	Non-Partnered	Partnered	Non-Partnered	Partnered	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	1	0.94
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	2	0.90
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	3	0.86
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	4	0.83
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	5	0.81
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	6	0.84
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	7	0.87
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	8	0.89
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	9	0.91
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	10	0.93
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	11	0.94
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	12	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	13	0.98
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	14	1.00
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	15	1.02
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	16	1.02
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	17	1.02
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	18	1.01
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	19	1.01
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	20	1.00
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	21	1.01
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	22+	1.00
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	1.06	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		

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

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

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

	ALF Starting Site of Care				HHC Starting Site of Care				SNF Starting Site of Care				Total			
		Actual	Actual-to-Expected (A:E)			Actual	A:E			Actual	A:E			Actual	A:E	
Policy or Insured Characteristic	Exposure [A]	Deaths [B]	2017 Guidelines [C]	Expected[1] [D]	Exposure [A]	Deaths [B]	2017 Guidelines [C]	Expected[1] [D]	Exposure [A]	Deaths [B]	2017 Guidelines [C]	Expected[1] [D]	Exposure [A]	Deaths [B]	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	Actual Recoveries	Actual-to-Expected (A:E) 2017 Guidelines[1]	Expected[2]	Exposure	Actual Recoveries	A:E 2017 Guidelines[1]	Expected[2]	Exposure	Actual Recoveries	A:E 2017 Guidelines[1]	Expected[2]	Exposure	Actual Recoveries	A:E 2017 Guidelines[1]	Expected[2]
	[A]	[B]	[C]	[D]	[A]	[B]	[C]	[D]	[A]	[B]	[C]	[D]	[A]	[B]	[C]	[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.

Exhibit A-7
Actual-to-Expected Composite Claim Termination Experience 2009-2018
Claim Months 4 to 96
All Rate Series Combined

Policy or Insured Characteristic	ALF Starting Site of Care Exposure [A]	Claim Terminations [B]	Actual-to-Expected (A:E) 2017 Guidelines [C]	Expected[1] [D]	HHC Starting Site of Care Exposure [A]	Claim Terminations [B]	A:E 2017 Guidelines [C]	Expected[1] [D]	SNF Starting Site of Care Exposure [A]	Claim Terminations [B]	A:E 2017 Guidelines [C]	Expected[1] [D]	Total Exposure [A]	Claim Terminations [B]	A:E 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 | | | | | | 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	0.88	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

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

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	0.92	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	1.26	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

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

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	1.00	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	0.99	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

Exhibit A-8b
Actual-to-Expected Claim Duration Utilization Experience January 1, 2015-September 30, 2019
Reimbursement Payment Type with Claim Months 4 to 96
All Rate Series Combined

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

Exhibit A-9b
Actual-to-Expected Claim Duration Utilization Experience January 1, 2015-September 30, 2019
Indemnity Payment Type[1] with Claim Months 4 to 96
All Rate Series Combined

Attained Age	ALF Starting Site of Care			HHC Starting Site of Care			SNF Starting Site of Care			Total		
	Days Paid	Actual-to-Expected (A:E)		Days Paid	A:E		Days Paid	A:E		Days Paid	A:E	
		Unadjusted[2]	Expected[3]		Unadjusted[2]	Expected[3]		Unadjusted[2]	Expected[3]		Unadjusted[2]	Expected[3]
	[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.