

Long-Term Care Actuarial Valuation

As of June 30, 2021



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Actuarial Certification



April 2022

To the best of our knowledge, this report is complete and accurate and contains sufficient information to fully and fairly disclose the funded condition of the CalPERS Long-Term Care Program. This valuation is based on the participant and financial data as of June 30, 2021. It is our opinion that the valuation has been performed in accordance with generally accepted actuarial principles and the standards of practice prescribed by the Actuarial Standards Board and that the assumptions and methods are internally consistent and reasonable for the Program related to actual and anticipated future experience.

The undersigned, with actuarial credentials, meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

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Highlights and Executive Summary

Introduction

This is the actuarial valuation report as of June 30, 2021 for the CalPERS Long-Term Care Program (the Program). The financial projections used in this valuation analysis were produced under the First Principles Model by using the June 30, 2021 in-force data and updated assumptions. UHAS as the consulting actuary for CalPERS completed a parallel valuation, and UHAS' valuation results are consistent with CalPERS' valuation results.

This actuarial valuation uses best estimate assumptions that are appropriate as of the date of valuation and these assumptions do not include any margin for adverse deviation. Assumptions could change as more information becomes known, which would impact the funded status reported in this valuation. The model, scenarios, and all assumptions were reviewed and updated this year. This report summarizes the approach, assumptions, and results of the actuarial valuation of the CalPERS Long-Term Care (LTC) Program as of June 30, 2021. For information on the sensitivity of the valuation results to changes in the actuarial assumptions, please refer to the "Risk Analysis" section and Appendices A and B.

Purpose of the Report

The purpose of the June 30, 2021 actuarial valuation report of the CalPERS Long-Term Care Program is to:

- Determine whether assets as of June 30, 2021, expected future premium levels, and future investment returns are sufficient to support future benefits.
- Provide actuarial information as of June 30, 2021 to the CalPERS Board of Administration and other interested parties.
- Provide information as of June 30, 2021 to be used in CalPERS financial statements.

Use of this report for other purposes may be inappropriate. More detailed information can be provided upon request.

Funded Status and Margin for the Program

As of June 30, 2021, the Program's funded status is 108% (an increase from 101% last year) and the margin is 10.51% (an increase from 1.34% last year). During the 2020-21 fiscal year, the program experienced a higher-than-expected investment return, as well as higher-than-expected mortality and lower-than-expected claim amount due to COVID-19. These factors positively impacted the margin in this valuation. This valuation also incorporates assumption adjustments on claim incidence rates, morbidity improvement and mortality. These assumption adjustments negatively impacted the margin. Same as last year, the valuation results this year incorporate rate increases of 52% in 2021 and 25% in 2022. For more details on the program and assumption changes, please see the "Key Assumption Changes and Findings" section. The table below provides the funded status and margin as of June 30, 2021.

Component	(\$ in Millions)
1)Present Value of Future Benefits	\$8,473
2)Present Value of Future Expenses	\$385
3)Present Value of Future Premiums (PVFP)	\$3,819
4)Valuation Liabilities [(1+2) - (3)]	\$5,040
5)Valuation Assets	\$5,441
6)Valuation Margin [(5) - (4)]	\$401
7)Margin as a % of PVFP [(6) / (3)]	10.51%
8)Funded Status [(5) / (4)]	108%

Highlights and Executive Summary

The table below shows the funded status and the margin/(deficit) for the LTC Program over the last five years. The low-interest-rate environment and the corresponding long-term investment return expectation have had a large negative impact on the margin. In addition, morbidity assumption and lapse assumption adjustments also contributed to the large decrease in the 2019 valuation margin. The stabilization plan to change the asset allocation and increase premium rates brought the margin back to positive in the 2020 valuation. The higher-than-expected investment return and the program experience due to COVID-19 increased the margin in the 2021 valuation.

5-Year History of Funded Status and Margin

Valuation Date	Funded Status	Margin / (Deficit)
June 30, 2017	99%	(1.45%)
June 30, 2018	101%	1.20%
June 30, 2019	69%	(85.46%)
June 30, 2020	101%	1.34%
June 30, 2021	108%	10.51%

Key Assumption Changes and Findings

The key assumption changes and findings reflected in this actuarial valuation are as follows:

- The Program experienced an investment return of 13% during the fiscal year 2020-21, which exceeded the discount rate assumption of 4.75%. The higher-than-expected return improved the margin by 10.3%.
- The program experienced higher mortality, fewer new claims, and less claim payments during the fiscal year 2020-21. These experiences were largely attributed to COVID-19 and increased the margin by 3.4%.
- Experience analysis for the 2021 valuation identified that the probability of a policy going on claim increases rapidly between age 90 and age 96. As a result, the claim incidence assumption was adjusted to project more claims for the population above age 90. This update reduced the margin by 4.8%.
- Morbidity improvement is an assumption that projects claim incidence level to gradually decrease in future years due to advancement in healthcare technology and other factors. In recent years, there has not been consistent industry-wide evidence or direct data support suggesting this trend would continue. As a result, this assumption is further reduced in this valuation to reflect a lower outlook. This update has a negative impact to the margin by 3.1%.
- Mortality projections were refined to project more accurately for active lives (i.e., policyholders not on claim) and disabled lives (i.e., policyholders on claim). The active mortality assumption was lowered to account for historical mortality improvement prior to COVID-19. Lowering the active mortality had a negative impact to the margin. The disabled mortality projection was modified to account for the on-claim death variation by claim types, which increased the projected future disabled mortality and had a positive impact to the margin. The impact from the active and disabled mortality adjustments partially offset each other and in total reduced the margin by 1.2%.

Below are findings from comparing projected versus actual cashflows in fiscal year 2020-21:

- The Program's actual claim payment in fiscal year 2020-21 was \$311.3 million, which was 12%, or \$41.8 million, lower than projected.
- The Program's actual premium collected in fiscal year 2020-21 was \$271.8 million, which was 1.0%, or \$2.6 million, lower than projected.
- The Program experienced an investment return of 13% during the 2020-21 fiscal year. The investment return was \$404.7 million higher than expected.

A complete reconciliation of the Program's margin/(deficit) is provided on page 10.

Highlights and Executive Summary

Changes Since the Prior Valuation

Actuarial Model

CalPERS has used a First Principles Model for the Program's valuation projection since 2017. Improvements to the First Principles Model are made subsequently each year when necessary. The modeling improvements and revisions made for the 2021 valuation include:

- Modified the model to project disabled mortality through claim recovery and claim termination assumptions
- Removed contingent benefit upon lapse projection related to shock lapse
- Modified the model to project remaining length of stay for claims more accurately

More information about the First Principles Based Model can be found in Appendix C.

Actuarial Assumptions

The First Principles Model requires development of granular assumptions. It requires multiple morbidity assumption components including claim incidence rates, claim termination rates, and claim utilization rates. The claim termination rates for the First Principles Model are also further refined into assumptions for claim recovery and on-claim death. Similarly, mortality for the First Principles Model is separated into active life and disabled life components. First Principles Model lapse rates are only applied to active policies.

Each year, actual experience is measured against the assumptions made, which are then updated to reflect the actual experience. For the 2021 valuation, all assumptions were updated to include one more year of recent data. Please refer to the "Summary of Key Assumptions" Section on page 11 for more information on the changes that were made. Assumptions are documented in more detail in Appendix C.

Premiums and Policies

As of June 30, 2021, there are 111,518 in-force policies with an annualized premium amount of \$291,275,149. CalPERS historically implemented corrective actions, including premium increases in 2003, 2007, 2010, and 2015/2016, to stabilize the LTC Fund. These historical premium increases were already fully implemented and reflected in the data of this valuation.

In the June 30, 2019 valuation, the program had an underfunded status due to a decreased future investment return assumption and an increased projected future claim liability. To address this funding risk, the board subsequently approved stabilization efforts to improve the financial position of the program. The stabilization efforts included a 52% premium increase in November 2021 for all policies and an additional premium increase of up to 25% in 2022 for a cumulative increase of up to 90%. The implementation of the first phase of the premium increase is in progress. The second phase of the premium increase is planned to be implemented in November 2022. This valuation incorporates the 52% premium increase in 2021 and a 25% premium increase in 2022.

To reduce the impact of higher premiums on policyholders, options to convert to less expensive policies are offered to policy holders. At the time this valuation was completed, conversion options were offered for the 52% premium increase. Conversion options for the 25% premium increase are not yet available. Since the policy conversions for the 52% premium increase became effective after the valuation date, this valuation does not assume any policy conversions in the projections but provides an estimate of the impact to the margin due to conversions for sensitivity testing purposes. Please see the Sensitivity of Key Assumptions section for more detail.

Highlights and Executive Summary

Subsequent Events

Due to COVID-19, the program experienced higher mortality, lower claim incidence, and lower claim payments most noticeably starting from July 2020. These impacts from COVID-19 are expected to continue into the fiscal year 2021-22 but at a lower magnitude compared to what was experienced in the fiscal year 2020-21. These impacts are expected to be one-time and temporary, pending confirmation based on subsequent data and how long COVID-19 persists in the population. The long-term impact from COVID-19 is unclear at this moment. Neither short-term nor long-term impacts due to COVID 19 after the valuation date are included in the projection result of this valuation.

A lawsuit was filed in 2013 contesting the increase in premiums from the 2012 stabilization plan. The impact of this lawsuit is uncertain and has not been reflected in this valuation.

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Valuation Results

Comparison of Current and Prior Year Results

The results summarized throughout this report refer to deficits/margins and to funded status. A deficit is an estimate of the level of a one-time rate increase in premiums needed to bring the Program back to a zero margin. If the current fund balance and present value of earnings are adequate, a positive number or a margin would result. A second method of expressing the current financial status of the Program is the funded status. In general, the funded status is calculated by dividing the Program's assets by the accrued liability, or reserves. For the LTC Program, the accrued liability is equal to the present value of future benefits and expenses less the present value of participant premiums. This definition is consistent with a statutory gross premium valuation reserve for LTC insurance. In this context, a breakeven position is a funded ratio of 100%.

These two methods of expressing the financial status of the LTC Program are consistent in that both will always produce a margin when the funded ratio is greater than 100% and both will always produce a deficit when the funded ratio is lower than 100%. They are not consistent, however, in that a 10% margin does not produce a 110% funded ratio.

The table below summarizes and compares the CalPERS Long-Term Care Program's June 30, 2021 actuarial valuation results to its June 30, 2020 results, including the present values of future cash flows for the current in-force participants. These present values are based on 60 years of projected cash flow.

Component	6/30/2020 (\$ in Millions)	6/30/2021 (\$ in Millions)
1) Present Value of Future Benefits	\$8,348	\$8,473
2) Present Value of Future Expenses	\$389	\$385
3) Present Value of Future Premiums (PVFP)	\$3,919	\$3,819
4) Valuation Liabilities [(1+2) - (3)]	\$4,818	\$5,040
5) Valuation Assets	\$4,871	\$5,441
6) Valuation Margin [(5) - (4)]	\$53	\$401
7) Margin as a % of PVFP [(6) / (3)]	1.34%	10.51%
8) Funded Status [(5) / (4)]	101%	108%

This result shows that, with the planned rate increases reflected in this valuation, the assets and expected future premiums are sufficient to support the program if the future experience conforms to our current actuarial assumptions.

Liability cashflows were calculated through the application of a projection of expected future cash flows based on the in-force policies as of June 30, 2021. This projection uses a set of underlying assumptions derived from the CalPERS Long-Term Care Program's assumed experience, as well as industry experience in areas where CalPERS data does not have sufficient credibility. Policies were projected on a seriatim basis using specific characteristics including issue age, issue date, policy form, benefit period, elimination period, underwriting status, and benefit options. We have not generated liabilities and reserves consistent with statutory reporting requirements as this self-funded plan is not subject to such requirements.

Detailed yearly cashflows and projected fund balances are provided in Appendix A.

Valuation Results

Reconciliation to Prior Valuation Year Results

The Program's margin increased from 1.34% to 10.51% between the June 30, 2020 and June 30, 2021 reports. Factors that impacted the margin either positively or negatively during the fiscal year are the following:

A higher-than-expected investment return, program experiences related to COVID-19, morbidity assumption updates, mortality improvement updates, and model improvement had a positive impact on the margin:

- The Program experienced an investment return of 13% during the fiscal year 2020-21, which exceeded the expected investment return of 4.75%. The higher-than-expected return improved the margin by 10.30%.
- During the fiscal year 2020-21, the program experienced higher mortality, fewer new claims and less claims payments compared to last year's projection. These experiences were largely attributed to COVID-19. Lower claim payments during the fiscal year increased the margin by 1.09%. Higher mortality and fewer new claims than expected during the fiscal year increased the margin by 2.35%. These effects in total increased the margin by 3.44%.
- The morbidity assumption updates consist of a few small components. The experience studies were updated to include one additional year of data from the calendar year 2019. The claim data used was refined to combine historical short claims that were close to each other into one claim. The claim utilization assumption structure was updated for policies with \$300 MDB (Maximum Daily Benefit) or higher to reflect that utilization would increase each year but would be offset as MDB increases. The estimated IBNR (Incurred But Not Reported) claim amount decreased compared to last year due to fewer open claims at the valuation date due to COVID-19. The overall morbidity assumption updates, not including the claim incidence rate adjustment for high attained age population, improved the margin by 1.81%
- The mortality improvement assumption was updated using 100% of the Society of Actuaries (SOA) mortality improvement scale MP-2020. This is a more recent mortality improvement scale published by the SOA. The SOA scale MP-2020 projects less mortality improvement compared to the previous SOA scale MP-2016. This update improved the margin by 1.15%
- The projection model was updated to remove contingent benefit upon lapse projection related to shock lapses as this benefit was not implemented. The model was also refined to project claim remaining length of stay more accurately. The model updates in total improved the margin by 1.33%.

Assumption updates on claim incidence, morbidity improvement, and mortality had a negative impact on the margin:

- The claim incidence assumption was updated to reflect incidence rates at each individual age instead of by age group bands. This update more accurately projects additional future claims for the population above age 90. For the population of this age group, although the claim incidence rate becomes higher as the attained age increases, the claim length of stay typically becomes shorter. Due to technical constraints in the projection model, the claim termination assumption was not updated to have separate values at individual ages. As a result, adjustment factors were incorporated in the incidence rates for ages 90 and higher to reflect a shorter length of stay as the claim incur age becomes higher. The combined impact of higher claim incidence rates along with shorter length of stay for the high attained age population decreased the margin by 4.79%.
- Morbidity improvement is an assumption that projects claim incidence level to gradually decrease in future years due to advancement in healthcare technology and other factors. In recent years there has not been consistent industry-wide evidence or direct data support suggesting this trend would continue. As a result, the maximum limit for the values of this assumption is further reduced in this valuation from 0.75% per year to 0.5% per year to reflect a lower outlook. This update had a negative impact to the margin by 3.08%.
- Mortality projections were refined to project more accurately for active lives and disabled lives. The active mortality assumption was lowered to account for historical mortality improvement prior to COVID-19, and that had a negative impact to the margin. The disabled mortality was modified to be projected through claim recovery rate in order to account for on-claim death variation by claim types. Disabled mortality is obtained by subtracting claim recovery from claim termination. This update increased future disabled mortality projection and had a positive impact to the margin. The impact from active and disabled mortality updates partially offset each other and in total reduced the margin by 1.23%.

Valuation Results

Reconciliation to Prior Valuation Year Results (continued)

This table below provides a detailed reconciliation of the factors that contributed to the change of margin.

	Change in Margin	Resulting Margin	Funded Status
Margin as of 6/30/20 valuation		1.34%	101%
FY20-21 Non-Investment Gain/Loss	1.09%	2.43%	102%
FY20-21 Investment Gain/Loss	10.30%	12.73%	110%
Update to 2021 Demographics	2.35%	15.08%	112%
Model Improvement	1.33%	16.41%	113%
Expense Assumption Update	0.24%	16.65%	113%
Lapse Assumption Update	0.00%	16.65%	113%
Mortality Assumption Updates	(1.23%)	15.42%	112%
Morbidity Assumption Updates	1.81%	17.23%	114%
Claim Incidence Assumption Update	(4.79%)	12.44%	110%
Mortality Improvement Assumption Update	1.15%	13.59%	111%
Morbidity Improvement Assumption Update	(3.08%)	10.51%	108%
Margin as of 6/30/21 valuation		10.51%	108%

Valuation Results

Summary of Key Assumptions

To calculate the future claim payments, premiums, and investment income, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Actual experience is measured against the assumptions, and the assumptions are then updated to reflect actual experience. This section provides general information on key assumptions used in the 2021 valuation.

Discount Rate

The discount rate assumption is a major assumption of the valuation, as it is used to project asset growth and to determine the present values of future premiums, benefits, and expenses. This June 30, 2021 valuation uses a discount rate assumption of 4.75% which was adopted by the board in November 2020. It reflects the target asset allocation approved by the board in the March 2021 Investment Committee and the related assumed future return for each asset class based on the information as of September 30, 2020.

Morbidity

Morbidity represents a substantial financial risk for Long-Term Care insurance products. The morbidity assumption reflects the expected claim payments for participants. The key components driving claim payments are:

- Claim incidence, which is the probability of going on claim
- Claim termination, which is the probability that an existing claim will close in a given month
- Claim utilization, which is the amount of claim payment reimbursed relative to the maximum daily benefit

Assumptions were developed for claim incidence and termination based on data as of June 30, 2021, with a study cutoff date of December 31, 2019, whereas the utilization study had a cutoff date of December 31, 2020. Expected claim incidence rates and claim termination rates were credibility weighted using CalPERS actual claim experience and the industry data. The industry data uses the Society of Actuaries' [Long Term Care Intercompany Experience Study - Aggregated Database 2000-2011 Report](#). Additional credibility is assigned to the Program's experience as the experience continues to emerge. Actual claim experience is summarized in the table "Comparison of Actual to Expected Cash Flows for 2020-21" in the "Assets" section on page 19.

The morbidity improvement assumption reflects the expectation for claim incidence to gradually improve in the population over time due to health care technology and other factors. Since such factors tend to impact morbidity and mortality at the same time, it is a common method in the industry to apply the morbidity improvement assumption in conjunction with the mortality improvement assumption. In this valuation, the morbidity improvement assumption uses the mortality improvement assumption as a base, but the annual improvement amount is capped at 0.5% and floored at -0.5%.

Mortality

The mortality assumption summarizes the expected death rate of the population. Mortality reduces future liabilities without significantly affecting assets.

The First Principles Model tracks policyholder status and projects separately for active and disabled mortality. This method more accurately models the plan's overall mortality, particularly the extent to which the mix of active and disabled individuals may be different for a given attained age.

For active mortality, the 2012 Individual Annuity Mortality (IAM) table is used as the assumed general population mortality, and selection factors are developed based on CalPERS' actual experience. Projected mortality based on the 2012 IAM and CalPERS selection factors is then compared to the actual CalPERS mortality experience to determine more refined experience-based adjustment factors that vary by attained age. The combination of these adjustment factors along with the 2012 IAM table and CalPERS selection factors produces the CalPERS experienced-based mortality assumption. Active mortality rates are broken down by the following categories: age, gender, and marital status at issue.

Valuation Results

Summary of Key Assumptions (continued)

Mortality improvement assumption reflects the expectation for mortality to gradually improve in the population due to health care technology and other factors. The development of this assumption can be very challenging and often relies on a very large population base to complete a credible study. Therefore, it is common in the LTC industry to rely on industry mortality improvement scales rather than independently calculate this assumption. Since many CalPERS LTC Program members are also in the CalPERS Pension Program, we have chosen the same mortality improvement table that CalPERS Pension Valuation is based on. This valuation uses 100% of the SOA mortality improvement scale MP-2020.

Disabled mortality accounts for the majority of claim terminations. It is projected by using claim termination rate minus claim recovery rate instead of having its own direct assumption. The amount of claim recoveries is relatively small compared to disabled mortality. If a life recovers from a claim, it returns to the active status and has a probability to enter claim again in the future. This projection approach allows the disabled mortality and the recovery rate to vary by claim type and claim duration. The recovery rate assumption is developed based on CalPERS claim data as of June 30, 2021, with a study cutoff date of December 31, 2019.

Lapse

The lapse assumption reflects the expected portion of participants who terminate their policies each year by not paying the renewal premiums. Lapse assumptions can differ based on a variety of factors, including the participant's age at enrollment and the number of years they have had their policy. In general, it is assumed that the longer a participant keeps their policy, the less likely they are to lapse. Lapse rate assumptions greatly affect long-term care insurance premiums because when individuals lapse, future liabilities are immediately reduced while current assets are mostly not affected. The First Principles Model uses an active life lapse assumption that only applies to active policyholders. See the "Rate Increase and Policy Conversion" section below for information regarding shock lapses associated with the rate increase.

Expense

Expenses for the Program include fees charged by the third-party administrator (TPA) and CalPERS expenses related to internal staff working on the LTC Program and the investments. Expense assumptions were updated based on last year's actual expenses and the five-year TPA contract which has been in effect since January 2018. The administrative expenses are expressed either as per participant per month or flat expenses per month. Credit card premium payment expenses are reflected as a percent of premium paid.

Rate Increase and Policy Conversion

This valuation projection includes the planned premium increases. 52% premium increase is assumed to become effective November 1, 2021, and an additional 25% premium increase is assumed to become effective November 1, 2022 for a total of 90% premium increase. Shock lapse and the related morbidity anti-selection assumptions due to the premium increases are applied in the projection.

Options to convert to less expensive policies to offset the 52% premium increase are offered to policyholders. The potentially associated anti-selection rate is difficult to estimate. The projection in this valuation does not reflect any conversions.

Risk Analysis

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Risk Analysis

Risk Analysis

The actuarial calculations supplied in this report are based on a number of assumptions about very long-term demographic and economic behavior. Unless these assumptions (such as morbidity, mortality, lapses, expenses, and investment return) are exactly realized each year, there will be differences on a year-to-year basis. The year-to-year differences between the assumptions and actual experience are called actuarial gains and losses which could either increase or decrease the funded status and margin of the LTC Program. If the actual experience differs from the assumptions over a prolonged period, it may result in a need for premium changes to ensure the financial integrity of the LTC Program. The next section displays the results of sensitivity testing performed around key actuarial assumptions.

Sensitivity Testing of Key Assumptions

Several scenarios were run to test the sensitivity of future cash flows to changes in assumptions with respect to claim incidence, claim termination, claim utilization, active mortality, claim recovery rate, lapses, and investment earnings. The tables below illustrate the impact of changes to the base assumptions on asset adequacy levels.

Results are highly sensitive to the assumptions underlying the calculations. While these tests show the outcomes of each of these scenarios, they do not indicate the likelihood of each scenario; as such, this testing does not include the probability that the projected values will be realized.

Detailed yearly cash flows and projected fund balances for the base case and each of the scenarios tested as part of the sensitivity testing are provided in Appendix A. The base case scenario is based on our current actuarial assumptions used for this valuation.

Discount Rate

The discount rate assumption used in this valuation is 4.75%. In the sensitivity analysis, we test the impact of future investment returns on the margin and funded ratio of the LTC Program by increasing and decreasing the discount rate by 0.5%. The table below shows the impact on the margin and funded status. As expected, a higher discount rate increases both margin and funded status while a lower discount rate decreases both measures.

Impact of Discount Rate on Margin and Funded Ratio

Scenario Description	Margin	Funded Ratio
Base Case	10.51%	108%
Discount Rate Increased by 0.5% to 5.25%	22.35%	118%
Discount Rate Decreased by 0.5% to 4.25%	(1.88%)	99%

Claim Incidence

Claim incidence is the probability of an active policyholder going on claim. This is a key morbidity assumption for long-term care modeling and is calculated using new claim counts and active exposure life years. The sensitivity analysis tests the impact of claim incidence on the margin and funded ratio of the LTC Program by increasing and decreasing future expected claim incidence by 10%. As shown in the table below, lower-than-expected incidence increases both the margin and funded status while higher-than-expected claim incidence decreases both measures.

Impact of Claim Incidence on Margin and Funded Ratio

Scenario Description	Margin	Funded Ratio
Base Case	10.51%	108%
Lower Claim Incidence (Future Claims Incidence Reduced by 10%)	21.83%	119%
Higher Claim Incidence (Future Claims Incidence Increased by 10%)	(0.23%)	100%

Risk Analysis

Sensitivity Testing of Key Assumptions (continued)

Morbidity Improvement

Morbidity improvement is the assumption that projects claim incidence rate to decrease overtime due to healthcare technology advancement and other factors. It is possible that the assumed future decreases in claim incidence does not fully materialize. This sensitivity analysis tests the impact on the margin and funded ratio of the LTC Program if the morbidity improvement assumption does not materialize at all.

Impact of Morbidity Improvement Assumption on Margin and Funded Ratio

Scenario Description	Margin	Funded Ratio
Base Case	10.51%	108%
Remove Morbidity Improvement Assumption	5.62%	104%

Claim Termination

Claim termination is the probability that an existing claim will cease in a given month. Claim termination occurs due to recovery or death of a member while on claim. For the sensitivity analysis, we test the impact that claim terminations have on the margin and funded ratio of the LTC Program by increasing and decreasing future expected claim terminations by 10%. As shown in the table below, higher-than-expected claim terminations increase both the margin and funded status, while lower-than-expected claim terminations decrease both measures.

Impact of Claim Termination on Margin and Funded Ratio

Scenario Description	Margin	Funded Ratio
Base Case	10.51%	108%
Higher Claim Termination (Future Claim Termination Increased by 10%)	26.99%	123%
Lower Claim Termination (Future Claim Termination Decreased by 10%)	(8.78%)	94%

Claim Utilization

Claim utilization assumption projects the average percentage of maximum benefit allowance being used each month while on-claim. This assumption incorporates a trend projecting the utilization rate to increase each calendar year. For the sensitivity analysis, we test the impact of the yearly increase trend being 0.5 times higher or lower compared to the baseline assumption. As shown in the table below, higher-than-expected claim utilization decreases both the margin and funded status, while lower-than-expected claim utilization increases both measures.

Impact of Claim Utilization on Margin and Funded Ratio

Scenario Description	Margin	Funded Ratio
Base Case	10.51%	108%
Lower Claim Utilization (Yearly Increase Trend Being 0.5 Times Lower)	17.39%	114%
Higher Claim Utilization (Yearly Increase Trend Being 0.5 Times Higher)	(0.13%)	100%

Active Mortality

The active mortality assumption reflects the expected death rate of the participants in the LTC Program. Active mortality reduces future liabilities without significantly affecting the assets on hand. Because of this, higher-than-expected active mortality will generally result in an increase in the margin and funded status. For the sensitivity analysis, we test the impact active mortality rates have on the margin and funded ratio of the LTC Program by increasing and decreasing the active mortality rates by 10%. As shown in the table below, mortality deterioration (i.e., higher rates) increases both the margin and funded status, while mortality improvement (i.e., lower rates) decreases both measures.

Impact of Active Mortality on Margin and Funded Ratio

Scenario Description	Margin	Funded Ratio
Base Case	10.51%	108%
Active Mortality Increased by 10%	15.09%	112%
Active Mortality Decreased by 10%	5.74%	104%

Risk Analysis

Sensitivity Testing of Key Assumptions (continued)

Claim Recovery Rate

The claim recovery assumption reflects the percentage of claims that would recover and return to active status. It is used to split claim terminations into recoveries and disabled mortality. If a claim is terminated due to recovery, the policy has a probability to enter claim again in the future, while a claim termination due to disabled mortality would have no further liability. Therefore, under a certain total claim termination rate, higher claim recovery rate decreases the margin while lower claim recovery rate increases the margin. We test the impact if the claim recovery rate is 25% higher or lower than expected, and the results are shown below:

Impact of Claim Recovery Rate on Margin and Funded Ratio

Scenario Description	Margin	Funded Ratio
Base Case	10.51%	108%
Claim Recovery Rate Being 25% Lower	13.51%	110%
Claim Recovery Rate Being 25% Higher	7.43%	106%

Lapses

The lapse assumption reflects the expected portion of active participants who terminate their policies each year by not paying the renewal premiums. For the sensitivity analysis, we test the impact lapses have on the margin and funded ratio of the LTC Program by increasing and decreasing the assumed lapse rates by a flat 0.25%. As shown in the table below, higher-than-expected lapse assumptions increase both the margin and funded status, while lower-than-expected lapses decrease both measures.

Impact of Lapses on Margin and Funded Ratio

Scenario Description	Margin	Funded Ratio
Base Case	10.51%	108%
Lapse Rates Increased by 0.25%	15.23%	112%
Lapse Rates Decreased by 0.25%	5.71%	104%

Best and Worst Case

To test the potential “best case” and “worst case” scenarios, the sensitivity of the seven key assumptions was tested simultaneously. The seven key assumptions include discount rate, claim incidence, claim termination, claim utilization, active mortality, claim recovery, and lapses. The table below shows the combined impact on the margin and the funded status when the experience is better for all seven key assumptions, and when the experience is worse for all seven key assumptions.

Combined Impact of Key Assumptions on Margin and Funded Ratio

Scenario Description	Margin	Funded Ratio
Base Case	10.51%	108%
Discount Rate Increases by 0.5% to 5.25% Lower Claim Incidence (Future Claim Incidence Reduced by 10%) Higher Claim Termination (Future Claim Termination Increased by 10%) Lower Claim Utilization (Yearly Increase Trend Being 0.5 times Lower) Active Mortality Rates Increased by 10% Claim Recovery Rate Being 25% Lower Lapses Increased by 0.25%	53.92%	159%
Discount Rate Decreases by 0.5% to 4.25% Higher Claim Incidence (Future Claim Incidence Increased by 10%) Lower Claim Termination (Future Claim Termination Decreased by 10%) Higher Claim Utilization (Yearly Increase Trend Being 0.5 times Higher) Active Mortality Rates Decreased by 10% Claim Recovery Rate Being 25% Higher Lapses Decreased by 0.25%	(48.54%)	74%

Risk Analysis

Sensitivity Testing of Key Assumptions (continued)

Policy Conversion

The base result of this valuation does not assume any conversions related to the rate increase offers. Generally, conversions to less expensive policies help the financial position of the LTC Program. Below we test the impact on the margin and funded ratio for a 30% conversion acceptance rate related to the first 52% rate increase. Anti-selection related to conversion is hard to estimate and is not included in the testing below. As shown in the table below, conversion may have a positive impact on the margin without considering anti-selection.

Impact of Policy Conversion on Margin and Funded Ratio

Scenario Description	Margin	Funded Ratio
Base Case	10.51%	108%
30% Conversion Rate	13.76%	110%

Additional Sensitivity Testing

In addition to the sensitivity testing summarized above, we used the New York 7 interest rate scenarios to test different investment scenarios on the base case scenario. In the private industry, most LTC insurance companies use the seven interest rate scenarios defined in New York Regulation 126 to test asset adequacy and form an opinion with respect to asset adequacy analysis. Those scenarios prescribe the use of specific discount rate assumptions as described in the table below:

New York Regulation 126 Discount Rate Sensitivity

Scenarios	Projection Years										
	1	2	3	4	5	6	7	8	9	10	11+
Scenario #1	4.75%	4.75%	4.75%	4.75%	4.75%	4.75%	4.75%	4.75%	4.75%	4.75%	4.75%
Scenario #2	4.75%	5.25%	5.75%	6.25%	6.75%	7.25%	7.75%	8.25%	8.75%	9.25%	9.75%
Scenario #3	4.75%	5.75%	6.75%	7.75%	8.75%	9.75%	8.75%	7.75%	6.75%	5.75%	4.75%
Scenario #4	7.75%	7.75%	7.75%	7.75%	7.75%	7.75%	7.75%	7.75%	7.75%	7.75%	7.75%
Scenario #5	4.75%	4.25%	3.75%	3.25%	2.75%	2.25%	1.75%	1.25%	0.75%	0.25%	0.00%
Scenario #6	4.75%	3.75%	2.75%	1.75%	0.75%	0.00%	0.75%	1.75%	2.75%	3.75%	4.75%
Scenario #7	1.75%	1.75%	1.75%	1.75%	1.75%	1.75%	1.75%	1.75%	1.75%	1.75%	1.75%

The following table shows how varying the discount rate assumptions as described in the table above impacts the margin and funded status as of the valuation date.

Impact of Additional Discount Rate Sensitivity on Margin and Funded Ratio

Scenarios	Margin	Funded Ratio
Scenario #1	10.51%	108%
Scenario #2	75.82%	186%
Scenario #3	41.42%	135%
Scenario #4	75.01%	177%
Scenario #5	(107.73%)	52%
Scenario #6	(20.74%)	86%
Scenario #7	(75.02%)	60%

Detailed yearly cash flows and projected fund balances for these additional discount rate sensitivity scenarios are provided in Appendix B.

Assets

- 19 Reconciliation of the Market Value of Assets Over Prior Fiscal Year
- 19 Comparison of Actual to Expected Cash Flows
- 20 Asset Allocation
- 21 Historical Investment Return

Assets

Reconciliation of the Market Value of Assets Over Prior Fiscal Year

	Market Value
Market Value of Assets as of June 30, 2020	\$4,870,512,188
Premiums Received During Fiscal Year 2020-21	\$271,766,151
Benefit Payments in 2020-21	(\$311,259,874)
Expense Payments in 2020-21	(\$26,779,602)
Investment Returns in 2020-21	\$633,771,661
Uncollected Benefit Adjustments	3,173,289
Market Value of Assets as of June 30, 2021	
[(1) + (2) + (3) + (4) + (5)]	<u>\$5,441,183,813</u>

Comparison of Actual to Expected Cash Flows

Below is a table comparing the actual cash flows in 2020-21 to the cash flows that were projected as part of the June 30, 2020 valuation. As shown in the table, the investment experience had the biggest impact on the assets.

Comparison of Actual to Expected Cash Flows for 2020-2021

	Projected Results in the June 30, 2020 Valuation	Actual Results in the June 30, 2021 Valuation	Difference
Fund Balance as of June 30, 2020	\$4,870,512,188	\$4,870,512,188	\$0
Cash Flows for 2020-21			
Premiums	\$274,408,959	\$271,766,151	(\$2,642,808)
Paid Claims	(\$353,076,889)	(\$311,259,874)	\$41,817,016
Expenses	(\$26,383,308)	(\$26,779,602)	(\$396,294)
Investment Income	\$229,031,180	\$633,771,661	\$404,740,481
Uncollected Benefit Adjustments		3,173,289	3,173,289
Balance as of June 30, 2021	<u>\$4,994,492,130</u>	<u>\$5,441,183,813</u>	<u>\$ 446,691,684</u>

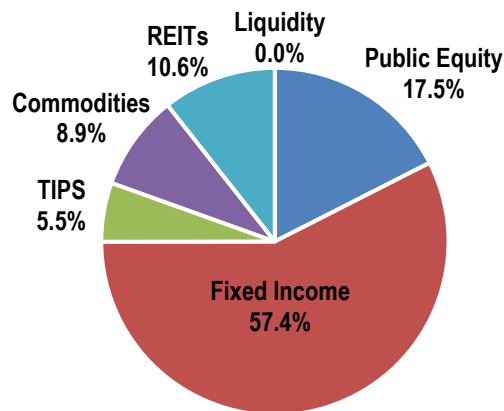
Assets

Asset Allocation

CalPERS follows a strategic allocation policy that identifies the percentage of funds to be invested in each asset class. A new strategic asset allocation target was adopted by the board in March 2021. The asset allocation and market value of assets as of June 30, 2021, as well as the future asset allocation target, are shown below.

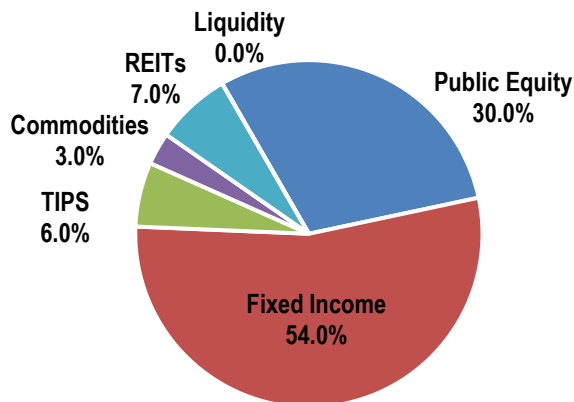
Asset Class	Allocation at Valuation Date	Market Value at Valuation Date (\$ in Millions)	Future Allocation Target
Public Equity	17.5%	\$961.0	30.0%
Fixed Income	57.4%	\$3,145.2	54.0%
Treasury-Inflation Protected Securities (TIPS)	5.5%	\$302.5	6.0%
Commodities	8.9%	\$486.0	3.0%
Real Estate Investment Trusts (REITs)	10.6%	\$581.6	7.0%
Liquidity	0.0%	\$0.1	0.0%
Total Net Assets at Market:	100.0%	\$5,476.4	100.0%

Asset Allocation at Valuation Date



■ Public Equity ■ Fixed Income ■ TIPS ■ Commodities ■ REITs ■ Liquidity

Future Allocation Target

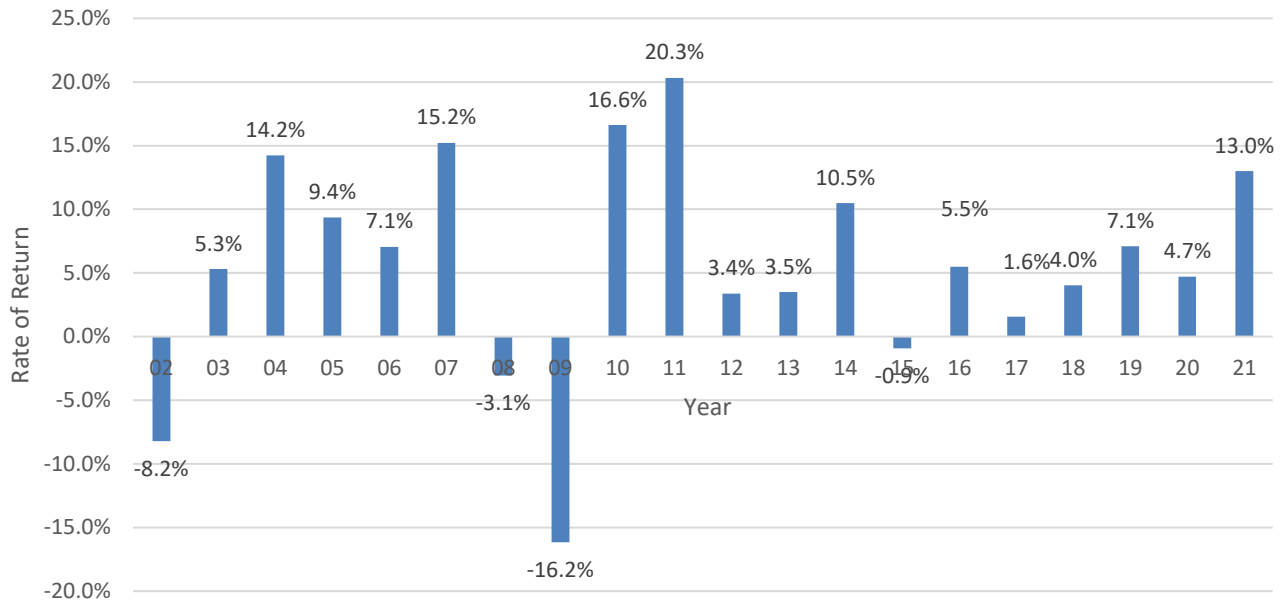


■ Public Equity ■ Fixed Income ■ TIPS ■ Commodities ■ REITs ■ Liquidity

Assets

Historical Investment Return

The following table provides 20 years of historical investment returns for each fiscal year ending June 30. Prior to 2012, the program's portfolio allocated about 44% in equity. Starting from 2012, the targeted asset allocation switched to a more conservative mix with 15% in equity and 66% in fixed income.



Appendices

- A-1 Appendix A – 60 Year Projection of Fund Balance for Scenarios Used in Sensitivity Testing of Key Assumptions
- B-1 Appendix B – 60 Year Projection of Fund Balance for Additional Discount Rate Sensitivity Testing from New York Regulation 126
- C-1 Appendix C – Long-Term Care Model and Assumptions
- D-1 Appendix D – Summary of Policy Benefits
- E-1 Appendix E – Demographic Information
- F-1 Appendix F – Glossary of Terms

Appendix A – 60 Year Projection of Fund Balance for Scenarios Used in Sensitivity Testing of Key Assumptions

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Appendix A

Base Case Scenario

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years based on the actuarial assumptions used in this valuation.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
10.5%	\$401	108%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,081	\$154,502	\$162,683	\$13,035	\$127,334	\$5,547,303
2022	102,673	\$388,440	\$344,365	\$25,471	\$263,727	\$5,829,633
2023	98,509	\$440,371	\$369,839	\$25,781	\$278,068	\$6,152,452
2024	94,266	\$414,566	\$396,601	\$25,993	\$292,157	\$6,436,581
2025	89,978	\$389,126	\$422,062	\$26,330	\$304,445	\$6,681,759
2026	85,629	\$364,111	\$445,789	\$26,617	\$314,929	\$6,888,392
2027	81,258	\$339,587	\$467,766	\$26,852	\$323,642	\$7,057,004
2028	76,863	\$315,634	\$488,028	\$27,032	\$330,596	\$7,188,174
2029	72,489	\$292,319	\$506,155	\$26,744	\$335,854	\$7,283,448
2030	68,156	\$269,710	\$523,218	\$26,386	\$339,450	\$7,343,004
2031	63,873	\$247,878	\$538,748	\$25,959	\$341,403	\$7,367,578
2041	26,959	\$82,761	\$577,795	\$18,213	\$284,383	\$6,013,392
2051	7,373	\$17,602	\$351,722	\$8,750	\$184,772	\$3,904,016
2061	1,393	\$2,646	\$136,496	\$3,593	\$151,547	\$3,274,058
2071	201	\$306	\$34,325	\$2,454	\$192,474	\$4,226,625
2081	31	\$18	\$3,066	\$1,799	\$145,441	\$6,338,729

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,587,982	\$18,244,151	\$735,974	\$14,289,688
Present Value as of June 30, 2021	\$3,818,588	\$8,473,184	\$385,298	\$5,519,687

Appendix A

Discount Rate Increased by 0.50% to 5.25%

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if the assumed discount rate and expected return were 5.25%, i.e., 0.50% higher.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
22.3%	\$825	118%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,081	\$154,502	\$162,683	\$13,035	\$140,569	\$5,560,537
2022	102,673	\$388,440	\$344,365	\$25,473	\$292,183	\$5,871,321
2023	98,509	\$440,371	\$369,839	\$25,788	\$309,525	\$6,225,590
2024	94,266	\$414,566	\$396,601	\$26,005	\$326,751	\$6,544,302
2025	89,978	\$389,126	\$422,062	\$26,348	\$342,148	\$6,827,165
2026	85,629	\$364,111	\$445,789	\$26,642	\$355,714	\$7,074,559
2027	81,258	\$339,587	\$467,766	\$26,884	\$367,486	\$7,286,983
2028	76,863	\$315,634	\$488,028	\$27,072	\$377,472	\$7,464,990
2029	72,489	\$292,319	\$506,155	\$26,793	\$385,744	\$7,610,105
2030	68,156	\$269,710	\$523,218	\$26,445	\$392,335	\$7,722,486
2031	63,873	\$247,878	\$538,748	\$26,029	\$397,268	\$7,802,855
2041	26,959	\$82,761	\$577,795	\$18,462	\$370,533	\$7,169,960
2051	7,373	\$17,602	\$351,722	\$9,365	\$314,669	\$6,137,207
2061	1,393	\$2,646	\$136,496	\$4,958	\$362,706	\$7,202,688
2071	201	\$306	\$34,325	\$5,400	\$548,487	\$10,976,405
2081	31	\$18	\$3,066	\$4,837	\$443,595	\$17,557,476

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,587,982	\$18,244,151	\$815,978	\$25,588,439
Present Value as of June 30, 2021	\$3,690,886	\$7,933,670	\$373,577	\$6,893,136

Appendix A

Discount Rate Decreased by 0.50% to 4.25%

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if the assumed discount rate and expected return were 4.25%, i.e., 0.50% lower.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
(1.9%)	(\$75)	99%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,081	\$154,502	\$162,683	\$13,035	\$114,069	\$5,534,037
2022	102,673	\$388,440	\$344,365	\$25,469	\$235,403	\$5,788,045
2023	98,509	\$440,371	\$369,839	\$25,775	\$247,031	\$6,079,833
2024	94,266	\$414,566	\$396,601	\$25,982	\$258,318	\$6,330,135
2025	89,978	\$389,126	\$422,062	\$26,313	\$267,873	\$6,538,759
2026	85,629	\$364,111	\$445,789	\$26,594	\$275,699	\$6,706,185
2027	81,258	\$339,587	\$467,766	\$26,821	\$281,829	\$6,833,015
2028	76,863	\$315,634	\$488,028	\$26,993	\$286,274	\$6,919,902
2029	72,489	\$292,319	\$506,155	\$26,696	\$289,097	\$6,968,466
2030	68,156	\$269,710	\$523,218	\$26,329	\$290,328	\$6,978,957
2031	63,873	\$247,878	\$538,748	\$25,891	\$289,990	\$6,952,186
2041	26,959	\$82,761	\$577,795	\$17,987	\$213,250	\$4,973,207
2051	7,373	\$17,602	\$351,722	\$8,232	\$89,992	\$2,037,141
2061	1,393	\$2,646	\$136,496	\$2,533	\$12,828	\$247,296
2071	201	\$306	\$34,325	\$579	(\$22,065)	(\$558,214)
2081	31	\$18	\$3,066	\$68	(\$21,011)	(\$1,021,684)

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,587,982	\$18,244,151	\$682,535	\$6,875,835
Present Value as of June 30, 2021	\$3,954,653	\$9,071,909	\$398,437	\$4,222,065

Appendix A

Claim Incidence Rates Increased by 10%

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if the future claim incidence were to be 10% higher than expected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
(0.2%)	(\$9)	100%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,070	\$154,385	\$163,903	\$13,035	\$127,325	\$5,545,955
2022	102,608	\$387,222	\$354,044	\$25,469	\$263,446	\$5,817,111
2023	98,369	\$437,659	\$387,178	\$25,769	\$277,032	\$6,118,855
2024	94,036	\$410,784	\$419,766	\$25,964	\$289,951	\$6,373,859
2025	89,647	\$384,449	\$449,432	\$26,278	\$300,729	\$6,583,326
2026	85,194	\$358,697	\$476,014	\$26,537	\$309,427	\$6,748,900
2027	80,717	\$333,581	\$499,738	\$26,739	\$316,132	\$6,872,136
2028	76,220	\$309,165	\$520,858	\$26,882	\$320,896	\$6,954,458
2029	71,753	\$285,506	\$539,207	\$26,542	\$323,820	\$6,998,036
2030	67,339	\$262,661	\$556,083	\$26,131	\$324,959	\$7,003,441
2031	62,988	\$240,692	\$571,109	\$25,651	\$324,348	\$6,971,721
2041	26,034	\$77,864	\$593,950	\$17,489	\$238,183	\$4,984,508
2051	6,974	\$16,109	\$351,258	\$7,891	\$105,681	\$2,159,846
2061	1,294	\$2,365	\$133,241	\$2,476	\$27,288	\$535,875
2071	185	\$270	\$32,664	\$535	(\$2,853)	(\$79,061)
2081	28	\$15	\$2,876	\$63	(\$7,083)	(\$310,273)

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,436,442	\$18,761,075	\$670,875	\$8,244,050
Present Value as of June 30, 2021	\$3,738,007	\$8,814,077	\$373,721	\$4,551,483

Appendix A

Claim Incidence Rates Reduced by 10%

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if the future claim incidence were to be 10% lower than expected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
21.8%	\$853	119%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,091	\$154,619	\$161,462	\$13,035	\$127,344	\$5,548,650
2022	102,738	\$389,666	\$334,633	\$25,473	\$264,009	\$5,842,218
2023	98,650	\$443,119	\$352,275	\$25,794	\$279,112	\$6,186,380
2024	94,499	\$418,428	\$372,957	\$26,022	\$294,392	\$6,500,220
2025	90,314	\$393,935	\$393,912	\$26,383	\$308,224	\$6,782,084
2026	86,074	\$369,713	\$414,461	\$26,699	\$320,549	\$7,031,185
2027	81,814	\$345,842	\$434,361	\$26,968	\$331,348	\$7,247,045
2028	77,526	\$322,409	\$453,448	\$27,186	\$340,588	\$7,429,407
2029	73,251	\$299,493	\$471,056	\$26,952	\$348,301	\$7,579,193
2030	69,005	\$277,172	\$488,030	\$26,649	\$354,495	\$7,696,181
2031	64,796	\$255,525	\$503,812	\$26,277	\$359,175	\$7,780,791
2041	27,960	\$88,238	\$557,928	\$18,992	\$334,019	\$7,120,175
2051	7,820	\$19,348	\$350,397	\$9,697	\$271,284	\$5,812,791
2061	1,507	\$2,984	\$139,395	\$4,829	\$288,236	\$6,286,482
2071	220	\$352	\$36,025	\$4,592	\$407,565	\$8,968,038
2081	34	\$20	\$3,276	\$3,803	\$313,384	\$13,659,839

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,753,180	\$17,643,036	\$808,467	\$20,916,978
Present Value as of June 30, 2021	\$3,905,178	\$8,095,797	\$397,945	\$6,572,631

Appendix A

Morbidity Improvement Assumption Removed

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if there is no morbidity improvement in the future.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
5.6%	\$213	104%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,080	\$154,497	\$162,734	\$13,035	\$127,334	\$5,547,246
2022	102,668	\$388,362	\$345,002	\$25,471	\$263,712	\$5,828,847
2023	98,496	\$440,130	\$371,452	\$25,780	\$277,992	\$6,149,736
2024	94,241	\$414,130	\$399,479	\$25,991	\$291,957	\$6,430,354
2025	89,935	\$388,454	\$426,442	\$26,325	\$304,037	\$6,670,079
2026	85,563	\$363,172	\$451,853	\$26,607	\$314,217	\$6,869,008
2027	81,164	\$338,358	\$475,647	\$26,836	\$322,516	\$7,027,399
2028	76,736	\$314,098	\$497,807	\$27,007	\$328,933	\$7,145,615
2029	72,325	\$290,471	\$517,869	\$26,704	\$333,523	\$7,225,037
2030	67,952	\$267,552	\$536,867	\$26,329	\$336,313	\$7,265,707
2031	63,626	\$245,421	\$554,288	\$25,881	\$337,318	\$7,268,277
2041	26,422	\$79,683	\$593,828	\$17,829	\$264,365	\$5,562,687
2051	7,101	\$16,601	\$351,338	\$8,265	\$147,837	\$3,089,491
2061	1,324	\$2,459	\$133,762	\$3,038	\$94,031	\$2,007,228
2071	190	\$283	\$33,018	\$1,551	\$102,606	\$2,245,898
2081	29	\$16	\$2,928	\$962	\$75,365	\$3,283,972

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,519,512	\$18,523,861	\$704,275	\$11,551,411
Present Value as of June 30, 2021	\$3,787,308	\$8,635,677	\$379,844	\$5,102,302

Appendix A

Claim Termination Rates Increased by 10%

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if the future claim terminations were to be 10% higher than expected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
27.0%	\$1,030	123%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	106,988	\$154,502	\$161,740	\$13,030	\$127,341	\$5,548,256
2022	102,423	\$388,423	\$336,178	\$25,436	\$263,936	\$5,839,001
2023	98,136	\$440,310	\$354,800	\$25,718	\$278,843	\$6,177,637
2024	93,798	\$414,460	\$376,044	\$25,906	\$293,818	\$6,483,965
2025	89,434	\$388,973	\$397,000	\$26,223	\$307,269	\$6,756,984
2026	85,028	\$363,915	\$416,964	\$26,494	\$319,166	\$6,996,608
2027	80,612	\$339,353	\$435,743	\$26,715	\$329,523	\$7,203,026
2028	76,185	\$315,365	\$453,271	\$26,884	\$338,339	\$7,376,575
2029	71,789	\$292,021	\$469,116	\$26,581	\$345,665	\$7,518,564
2030	67,439	\$269,389	\$484,104	\$26,211	\$351,529	\$7,629,167
2031	63,146	\$247,540	\$497,751	\$25,774	\$355,952	\$7,709,133
2041	26,362	\$82,474	\$527,755	\$18,092	\$335,012	\$7,155,001
2051	7,119	\$17,496	\$316,518	\$9,130	\$291,623	\$6,277,657
2061	1,328	\$2,623	\$121,016	\$4,896	\$336,131	\$7,351,607
2071	190	\$303	\$29,925	\$5,308	\$490,553	\$10,800,750
2081	29	\$17	\$2,647	\$4,576	\$379,272	\$16,532,445

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,580,158	\$16,707,159	\$803,415	\$23,021,678
Present Value as of June 30, 2021	\$3,814,771	\$7,835,381	\$390,865	\$6,803,204

Appendix A

Claim Termination Rates Reduced by 10%

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if the future claim terminations were to be 10% lower than expected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
(8.8%)	(\$336)	94%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,174	\$154,503	\$163,632	\$13,040	\$127,328	\$5,546,341
2022	102,934	\$388,457	\$352,818	\$25,507	\$263,514	\$5,819,987
2023	98,906	\$440,433	\$385,749	\$25,849	\$277,261	\$6,126,083
2024	94,773	\$414,677	\$418,783	\$26,087	\$290,405	\$6,386,295
2025	90,575	\$389,286	\$449,537	\$26,447	\$301,429	\$6,601,025
2026	86,297	\$364,318	\$477,791	\$26,755	\$310,357	\$6,771,154
2027	81,983	\$339,838	\$503,681	\$27,006	\$317,244	\$6,897,549
2028	77,628	\$315,923	\$527,329	\$27,200	\$322,110	\$6,981,053
2029	73,284	\$292,640	\$548,307	\$26,929	\$325,037	\$7,023,493
2030	68,974	\$270,058	\$567,975	\$26,587	\$326,061	\$7,025,049
2031	64,707	\$248,247	\$585,879	\$26,172	\$325,202	\$6,986,447
2041	27,662	\$83,084	\$637,086	\$18,364	\$226,519	\$4,707,547
2051	7,683	\$17,725	\$394,969	\$8,327	\$61,038	\$1,154,040
2061	1,474	\$2,673	\$156,195	\$2,549	(\$63,592)	(\$1,479,559)
2071	215	\$311	\$40,154	\$625	(\$156,202)	(\$3,464,540)
2081	33	\$18	\$3,643	\$73	(\$128,819)	(\$5,618,248)

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,596,696	\$20,077,457	\$690,792	\$4,112,122
Present Value as of June 30, 2021	\$3,822,793	\$9,217,884	\$381,924	\$4,033,128

Appendix A

Claim Utilization Rate with Higher Yearly Increases

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if the future yearly increase trend of claim utilization rate being 0.5 times higher than projected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
(0.1%)	(\$5)	100%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,081	\$154,502	\$163,372	\$13,035	\$127,327	\$5,546,606
2022	102,673	\$388,440	\$346,850	\$25,472	\$263,642	\$5,826,365
2023	98,507	\$440,371	\$373,972	\$25,783	\$277,822	\$6,144,802
2024	94,263	\$414,566	\$402,602	\$25,995	\$291,660	\$6,422,431
2025	89,972	\$389,126	\$430,048	\$26,332	\$303,592	\$6,658,768
2026	85,621	\$364,110	\$455,870	\$26,619	\$313,607	\$6,853,996
2027	81,245	\$339,587	\$479,968	\$26,852	\$321,729	\$7,008,491
2028	76,847	\$315,633	\$502,355	\$27,030	\$327,962	\$7,122,700
2029	72,469	\$292,317	\$522,700	\$26,739	\$332,363	\$7,197,942
2030	68,134	\$269,708	\$542,009	\$26,378	\$334,955	\$7,234,218
2031	63,848	\$247,876	\$559,791	\$25,947	\$335,749	\$7,232,104
2041	26,920	\$82,756	\$615,215	\$18,100	\$257,855	\$5,409,496
2051	7,351	\$17,598	\$386,019	\$8,378	\$120,305	\$2,465,366
2061	1,386	\$2,644	\$152,630	\$2,700	\$33,702	\$667,733
2071	200	\$306	\$38,495	\$594	\$98	(\$16,873)
2081	31	\$18	\$3,465	\$68	(\$5,675)	(\$249,183)

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,587,850	\$19,399,810	\$687,728	\$8,809,321
Present Value as of June 30, 2021	\$3,818,541	\$8,884,964	\$379,601	\$4,752,653

Appendix A

Claim Utilization Rate with Lower Yearly Increases

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if the future yearly increase trend of claim utilization rate being 0.5 times lower than projected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
17.4%	\$664	114%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,081	\$154,502	\$162,136	\$13,035	\$127,340	\$5,547,855
2022	102,673	\$388,440	\$342,415	\$25,470	\$263,795	\$5,832,205
2023	98,510	\$440,371	\$366,599	\$25,780	\$278,261	\$6,158,458
2024	94,268	\$414,566	\$391,904	\$25,992	\$292,548	\$6,447,676
2025	89,983	\$389,126	\$415,852	\$26,329	\$305,112	\$6,699,733
2026	85,635	\$364,111	\$438,033	\$26,616	\$315,959	\$6,915,154
2027	81,267	\$339,588	\$458,418	\$26,852	\$325,128	\$7,094,599
2028	76,876	\$315,634	\$477,142	\$27,034	\$332,632	\$7,238,690
2029	72,505	\$292,319	\$493,765	\$26,748	\$338,540	\$7,349,037
2030	68,174	\$269,711	\$509,303	\$26,393	\$342,887	\$7,425,939
2031	63,893	\$247,879	\$523,363	\$25,969	\$345,699	\$7,470,186
2041	26,991	\$82,765	\$553,355	\$18,299	\$303,392	\$6,444,862
2051	7,392	\$17,605	\$333,808	\$9,011	\$228,094	\$4,868,186
2061	1,398	\$2,646	\$127,923	\$4,179	\$228,165	\$4,967,628
2071	202	\$307	\$31,717	\$3,659	\$317,052	\$6,974,564
2081	31	\$18	\$2,836	\$2,962	\$243,280	\$10,603,985

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,588,072	\$17,539,102	\$768,078	\$17,881,909
Present Value as of June 30, 2021	\$3,818,620	\$8,206,428	\$389,142	\$6,031,972

Appendix A

Active Mortality Rates Increased by 10%

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if the active mortality rates were to be 10% higher than expected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
15.1%	\$568	112%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	106,995	\$154,432	\$162,864	\$13,031	\$127,332	\$5,547,053
2022	102,422	\$387,696	\$344,506	\$25,441	\$263,697	\$5,828,499
2023	98,104	\$438,691	\$369,410	\$25,720	\$277,986	\$6,150,045
2024	93,720	\$412,197	\$395,330	\$25,902	\$292,019	\$6,433,028
2025	89,304	\$386,173	\$419,746	\$26,207	\$304,262	\$6,677,511
2026	84,841	\$360,673	\$442,284	\$26,462	\$314,729	\$6,884,169
2027	80,371	\$335,758	\$462,978	\$26,664	\$323,466	\$7,053,750
2028	75,891	\$311,498	\$481,903	\$26,813	\$330,490	\$7,187,023
2029	71,447	\$287,955	\$498,670	\$26,482	\$335,876	\$7,285,702
2030	67,059	\$265,191	\$514,364	\$26,084	\$339,663	\$7,350,109
2031	62,733	\$243,270	\$528,529	\$25,618	\$341,877	\$7,381,108
2041	25,986	\$79,632	\$556,164	\$17,701	\$292,405	\$6,199,927
2051	6,975	\$16,613	\$332,585	\$8,512	\$209,444	\$4,457,279
2061	1,296	\$2,453	\$127,107	\$3,797	\$199,126	\$4,327,754
2071	185	\$280	\$31,421	\$3,172	\$271,378	\$5,967,717
2081	28	\$16	\$2,766	\$2,533	\$207,618	\$9,049,389

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,490,757	\$17,608,189	\$740,778	\$16,466,416
Present Value as of June 30, 2021	\$3,767,120	\$8,258,103	\$381,805	\$5,805,346

Appendix A

Active Mortality Rates Decreased by 10%

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if the active mortality rates were to be 10% lower than expected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
5.7%	\$222	104%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,166	\$154,572	\$162,501	\$13,039	\$127,337	\$5,547,552
2022	102,924	\$389,184	\$344,224	\$25,501	\$263,757	\$5,830,768
2023	98,916	\$442,058	\$370,269	\$25,842	\$278,149	\$6,154,864
2024	94,817	\$416,956	\$397,881	\$26,086	\$292,297	\$6,440,150
2025	90,661	\$392,116	\$424,407	\$26,456	\$304,628	\$6,686,032
2026	86,430	\$367,605	\$449,351	\$26,776	\$315,129	\$6,892,639
2027	82,164	\$343,495	\$472,649	\$27,044	\$323,820	\$7,060,260
2028	77,858	\$319,869	\$494,298	\$27,256	\$330,701	\$7,189,276
2029	73,559	\$296,803	\$513,845	\$27,012	\$335,829	\$7,281,051
2030	69,288	\$274,370	\$532,345	\$26,697	\$339,228	\$7,335,606
2031	65,052	\$252,646	\$549,314	\$26,310	\$340,911	\$7,353,539
2041	27,997	\$86,111	\$600,763	\$18,758	\$275,981	\$5,817,893
2051	7,812	\$18,703	\$372,646	\$9,019	\$158,604	\$3,316,883
2061	1,503	\$2,867	\$147,046	\$3,386	\$100,703	\$2,147,788
2071	220	\$337	\$37,675	\$1,689	\$107,922	\$2,360,781
2081	34	\$19	\$3,423	\$1,013	\$78,770	\$3,432,144

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,690,466	\$18,931,487	\$730,940	\$11,962,921
Present Value as of June 30, 2021	\$3,872,268	\$8,702,361	\$388,986	\$5,215,269

Appendix A

Claim Recovery Rate Being 25% Higher

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if the claim recovery rates were to be 25% higher than expected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
7.4%	\$286	106%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,108	\$154,528	\$162,685	\$13,036	\$127,335	\$5,547,325
2022	102,766	\$388,759	\$344,455	\$25,482	\$263,733	\$5,829,880
2023	98,669	\$441,135	\$370,199	\$25,805	\$278,088	\$6,153,100
2024	94,489	\$415,671	\$397,397	\$26,031	\$292,195	\$6,437,539
2025	90,261	\$390,523	\$423,428	\$26,382	\$304,491	\$6,682,742
2026	85,967	\$365,755	\$447,826	\$26,684	\$314,966	\$6,888,953
2027	81,647	\$341,437	\$470,546	\$26,934	\$323,647	\$7,056,557
2028	77,296	\$317,651	\$491,603	\$27,129	\$330,538	\$7,186,013
2029	72,961	\$294,468	\$510,554	\$26,862	\$335,698	\$7,278,763
2030	68,662	\$271,958	\$528,460	\$26,526	\$339,156	\$7,334,893
2031	64,407	\$250,195	\$544,841	\$26,118	\$340,928	\$7,355,057
2041	27,490	\$84,540	\$591,812	\$18,491	\$278,919	\$5,886,535
2051	7,615	\$18,213	\$365,200	\$8,888	\$167,961	\$3,526,776
2061	1,456	\$2,771	\$143,485	\$3,449	\$118,778	\$2,548,072
2071	212	\$324	\$36,618	\$1,957	\$137,876	\$3,021,731
2081	33	\$19	\$3,310	\$1,291	\$102,366	\$4,460,849

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,640,009	\$18,676,002	\$730,746	\$12,786,404
Present Value as of June 30, 2021	\$3,845,257	\$8,614,124	\$386,795	\$5,322,133

Appendix A

Claim Recovery Rate Being 25% Lower

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if the claim recovery rates were to be 25% lower than expected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
13.5%	\$512	110%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,053	\$154,476	\$162,680	\$13,034	\$127,334	\$5,547,280
2022	102,579	\$388,121	\$344,276	\$25,460	\$263,722	\$5,829,387
2023	98,349	\$439,608	\$369,480	\$25,758	\$278,047	\$6,151,805
2024	94,044	\$413,466	\$395,808	\$25,956	\$292,120	\$6,435,627
2025	89,697	\$387,738	\$420,704	\$26,279	\$304,399	\$6,680,781
2026	85,294	\$362,481	\$443,769	\$26,551	\$314,891	\$6,887,833
2027	80,874	\$337,757	\$465,012	\$26,771	\$323,637	\$7,057,444
2028	76,435	\$313,642	\$484,495	\$26,936	\$330,653	\$7,190,309
2029	72,023	\$290,200	\$501,817	\$26,626	\$336,009	\$7,288,074
2030	67,658	\$267,498	\$518,061	\$26,248	\$339,740	\$7,351,003
2031	63,349	\$245,603	\$532,765	\$25,801	\$341,872	\$7,379,911
2041	26,445	\$81,048	\$564,267	\$17,945	\$289,709	\$6,136,963
2051	7,143	\$17,026	\$338,951	\$8,622	\$201,014	\$4,268,358
2061	1,334	\$2,530	\$129,977	\$3,735	\$183,055	\$3,971,997
2071	191	\$290	\$32,218	\$2,932	\$244,879	\$5,383,082
2081	29	\$17	\$2,846	\$2,287	\$186,768	\$8,140,438

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,537,482	\$17,832,188	\$741,010	\$15,734,970
Present Value as of June 30, 2021	\$3,792,546	\$8,337,527	\$383,842	\$5,710,031

Appendix A

Lapses Increased by 0.25%

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if the lapse rates were to be 0.25% higher than expected for each of the next 60 years.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
15.2%	\$571	112%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	106,951	\$154,362	\$162,676	\$13,029	\$127,333	\$5,547,174
2022	102,305	\$387,371	\$344,213	\$25,426	\$263,704	\$5,828,611
2023	97,922	\$438,077	\$369,299	\$25,693	\$277,982	\$6,149,678
2024	93,480	\$411,376	\$395,456	\$25,862	\$291,982	\$6,431,718
2025	89,013	\$385,167	\$420,120	\$26,154	\$304,170	\$6,674,781
2026	84,506	\$359,506	\$442,880	\$26,397	\$314,561	\$6,879,572
2027	79,999	\$334,456	\$463,742	\$26,587	\$323,202	\$7,046,901
2028	75,488	\$310,089	\$482,766	\$26,723	\$330,114	\$7,177,614
2029	71,019	\$286,467	\$499,554	\$26,376	\$335,376	\$7,273,527
2030	66,613	\$263,651	\$515,190	\$25,962	\$339,032	\$7,335,058
2031	62,275	\$241,705	\$529,226	\$25,482	\$341,112	\$7,363,167
2041	25,657	\$78,712	\$553,988	\$17,513	\$290,829	\$6,165,917
2051	6,849	\$16,329	\$329,180	\$8,387	\$208,410	\$4,436,123
2061	1,263	\$2,394	\$124,702	\$3,745	\$199,289	\$4,332,542
2071	178	\$270	\$30,622	\$3,165	\$272,581	\$5,994,641
2081	27	\$15	\$2,671	\$2,542	\$208,686	\$9,096,013

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,459,570	\$17,525,539	\$735,664	\$16,456,462
Present Value as of June 30, 2021	\$3,750,195	\$8,240,395	\$379,713	\$5,794,017

Appendix A

Lapses Decreased by 0.25%

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if the lapse rates were to be 0.25% lower than expected for each of the next 60 years.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
5.7%	\$222	104%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,210	\$154,642	\$162,689	\$13,042	\$127,335	\$5,547,431
2022	103,041	\$389,509	\$344,518	\$25,516	\$263,750	\$5,830,656
2023	99,098	\$442,670	\$370,379	\$25,870	\$278,153	\$6,155,231
2024	95,057	\$417,772	\$397,748	\$26,125	\$292,334	\$6,441,463
2025	90,951	\$393,115	\$424,014	\$26,508	\$304,720	\$6,688,776
2026	86,764	\$368,761	\$448,718	\$26,841	\$315,298	\$6,897,276
2027	82,535	\$344,783	\$471,824	\$27,121	\$324,086	\$7,067,201
2028	78,260	\$321,262	\$493,346	\$27,345	\$331,083	\$7,198,854
2029	73,985	\$298,273	\$512,843	\$27,118	\$336,339	\$7,293,506
2030	69,732	\$275,890	\$531,369	\$26,818	\$339,875	\$7,351,084
2031	65,509	\$254,190	\$548,438	\$26,445	\$341,700	\$7,372,091
2041	28,324	\$87,007	\$602,592	\$18,944	\$277,748	\$5,856,266
2051	7,935	\$18,972	\$375,768	\$9,144	\$160,130	\$3,349,037
2061	1,536	\$2,923	\$149,385	\$3,444	\$101,420	\$2,162,446
2071	227	\$347	\$38,469	\$1,710	\$108,129	\$2,364,964
2081	36	\$20	\$3,519	\$1,017	\$78,806	\$3,433,646

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (which is as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,721,022	\$19,005,397	\$736,336	\$12,013,174
Present Value as of June 30, 2021	\$3,888,921	\$8,716,817	\$391,090	\$5,232,165

Appendix A

“Best Case” Scenario

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if the experience were to be better than expected for the key assumptions. Specifically, this scenario includes higher discount rate, higher claim termination rates, higher active mortality, higher lapse rates, lower claim incidence rates, lower yearly increase for claim utilization rates, and lower claim recovery rates.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
53.9%	\$2,024	159%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	106,759	\$154,383	\$160,170	\$13,018	\$127,352	\$5,549,732
2022	101,792	\$387,531	\$324,797	\$25,353	\$264,219	\$5,851,332
2023	97,159	\$438,361	\$333,811	\$25,561	\$279,850	\$6,210,172
2024	92,525	\$411,713	\$346,594	\$25,682	\$295,971	\$6,545,581
2025	87,916	\$385,537	\$360,184	\$25,935	\$310,966	\$6,855,964
2026	83,307	\$359,896	\$373,716	\$26,147	\$324,780	\$7,140,777
2027	78,730	\$334,856	\$386,805	\$26,315	\$337,410	\$7,399,923
2028	74,179	\$310,492	\$399,325	\$26,437	\$348,843	\$7,633,496
2029	69,687	\$286,870	\$410,648	\$26,070	\$359,123	\$7,842,771
2030	65,268	\$264,051	\$421,390	\$25,643	\$368,280	\$8,028,069
2031	60,930	\$242,097	\$431,076	\$25,156	\$376,344	\$8,190,278
2041	24,681	\$78,871	\$440,260	\$17,475	\$412,053	\$8,896,488
2051	6,459	\$16,295	\$255,423	\$9,478	\$458,951	\$9,997,381
2061	1,167	\$2,374	\$93,899	\$6,857	\$627,642	\$13,792,489
2071	162	\$266	\$22,271	\$9,795	\$962,228	\$21,203,858
2081	24	\$15	\$1,907	\$8,965	\$749,380	\$32,667,134

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,465,835	\$14,100,415	\$898,548	\$36,759,078
Present Value as of June 30, 2021	\$3,754,395	\$6,776,272	\$394,929	\$8,799,695

Appendix A

“Worst Case” Scenario

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years if the experience were to be worse than expected for the key assumptions. Specifically, this scenario includes lower discount rate, lower claim termination rates, lower active mortality, lower lapse rates, higher claim incidence rates, higher yearly increase for claim utilization rates, and higher claim recovery rates.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
(48.5%)	(\$1,889)	74%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,409	\$154,622	\$165,395	\$13,053	\$127,315	\$5,544,673
2022	103,598	\$389,386	\$365,530	\$25,594	\$263,197	\$5,806,132
2023	99,954	\$442,513	\$409,844	\$26,016	\$276,119	\$6,088,904
2024	96,157	\$417,652	\$453,588	\$26,331	\$287,919	\$6,314,556
2025	92,246	\$393,049	\$494,253	\$26,765	\$297,082	\$6,483,668
2026	88,211	\$368,758	\$531,701	\$27,141	\$303,638	\$6,597,223
2027	84,094	\$344,845	\$566,061	\$27,456	\$307,648	\$6,656,199
2028	79,898	\$321,387	\$597,512	\$27,706	\$309,135	\$6,661,502
2029	75,681	\$298,455	\$625,909	\$27,512	\$308,178	\$6,614,714
2030	71,469	\$276,122	\$652,744	\$27,238	\$304,799	\$6,515,653
2031	67,269	\$254,467	\$677,575	\$26,885	\$298,999	\$6,364,659
2041	29,742	\$87,432	\$775,167	\$19,088	\$118,448	\$2,256,431
2051	8,555	\$19,235	\$509,229	\$8,818	(\$187,837)	(\$4,390,959)
2061	1,701	\$2,998	\$211,525	\$2,972	(\$511,019)	(\$11,373,959)
2071	256	\$360	\$56,362	\$758	(\$888,329)	(\$19,617,865)
2081	40	\$21	\$5,348	\$91	(\$706,840)	(\$30,820,537)

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,730,731	\$24,366,826	\$716,152	(\$16,909,474)
Present Value as of June 30, 2021	\$3,892,422	\$10,831,313	\$391,789	\$1,047,863

Appendix B – 60 Year Projection of Fund Balance for Additional Discount Rate Sensitivity Testing from New York Regulation 126

- SCENARIO 1 – BASE CASE..... B-1
- SCENARIO 2 – DISCOUNT RATE INCREASING 0.50% FOR 10 YEARS..... B-2
- SCENARIO 3 – DISCOUNT RATE INCREASING 1% FOR 5 YEARS THEN
DECREASING 1% FOR 5 YEARS B-3
- SCENARIO 4 – DISCOUNT RATE INCREASED 3% B-4
- SCENARIO 5 – DISCOUNT RATE DECREASING 0.50% FOR 10 YEARS B-5
- SCENARIO 6 – DISCOUNT RATE DECREASING 1% FOR 5 YEARS THEN
INCREASING 1% FOR 5 YEARS B-6
- SCENARIO 7 – DISCOUNT RATE DECREASED 3%..... B-7

Appendix B

Scenario 1 – Base Case

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years based on the actuarial assumptions used in this valuation. This is the base scenario including a discount rate and expected return assumption of 4.75%.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
10.5%	\$401	108%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,081	\$154,502	\$162,683	\$13,035	\$127,334	\$5,547,303
2022	102,673	\$388,440	\$344,365	\$25,471	\$263,727	\$5,829,633
2023	98,509	\$440,371	\$369,839	\$25,781	\$278,068	\$6,152,452
2024	94,266	\$414,566	\$396,601	\$25,993	\$292,157	\$6,436,581
2025	89,978	\$389,126	\$422,062	\$26,330	\$304,445	\$6,681,759
2026	85,629	\$364,111	\$445,789	\$26,617	\$314,929	\$6,888,392
2027	81,258	\$339,587	\$467,766	\$26,852	\$323,642	\$7,057,004
2028	76,863	\$315,634	\$488,028	\$27,032	\$330,596	\$7,188,174
2029	72,489	\$292,319	\$506,155	\$26,744	\$335,854	\$7,283,448
2030	68,156	\$269,710	\$523,218	\$26,386	\$339,450	\$7,343,004
2031	63,873	\$247,878	\$538,748	\$25,959	\$341,403	\$7,367,578
2041	26,959	\$82,761	\$577,795	\$18,213	\$284,383	\$6,013,392
2051	7,373	\$17,602	\$351,722	\$8,750	\$184,772	\$3,904,016
2061	1,393	\$2,646	\$136,496	\$3,593	\$151,547	\$3,274,058
2071	201	\$306	\$34,325	\$2,454	\$192,474	\$4,226,625
2081	31	\$18	\$3,066	\$1,799	\$145,441	\$6,338,729

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,587,982	\$18,244,151	\$735,974	\$14,289,688
Present Value as of June 30, 2021	\$3,818,588	\$8,473,184	\$385,298	\$5,519,687

Appendix B

Scenario 2 - Discount Rate Increasing by 0.50% for 10 Years

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years under scenario 2 of the NY 7 interest rates scenarios.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
75.8%	\$2,521	186%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,081	\$154,502	\$162,683	\$13,035	\$127,334	\$5,547,303
2022	102,673	\$388,440	\$344,365	\$25,471	\$277,596	\$5,843,502
2023	98,509	\$440,371	\$369,839	\$25,783	\$322,744	\$6,210,995
2024	94,266	\$414,566	\$396,601	\$26,003	\$372,531	\$6,575,489
2025	89,978	\$389,126	\$422,062	\$26,353	\$425,587	\$6,941,786
2026	85,629	\$364,111	\$445,789	\$26,661	\$482,234	\$7,315,680
2027	81,258	\$339,587	\$467,766	\$26,925	\$542,969	\$7,703,546
2028	76,863	\$315,634	\$488,028	\$27,145	\$608,411	\$8,112,419
2029	72,489	\$292,319	\$506,155	\$26,908	\$679,449	\$8,551,123
2030	68,156	\$269,710	\$523,218	\$26,617	\$757,141	\$9,028,139
2031	63,873	\$247,878	\$538,748	\$26,272	\$842,776	\$9,553,773
2041	26,959	\$82,761	\$577,795	\$20,468	\$1,526,896	\$16,926,206
2051	7,373	\$17,602	\$351,722	\$17,092	\$3,158,945	\$35,382,003
2061	1,393	\$2,646	\$136,496	\$31,069	\$7,604,356	\$85,514,916
2071	201	\$306	\$34,325	\$90,795	\$19,074,606	\$214,647,386
2081	31	\$18	\$3,066	\$134,622	\$23,491,521	\$516,772,157

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,587,982	\$18,244,151	\$3,141,333	\$527,128,475
Present Value as of June 30, 2021	\$3,324,484	\$5,909,955	\$335,033	\$16,987,817

Appendix B

Scenario 3 - Discount Rate Increasing 1% for Five Years then Decreasing 1% for Five Years

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years under scenario 3 of the NY 7 interest rates scenarios.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
41.4%	\$1,405	135%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,081	\$154,502	\$162,683	\$13,035	\$127,334	\$5,547,303
2022	102,673	\$388,440	\$344,365	\$25,471	\$291,432	\$5,857,338
2023	98,509	\$440,371	\$369,839	\$25,786	\$367,592	\$6,269,676
2024	94,266	\$414,566	\$396,601	\$26,012	\$454,342	\$6,715,971
2025	89,978	\$389,126	\$422,062	\$26,376	\$551,686	\$7,208,344
2026	85,629	\$364,111	\$445,789	\$26,706	\$661,811	\$7,761,771
2027	81,258	\$339,587	\$467,766	\$27,001	\$711,179	\$8,317,771
2028	76,863	\$315,634	\$488,028	\$27,251	\$678,386	\$8,796,512
2029	72,489	\$292,319	\$506,155	\$27,029	\$629,437	\$9,185,083
2030	68,156	\$269,710	\$523,218	\$26,731	\$565,740	\$9,470,583
2031	63,873	\$247,878	\$538,748	\$26,353	\$489,309	\$9,642,669
2041	26,959	\$82,761	\$577,795	\$19,016	\$448,153	\$9,624,544
2051	7,373	\$17,602	\$351,722	\$10,349	\$444,588	\$9,632,827
2061	1,393	\$2,646	\$136,496	\$6,775	\$563,469	\$12,356,377
2071	201	\$306	\$34,325	\$8,782	\$845,014	\$18,613,601
2081	31	\$18	\$3,066	\$7,869	\$655,849	\$28,589,203

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,587,982	\$18,244,151	\$914,254	\$36,718,442
Present Value as of June 30, 2021	\$3,391,409	\$7,078,625	\$349,156	\$8,665,084

Appendix B

Scenario 4 – Discount Rate Increased 3%

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years under scenario 4 of the NY 7 interest rates scenarios.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
75.0%	\$2,367	177%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,081	\$154,502	\$162,683	\$13,035	\$206,274	\$5,626,242
2022	102,673	\$388,440	\$344,365	\$25,484	\$436,408	\$6,081,241
2023	98,509	\$440,371	\$369,839	\$25,821	\$473,179	\$6,599,131
2024	94,266	\$414,566	\$396,601	\$26,065	\$511,295	\$7,102,327
2025	89,978	\$389,126	\$422,062	\$26,439	\$548,328	\$7,591,280
2026	85,629	\$364,111	\$445,789	\$26,769	\$584,333	\$8,067,165
2027	81,258	\$339,587	\$467,766	\$27,053	\$619,424	\$8,531,358
2028	76,863	\$315,634	\$488,028	\$27,288	\$653,682	\$8,985,358
2029	72,489	\$292,319	\$506,155	\$27,063	\$687,287	\$9,431,746
2030	68,156	\$269,710	\$523,218	\$26,776	\$720,369	\$9,871,830
2031	63,873	\$247,878	\$538,748	\$26,428	\$753,050	\$10,307,581
2041	26,959	\$82,761	\$577,795	\$20,146	\$1,106,906	\$15,129,350
2051	7,373	\$17,602	\$351,722	\$14,496	\$1,824,170	\$25,187,361
2061	1,393	\$2,646	\$136,496	\$19,309	\$3,564,895	\$49,487,120
2071	201	\$306	\$34,325	\$44,583	\$7,398,191	\$102,818,854
2081	31	\$18	\$3,066	\$55,158	\$7,610,648	\$207,719,527

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,587,982	\$18,244,151	\$1,865,204	\$216,799,716
Present Value as of June 30, 2021	\$3,155,819	\$5,904,076	\$325,896	\$14,467,246

Appendix B

Scenario 5 – Discount Rate Decreasing 0.50% for 10 Years

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years under scenario 5 of the NY 7 interest rates scenarios. Interest rates in future years are floored at 0%.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
(107.7%)	(\$4,991)	52%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,081	\$154,502	\$162,683	\$13,035	\$127,334	\$5,547,303
2022	102,673	\$388,440	\$344,365	\$25,471	\$249,825	\$5,815,731
2023	98,509	\$440,371	\$369,839	\$25,779	\$233,562	\$6,094,046
2024	94,266	\$414,566	\$396,601	\$25,984	\$213,216	\$6,299,244
2025	89,978	\$389,126	\$422,062	\$26,308	\$188,176	\$6,428,175
2026	85,629	\$364,111	\$445,789	\$26,575	\$159,455	\$6,479,376
2027	81,258	\$339,587	\$467,766	\$26,783	\$128,160	\$6,452,575
2028	76,863	\$315,634	\$488,028	\$26,927	\$95,429	\$6,348,683
2029	72,489	\$292,319	\$506,155	\$26,595	\$62,435	\$6,170,687
2030	68,156	\$269,710	\$523,218	\$26,184	\$30,319	\$5,921,313
2031	63,873	\$247,878	\$538,748	\$25,695	\$7,300	\$5,612,048
2041	26,959	\$82,761	\$577,795	\$17,127	\$0	\$1,064,310
2051	7,373	\$17,602	\$351,722	\$7,564	\$0	(\$3,298,668)
2061	1,393	\$2,646	\$136,496	\$2,397	\$0	(\$5,515,530)
2071	201	\$306	\$34,325	\$579	\$0	(\$6,234,364)
2081	31	\$18	\$3,066	\$68	\$0	(\$6,383,534)

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,587,982	\$18,244,151	\$663,760	\$1,495,211
Present Value as of June 30, 2021	\$4,633,033	\$14,528,542	\$536,934	\$1,318,931

Appendix B

Scenario 6 – Discount Rate Decreasing 1% for Five Years then Increasing 1% for Five Years

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years under scenario 6 of the NY 7 interest rates scenarios. Interest rates in future years are floored at 0%.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
(20.7%)	(\$903)	86%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,081	\$154,502	\$162,683	\$13,035	\$127,334	\$5,547,303
2022	102,673	\$388,440	\$344,365	\$25,471	\$235,890	\$5,801,796
2023	98,509	\$440,371	\$369,839	\$25,777	\$189,228	\$6,035,779
2024	94,266	\$414,566	\$396,601	\$25,975	\$135,701	\$6,163,471
2025	89,978	\$389,126	\$422,062	\$26,286	\$76,699	\$6,180,947
2026	85,629	\$364,111	\$445,789	\$26,534	\$23,041	\$6,095,776
2027	81,258	\$339,587	\$467,766	\$26,718	\$22,390	\$5,963,270
2028	76,863	\$315,634	\$488,028	\$26,842	\$73,002	\$5,837,036
2029	72,489	\$292,319	\$506,155	\$26,504	\$128,314	\$5,725,009
2030	68,156	\$269,710	\$523,218	\$26,103	\$181,189	\$5,626,586
2031	63,873	\$247,878	\$538,748	\$25,640	\$232,067	\$5,542,142
2041	26,959	\$82,761	\$577,795	\$17,569	\$152,981	\$3,115,959
2051	7,373	\$17,602	\$351,722	\$7,564	(\$23,696)	(\$692,655)
2061	1,393	\$2,646	\$136,496	\$2,397	(\$179,348)	(\$4,022,444)
2071	201	\$306	\$34,325	\$579	(\$332,972)	(\$7,359,878)
2081	31	\$18	\$3,066	\$68	(\$266,854)	(\$11,636,218)

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,587,982	\$18,244,151	\$668,630	(\$3,752,603)
Present Value as of June 30, 2021	\$4,351,719	\$10,255,183	\$440,346	\$1,801,859

Appendix B

Scenario 7 – Discount Rate Decreasing 3%

The tables below contain information about the margin, funded status, and expected cash flows for the next 60 years under scenario 7 of the NY 7 interest rates scenarios.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin (\$ in Millions)	Funded Status
(75.0%)	(\$3,594)	60%

Projected Cash Flows and Fund Balance Over the Next 60 Years (\$ in Thousands)

Calendar Year ¹	Lives	Expected Premiums	Expected Claims	Expenses	Investment Earnings	Fund Balance ²
						\$5,441,184
2021	107,081	\$154,502	\$162,683	\$13,035	\$47,257	\$5,467,225
2022	102,673	\$388,440	\$344,365	\$25,459	\$95,762	\$5,581,603
2023	98,509	\$440,371	\$369,839	\$25,743	\$98,108	\$5,724,500
2024	94,266	\$414,566	\$396,601	\$25,925	\$100,148	\$5,816,688
2025	89,978	\$389,126	\$422,062	\$26,230	\$101,314	\$5,858,836
2026	85,629	\$364,111	\$445,789	\$26,481	\$101,622	\$5,852,298
2027	81,258	\$339,587	\$467,766	\$26,676	\$101,100	\$5,798,544
2028	76,863	\$315,634	\$488,028	\$26,814	\$99,769	\$5,699,105
2029	72,489	\$292,319	\$506,155	\$26,480	\$97,669	\$5,556,458
2030	68,156	\$269,710	\$523,218	\$26,073	\$94,829	\$5,371,706
2031	63,873	\$247,878	\$538,748	\$25,593	\$91,272	\$5,146,515
2041	26,959	\$82,761	\$577,795	\$17,149	\$24,781	\$1,184,613
2051	7,373	\$17,602	\$351,722	\$7,564	(\$55,311)	(\$3,385,238)
2061	1,393	\$2,646	\$136,496	\$2,397	(\$110,286)	(\$6,479,373)
2071	201	\$306	\$34,325	\$579	(\$146,021)	(\$8,506,975)
2081	31	\$18	\$3,066	\$68	(\$88,056)	(\$10,196,947)

(1) Cash flows for 2021 and 2081 are for six months only.

(2) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2021) and the last projected fund balance (as of June 30, 2081).

Total Sum of All Cash Flows and Present Values (\$ in Thousands)

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	\$5,587,982	\$18,244,151	\$662,731	(\$2,319,232)
Present Value as of June 30, 2021	\$4,791,054	\$13,305,245	\$521,307	(\$381,666)

Appendix C – Long-Term Care Model and Assumptions

Model

Projection results are based on the 111,518 in-force participants as of June 30, 2021. CalPERS LTC business consists of facility-only and comprehensive coverage options and includes a variety of elimination periods, benefit periods, and inflation coverage combinations. New optional benefits available to LTC4 policies, which include 3% simple or compound automatic inflation protection, 5% simple automatic inflation protection, restoration of benefits, and survivorship benefit, are projected in the model. A summary of policy benefits has been included as Appendix D; the projection results reflect output from the First Principles Model based on the policy benefits in the program.

The first principles modeling approach is becoming the industry standard for modeling long-term care insurance. This approach includes more detailed modeling on claim incidence, claim termination, and utilization. The First Principles Model automatically tracks policyholder status: policyholders are classified as “active”, “disabled” (including site of care), or “inactive” (due to lapsation, death, or benefit expiration). In addition to tracking policyholder status, the First Principles Model follows lives as they progress through claims or as they recover back into the healthy population, tracking their used and remaining benefits. This detailed tracking of lives allows first principles models to more accurately project when benefits will be exhausted and to more accurately reflect the claim payment patterns as claimants move along their respective continuance curves.

Benefit exhaustion and the runout of incurred claims into paid claims are calculated inside the model. For the runout of incurred claims into paid claims, the First Principles Model pays claims exactly as the continuance curve and utilization assumptions suggest, allowing for detailed patterns of all segments of the population.

Important statistics such as the number of new and open claims, the rate at which claims are terminating (often distinguished between death, recovery, and exhaustion), and the split of the population between disabled and healthy lives can be easily tracked using the information available in the First Principles Model. These statistics offer increased transparency on what is driving deviations in experience, e.g., higher/lower-than-assumed claim incidence or longer/shorter-than-expected claim persistence. The ability to directly compare these figures against emerging experience is a useful tool which is not readily available from the Claim Cost Model. Used together with sensitivity testing, the additional information accessible in the First Principles Model allows for better insight into the CalPERS Program and the impacts of different assumption changes on its projected development.

The first principles modeling gives more credibility to CalPERS experience and provides more detailed actual-to-expected observations including the number of new claimants, the number of claim terminations, and the utilization of benefits.

Appendix C

Assumptions

Morbidity

There are three separate morbidity assumptions. The first assumption is the incidence rate, which determines the probability that an individual will go on claim at a given time. The second assumption is the continuance rate, or claim termination rate, which is the probability that an individual will continue with their claim from one month to the next. The third assumption is the claim utilization rate, which determines how much of the available benefit a policyholder will use while on claim as a percentage of the maximum benefit available.

Claim Incidence Rates

The incidence rate is developed using CalPERS claim data. When there is insufficient claim data available for full credibility, CalPERS experience rates are credibility weighted with the industry data using the 2000-2011 Long-Term Care Intercompany Experience Study Aggregated Databases from the Society of Actuaries (SOA). Before credibility weighting, adjustment factors are applied to incidence rates from industry data to bring the incidence distribution by site of care more in line with CalPERS experience.

A link to the SOA study and associated databases can be found at <https://www.soa.org/experience-studies/2015/research-ltc-study-2000-11-aggregated/>. Please note that this is a website outside of CalPERS and the web address may be subject to change or removal. Unless noted otherwise, all references to SOA material in this section refer to this report and its associated databases.

Separate incidence rates were developed for the following categories:

- Gender: Male or Female
- Attained Age at Claim
- Initial Site of Care: Home Health Care, Assisted Living Facility, or Nursing Home
- Policy Type: Comprehensive or Non-Comprehensive
- Duration of Claim: Long Duration or Short Duration claims. The initial diagnosis of a claim is used to identify potential Long Duration claims. Claims with initial diagnosis in the following diagnosis categories are identified as Long Duration claims: Alzheimer's, Mental, and Nervous System and Sense Organs.

The incidence study for the June 30, 2021 valuation uses all claim and exposure information as of June 30, 2021, with an experience study cutoff date of December 31, 2019. The experience study uses the following steps to calculate the incidence rates:

- Step 1: Aggregate the active life exposure.
 - The active life exposure is found by adding up all exposures while an individual is not on claim. In years when an individual does go on claim, a full year of exposure is credited to the individual for that year.
- Step 2: Aggregate claim counts.
 - The claim counts are grouped based on the different categories mentioned previously.
- Step 3: Calculate the incidence rates based on CalPERS experience.
 - The incidence rates are the total number of claims divided by the exposure.
- Step 4: Obtain incidence rates based on industry experience.
 - Base industry incidence rates are obtained from the SOA 2000-2011 Claim Incidence Rates Database. The base rates are then split between Long Duration and Short Duration claims. The split ratio is determined by the ratio between Long and Short Duration exposure amounts from the SOA 2000-2011 Claim Termination Rates Database.

Appendix C

Assumptions (continued)

- Step 5: Develop adjustment factors for industry incidence rates.
 - It was observed that compared to CalPERS data, SOA pre-2011 data had higher distribution in claims with Nursing Home as initial site of care. CalPERS data overall has higher distribution in Assisted Living Facility and Home Health Care claims. As a result, adjustment factors are developed to bring site of care distribution of the industry incidence rates more in line with CalPERS experience.
- Step 6: Calculate the credibility-weighted incidence rates.
 - Final incidence rates are credibility-weighted averages between the rates from CalPERS experience and the rates from SOA industry data.
 - CalPERS experience receives full credibility in areas with 271 or more claims. Otherwise, CalPERS experience receives partial or zero credibility.
- Step 7: Develop adjustment factors for underwriting groups, benefit period, marital status, and partnership policies.
 - Underwriting group factors are developed to reflect the variation in claim incidence rates between different underwriting methods. This set of factors is developed by underwriting group and by policy duration. Underwriting groups include Short Form (SF), Modified Guarantee Issue (MGI) with issue dates in 1995, MGI with issue dates after 1996, Long Form (LF) with issue dates from 1995 to 1998, and LF with issue dates after 1999. The underwriting group factors also include an adjustment component to adjust the actual-to-expected ratio of historical claim counts to 100%.
 - Benefit period factors are developed to reflect the variation in claim incidence rates between policies with benefit period 10 years or lifetime and policies with benefit period lower than 10 years.
 - Marital status factors are developed to reflect the variation in claim incidence rates between married and single policyholders.
 - Elimination period adjustment factor is developed using actual-to-expected method to distinguish incidence rate between comprehensive policies that have 30-day or 90-day elimination period.
- Step 8: Develop attained age smoothing factors
 - Attained age smoothing factors are developed to break down age-group incidence rates by individual attained ages. It also reflects the higher claim incidence for attained ages around age 95 and higher.
 - The smoothing factors are developed from age 60 to age 96+, with age 96 and higher grouped together. The factor values are based on actual-to-expected ratio for each age with smoothing applied.
 - Due to technical constraints in the projection model, the claim termination assumption was not able to be updated to have separate values at individual ages. As a result, adjustment factors were incorporated in the incidence rates for ages 90 and higher to reflect a shorter length of stay as the claim incur age becomes higher.
- Step 9: Apply morbidity improvement factors.
 - 100% of the SOA Mortality Improvement Scale MP-2020 is used for morbidity improvement factors, with annual improvement amount capped at 0.5% and floored at -0.5%. 15 years of morbidity improvement projection are included in the assumption from year 2021. A link to SOA's table and report can be found at: <https://www.soa.org/resources/experience-studies/2020/mortality-improvement-scale-mp-2020/>.

Claim Termination Rates

The claim termination rates are developed using CalPERS claim data. When there is insufficient claim data available for full credibility, the termination rates are credibility weighted with industry data using the 2000-2011 Long Term Care Intercompany Experience Study Aggregated Databases from the SOA. Adjustment factors are then applied to make the actual-to-expected ratio 100% based on historical data.

Appendix C

Assumptions (continued)

A link to the study and the databases can be found at <https://www.soa.org/experience-studies/2015/research-ltc-study-2000-11-aggregated/>. Please note that this is a website outside of CalPERS and the web address may be subject to change or removal. Unless noted otherwise, all references to SOA material in this section refer to this report and its associated databases.

Separate claim termination rates were developed for the following categories:

- Gender: Male or Female
- Incurred Age Bands: 0-64, 65-74, 75-84, 85-89, or 90+
- Initial Site of Care: Home Health Care, Assisted Living Facility, or Nursing Home
 - Due to low data volume, ages 0-64 does not have separate claim termination rates for each site of care.
- Days on Claim: rates were developed for each 30-day interval starting from the incurred date of a claim.
- Duration of Claim: Claims with initial diagnosis in the following diagnosis categories are identified as Long Duration claims: Alzheimer's, Mental, and Nervous System and Sense Organs.

The claim termination study for the June 30, 2021 valuation uses all claim and exposure information as of June 30, 2021 and an experience study cutoff date of December 31, 2019. The claim termination study uses the following steps to calculate the claim termination rates:

- Step 1: Calculate exposure.
 - Exposure is the calculated open claim counts during each 30-day on-claim interval and is aggregated based on claim characteristics.
- Step 2: Obtain claim termination counts.
 - Terminations are non-benefit-exhaustion claim counts that closed during each 30-day on-claim interval and are aggregated based on claim characteristics.
- Step 3: Calculate the CalPERS-experience-based claim termination rate.
 - Claim termination rates are calculated as the claim termination counts in a given period divided by the exposure in that period.
- Step 4: Calculate industry claim termination rates.
 - The SOA Claim Termination Rates Database 2000-2011 was used to develop the industry rates. For areas without sufficient industry data, CalPERS' disabled mortality values were used (with 1-year lag).
- Step 5: Calculate the credibility-weighted claim termination rates.
 - Final claim termination rates are credibility-weighted averages between rates based on CalPERS experience and industry data.
 - CalPERS experience receives full credibility in areas with 271 or more exposure. Otherwise, CalPERS experience receives partial or zero credibility.
- Step 6: Apply A/E adjustment factors.
 - After Step 5, adjustment factors are applied to rates in each claim groups so that the actual-to-expected ratios of termination counts is 100% compared to historical data.
- Step 7: Develop marital status factors.
 - Marital status factors are applied in projection to reflect claim termination rate variations between the married and not-married populations. They are calculated for each age band and based on marital status at issue.

Appendix C

Assumptions (continued)

Claim Utilization Rates

The claim utilization assumption is developed using CalPERS' total claim data as of June 30, 2021, with an experience study cutoff date of December 31, 2020. The assumption structure captures utilization rate variations by claims' initial site of care, MDB range, product series, benefit period, and yearly increase trend.

The claim utilization assumption is developed by following the steps:

- Step 1: Summarize the total benefit paid for each claim category
- Step 2: Summarize total historical benefit allowance for each claim category
- Step 3: Derive utilization rate by site of care and MDB range for LTC1 using historical data
- Step 4: Calculate product series adjustment factors for LTC2 to LTC4 based on LTC1 result using actual-to-expected method
- Step 5: Calculate benefit period adjustment factors using actual-to-expected method
- Step 6: Calculate yearly increase adjustment factors using actual-to-expected method
- Step 7: Derive cumulative yearly increase cap based on historical data
- Step 8: Utilization rates in the initial projection year for existing open claims are based on the recent year data of each individual claim if there is 180 days or greater exposure.

Mortality

Since CalPERS does not have a sufficiently large enough population to develop its own mortality rates, the SOA 2012 Individual Annuitant Mortality (IAM) table was used as a baseline. Adjustment factors are then applied based on CalPERS plan experience. The disabled mortality result from this study is not used directly in the projection but is used in the claim termination study when there is no sufficient industry data.

The mortality study for the June 30, 2021 valuation uses the program's mortality and exposure data as of June 30, 2021, with an experience study cutoff date of December 31, 2019. The following steps are used to develop the mortality assumption:

- Step 1: Obtain death counts and develop active and disabled life exposures.
 - Death and exposure data are divided into several categories: active or disabled, age, gender, policy duration, and marital status. If there is a death, a full year of exposure is credited to the individual at the age of death.
- Step 2: Develop duration selection factors.
 - Duration selection factors are developed by comparing actual mortality and expected mortality (based on the IAM table) at each policy duration.
 - Historical expected mortality was adjusted according to the mortality improvement scale table to account for historical mortality improvement.
- Step 3: Develop marriage factors.
 - Marriage factors for active mortality vary by gender and attained age. They are derived by taking the ratio of A/E mortality for single and married active policies (split by attained age and gender) and calculating factors that will get those ratios close to 100 percent.
- Step 4: Develop attained age factors.
 - Attained age factors are developed by comparing actual mortality and expected mortality (based on the IAM table) at each attained age grouping. Age grouping intervals are determined so that each group has sufficient data credibility. The attained age factors are developed separately by gender and by active or disabled status. Attained age factors for disabled status are smoothed over the age group intervals.

Appendix C

Assumptions (continued)

- Step 5: Apply mortality improvement factors.
 - 100% of the SOA Mortality improvement Scale MP-2020 is used for mortality improvement factors, with a 15-year mortality improvement projection period. A link to SOA's table and report can be found at <https://www.soa.org/resources/experience-studies/2020/mortality-improvement-scale-mp-2020/>.

Claim Recovery Rates

The claim recovery assumption is used to split claim terminations into recoveries and disabled mortality. If a life recovers from a claim, it returns to the active status and has a probability to enter claim again in the future. Disabled mortality is projected by using the total claim termination minus the claim recovery. The claim recovery assumption is developed using CalPERS' total claim data as of June 30, 2021, with an experience study cutoff date of December 31, 2019. It is calculated by the following steps:

- Step 1: Summarize historical claim exposure by claim duration, claim site of care, and long / short claim types
- Step 2: Summarize historical claim recoveries by claim duration, claim site of care, and long / short claim types
- Step 3: Calculate recovery rates by using claim recoveries divided by claim exposure

Lapse

The lapse study for the June 30, 2021 valuation uses the program's lapse and exposure data as of June 30, 2021, with an experience study cutoff date of December 31, 2019. Lapse rates are calculated as the number of voluntary lapses divided by the total active life exposures. Shock lapses, which are determined as the lapses during rate increase years, are excluded from lapse counts. Policy terminations due to death or expiration of benefit are not included in this study. When a policy lapses, it receives a full year exposure at the duration of lapse. Due to the relatively low level of lapse experience in the recent two years, adjustment factors are applied to the final lapse rates to bring the assumption in line with recent experience.

Lapse rates are broken down by the following categories: issue age group and policy duration.

The following assumed voluntary lapse rates were used for all projection cells:

Policy Year	Issue Age Group					
	< 40	40 – 49	50 – 59	60 – 69	70 – 79	80+
1	4.54%	3.25%	2.66%	2.38%	2.46%	3.46%
2	3.23%	2.09%	1.59%	1.14%	1.25%	2.10%
3	2.25%	1.38%	0.97%	0.75%	0.73%	1.39%
4	2.24%	1.12%	0.77%	0.48%	0.58%	0.82%
5	1.42%	0.84%	0.52%	0.38%	0.46%	0.86%
6	1.37%	0.77%	0.43%	0.31%	0.46%	1.15%
7	1.40%	0.71%	0.41%	0.25%	0.34%	0.74%
8	1.10%	0.58%	0.35%	0.26%	0.39%	0.48%
9	1.09%	0.57%	0.37%	0.21%	0.42%	0.50%
10	1.12%	0.70%	0.41%	0.31%	0.36%	0.99%
11+	0.59%	0.35%	0.26%	0.46%	0.85%	1.16%

Appendix C

Assumptions (continued)

Expenses

We used the following expense assumptions:

- The third-party administrator (TPA) cost assumptions reflect the five-year contract with Long Term Care Group (LTCG), which became effective in 2018. Expenses after the five-year contract are assumed to increase at an annual inflation rate of 2.30%.
- CalPERS non-TPA expenses are assumed to be \$529,664 per month through December of 2021 and assumed to increase by 2.30% for inflation each January thereafter. Additional bank transaction fees are projected based on a percentage of cashflow amount with 2.30% annual inflation.
- Projected inflated fixed-dollar fees are assumed to decrease in January 2029 by the ratio of the current in-force count to the prior year's in-force count. This is intended to reflect that eventually as the Program's population declines, expenses would decline as well.
- An option for participants to pay premiums with credit card has been available since 2014. It is assumed that 2.26% of premiums will be paid with credit card each year. The credit card fee is 1.70% of transaction amount, resulting in the credit card expense fee to be 0.038% of total premium.

Discount Rate

The 4.75% discount rate used in this valuation is based on the target asset allocation adopted by the Investment Committee of the board in March 2021. It is based on a blend of 10-year and 30-year capital market assumptions as of September 30, 2020. The blending method calculates the present value of expected cashflows using the short-term and long-term expected returns derived from the capital market assumptions, then find a level discount rate that would result in the same present value of expected cashflows. The final discount rate assumption is rounded down to the nearest quarter.

Appendix C

Assumptions (continued)

Rate Increase Related Assumptions

2012 Rate Increase Anti-Selection Factors

During the 85% rate increase implementation starting in 2012, plan conversion options were given to policyholders to either avoid the rate increase or minimize its financial impact. The model assumptions include anti-selection factors related to this increase.

A rate increase may prompt healthier participants to lapse or reduce benefits to lower the impact of a rate increase. Therefore, the total risk pool will be less healthy after a rate increase. A higher risk will be assumed for policyholders that did not convert to benefit plans with lower benefit allowance.

Anti-selection is difficult to measure, and we have not attempted to determine the actual anti-selection experienced by CalPERS. As a result, the suggested anti-selection factor is an estimate. The anti-selection factors are twice the shock lapse rate and grade down to 0% over 10 years.

Anti-selection factors vary by benefit plan and are applied to the 2013, 2014, 2015, and 2016 conversions. Please see the table below for the groups that received or will receive the anti-selection factors.

For those policies that accepted the rate increase, the following anti-selection factors are applied to increase the future morbidity risk.

LTC1 & LTC 2, Lifetime, Inflation Receiving the 85% Premium Rate Increase Anti-Selection Factors Related to Shock Lapse and Conversion		
Calendar Year	LTC1	LTC2
2021	1.0731	1.0722
2022	1.0464	1.0510
2023	1.0199	1.0298
2024	1.0083	1.0109
2025	1.0016	1.0014
2026+	1.0000	1.0000

All Other Plans Receiving the 85% Premium Rate Increase Anti-Selection Factors Related to Shock Lapse	
Calendar Year	LTC1 & LTC2
2021	1.010
2022	1.006
2023	1.002
2024+	1.000

Appendix C

Assumptions (continued)

For those policies that converted to a 10-year Benefit Increase Option, the following anti-selection factors are applied to decrease the future morbidity risk because it is assumed that healthier participants are more likely to lower their benefits to pay lower premiums when there is a rate increase.

LTC1 & LTC 2, 10-Year Benefit Increase Option Selection Factors		
Calendar Year	LTC1	LTC2
2021	0.9439	0.9271
2022	0.9639	0.9471
2023	0.9839	0.9671
2024	0.9925	0.9871
2025	0.9986	0.9983
2026+	1.0000	1.0000

2021 Rate Increase Assumptions

The projection in this valuation assumes that the remaining shock lapses caused by the 2021 rate increase after the valuation date would be 2.6% of the population. This accounts for the shock lapses already reflected in the in-force data as of the valuation date. The assumed total shock lapses associated with both phases of the rate increase did not change from last year's assumption, which was 3%.

Anti-selection due to the shock lapses is accounted for in the projections. It is assumed that the claim incidence rate in the population after the shock lapses would be 2.47% higher. This factor is derived by assuming the shock lapse population has 80% less chance of going on claim compared to the plan average. This effect is set to grade down over 10 years as shown below. No policy conversion is assumed in the base result of this valuation.

Anti-Selection Factors Related to 2021 Shock Lapse	
Calendar Year	Anti-Selection Factor
2022	1.0247
2023	1.0223
2024	1.0198
2025	1.0173
2026	1.0148
2027	1.0124
2028	1.0099
2029	1.0074
2030	1.0049
2031+	1.0025

Appendix D – Summary of Policy Benefits

Summary of Model Cells Included in 6/30/2021 Projection¹

Product Series	Plan Type	HHC	ALF	Benefit Period	Elimination Period	Inflation	Underwriting Type	Policy Count	Annualized Premium
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	Inflation	LF	1,302	4,001,242
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	Inflation	MGI	625	1,510,650
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	Inflation	SF	531	1,358,268
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	No Inflation	LF	6,332	11,236,149
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	No Inflation	MGI	2,260	3,220,648
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	No Inflation	SF	2,017	2,874,186
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	Inflation	LF	858	3,077,768
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	Inflation	MGI	558	1,537,738
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	Inflation	SF	476	1,492,669
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	No Inflation	LF	7,855	14,542,770
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	No Inflation	MGI	4,270	6,744,585
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	No Inflation	SF	3,772	5,873,757
LTC1	Comprehensive	50% HHC	50% ALF	10 Year	90	No Inflation	LF	8,899	25,406,129
LTC1	Comprehensive	50% HHC	50% ALF	10 Year	90	No Inflation	MGI	4,295	11,383,670
LTC1	Comprehensive	50% HHC	50% ALF	10 Year	90	No Inflation	SF	3,780	9,791,471
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	Inflation	LF	6,621	35,977,035
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	Inflation	MGI	6,137	26,156,855
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	Inflation	SF	4,123	18,716,064
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	No Inflation	LF	1,695	6,330,079
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	No Inflation	MGI	1,682	4,882,642
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	No Inflation	SF	1,144	3,339,133
LTC1	Comprehensive	50% HHC	50% ALF	In-Nonforfeiture	90	Inflation	LF	8	0
LTC1	Comprehensive	50% HHC	50% ALF	In-Nonforfeiture	90	Inflation	MGI	2	0
LTC1	Comprehensive	50% HHC	50% ALF	In-Nonforfeiture	90	No Inflation	LF	3	0
LTC1	Comprehensive	50% HHC	50% ALF	In-Nonforfeiture	90	No Inflation	SF	1	0
LTC1	Facilities Only		50% ALF	3 Year	90	Inflation	LF	423	1,069,915
LTC1	Facilities Only		50% ALF	3 Year	90	Inflation	MGI	204	396,463
LTC1	Facilities Only		50% ALF	3 Year	90	Inflation	SF	181	371,804
LTC1	Facilities Only		50% ALF	3 Year	90	No Inflation	LF	2,955	4,224,113
LTC1	Facilities Only		50% ALF	3 Year	90	No Inflation	MGI	699	761,699
LTC1	Facilities Only		50% ALF	3 Year	90	No Inflation	SF	710	798,350
LTC1	Facilities Only		50% ALF	6 Year	90	Inflation	LF	120	389,747
LTC1	Facilities Only		50% ALF	6 Year	90	Inflation	MGI	56	141,951
LTC1	Facilities Only		50% ALF	6 Year	90	Inflation	SF	103	282,834
LTC1	Facilities Only		50% ALF	6 Year	90	No Inflation	LF	2,452	4,035,860
LTC1	Facilities Only		50% ALF	6 Year	90	No Inflation	MGI	630	829,052
LTC1	Facilities Only		50% ALF	6 Year	90	No Inflation	SF	732	917,492
LTC1	Facilities Only		50% ALF	10 Year	90	No Inflation	LF	2,237	5,548,676
LTC1	Facilities Only		50% ALF	10 Year	90	No Inflation	MGI	647	1,354,205
LTC1	Facilities Only		50% ALF	10 Year	90	No Inflation	SF	765	1,515,068
LTC1	Facilities Only		50% ALF	Lifetime	90	Inflation	LF	1,058	4,985,401
LTC1	Facilities Only		50% ALF	Lifetime	90	Inflation	MGI	524	1,883,608
LTC1	Facilities Only		50% ALF	Lifetime	90	Inflation	SF	558	1,999,169
LTC1	Facilities Only		50% ALF	Lifetime	90	No Inflation	LF	486	1,589,248
LTC1	Facilities Only		50% ALF	Lifetime	90	No Inflation	MGI	180	403,316
LTC1	Facilities Only		50% ALF	Lifetime	90	No Inflation	SF	149	339,685
LTC1	Facilities Only		50% ALF	In-Nonforfeiture	90	Inflation	LF	1	0
LTC1	Facilities Only		50% ALF	In-Nonforfeiture	90	No Inflation	LF	1	0

1)Benefit categories include all in-force data as of June 30, 2021. All benefits, including selected optional benefits, are valued in the projection except Benefit Increase Options.

<u>Abbreviation</u>	<u>Description</u>
ALF	Assisted Living Facility
HHC	Home Health Care
LF U/W	Long Form Underwriting
MGI U/W	Modified Guaranteed Issue Underwriting
SF U/W	Short Form Underwriting

Appendix D

Summary of Model Cells Included in 6/30/2021 Projection¹

(LTC1 Continued)

LTC1	Partnership	50% HHC	50% ALF	6 Mo	30	Inflation	LF	51	41,583
LTC1	Partnership	50% HHC	50% ALF	6 Mo	30	Inflation	MGI	13	6,219
LTC1	Partnership	50% HHC	50% ALF	6 Mo	30	Inflation	SF	8	4,395
LTC1	Partnership	50% HHC	50% ALF	1 Year	30	Inflation	LF	628	659,669
LTC1	Partnership	50% HHC	50% ALF	1 Year	30	Inflation	MGI	221	159,959
LTC1	Partnership	50% HHC	50% ALF	1 Year	30	Inflation	SF	218	150,467
LTC1	Partnership	50% HHC	50% ALF	2 Year	30	Inflation	LF	1,224	1,935,065
LTC1	Partnership	50% HHC	50% ALF	2 Year	30	Inflation	MGI	425	482,162
LTC1	Partnership	50% HHC	50% ALF	2 Year	30	Inflation	SF	493	516,182
LTC1	Partnership	50% HHC	50% ALF	In-Nonforfeiture	30	Inflation	LF	69	0
LTC1	Partnership	50% HHC	50% ALF	In-Nonforfeiture	30	Inflation	MGI	40	0
LTC1	Partnership	50% HHC	50% ALF	In-Nonforfeiture	30	Inflation	SF	11	0
LTC1 Subtotal								88,518	237,246,866

Product Series	Plan Type	HHC	ALF	Benefit Period	Elimination Period	Inflation	Underwriting Type	Policy Count	Annualized Premium
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	Inflation	LF	208	765,321
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	Inflation	MGI	3	11,767
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	Inflation	SF	3	15,850
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	No Inflation	LF	1,310	2,210,400
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	No Inflation	MGI	8	16,146
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	No Inflation	SF	8	11,307
LTC2	Comprehensive	50% HHC	70% ALF	6 Year	90	Inflation	LF	17	84,514
LTC2	Comprehensive	50% HHC	70% ALF	6 Year	90	Inflation	SF	1	5,680
LTC2	Comprehensive	50% HHC	70% ALF	6 Year	90	No Inflation	LF	1,383	2,565,910
LTC2	Comprehensive	50% HHC	70% ALF	6 Year	90	No Inflation	MGI	21	43,095
LTC2	Comprehensive	50% HHC	70% ALF	6 Year	90	No Inflation	SF	18	42,459
LTC2	Comprehensive	50% HHC	70% ALF	10 Year	90	No Inflation	LF	1,551	4,032,309
LTC2	Comprehensive	50% HHC	70% ALF	10 Year	90	No Inflation	MGI	10	26,022
LTC2	Comprehensive	50% HHC	70% ALF	10 Year	90	No Inflation	SF	9	27,373
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	Inflation	LF	989	5,506,974
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	Inflation	MGI	10	73,457
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	Inflation	SF	9	51,713
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	No Inflation	LF	565	1,861,866
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	No Inflation	MGI	4	12,049
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	No Inflation	SF	3	8,980
LTC2	Facilities Only		70% ALF	3 Year	90	Inflation	LF	31	95,495
LTC2	Facilities Only		70% ALF	3 Year	90	No Inflation	LF	274	348,754
LTC2	Facilities Only		70% ALF	6 Year	90	Inflation	LF	9	29,942
LTC2	Facilities Only		70% ALF	6 Year	90	No Inflation	LF	230	337,154
LTC2	Facilities Only		70% ALF	10 Year	90	No Inflation	LF	238	442,130
LTC2	Facilities Only		70% ALF	10 Year	90	No Inflation	MGI	1	3,277
LTC2	Facilities Only		70% ALF	10 Year	90	No Inflation	SF	1	1,542
LTC2	Facilities Only		70% ALF	Lifetime	90	Inflation	LF	108	403,418
LTC2	Facilities Only		70% ALF	Lifetime	90	Inflation	MGI	1	8,989
LTC2	Facilities Only		70% ALF	Lifetime	90	No Inflation	LF	48	136,083
LTC2	Partnership	50% HHC	70% ALF	6 Mo	30	Inflation	LF	7	5,753
LTC2	Partnership	50% HHC	70% ALF	1 Year	30	Inflation	LF	70	79,228
LTC2	Partnership	50% HHC	70% ALF	2 Year	30	Inflation	LF	136	255,328
LTC2 Subtotal								7,284	19,520,285

1) Benefit categories include all in-force data as of June 30, 2021. All Benefits, including selected optional benefits, are valued in the projection except Benefit Increase Options.

ABBREVIATION	DESCRIPTION
ALF	Assisted Living Facility
HHC	Home Health Care
LF U/W	Long Form Underwriting
MGI U/W	Modified Guaranteed Issue Underwriting
SF U/W	Short Form Underwriting

Appendix D

Summary of Model Cells Included in 6/30/2021 Projection¹

Product Series	Plan Type	HHC	ALF	Benefit Period	Elimination Period	Inflation	Underwriting Type	Policy Count	Annualized Premium
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	Inflation	LF	1,883	3,672,734
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	Inflation	MGI	299	395,699
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	Inflation	SF	330	473,441
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	No Inflation	LF	688	1,086,199
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	No Inflation	MGI	52	59,061
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	No Inflation	SF	40	30,530
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	Inflation	LF	2,146	5,537,702
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	Inflation	MGI	400	774,206
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	Inflation	SF	379	794,880
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	No Inflation	LF	2,039	3,632,688
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	No Inflation	MGI	512	651,146
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	No Inflation	SF	394	513,666
LTC3	Comprehensive	70% HHC	70% ALF	10 Year	90	No Inflation	LF	5	14,066
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	Inflation	LF	1,046	3,766,737
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	Inflation	MGI	10	51,777
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	Inflation	SF	6	21,633
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	No Inflation	LF	961	2,267,694
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	No Inflation	MGI	19	53,133
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	No Inflation	SF	15	35,238
LTC3	Facilities Only		70% ALF	3 Year	90	Inflation	LF	394	660,123
LTC3	Facilities Only		70% ALF	3 Year	90	Inflation	MGI	55	65,150
LTC3	Facilities Only		70% ALF	3 Year	90	Inflation	SF	107	139,242
LTC3	Facilities Only		70% ALF	3 Year	90	No Inflation	LF	168	209,087
LTC3	Facilities Only		70% ALF	3 Year	90	No Inflation	MGI	12	7,427
LTC3	Facilities Only		70% ALF	3 Year	90	No Inflation	SF	14	7,830
LTC3	Facilities Only		70% ALF	6 Year	90	Inflation	LF	154	349,723
LTC3	Facilities Only		70% ALF	6 Year	90	Inflation	MGI	13	24,729
LTC3	Facilities Only		70% ALF	6 Year	90	Inflation	SF	18	30,660
LTC3	Facilities Only		70% ALF	6 Year	90	No Inflation	LF	457	681,251
LTC3	Facilities Only		70% ALF	6 Year	90	No Inflation	MGI	47	47,211
LTC3	Facilities Only		70% ALF	6 Year	90	No Inflation	SF	71	75,251
LTC3	Facilities Only		70% ALF	Lifetime	90	Inflation	LF	164	411,721
LTC3	Facilities Only		70% ALF	Lifetime	90	Inflation	MGI	1	1,521
LTC3	Facilities Only		70% ALF	Lifetime	90	No Inflation	LF	132	255,320
LTC3	Facilities Only		70% ALF	Lifetime	90	No Inflation	MGI	1	4,259
LTC3	Partnership	70% HHC	70% ALF	6 Mo	30	Inflation	LF	1	2,065
LTC3	Partnership	70% HHC	70% ALF	1 Year	30	Inflation	LF	31	45,412
LTC3	Partnership	70% HHC	70% ALF	2 Year	30	Inflation	LF	60	134,441
LTC 3 Subtotal								13,124	26,984,653

Product Series	Plan Type	HHC	ALF	Benefit Period	Elimination Period	Inflation	Underwriting Type	Policy Count	Annualized Premium
LTC4	Comprehensive	100% HHC	100% ALF	3 Year	90	Inflation	LF	1,105	2,746,622
LTC4	Comprehensive	100% HHC	100% ALF	3 Year	90	No Inflation	LF	113	235,788
LTC4	Comprehensive	100% HHC	100% ALF	6 Year	90	Inflation	LF	784	2,488,388
LTC4	Comprehensive	100% HHC	100% ALF	6 Year	90	No Inflation	LF	65	204,301
LTC4	Comprehensive	100% HHC	100% ALF	10 Year	90	Inflation	LF	418	1,472,606
LTC4	Comprehensive	100% HHC	100% ALF	10 Year	90	No Inflation	LF	67	222,645
LTC4	Partnership	100% HHC	100% ALF	1 Year	30	Inflation	LF	9	23,078
LTC4	Partnership	100% HHC	100% ALF	2 Year	30	Inflation	LF	31	129,916
LTC4 Subtotal								2,592	7,523,345

Grand Total

111,518 291,275,149

1) Benefit categories include all in-force data as of June 30, 2021. All Benefits, including selected optional benefits, are valued in the projection except Benefit Increase Options.

<u>Abbreviation</u>	<u>Description</u>
ALF	Assisted Living Facility
HHC	Home Health Care
LF U/W	Long Form Underwriting
MGI U/W	Modified Guaranteed Issue Underwriting
SF U/W	Short Form Underwriting

Appendix E – Demographic Information

Data

We relied on the in-force data and claim information supplied by the third-party administrator LTCG and have evaluated that data for reasonableness and consistency. The principal materials used were provided by LTCG and internal financial reports and include the following:

1. Data extracts from LTCG's administrative system
2. Financial statements
3. Plan descriptions

The Actuarial Valuation considers the quantitative and demographic characteristics of covered participants, including active participants and on-claim participants. This section presents a summary of significant statistical data on these participant groups. Future plan costs are affected by attained age, years in plan, and benefits chosen. In this year's valuation, there were 111,518 in-force participants averaging an attained age of 75.8 years and a policy duration of 22 years.

In-force Participants as of 6/30/2021 - Demographics and Selected Benefit Options

The following distributions of all in-force participants as of June 30, 2021 are included in Appendix E:

- By benefit period and elimination period
- By issue-age and attained-age
- By gender
- By coverage
- By inflation option
- By Marriage Status at Issue
- By premium mode
- By underwriting type
- By product series

Appendix E

Distributions of Business In-force as of 6/30/2021

By Benefit Period and Elimination Period

Benefit Period	Elimination Period	Policy Count	Percent	Annualized Premium	Percent
6 Month	30 Day	80	0%	60,015	0%
1 Year	30 Day	1,177	1%	1,117,812	0%
2 Year	30 Day	2,369	2%	3,453,093	1%
In-Nonforfeiture	30 Day	120	0%	0	0%
3 Year	90 Day	25,344	23%	45,087,462	15%
6 Year	90 Day	31,040	28%	58,780,782	20%
10 Year	90 Day	22,923	21%	61,241,190	21%
Lifetime	90 Day	28,449	26%	121,534,795	42%
In-Nonforfeiture	90 Day	16	0%	0	0%
Total		111,518	100%	291,275,149	100%

By Issue-Age Band and Gender

Issue-Age Band	Policy Count				Annualized Premium			
	Females	Males	Total	Percent	Females	Males	Total	Percent
< 30	417	227	644	1%	489,327	280,114	769,440	0%
30-39	3,918	2,324	6,242	6%	5,928,585	3,509,629	9,438,213	3%
40-44	5,439	2,922	8,361	7%	10,032,143	5,377,990	15,410,134	5%
45-49	10,286	5,531	15,817	14%	22,129,450	11,907,573	34,037,024	12%
50-54	15,290	8,803	24,093	22%	36,975,407	21,369,421	58,344,828	20%
55-59	15,974	10,028	26,002	23%	43,891,092	28,140,490	72,031,582	25%
60-64	11,125	7,822	18,947	17%	34,399,147	24,557,328	58,956,475	20%
65-69	5,215	3,393	8,608	8%	18,283,826	12,139,557	30,423,384	10%
70-74	1,610	763	2,373	2%	6,494,409	3,199,133	9,693,542	3%
75-79	315	84	399	0%	1,496,127	461,717	1,957,844	1%
80-84	25	6	31	0%	177,266	29,230	206,496	0%
85-89	1	0	1	0%	6,188	0	6,188	0%
90-94	0	0	0	0%	0	0	0	0%
95+	0	0	0	0%	0	0	0	0%
Total	69,615	41,903	111,518	100%	180,302,966	110,972,182	291,275,149	100%

By Attained Age and Gender

Attained-Age Band	Policy Count				Annualized Premium			
	Females	Males	Total	Percent	Females	Males	Total	Percent
< 30	12	13	25	0%	8,630	9,203	17,833	0%
30-39	63	40	103	0%	64,902	46,152	111,053	0%
40-44	139	69	208	0%	185,015	88,572	273,588	0%
45-49	353	201	554	0%	467,919	282,169	750,089	0%
50-54	945	583	1,528	1%	1,403,920	863,085	2,267,005	1%
55-59	2,250	1,399	3,649	3%	3,687,338	2,285,707	5,973,046	2%
60-64	4,481	2,506	6,987	6%	8,017,374	4,557,688	12,575,063	4%
65-69	8,280	4,374	12,654	11%	16,898,744	9,045,314	25,944,057	9%
70-74	13,960	8,206	22,166	20%	32,668,292	19,372,299	52,040,591	18%
75-79	14,850	9,242	24,092	22%	39,460,452	25,012,995	64,473,448	22%
80-84	11,707	7,542	19,249	17%	34,392,480	23,026,913	57,419,393	20%
85-89	7,517	5,070	12,587	11%	24,283,750	16,457,542	40,741,292	14%
90-94	3,905	2,194	6,099	5%	14,116,656	7,983,826	22,100,482	8%
95+	1,153	464	1,617	1%	4,647,494	1,940,717	6,588,211	2%
Total	69,615	41,903	111,518	100%	180,302,966	110,972,182	291,275,149	100%

Appendix E

Distributions of Business In-force as of 6/30/2021 (continued)

By Plan Type

Plan Type	Policy Count	Percent	Annualized Premium	Percent
Partnership (Comprehensive)	3,746	3%	4,630,920	2%
Comprehensive	89,152	80%	248,029,284	85%
Facilities Only	18,620	17%	38,614,944	13%
Total	111,518	100%	291,275,149	100%

By Inflation

Inflation	Policy Count	Percent	Annualized Premium	Percent
No Inflation	72,202	65%	150,362,632	52%
Inflation	39,316	35%	140,912,517	48%
Total	111,518	100%	291,275,149	100%

By Marriage Status at Time of Issue

Marital Status	Gender	Policy Count	Percent	Annualized Premium	Percent
Married	F	47,420	43%	120,066,045	41%
Married	M	35,007	31%	92,110,061	32%
Single	F	22,195	20%	60,236,921	21%
Single	M	6,896	6%	18,862,121	6%
Total		111,518	100%	291,275,149	100%

By Premium Mode

Premium Mode	Policy Count	Percent	Annualized Premium	Percent
Monthly	84,215	76%	225,664,677	77%
Quarterly	21,057	19%	48,845,068	17%
Semi-Annually	3,587	3%	9,421,005	3%
Annually	2,659	2%	7,344,398	3%
Total	111,518	100%	291,275,149	100%

By Underwriting Type

Underwriting Type	Policy Count	Percent	Annualized Premium	Percent
LF	65,372	59%	174,460,225	60%
MGI	24,948	22%	64,186,655	22%
SF	21,198	19%	52,628,268	18%
Total	111,518	100%	291,275,149	100%

By Product Series

Product Series	Policy Count	Percent	Annualized Premium	Percent
LTC 1	88,518	79%	237,246,866	81%
LTC 2	7,284	7%	19,520,285	7%
LTC 3	13,124	12%	26,984,653	9%
LTC 4	2,592	2%	7,523,345	3%
Total	111,518	100%	291,275,149	100%

Appendix F – Glossary of Actuarial Terms

Glossary of Actuarial Terms

Anti-Selection - Individuals who let their policies lapse because of special events (see “Shock Lapses”) are usually in better health. A participant does not normally drop their coverage if they anticipate that they will soon have a claim. As a result of this participant decision process, individuals who retain their policies are often, on average, in worse health than those who lapse them. This phenomenon is called anti-selection.

Base Case - The results of a projection using the “best estimate” assumptions in the LTC valuation. All sensitivity projections are done relative to this base case.

Benefit Period - This is the period of time that an insured would receive benefits if the full maximum daily benefit amount was paid each day an insured is on claim. If less than the maximum daily benefit amount was paid, the length of time that a claimant would receive benefits would be greater than this time period.

Claim Incidence - The probability of a policyholder incurring a claim is referred to as claim incidence.

Claim Termination - The probability that an existing claim will cease is referred to as claim termination.

Comprehensive Plan - A plan that covers home health care in addition to care in a nursing home and/or an assisted living facility.

Claim Continuance - The period of time that a participant continues to be on claim after a claim has begun.

Conversion - The voluntary decision to switch or reduce coverage, sometimes as the result of a specific event such as a premium rate increase.

Credible - A statistical measure of the degree to which data is considered reliable for predictive purposes. Credibility increases as a block of business grows and as more data accumulates over time.

Deficit - A calculation that determines the degree to which the current fund value is insufficient to pay future benefits, expressed as a percentage of the present value of future premiums. This number is an estimate of what one-time rate increase would be needed to bring the Program back to the target margin level. If the current fund value is more than enough to pay future benefits, the surplus is represented by a positive number. In formula terms:

{Current Fund Balance + Present Value of Premiums - Present Value of Benefits and Expenses} / Present Value of Premiums

Disabled Life Reserve - The value of future claim payments for those participants currently on claim.

Discount Rate - An interest rate used to determine present values. For CalPERS, the discount rate is set equal to the expected investment earnings rate.

Duration - The amount of time, typically measured in years since the issue date of the policy. Duration is sometimes referred to as policy year.

Appendix F

Glossary of Actuarial Terms (continued)

Elimination Period - The period of time in which the participant pays for care before benefits are paid from insurance proceeds.

First Principles Model - A model that uses fundamental concepts and assumptions to project cash flows. First principles model calculations tend to use more granular assumptions and track policyholder status and transitions more closely than a comparable claim cost model does.

Facility-Only Plan - A type of plan that pays for care in a nursing home or assisted living facility, but not for care at home or in the community.

Funded Ratio - Method of expressing the current financial status of the Program, which is consistent with the CalPERS pension and health plan financial status measurements. In general, the funded ratio is the assets divided by the accrued liability, or reserves. For long-term care insurance, the accrued liability is equal to the present value of future benefits and expenses less the present value of participant premiums. This definition is consistent with a statutory gross premium valuation reserve for LTC insurance. In this context, a breakeven position is a ratio of 100%. In formula terms:

Fund Balance / {Present Value of Benefits and Expenses - Present Value of Premiums}

Incidence - The number of participants that start a claim as a percentage of the participants that could start a claim over a specified time period (i.e., frequency of claim).

Incurred But Not Reported (IBNR) - an estimate of the liability for claim-generating events that have taken place but have not yet been reported.

Inflation Coverage - An optional feature that increases the amount of available benefits over time to protect a participant against rising health care costs. The CalPERS inflation coverage offers four different levels of automatic inflation protection: 3 or 5 percent simple, and 3 or 5 percent compound.

LTC1, LTC2, LTC3, LTC4 - Four different long-term care insurance plans sold to CalPERS participants. The main differences between the plans are the percentages of daily benefit for Home Health Care (HHC) and Assisted Living Facility (ALF) care available at the time of claim in comparison to the Nursing Home (NH) coverage for comprehensive policies. A summary of those benefits and the initial issue year is shown below.

LTC1 (1995) - NH (100%) / ALF (50%) / HHC (50%)

LTC2 (2003) - NH (100%) / ALF (70%) / HHC (50%)

LTC3 (2005) - NH (100%) / ALF (70%) / HHC (70%)

LTC4 (2014) - NH (100%) / ALF (100%) / HHC (100%)

Model - An actuarial tool used to project future cash flows including premiums, claims, investment returns, and expenses.

Appendix F

Glossary of Actuarial Terms (continued)

Morbidity - The generic term for the various assumptions underlying the expected/projected claims of a block of business.

Mortality - The rate of death.

Partnership Plan - A collaboration or “partnership” between the state government, insurance companies, and state residents who buy long-term care Partnership policies. The purpose of the Partnership Program is to encourage individuals to purchase LTC coverage and save the state money by increasing the private funding of LTC services, thereby reducing Medicaid payments for LTC. The advantage of the partnership plan for a participant is that once their insurance coverage is exhausted, their assets in an amount equal to the amount of insurance coverage used are protected when qualifying for Medicaid payments for LTC.

Persistency - The number of participants that remain active relative to the total number that started from one time period to another. Historically, LTC persistency has been higher than what was originally expected for CalPERS and the LTC industry as a whole. Because of the stronger-than-expected persistency, more participants are ultimately expected to submit claims than were originally expected, which puts additional financial strain on a LTC Program.

Present Value - A calculation that expresses future cash flows in a current cash equivalent amount based on assumed future interest rates (the discount rate).

Restoration of Benefits (ROB) - Benefit period will be restored if the participant recovers and is not eligible for benefits for at least 180 consecutive days. The maximum amount that can be restored over the life of the coverage is equal to the original total benefit amount purchased. This optional benefit rider is only available to LTC4 policies with a benefit period of three years or six years.

Return of Premium (ROP) - Returns some or all of a participant’s premiums less any benefits paid to the spouse or estate if the participant dies before age 75. This is a built-in option for some of CalPERS’s plans.

Selection Factors - Factors used to adjust attained age or ultimate morbidity to levels reflecting recent underwriting/issue, generally reducing the projected claims associated with those policies. Different selection factors are also used for the mortality assumption.

Shock Lapses - An insurance phenomenon where individuals allow their policies to lapse/terminate at a higher rate than usual due to a specific event such as a premium rate increase.

Survivorship Benefit - If both spouses or partners have this optional benefit, long-term care coverage for the surviving spouse or partner will be paid up if one spouse or partner dies after both have had coverage for a period of 10 years or more. This optional benefit rider is only available to LTC4 policies. Spouses or domestic partners must choose identical coverage to sign up for this optional benefit.

Terminations - The policies that are no longer active due to death, voluntary lapse, or any other reason.

Appendix F

Glossary of Actuarial Terms (continued)

Underwriting Type - Underwriting is the process of evaluating and selecting risks to be insured. Three types of underwriting were utilized at various times by CalPERS:

- Modified Guaranteed Issue (MGI) - limited underwriting for younger applicants active in the workforce
- Short Form (SF) - simplified application process with limited medical evaluation for younger applicants.
- Long Form (LF) - considered “full underwriting” due to the comprehensive nature of the medical questions asked and the associated underwriting process.

CalPERS only uses the long form of application for underwriting since 2002.

Voluntary Lapsation - Occurs when a participant chooses to voluntarily terminate their policy rather than terminate due to death or limitations on renewing contained within the policy itself.

Waiver of Premium or WOP - A benefit provision in a policy that allows the participant to stop making premium payments during the period of time in which they meet specific disabling conditions such as being eligible to be on LTC claim.

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