California Public Employees' Retirement System

Long-Term Care Actuarial Valuation

as of June 30, 2023

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Actuarial Certification

April 2024

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 as of the valuation date. This valuation is based on the participant and financial data as of June 30, 2023. 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

Highlights and Executive Summary

Introduction

This is the actuarial valuation report as of June 30, 2023 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, 2023 in-force data and updated assumptions. Milliman as the consulting actuary for CalPERS completed a parallel valuation, and Milliman's 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, 2023. 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, 2023 actuarial valuation report of the CalPERS Long-Term Care Program is to:

- Determine whether assets as of June 30, 2023, expected future premium levels, and future investment returns are sufficient to support future benefits.
- Provide actuarial information as of June 30, 2023 to the CalPERS Board of Administration and other interested parties.
- Provide information as of June 30, 2023 relevant to 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, 2023, the Program's funded status is 90% (a decrease from 95% last year) and the margin is negative 19.01% (a decrease from negative 7.40% last year). During the 2022-23 fiscal year, the Program experienced a negative 0.6% investment return due to the rising interest rates and market volatility. The claim termination assumption update is another factor that reduced the margin. This valuation reflected the 52% premium rate increase implemented during the 2021-22 fiscal year and the 25% premium rate increase implemented during the 2022-23 fiscal year. For more details on the Program and the assumption changes, please see the "Key Assumption Changes and Findings" section. The table below provides the funded status and margin as of June 30, 2023.

Component	($ in Millions)
1)Present Value of Future Benefits	$7,705
2)Present Value of Future Expenses	$353
3)Present Value of Future Premiums (PVFP)	$2,739
4)Valuation Liabilities [(1+2) - (3)]	**$5,319**
5)Valuation Assets	$4,798
6)Valuation Margin [(5) – (4)]	**($521)**
7)Margin as a % of PVFP [(6) / (3)]	**(19.01%)**
8)Funded Status [(5) / (4)]	**90%**

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 previous low-interest-rate environment and the corresponding long-term investment return expectation had a large negative impact on the margin in the 2019 valuation. 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's experience due to COVID-19 increased the margin in the 2021 valuation. However, the rising interest rates reduced the market value of fixed income assets and reduced the valuation margin to negative in the 2022 and 2023 valuations. Further refinements in the morbidity assumptions also contributed to the margin decreases since 2021.

5-Year History of Funded Status and Margin

Valuation Date	Funded Status	Margin / (Deficit)
June 30, 2019	69%	**(85.46%)**
June 30, 2020	101%	1.34%
June 30, 2021	108%	10.51%
June 30, 2022	95%	**(7.40%)**
June 30, 2023	90%	**(19.01%)**

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 negative 0.6% during the fiscal year 2022-23, which was partially due to the rising interest rates reducing the market value of fixed income assets. The negative investment return decreased the margin by 8.54%.
- The claim incidence and claim termination assumptions were updated using Milliman's industry benchmark Milliman LTC Guidelines as the baseline assumption, which was then adjusted to reflect the Program's experience level. In the previous years, the Society of Actuaries' LTC industry data was used as the baseline assumption. The Milliman Guidelines reflect more recent industry experience, more data volume, and more accurate variations across different assumption variables. The update in the claim termination assumption reflected better smoothed claim termination curves across claim durations but indicated longer claim length. The claim termination assumption update decreased the margin by 4.65%. The claim incidence update improved the margin by 0.94%
- The in-force population data at 6/30/2023 reflected the 25% premium rate increase implementation during the 2022-23 fiscal year. It also reflected the modestly higher-than-projected mortality and less-than-projected new claims during the fiscal year. The in-force population update overall improved the margin by 1.02%.

Summary of the Program's cashflows in the fiscal year 2022-23 are as follows:

- The Program's actual claim payment during the fiscal year was $345.6 million, which was 1.9%, or $6.3 million, higher than projected. This was largely due to the incurred-but-not-reported (IBNR) claim cashflows being higher than projected during the fiscal year.
- The Program's actual premium collected in the 2022-23 fiscal year was $339.8 million. This amount reflected the implemented 25% premium rate increase during the fiscal year.
- The Program experienced an investment return of negative 0.6% during the 2022-23 fiscal year. The investment return was $258.1 million lower than expected.
- The Program's actual expenses during the 2022-23 fiscal year was $28.4 million, which was 8%, or $2.1 million, higher than projected.

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 uses a First Principles Model for the Program's valuation projection. Improvements to the projection model are made subsequently each year when necessary. The modeling improvements and revisions made for the 2023 valuation include:

- Modified the model to allow inflation type factors and more detailed benefit period factors for the claim incidence assumption.
- Modified the model to allow variations by benefit period and by coverage type for the claim termination assumption.

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. The model tracks active life mortality and disabled life mortality separately. 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 2023 valuation, assumptions were updated to reflect more recent years' experience. Please refer to the "Reconciliation to Prior Year Valuation Results" section on page 9 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, 2023, there were 99,755 in-force policies with a total annualized premium amount of $384,446,929. 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 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 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 the 2021-22 fiscal year for all policies and an additional premium increase of up to 25% in the 2022-23 fiscal year for a cumulative increase of up to 90%. The implementation of the first phase of the premium increase has been completed. The second phase of the premium increase was implemented for the vast majority of the policies by 6/30/2023. This valuation reflects the implemented 52% and 25% premium increases, and assumes a 25% premium increase for the small amount of policies that have not yet received the 25% premium increase at 6/30/2023.

To reduce the impact of higher premiums on policyholders, options to convert to less expensive policies are offered to policyholders during the premium increase implementations. Vast majority of the coverage conversions have been implemented by 6/30/2023. More details of the coverage conversions during the fiscal year are provided in Appendix D. This valuation does not assume any additional policy conversions.

Highlights and Executive Summary

Subsequent Events

A lawsuit was filed in 2013 contesting the increase in premiums from the 2012 stabilization plan. A settlement has been approved by the Court in September 2023. The approved settlement provides eligible policies an option to opt out from the Program and receive a partial premium refund (less any benefits received). Based on the policyholders' settlement option election results, around 15,200 policies have surrendered their policies. Not all settlement elections have been finalized as of the time of this valuation.

Due to COVID-19, the Program experienced higher mortality, lower claim incidence, and lower claim payments most noticeably in the 2020-21 fiscal year. This impact is currently assumed to be one time and temporary. The long-term mortality trend in the "post-COVID" era is currently unclear.

Future morbidity risk is uncertain and will continue to be monitored. It is possible that future morbidity assumption changes may still be necessary.

Interest rates could fluctuate in the next few years. If interest rates revert to lower levels in future years, it could cause an increase in the market value of fixed income assets and possibly higher-than-expected returns.

Valuation Results

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 status 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, 2023 actuarial valuation results to its June 30, 2022 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 flows.

Component	6/30/2022 ($ in Millions)	6/30/2023 ($ in Millions)
1) Present Value of Future Benefits	$7,943	$7,705
2) Present Value of Future Expenses	$369	$353
3) Present Value of Future Premiums (PVFP)	$3,215	$2,739
4) Valuation Liabilities [(1+2) - (3)]	**$5,098**	**$5,319**
5) Valuation Assets	$4,860	$4,798
6) Valuation Margin [(5) – (4)]	**($238)**	**($521)**
7) Margin as a % of PVFP [(6) / (3)]	**(7.40%)**	**(19.01%)**
8) Funded Status [(5) / (4)]	**95%**	**90%**

This result shows that the assets and expected future premiums are not sufficient to support the Program if the future experience conforms to our current actuarial assumptions.

Liability cashflows were calculated based on a projection of expected future cash flows of in-force policies as of June 30, 2023. This projection used a set of underlying assumptions derived from the Program's historical 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 Year Valuation Results

The Program's margin decreased from negative 7.40% to negative 19.01% between June 30, 2022 and June 30, 2023. Factors that impacted the margin either positively or negatively during the fiscal year are the following:

The in-force population update and the expense assumption update had positive impact on the margin:

- The in-force population data at 6/30/2023 reflected the 25% premium rate increase implementation during the 2022-23 fiscal year. It also reflected the modestly higher-than-projected mortality and less-than-projected new claims during the fiscal year. The in-force population update overall improved the margin by 1.02%.
- The expense assumptions reflected the updated third-party administrator fees and other expense rates at the valuation date. This update improved the margin by 0.13%

The negative investment return, morbidity assumption updates, and mortality assumption updates had negative impact on the margin:

- The Program experienced an investment return of negative 0.6% during the 2022-23 fiscal year. The negative return decreased the margin by 8.54%. A breakdown of the investment returns by asset classes can be found in the "Asset Allocation" section on page 20.
- The morbidity assumption updates included components with positive and negative impact to the margin. The total impact overall decreased the margin by 3.13%. These updates included the following components:
    - The claim termination assumption was updated using Milliman's industry benchmark Milliman Guidelines as the baseline assumption, then adjusted to the Program's experience level. The Program's data from 2011 to 2022, excluding 2020 and 2021, was used in the study. The update reflected better smoothed claim termination curves across claim durations but indicated longer claim length. Assumption variations by lifetime vs non-lifetime policies and by coverage types were also added. The claim termination assumption updates decreased the margin by 4.65%.
    - The claim incidence assumption was updated using the Milliman Guidelines as the baseline assumption, then adjusted to the Program's experience level. The Program's data from 2011 to 2022, excluding 2020 and 2021 was used. In addition, only data with policy duration 10 and higher was used in the study. The update also added inflation type factors and more detailed benefit period factors. Due to technical limitation, CalPERS' projection model input was not able to accommodate the increasing trend by policy duration suggested by the Milliman Guidelines. Therefore, a flat 5% increase was applied to the claim incidence assumption to approximate the result. This year's update reflects the Program's experience during time periods where there were premium increases and higher new claims. As such, the updated assumption is considered sufficient for future incidence level without anti-selection factors related to the previous premium increases. Anti-selection factors related to the previous premium increases were no longer applied. Overall, the claim incidence assumption update improved the margin by 0.94%.
    - The claim utilization assumption was updated to include 2022 experience. This update improved the margin by 0.88%.
    - The Incurred-But-Not-Reported (IBNR) projection was updated to distribute the cashflows over a shorter horizon, and the update decreased the margin by 0.30%.
- The active mortality assumption was updated based on the Program's experience from 2011 to 2022, excluding 2020 and 2021. In addition, only data with policy duration 15 and higher was used. The mortality improvement scale was updated to use 100% of the SOA Projection Scale G2 from last year's MP-2020. Overall, the active mortality assumption update decreased the margin by 0.88%.

Valuation Results

Reconciliation to Prior Year Valuation 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
Result as of 6/30/22 valuation		**(7.40%)**	95%
FY22-23 Non-Investment Gain/Loss	**(0.21%)**	**(7.61%)**	95%
FY22-23 Investment Gain/Loss	**(8.54%)**	**(16.15%)**	90%
Update to 2023 Demographics	1.02%	**(15.12%)**	92%
Expense Assumption Update	0.13%	**(14.99%)**	92%
Lapse Assumption Update	0.00%	**(14.99%)**	92%
Mortality Assumption Updates	**(0.88%)**	**(15.87%)**	92%
Morbidity Assumption Updates	**(3.13%)**	**(19.01%)**	90%
Result as of 6/30/23 valuation		**(19.01%)**	90%

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 2023 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 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 a policy going on a new 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 incidences and claim terminations based on data as of June 30, 2023, filtered for years from 2011 to 2022, excluding 2020 and 2021. The claim utilization study was based on data in all years up to 2022. Milliman's industry benchmark Milliman LTC Guidelines were used as the expected basis for the claim incidence and claim termination assumptions, then adjusted to the Program's experience through credibility weighting. Additional credibility will be assigned to the Program's experience in the future as the experience continues to emerge. Actual claim cashflow during the fiscal year ending at the valuation date is summarized in the table "Comparison of Actual to Expected Cash Flows for 2022-23" in the "Assets" section on page 19.

Mortality

The mortality assumption summarizes the expected death rates 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. Expected 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)

The 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. This valuation uses 100% of the SOA mortality improvement Projection Scale G2.

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 rates to vary by claim type and claim duration. The recovery rate assumption is developed based on CalPERS claim data as of June 30, 2023, excluding data after December 31, 2022.

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.

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 updated TPA contract at the valuation date. 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 reflects the previously implemented 52% premium increase. The 25% premium increase and the conversions to offset the increase has been implemented for the vast majority of policies during the 2022-23 fiscal year and reflected in the 6/30/2023 in-force data. A 25% premium increase is assumed in the projection for the small amount of policies that have not yet received the premium increase at the valuation date. This valuation does not reflect any future conversions. Anti-selection factors were no longer applied due to the claim incidence assumption update.

Risk Analysis

Risk Analysis

The actuarial calculations supplied in this report are based on several 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 Status

Scenario Description	Margin	Funded Status
Base Case	(19.01%)	90%
Discount Rate Increased by 0.5% to 5.25%	(4.86%)	97%
Discount Rate Decreased by 0.5% to 4.25%	(33.86%)	83%

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 status 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 Status

Scenario Description	Margin	Funded Status
Base Case	(19.01%)	90%
Lower Claim Incidence (Future Claims Incidence Reduced by 10%)	(5.42%)	97%
Higher Claim Incidence (Future Claims Incidence Increased by 10%)	(31.90%)	85%

Risk Analysis

Sensitivity Testing of Key Assumptions (continued)

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 status 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 Status

Scenario Description	Margin	Funded Status
Base Case	(19.01%)	90%
Higher Claim Termination (Future Claim Termination Increased by 10%)	3.02%	102%
Lower Claim Termination (Future Claim Termination Decreased by 10%)	(44.95%)	80%

Claim Utilization

The 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 Status

Scenario Description	Margin	Funded Status
Base Case	(19.01%)	90%
Lower Claim Utilization (Yearly Increase Trend Being 0.5 Times Lower)	(4.29%)	98%
Higher Claim Utilization (Yearly Increase Trend Being 0.5 Times Higher)	(32.83%)	84%

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 Status

Scenario Description	Margin	Funded Status
Base Case	(19.01%)	90%
Active Mortality Increased by 10%	(13.91%)	93%
Active Mortality Decreased by 10%	(24.30%)	88%

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 Status

Scenario Description	Margin	Funded Status
Base Case	(19.01%)	90%
Claim Recovery Rate Being 25% Lower	(15.88%)	92%
Claim Recovery Rate Being 25% Higher	(22.20%)	89%

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 status 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 Status

Scenario Description	Margin	Funded Status
Base Case	(19.01%)	90%
Lapse Rates Increased by 0.25%	(13.56%)	93%
Lapse Rates Decreased by 0.25%	(24.54%)	88%

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 Status

Scenario Description	Margin	Funded Status
Base Case	(19.01%)	90%
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%	38.7%	128%
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%	(92.11%)	65%

Risk Analysis

Additional Sensitivity Testing

In addition to the sensitivity testing summarized above, we used the interest rate scenarios that take ideas from New York 7 to test different investment scenarios compared to 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. The additional discount rate sensitivity scenarios as described in the table below:

Scenarios for Additional Discount Rate Sensitivity

	Projection Years										
Scenarios	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 Status

Scenarios	Margin	Funded Status
Scenario #1	(19.01%)	90%
Scenario #2	56.43%	140%
Scenario #3	18.19%	110%
Scenario #4	56.29%	137%
Scenario #5	(157.92%)	48%
Scenario #6	(57.57%)	73%
Scenario #7	(121.23%)	54%

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

Assets

Assets

Reconciliation of the Market Value of Assets Over Prior Fiscal Year

	Market Value
Market Value of Assets as of June 30, 2022	$4,859,888,060
Premiums Received During Fiscal Year 2022-23	$339,754,687
Benefit Payments in 2022-23	($345,591,327)
Expense Payments in 2022-23	($28,363,494)
Investment Returns in 2022-23	($27,285,558)
Market Value of Assets as of June 30, 2023 [(1) + (2) + (3) + (4) + (5)]	**$4,798,402,368**

Comparison of Actual to Expected Cash Flows

Below is a table comparing the actual cash flows in 2022-23 to the cash flows that were projected as part of the June 30, 2022 valuation. As shown in the table, the investment experience had the largest impact on the fund balance. The actual premium received during fiscal year 2022-23 reflected the implemented 25% premium increase and policyholders' election of coverage conversions to offset the 25% premium increase.

Comparison of Actual to Expected Cash Flows for 2022-2023

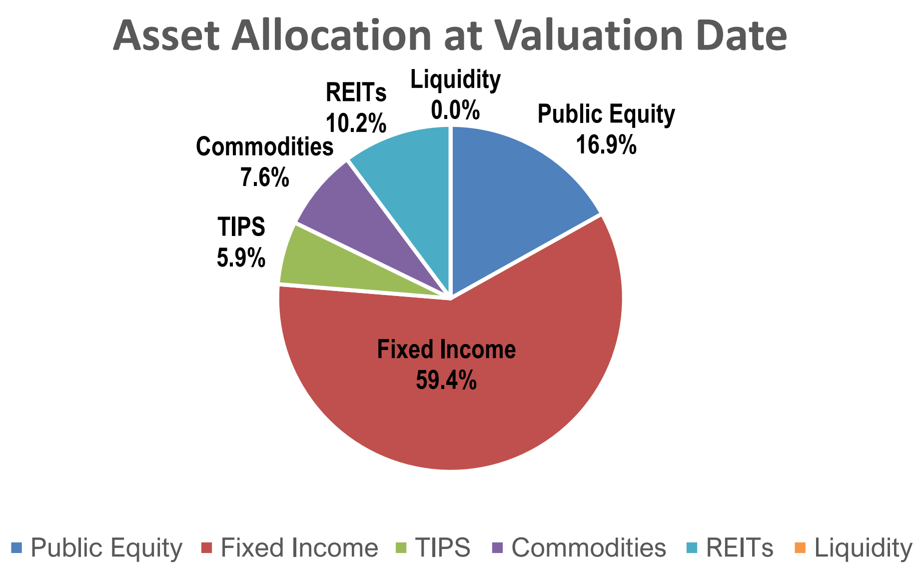
	Projected Results in the June 30, 2022 Valuation	Actual Results in the June 30, 2023 Valuation	Difference
Fund Balance as of June 30, 2022	$4,859,888,060	$4,859,888,060	$0
Cash Flows for 2022-23			
Premiums	$369,691,612	$339,754,687	($29,936,925)
Paid Claims	($339,249,338)	($345,591,327)	($6,341,989)
Expenses	($26,254,587)	($28,363,494)	($2,108,907)
Investment Income	$230,789,897	($27,285,558)	($258,075,455)
Balance as of June 30, 2023	**$5,094,865,644**	**$4,798,402,368**	**($296,463,276)**

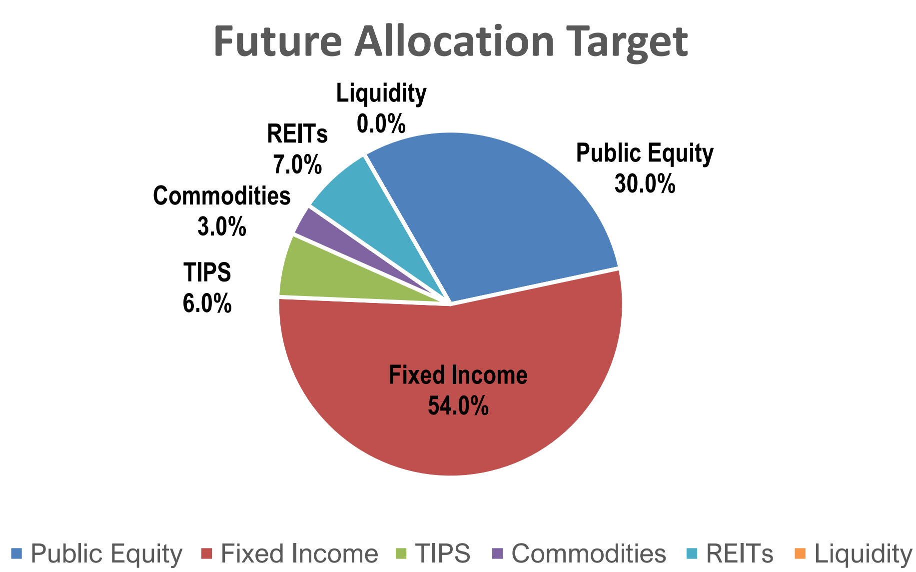
Assets

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, 2023, as well as the future asset allocation target, are shown below.

Asset Class	Allocation at Valuation Date	Market Value at Valuation Date ($ in Millions)	Return during Fiscal Year	Future Allocation Target
Public Equity	16.9%	$818.4	16.5%	30.0%
Fixed Income	59.4%	$2,876.2	(2.1%)	54.0%
Treasury-Inflation Protected Securities (TIPS)	5.9%	$287.0	(1.4%)	6.0%
Commodities	7.6%	$369.8	(14.5%)	3.0%
Real Estate Investment Trusts (REITs)	10.2%	$491.8	(3.8%)	7.0%
Liquidity	0.0%	$0.0	n/a	0.0%
Total LTC Fund:	**100.0%**	**$4,843.3**	**(0.6%)**	**100.0%**

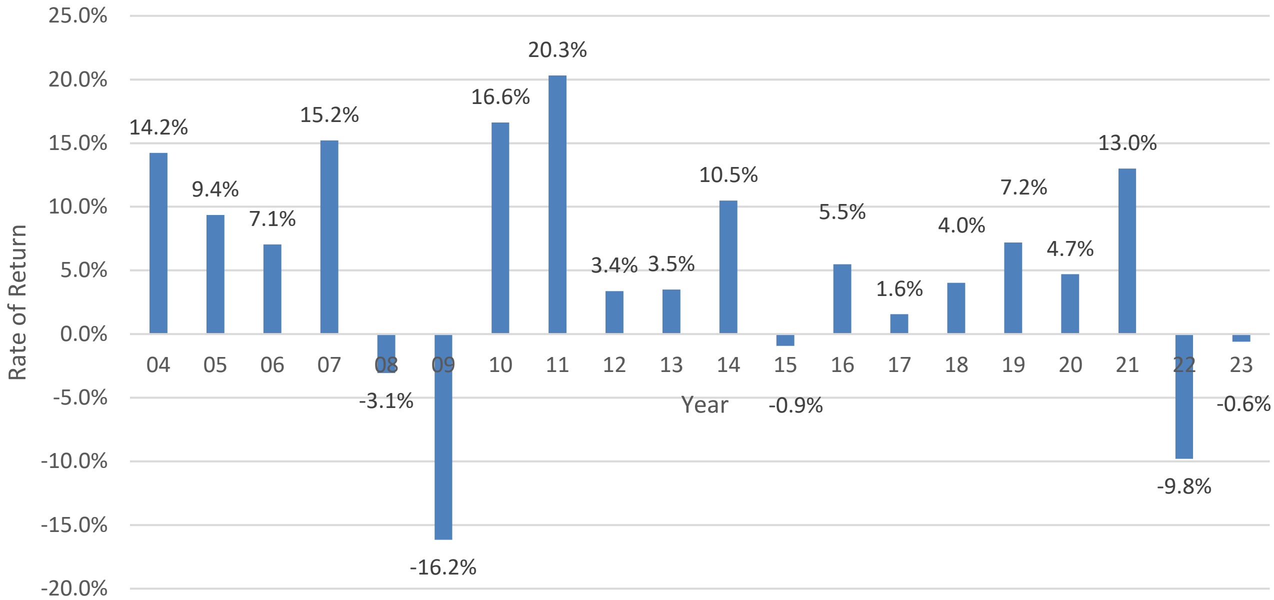




Assets

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

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

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
(19.01%)	($521)	90%

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]
						$4,798,402
2023	97,715	$176,597	$180,405	$13,587	$112,452	$4,893,459
2024	93,543	$331,872	$371,802	$27,069	$230,909	$5,057,370
2025	89,344	$312,160	$386,058	$26,695	$237,912	$5,194,689
2026	85,102	$292,702	$401,485	$26,252	$243,627	$5,303,281
2027	80,835	$273,545	$417,023	$26,402	$247,967	$5,381,367
2028	76,523	$254,740	$425,152	$26,492	$251,011	$5,435,475
2029	72,231	$236,342	$439,323	$26,200	$252,854	$5,459,147
2030	67,966	$218,406	$454,822	$25,836	$253,198	$5,450,094
2031	63,740	$200,996	$469,344	$25,397	$252,024	$5,408,373
2032	59,571	$184,174	$482,983	$24,886	$249,334	$5,334,012
2033	55,468	$167,997	$495,246	$24,300	$245,140	$5,227,603
2043	21,412	$50,919	$494,079	$15,139	$134,882	$2,744,585
2053	5,302	$9,786	$281,592	$5,571	($12,412)	($411,737)
2063	903	$1,319	$104,323	$1,588	($132,523)	($2,974,127)
2073	120	$143	$23,968	$352	($246,416)	($5,445,966)
2083	18	$9	$1,949	$39	($197,113)	($8,595,015)

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,895,965	$15,920,057	$605,088	($764,238)
Present Value as of June 30, 2023	$2,739,163	$7,705,306	$352,845	$2,565,392

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
(4.86%)	($129)	97%

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]
						$4,798,402
2023	97,715	$176,597	$180,405	$13,587	$124,139	$4,905,146
2024	93,543	$331,872	$371,802	$27,076	$255,830	$5,093,971
2025	89,344	$312,160	$386,058	$26,710	$264,879	$5,258,241
2026	85,102	$292,702	$401,485	$26,276	$272,611	$5,395,792
2027	80,835	$273,545	$417,023	$26,437	$278,928	$5,504,805
2028	76,523	$254,740	$425,152	$26,538	$283,917	$5,591,771
2029	72,231	$236,342	$439,323	$26,259	$287,679	$5,650,209
2030	67,966	$218,406	$454,822	$25,908	$289,885	$5,677,770
2031	63,740	$200,996	$469,344	$25,485	$290,510	$5,674,447
2032	59,571	$184,174	$482,983	$24,990	$289,552	$5,640,201
2033	55,468	$167,997	$495,246	$24,422	$287,024	$5,575,553
2043	21,412	$50,919	$494,079	$15,522	$190,418	$3,587,134
2053	5,302	$9,786	$281,592	$6,270	$60,013	$1,064,630
2063	903	$1,319	$104,323	$1,588	($28,117)	($615,372)
2073	120	$143	$23,968	$352	($87,431)	($1,764,628)
2083	18	$9	$1,949	$39	($75,881)	($3,005,037)

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,895,965	$15,920,057	$616,041	$4,836,693
Present Value as of June 30, 2023	$2,654,363	$7,241,441	$340,281	$3,598,499

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
(33.86%)	($958)	83%

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]
						$4,798,402
2023	97,715	$176,597	$180,405	$13,586	$100,736	$4,881,745
2024	93,543	$331,872	$371,802	$27,062	$206,104	$5,020,857
2025	89,344	$312,160	$386,058	$26,680	$211,316	$5,131,595
2026	85,102	$292,702	$401,485	$26,227	$215,299	$5,211,883
2027	80,835	$273,545	$417,023	$26,368	$217,978	$5,260,016
2028	76,523	$254,740	$425,152	$26,446	$219,429	$5,282,586
2029	72,231	$236,342	$439,323	$26,143	$219,737	$5,273,199
2030	67,966	$218,406	$454,822	$25,765	$218,640	$5,229,659
2031	63,740	$200,996	$469,344	$25,312	$216,124	$5,152,122
2032	59,571	$184,174	$482,983	$24,785	$212,194	$5,040,723
2033	55,468	$167,997	$495,246	$24,184	$206,868	$4,896,157
2043	21,412	$50,919	$494,079	$14,796	$90,599	$1,992,791
2053	5,302	$9,786	$281,592	$5,571	($60,456)	($1,620,873)
2063	903	$1,319	$104,323	$1,588	($189,897)	($4,709,672)
2073	120	$143	$23,968	$352	($318,911)	($7,834,529)
2083	18	$9	$1,949	$39	($242,227)	($11,761,961)

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,895,965	$15,920,057	$598,949	($3,937,322)
Present Value as of June 30, 2023	$2,829,301	$8,218,335	$367,458	$1,609,505

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
(31.9%)	($855)	85%

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]
						$4,798,402
2023	97,702	$176,468	$181,595	$13,587	$112,442	$4,892,131
2024	93,470	$330,778	$381,099	$27,063	$230,638	$5,045,384
2025	89,191	$310,108	$402,479	$26,675	$236,936	$5,163,274
2026	84,852	$289,845	$423,158	$26,210	$241,578	$5,245,328
2027	80,480	$270,018	$442,326	$26,331	$244,550	$5,291,239
2028	76,060	$250,666	$452,798	$26,386	$245,994	$5,308,716
2029	71,664	$231,831	$468,289	$26,040	$246,053	$5,292,271
2030	67,301	$213,560	$484,330	$25,618	$244,470	$5,240,353
2031	62,990	$195,908	$498,841	$25,120	$241,254	$5,153,554
2032	58,748	$178,932	$512,065	$24,549	$236,428	$5,032,301
2033	54,584	$162,680	$523,586	$23,904	$230,023	$4,877,514
2043	20,589	$47,648	$504,486	$14,272	$95,972	$1,880,262
2053	4,991	$8,899	$279,302	$5,270	($76,884)	($1,832,609)
2063	835	$1,172	$100,967	$1,477	($233,242)	($5,193,588)
2073	110	$126	$22,545	$324	($405,149)	($8,945,735)
2083	16	$8	$1,830	$36	($321,660)	($14,025,113)

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,789,809	$16,318,945	$586,495	($5,707,885)
Present Value as of June 30, 2023	$2,681,164	$7,989,334	$345,572	$1,764,396

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
(5.42%)	($152)	97%

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]
						$4,798,402
2023	97,728	$176,726	$179,215	$13,587	$112,461	$4,894,788
2024	93,617	$332,974	$362,450	$27,074	$231,182	$5,069,419
2025	89,500	$314,241	$369,416	$26,715	$238,897	$5,226,426
2026	85,355	$295,622	$379,352	$26,294	$245,702	$5,362,104
2027	81,196	$277,175	$390,978	$26,475	$251,443	$5,473,269
2028	76,995	$258,962	$396,464	$26,600	$256,139	$5,565,306
2029	72,814	$241,046	$409,012	$26,364	$259,835	$5,630,811
2030	68,651	$223,490	$423,673	$26,059	$262,196	$5,666,765
2031	64,517	$206,363	$437,923	$25,683	$263,174	$5,672,696
2032	60,427	$189,736	$451,715	$25,235	$262,749	$5,648,231
2033	56,389	$173,670	$464,480	$24,713	$260,916	$5,593,624
2043	22,306	$54,602	$480,548	$16,075	$176,877	$3,678,697
2053	5,651	$10,829	$282,688	$6,656	$58,320	$1,147,465
2063	982	$1,499	$107,577	$1,716	($21,629)	($530,231)
2073	132	$165	$25,502	$385	($71,522)	($1,589,849)
2083	19	$10	$2,088	$42	($59,888)	($2,612,153)

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$4,011,792	$15,453,458	$629,962	$4,661,072
Present Value as of June 30, 2023	$2,801,555	$7,389,913	$361,799	$3,437,765

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
3.02%	$83	102%

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]
						$4,798,402
2023	97,619	$176,596	$179,374	$13,581	$112,459	$4,894,503
2024	93,288	$331,862	$362,927	$27,032	$231,136	$5,067,542
2025	88,969	$312,128	$369,879	$26,632	$238,752	$5,221,910
2026	84,640	$292,644	$379,691	$26,174	$245,415	$5,354,105
2027	80,309	$273,461	$390,875	$26,313	$250,982	$5,461,361
2028	75,956	$254,632	$395,595	$26,397	$255,496	$5,549,497
2029	71,634	$236,212	$407,054	$26,096	$259,020	$5,611,579
2030	67,348	$218,257	$420,240	$25,726	$261,244	$5,645,115
2031	63,107	$200,830	$432,796	$25,286	$262,141	$5,650,004
2032	58,927	$183,996	$444,644	$24,776	$261,706	$5,626,287
2033	54,818	$167,809	$455,310	$24,195	$259,957	$5,574,548
2043	20,916	$50,767	$447,619	$15,328	$184,713	$3,866,694
2053	5,107	$9,734	$250,397	$6,512	$90,438	$1,871,427
2063	857	$1,309	$90,814	$2,202	$43,938	$923,680
2073	113	$142	$20,217	$1,105	$38,763	$844,449
2083	17	$9	$1,618	$716	$27,326	$1,190,261

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,891,797	$14,489,336	$634,127	$7,623,524
Present Value as of June 30, 2023	$2,737,099	$7,095,908	$356,938	$3,806,634

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
(44.95%)	($1,232)	80%

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]
						$4,798,402
2023	97,812	$176,597	$181,444	$13,592	$112,444	$4,892,407
2024	93,810	$331,883	$380,947	$27,107	$230,678	$5,046,914
2025	89,745	$312,193	$403,134	$26,761	$237,040	$5,166,252
2026	85,603	$292,761	$424,961	$26,336	$241,745	$5,249,461
2027	81,413	$273,632	$445,662	$26,501	$244,753	$5,295,683
2028	77,153	$254,855	$457,959	$26,598	$246,182	$5,312,163
2029	72,901	$236,481	$475,526	$26,319	$246,156	$5,292,955
2030	68,665	$218,567	$493,956	$25,962	$244,393	$5,235,997
2031	64,461	$201,175	$510,987	$25,527	$240,884	$5,141,541
2032	60,308	$184,368	$526,921	$25,016	$235,634	$5,009,607
2033	56,214	$168,202	$541,243	$24,426	$228,656	$4,840,796
2043	22,000	$51,091	$549,474	$14,935	$77,890	$1,460,095
2053	5,541	$9,847	$320,347	$5,836	($131,965)	($3,067,641)
2063	963	$1,332	$121,841	$1,704	($339,614)	($7,549,770)
2073	130	$145	$29,110	$385	($582,307)	($12,855,783)
2083	19	$9	$2,433	$42	($461,930)	($20,141,102)

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,900,629	$17,636,292	$607,158	($10,596,684)
Present Value as of June 30, 2023	$2,741,446	$8,418,666	$353,559	$1,121,597

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 were to be 0.5 times higher than projected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in Millions)	Funded Status
(32.83%)	($899)	84%

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]
						$4,798,402
2023	97,715	$176,597	$181,280	$13,587	$112,443	$4,892,574
2024	93,543	$331,872	$374,737	$27,070	$230,804	$5,053,444
2025	89,342	$312,160	$390,748	$26,695	$237,622	$5,185,783
2026	85,096	$292,701	$408,006	$26,251	$243,058	$5,287,285
2027	80,825	$273,545	$425,463	$26,400	$247,016	$5,355,983
2028	76,509	$254,740	$435,548	$26,486	$249,568	$5,398,258
2029	72,213	$236,341	$451,806	$26,189	$250,800	$5,407,404
2030	67,943	$218,405	$469,405	$25,819	$250,405	$5,380,991
2031	63,715	$200,994	$486,022	$25,373	$248,358	$5,318,949
2032	59,542	$184,173	$501,802	$24,853	$244,652	$5,221,118
2033	55,435	$167,995	$516,193	$24,258	$239,294	$5,087,956
2043	21,363	$50,914	$531,313	$14,872	$108,087	$2,135,009
2053	5,278	$9,783	$306,509	$5,576	($74,858)	($1,801,241)
2063	898	$1,318	$115,338	$1,595	($242,243)	($5,399,236)
2073	120	$143	$27,114	$355	($425,079)	($9,387,488)
2083	17	$9	$2,104	$39	($337,967)	($14,736,224)

(3) Cash flows for 2023 and 2083 are for six months only.
(4) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,895,853	$16,915,553	$600,610	($5,914,317)
Present Value as of June 30, 2023	$2,739,122	$8,085,571	$351,131	$1,833,421

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 were to be 0.5 times lower than projected.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in Millions)	Funded Status
(4.29%)	($117)	98%

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]
						$4,798,402
2023	97,715	$176,597	$179,527	$13,586	$112,461	$4,894,346
2024	93,544	$331,872	$368,834	$27,068	$231,015	$5,061,331
2025	89,348	$312,160	$381,356	$26,694	$238,204	$5,203,645
2026	85,106	$292,702	$394,939	$26,252	$244,200	$5,319,354
2027	80,843	$273,545	$408,513	$26,405	$248,923	$5,406,905
2028	76,537	$254,741	$414,636	$26,498	$252,464	$5,472,975
2029	72,249	$236,343	$426,722	$26,211	$254,923	$5,511,308
2030	67,988	$218,407	$440,079	$25,852	$256,014	$5,519,797
2031	63,766	$200,997	$452,388	$25,421	$255,725	$5,498,710
2032	59,601	$184,176	$463,760	$24,918	$254,068	$5,448,275
2033	55,501	$167,999	$473,757	$24,343	$251,064	$5,369,237
2043	21,466	$50,924	$456,407	$15,413	$162,243	$3,366,871
2053	5,331	$9,789	$250,681	$6,233	$52,137	$1,026,876
2063	911	$1,320	$90,111	$1,580	($16,126)	($400,240)
2073	122	$144	$20,385	$349	($56,278)	($1,251,159)
2083	18	$9	$1,654	$39	($47,143)	($2,056,252)

(5) Cash flows for 2023 and 2083 are for six months only.
(6) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,896,080	$14,816,414	$613,801	$4,679,479
Present Value as of June 30, 2023	$2,739,205	$7,299,496	$355,597	$3,332,548

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
(13.91%)	($376)	93%

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]
						$4,798,402
2023	97,630	$176,520	$180,551	$13,582	$112,449	$4,893,239
2024	93,296	$331,210	$371,878	$27,037	$230,883	$5,056,418
2025	88,947	$310,901	$385,578	$26,633	$237,850	$5,192,958
2026	84,569	$290,939	$400,200	$26,163	$243,534	$5,301,069
2027	80,180	$271,364	$414,756	$26,284	$247,864	$5,379,257
2028	75,762	$252,220	$421,786	$26,345	$250,931	$5,434,277
2029	71,380	$233,555	$434,787	$26,010	$252,840	$5,459,875
2030	67,041	$215,421	$449,075	$25,603	$253,300	$5,453,918
2031	62,755	$197,872	$462,368	$25,126	$252,299	$5,416,594
2032	58,540	$180,968	$474,781	$24,579	$249,845	$5,348,048
2033	54,405	$164,759	$485,832	$23,962	$245,957	$5,248,970
2043	20,599	$48,968	$476,293	$14,743	$143,105	$2,934,119
2053	5,010	$9,243	$267,964	$5,413	$9,951	$88,051
2063	841	$1,228	$98,282	$1,483	($91,093)	($2,057,507)
2073	111	$132	$22,335	$326	($178,338)	($3,943,855)
2083	16	$8	$1,803	$36	($143,356)	($6,251,149)

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,831,629	$15,432,849	$594,506	$1,146,174
Present Value as of June 30, 2023	$2,703,931	$7,530,055	$348,370	$2,822,849

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
(24.30%)	($675)	88%

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]
						$4,798,402
2023	97,800	$176,673	$180,259	$13,591	$112,454	$4,893,679
2024	93,792	$332,535	$371,725	$27,101	$230,935	$5,058,322
2025	89,744	$313,424	$386,540	$26,757	$237,975	$5,196,425
2026	85,641	$294,481	$402,780	$26,342	$243,720	$5,305,504
2027	81,499	$275,756	$419,318	$26,522	$248,070	$5,383,489
2028	77,297	$257,307	$428,574	$26,641	$251,091	$5,436,671
2029	73,101	$239,191	$443,954	$26,395	$252,867	$5,458,381
2030	68,916	$221,471	$460,710	$26,074	$253,093	$5,446,161
2031	64,756	$204,214	$476,515	$25,676	$251,742	$5,399,927
2032	60,638	$187,490	$491,442	$25,202	$248,808	$5,319,581
2033	56,571	$171,359	$504,987	$24,651	$244,300	$5,205,601
2043	22,287	$53,021	$512,972	$15,565	$126,289	$2,546,394
2053	5,627	$10,394	$296,443	$5,895	($36,066)	($940,648)
2063	975	$1,425	$111,037	$1,708	($176,587)	($3,949,189)
2073	131	$156	$25,818	$382	($318,946)	($7,046,345)
2083	19	$9	$2,117	$42	($254,404)	($11,092,948)

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,963,860	$16,442,933	$616,997	($2,795,280)
Present Value as of June 30, 2023	$2,775,961	$7,891,220	$357,721	$2,292,463

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
(22.20%)	($612)	89%

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]
						$4,798,402
2023	97,739	$176,622	$180,407	$13,588	$112,452	$4,893,481
2024	93,619	$332,109	$371,881	$27,078	$230,913	$5,057,544
2025	89,470	$312,627	$386,362	$26,714	$237,924	$5,195,018
2026	85,275	$293,370	$402,138	$26,280	$243,643	$5,303,613
2027	81,051	$274,386	$418,123	$26,441	$247,977	$5,381,410
2028	76,779	$255,727	$426,772	$26,541	$250,998	$5,434,823
2029	72,523	$237,448	$441,515	$26,266	$252,797	$5,457,287
2030	68,289	$219,609	$457,625	$25,917	$253,072	$5,446,426
2031	64,091	$202,271	$472,785	$25,494	$251,799	$5,402,217
2032	59,945	$185,502	$487,082	$24,997	$248,976	$5,324,617
2033	55,859	$169,358	$500,016	$24,425	$244,613	$5,214,146
2043	21,763	$51,853	$504,647	$15,301	$130,102	$2,634,223
2053	5,442	$10,067	$290,894	$5,715	($25,968)	($715,282)
2063	937	$1,370	$108,998	$1,646	($158,303)	($3,544,976)
2073	126	$150	$25,426	$367	($289,197)	($6,390,121)
2083	18	$9	$2,083	$40	($230,966)	($10,071,042)

(3) Cash flows for 2023 and 2083 are for six months only.
(4) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,924,499	$16,229,986	$609,687	($1,954,270)
Present Value as of June 30, 2023	$2,754,276	$7,809,612	$354,646	$2,406,496

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
(15.88%)	($433)	92%

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]
						$4,798,402
2023	97,691	$176,571	$180,403	$13,585	$112,451	$4,893,437
2024	93,468	$331,636	$371,722	$27,059	$230,905	$5,057,196
2025	89,219	$311,694	$385,754	$26,676	$237,900	$5,194,361
2026	84,930	$292,035	$400,833	$26,223	$243,611	$5,302,951
2027	80,619	$272,708	$415,928	$26,363	$247,957	$5,381,324
2028	76,268	$253,760	$423,543	$26,443	$251,024	$5,436,123
2029	71,941	$235,245	$437,149	$26,135	$252,910	$5,460,993
2030	67,645	$217,216	$452,046	$25,755	$253,323	$5,453,731
2031	63,393	$199,734	$465,941	$25,301	$252,248	$5,414,471
2032	59,202	$182,863	$478,936	$24,776	$249,688	$5,343,311
2033	55,081	$166,656	$490,545	$24,177	$245,662	$5,240,907
2043	21,071	$50,012	$483,823	$14,981	$139,563	$2,852,645
2053	5,167	$9,517	$272,702	$5,462	$767	($116,741)
2063	872	$1,271	$99,915	$1,533	($107,553)	($2,421,294)
2073	116	$138	$22,615	$337	($205,036)	($4,532,752)
2083	17	$8	$1,826	$37	($164,379)	($7,167,773)

(3) Cash flows for 2023 and 2083 are for six months only.
(4) Fund balances are as of the end of the calendar year, except for the opening balance (as of June 30, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,868,062	$15,621,914	$600,772	$388,449
Present Value as of June 30, 2023	$2,724,319	$7,604,198	$351,123	$2,719,599

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
(13.56%)	($365)	93%

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]
						$4,798,402
2023	97,599	$176,444	$180,399	$13,580	$112,450	$4,893,318
2024	93,212	$330,974	$371,656	$27,026	$230,888	$5,056,498
2025	88,816	$310,536	$385,546	$26,613	$237,848	$5,192,723
2026	84,396	$290,451	$400,405	$26,134	$243,509	$5,300,144
2027	79,971	$270,763	$415,199	$26,247	$247,798	$5,377,259
2028	75,522	$251,520	$422,436	$26,299	$250,807	$5,430,851
2029	71,113	$232,771	$435,588	$25,950	$252,642	$5,454,726
2030	66,752	$214,570	$449,962	$25,531	$253,016	$5,446,819
2031	62,450	$196,972	$463,272	$25,041	$251,922	$5,407,400
2032	58,224	$180,037	$475,632	$24,483	$249,369	$5,336,691
2033	54,082	$163,813	$486,566	$23,855	$245,380	$5,235,463
2043	20,381	$48,427	$474,074	$14,607	$142,084	$2,912,560
2053	4,927	$9,078	$263,934	$5,333	$10,136	$94,120
2063	820	$1,194	$95,545	$1,446	($88,668)	($2,002,646)
2073	107	$127	$21,469	$313	($173,411)	($3,834,772)
2083	15	$7	$1,704	$34	($139,350)	($6,076,440)

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,812,988	$15,340,254	$590,656	$1,243,080
Present Value as of June 30, 2023	$2,693,746	$7,510,650	$346,820	$2,826,900

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
38.7%	$1,046	128%

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]
						$4,798,402
2023	97,409	$176,472	$177,471	$13,569	$112,474	$4,896,308
2024	92,721	$331,174	$350,921	$26,953	$231,453	$5,081,062
2025	88,103	$310,877	$348,522	$26,493	$239,840	$5,256,764
2026	83,524	$290,902	$350,285	$25,988	$247,700	$5,419,094
2027	78,994	$271,304	$354,513	$26,084	$254,858	$5,564,659
2028	74,484	$252,136	$353,189	$26,132	$261,329	$5,698,802
2029	70,039	$233,450	$359,285	$25,776	$267,162	$5,814,353
2030	65,661	$215,300	$367,617	$25,361	$272,039	$5,908,714
2031	61,355	$197,743	$375,657	$24,885	$275,929	$5,981,845
2032	57,134	$180,839	$383,260	$24,348	$278,836	$6,033,911
2033	53,007	$164,635	$389,947	$23,751	$280,781	$6,065,629
2043	19,705	$48,923	$364,339	$15,362	$262,349	$5,619,703
2053	4,686	$9,177	$193,197	$8,162	$256,097	$5,552,061
2063	766	$1,206	$66,803	$6,598	$330,066	$7,243,122
2073	99	$127	$14,410	$10,275	$498,403	$10,978,871
2083	14	$8	$1,111	$9,630	$385,803	$16,815,397

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,828,898	$12,024,754	$862,476	$21,075,326
Present Value as of June 30, 2023	$2,702,637	$6,076,026	$379,102	$5,777,233

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
(24.54%)	($684)	88%

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]
						$4,798,402
2023	97,831	$176,749	$180,411	$13,593	$112,453	$4,893,600
2024	93,876	$332,770	$371,947	$27,112	$230,931	$5,058,241
2025	89,875	$313,788	$386,570	$26,777	$237,977	$5,196,659
2026	85,812	$294,964	$402,568	$26,370	$243,745	$5,306,430
2027	81,706	$276,348	$418,855	$26,559	$248,136	$5,385,499
2028	77,534	$257,993	$427,888	$26,687	$251,216	$5,440,134
2029	73,363	$239,958	$443,092	$26,454	$253,068	$5,463,614
2030	69,199	$222,301	$459,736	$26,145	$253,382	$5,453,417
2031	65,054	$205,090	$475,495	$25,759	$252,128	$5,409,382
2032	60,947	$188,395	$490,446	$25,296	$249,299	$5,331,334
2033	56,886	$172,276	$504,081	$24,754	$244,899	$5,219,674
2043	22,494	$53,531	$514,909	$15,695	$127,479	$2,571,824
2053	5,704	$10,547	$300,411	$5,970	($35,871)	($938,324)
2063	995	$1,458	$113,897	$1,743	($178,438)	($3,991,447)
2073	136	$163	$26,755	$396	($323,023)	($7,136,734)
2083	20	$10	$2,228	$45	($257,755)	($11,239,091)

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,981,786	$16,532,471	$620,697	($2,866,112)
Present Value as of June 30, 2023	$2,785,813	$7,908,588	$359,214	$2,292,297

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
(92.11%)	($2,562)	65%

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]
						$4,798,402
2023	98,027	$176,721	$183,400	$13,605	$112,429	$4,890,549
2024	94,406	$332,594	$393,808	$27,189	$230,343	$5,032,489
2025	90,673	$313,518	$426,900	$26,909	$235,861	$5,128,059
2026	86,811	$294,635	$458,643	$26,537	$239,211	$5,176,724
2027	82,854	$275,979	$488,297	$26,752	$240,374	$5,178,027
2028	78,783	$257,597	$508,698	$26,890	$239,484	$5,139,519
2029	74,682	$239,541	$533,753	$26,675	$236,673	$5,055,306
2030	70,562	$221,869	$559,070	$26,370	$231,662	$4,923,397
2031	66,447	$204,647	$582,549	$25,977	$224,443	$4,743,961
2032	62,355	$187,946	$604,666	$25,497	$215,012	$4,516,755
2033	58,296	$171,823	$624,864	$24,928	$203,370	$4,242,157
2043	23,484	$53,317	$666,914	$15,065	($22,174)	($804,736)
2053	6,093	$10,542	$401,079	$6,437	($352,732)	($7,976,354)
2063	1,092	$1,465	$158,221	$1,952	($725,412)	($16,075,744)
2073	152	$164	$39,575	$458	($1,209,492)	($26,692,022)
2083	22	$10	$3,278	$51	($956,449)	($41,702,297)

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,973,833	$21,044,380	$625,806	($28,804,346)
Present Value as of June 30, 2023	$2,780,921	$9,780,308	$360,591	($1,506,161)

Appendix B – 60 Year Projection of Fund Balance for Additional Discount Rate Sensitivity Testing

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
(19.01%)	($521)	90%

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]
						$4,798,402
2023	97,715	$176,597	$180,405	$13,587	$112,452	$4,893,459
2024	93,543	$331,872	$371,802	$27,069	$230,909	$5,057,370
2025	89,344	$312,160	$386,058	$26,695	$237,912	$5,194,689
2026	85,102	$292,702	$401,485	$26,252	$243,627	$5,303,281
2027	80,835	$273,545	$417,023	$26,402	$247,967	$5,381,367
2028	76,523	$254,740	$425,152	$26,492	$251,011	$5,435,475
2029	72,231	$236,342	$439,323	$26,200	$252,854	$5,459,147
2030	67,966	$218,406	$454,822	$25,836	$253,198	$5,450,094
2031	63,740	$200,996	$469,344	$25,397	$252,024	$5,408,373
2032	59,571	$184,174	$482,983	$24,886	$249,334	$5,334,012
2033	55,468	$167,997	$495,246	$24,300	$245,140	$5,227,603
2043	21,412	$50,919	$494,079	$15,139	$134,882	$2,744,585
2053	5,302	$9,786	$281,592	$5,571	($12,412)	($411,737)
2063	903	$1,319	$104,323	$1,588	($132,523)	($2,974,127)
2073	120	$143	$23,968	$352	($246,416)	($5,445,966)
2083	18	$9	$1,949	$39	($197,113)	($8,595,015)

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,895,965	$15,920,057	$605,088	($764,238)
Present Value as of June 30, 2023	$2,739,163	$7,705,306	$352,845	$2,565,392

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 additional discount rate sensitivity scenarios.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in Millions)	Funded Status
56.43%	$1,365	140%

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]
						$4,798,402
2023	97,715	$176,597	$180,405	$13,587	$112,452	$4,893,459
2024	93,543	$331,872	$371,802	$27,070	$243,008	$5,069,468
2025	89,344	$312,160	$386,058	$26,703	$276,070	$5,244,936
2026	85,102	$292,702	$401,485	$26,277	$310,665	$5,420,541
2027	80,835	$273,545	$417,023	$26,454	$346,840	$5,597,449
2028	76,523	$254,740	$425,152	$26,583	$384,924	$5,785,377
2029	72,231	$236,342	$439,323	$26,346	$425,363	$5,981,412
2030	67,966	$218,406	$454,822	$26,052	$468,090	$6,187,035
2031	63,740	$200,996	$469,344	$25,703	$513,498	$6,406,482
2032	59,571	$184,174	$482,983	$25,303	$562,118	$6,644,489
2033	55,468	$167,997	$495,246	$24,854	$614,645	$6,907,031
2043	21,412	$50,919	$494,079	$18,505	$937,875	$10,323,684
2053	5,302	$9,786	$281,592	$16,777	$1,767,731	$19,753,419
2063	903	$1,319	$104,323	$34,598	$4,150,185	$46,647,026
2073	120	$143	$23,968	$103,569	$10,338,455	$116,308,484
2083	18	$9	$1,949	$156,897	$12,662,910	$278,518,551

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,895,965	$15,920,057	$3,436,035	$289,180,275
Present Value as of June 30, 2023	$2,418,468	$5,520,861	$331,222	$10,711,877

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 additional discount rate sensitivity scenarios.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in Millions)	Funded Status
18.19%	$446	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]
						$4,798,402
2023	97,715	$176,597	$180,405	$13,587	$112,452	$4,893,459
2024	93,543	$331,872	$371,802	$27,070	$255,078	$5,081,537
2025	89,344	$312,160	$386,058	$26,711	$314,379	$5,295,306
2026	85,102	$292,702	$401,485	$26,302	$378,940	$5,539,162
2027	80,835	$273,545	$417,023	$26,507	$449,907	$5,819,083
2028	76,523	$254,740	$425,152	$26,678	$529,055	$6,151,048
2029	72,231	$236,342	$439,323	$26,496	$558,856	$6,480,427
2030	67,966	$218,406	$454,822	$26,239	$524,305	$6,742,076
2031	63,740	$200,996	$469,344	$25,900	$478,638	$6,926,466
2032	59,571	$184,174	$482,983	$25,475	$423,270	$7,025,453
2033	55,468	$167,997	$495,246	$24,958	$360,082	$7,033,328
2043	21,412	$50,919	$494,079	$16,453	$264,595	$5,604,441
2053	5,302	$9,786	$281,592	$8,031	$192,818	$4,112,869
2063	903	$1,319	$104,323	$4,663	$192,342	$4,188,432
2073	120	$143	$23,968	$5,725	$267,949	$5,894,413
2083	18	$9	$1,949	$5,142	$205,093	$8,938,406

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,895,965	$15,920,057	$779,022	$16,943,118
Present Value as of June 30, 2023	$2,453,379	$6,478,279	$327,151	$5,451,129

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 additional discount rate sensitivity scenarios.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in Millions)	Funded Status
56.29%	$1,293	137%

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]
						$4,798,402
2023	97,715	$176,597	$180,405	$13,591	$182,164	$4,963,167
2024	93,543	$331,872	$371,802	$27,111	$382,160	$5,278,287
2025	89,344	$312,160	$386,058	$26,788	$405,308	$5,582,909
2026	85,102	$292,702	$401,485	$26,403	$427,603	$5,875,326
2027	80,835	$273,545	$417,023	$26,620	$448,934	$6,154,162
2028	76,523	$254,740	$425,152	$26,784	$469,461	$6,426,427
2029	72,231	$236,342	$439,323	$26,577	$489,377	$6,686,246
2030	67,966	$218,406	$454,822	$26,306	$508,243	$6,931,766
2031	63,740	$200,996	$469,344	$25,973	$526,059	$7,163,504
2032	59,571	$184,174	$482,983	$25,579	$542,863	$7,381,980
2033	55,468	$167,997	$495,246	$25,122	$558,716	$7,588,325
2043	21,412	$50,919	$494,079	$18,182	$700,689	$9,509,294
2053	5,302	$9,786	$281,592	$13,807	$1,041,409	$14,336,038
2063	903	$1,319	$104,323	$21,102	$1,966,852	$27,283,640
2073	120	$143	$23,968	$50,736	$4,046,014	$56,214,799
2083	18	$9	$1,949	$63,991	$4,139,000	$112,949,461

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,895,965	$15,920,057	$1,978,757	$122,153,908
Present Value as of June 30, 2023	$2,296,791	$5,480,582	$321,794	$9,509,012

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 additional discount rate sensitivity 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
(157.92%)	($5,142)	48%

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]
						$4,798,402
2023	97,715	$176,597	$180,405	$13,587	$112,452	$4,893,459
2024	93,543	$331,872	$371,802	$27,068	$218,782	$5,045,243
2025	89,344	$312,160	$386,058	$26,687	$199,906	$5,144,565
2026	85,102	$292,702	$401,485	$26,227	$177,823	$5,187,378
2027	80,835	$273,545	$417,023	$26,351	$153,216	$5,170,764
2028	76,523	$254,740	$425,152	$26,403	$126,943	$5,100,892
2029	72,231	$236,342	$439,323	$26,063	$99,890	$4,971,739
2030	67,966	$218,406	$454,822	$25,637	$72,785	$4,782,471
2031	63,740	$200,996	$469,344	$25,125	$46,542	$4,535,540
2032	59,571	$184,174	$482,983	$24,528	$22,064	$4,234,268
2033	55,468	$167,997	$495,246	$23,846	$5,181	$3,888,353
2043	21,412	$50,919	$494,079	$13,763	$0	($514,924)
2053	5,302	$9,786	$281,592	$5,571	$0	($4,188,972)
2063	903	$1,319	$104,323	$1,588	$0	($5,945,813)
2073	120	$143	$23,968	$352	$0	($6,478,831)
2083	18	$9	$1,949	$39	$0	($6,577,432)

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,895,965	$15,920,057	$587,326	$1,235,584
Present Value as of June 30, 2023	$3,256,208	$12,719,042	$477,630	$1,093,889

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 additional discount rate sensitivity 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
(57.57%)	($1,782)	73%

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]
						$4,798,402
2023	97,715	$176,597	$180,405	$13,587	$112,452	$4,893,459
2024	93,543	$331,872	$371,802	$27,067	$206,625	$5,033,087
2025	89,344	$312,160	$386,058	$26,678	$162,052	$5,094,563
2026	85,102	$292,702	$401,485	$26,203	$113,249	$5,072,826
2027	80,835	$273,545	$417,023	$26,301	$62,517	$4,965,563
2028	76,523	$254,740	$425,152	$26,318	$18,404	$4,787,237
2029	72,231	$236,342	$439,323	$25,940	$17,282	$4,575,598
2030	67,966	$218,406	$454,822	$25,492	$55,200	$4,368,890
2031	63,740	$200,996	$469,344	$24,981	$94,630	$4,170,191
2032	59,571	$184,174	$482,983	$24,410	$129,905	$3,976,878
2033	55,468	$167,997	$495,246	$23,775	$161,188	$3,787,042
2043	21,412	$50,919	$494,079	$14,090	$31,399	$463,066
2053	5,302	$9,786	$281,592	$5,571	($176,597)	($4,032,455)
2063	903	$1,319	$104,323	$1,588	($393,663)	($8,732,967)
2073	120	$143	$23,968	$352	($661,767)	($14,605,541)
2083	18	$9	$1,949	$39	($523,594)	($22,829,397)

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,895,965	$15,920,057	$589,052	($15,014,656)
Present Value as of June 30, 2023	$3,095,199	$9,271,169	$404,375	($873,181)

Appendix B

Scenario 7 – Discount Rate Decreased 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 additional discount rate sensitivity scenarios.

Main Results

Margin as Percentage of the Present Value of Premiums	Margin ($ in Millions)	Funded Status
(121.23%)	($4,096)	54%

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]
						$4,798,402
2023	97,715	$176,597	$180,405	$13,582	$41,734	$4,822,746
2024	93,543	$331,872	$371,802	$27,027	$83,832	$4,839,621
2025	89,344	$312,160	$386,058	$26,605	$83,838	$4,822,956
2026	85,102	$292,702	$401,485	$26,109	$83,248	$4,771,311
2027	80,835	$273,545	$417,023	$26,203	$82,041	$4,683,671
2028	76,523	$254,740	$425,152	$26,232	$80,262	$4,567,289
2029	72,231	$236,342	$439,323	$25,875	$77,957	$4,416,389
2030	67,966	$218,406	$454,822	$25,441	$75,028	$4,229,560
2031	63,740	$200,996	$469,344	$24,930	$71,483	$4,007,765
2032	59,571	$184,174	$482,983	$24,341	$67,340	$3,751,956
2033	55,468	$167,997	$495,246	$23,675	$62,619	$3,463,652
2043	21,412	$50,919	$494,079	$13,763	($7,653)	($673,110)
2053	5,302	$9,786	$281,592	$5,571	($80,929)	($4,842,793)
2063	903	$1,319	$104,323	$1,588	($131,644)	($7,705,532)
2073	120	$143	$23,968	$352	($167,648)	($9,759,282)
2083	18	$9	$1,949	$39	($100,330)	($11,617,577)

(1) Cash flows for 2023 and 2083 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, 2023) and the last projected fund balance (as of June 30, 2083).

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

	Expected Premiums	Expected Claims	Expenses	Investment Earnings
Total Sum of Cash Flows	$3,895,965	$15,920,057	$584,949	($3,806,939)
Present Value as of June 30, 2023	$3,378,847	$11,803,838	$469,495	($1,313,879)

Appendix C – Long-Term Care Model and Assumptions

Model

Projection results are based on the 99,755 in-force participants as of June 30, 2023. CalPERS LTC business consists of facility-only and comprehensive coverage options and includes a variety of elimination periods, benefit periods, and inflation coverage combinations. A summary of policy benefits has been included in 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 the industry standard for modeling long-term care insurance. This approach includes more detailed modeling of 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 “terminated” (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 claim incidence rate, which determines the probability that an individual will go on claim at a given time. The second assumption is the claim termination rate, or continuance 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 claim incidence rates are developed using the Milliman LTC Guidelines as the baseline assumption, which is then adjusted to CalPERS experience level by applying adjustment factors. Credibility weighting is applied to the adjustment factors when there is not sufficient internal data volume.

The claim incidence rates capture the following experience variations:

- Gender: Male or Female
- Attained Age at Claim
- Initial Site of Care: Home Health Care, Assisted Living Facility, or Nursing Home
- Policy Type: Comprehensive / Facility-only / Partnership, and Inflation / Non-Inflation
- Marital Status: Married or Single
- Benefit Period
- Underwriting Type and Policy Duration

The incidence study for the June 30, 2023 valuation uses claim and exposure information as of June 30, 2023, filtered for years 2011 to 2022 and policy duration 10+, excluding 2020 and 2011. The experience study uses the following steps to calculate the incidence rates:

- Step 1: Calculate active life exposure.
    - In years when an individual does go on claim, a full year of exposure is credited to the individual for that year.
- Step 2: Summarize actual claim counts.
    - The claim counts are grouped based on the different categories mentioned previously.
- Step 3: Calculate the expected historical incidences using the active life exposure and Milliman Guidelines rates. Certain Milliman Guidelines rates were approximated to accommodate CalPERS' projection model structure.
- Step 4: Develop adjustment factors based on historical actual-to-expected ratios for the experience variables below. CalPERS experience receives full credibility in areas with 271 or more claims. Otherwise, CalPERS experience receives partial or zero credibility.
    - Attained age at claim
    - Marital status
    - Policy type
    - Gender
    - Benefit period
    - Policy inflation type

Appendix C

Assumptions (continued)

Claim Termination Rates

The claim termination rates are developed using the Milliman LTC Guidelines as the baseline assumption, which is then adjusted to CalPERS experience level by applying adjustment factors. Credibility weighting is applied to the adjustment factors when there is not sufficient internal data volume.

The claim termination rates capture the following experience variations:

- Gender: Male or Female
- Claim Incurred Age Groups: 0-64, 65-74, 75-84, 85-89, or 90+
- Claim Initial Site of Care: Home Health Care, Assisted Living Facility, or Nursing Home
- Number of Months on Claim (Claim duration)
- Benefit Period: Lifetime vs Non-Lifetime
- Policy Type: Comprehensive, Facility-Only, or Partnership
- Marital Status: Married or Single

The claim termination study for the June 30, 2023 valuation uses claim and exposure information as of June 30, 2023, filtered for years 2011 to 2022, excluding 2020 and 2021. The claim termination study uses the following steps to calculate the claim termination rates:

- Step 1: Calculate and aggregate on-claim exposure.
- Step 2: Summarize actual claim termination counts.
  - Claim terminations due to benefit-exhaustion are excluded.
- Step 3: Calculate the expected historical claim terminations using the disabled exposure and Milliman Guidelines rates.
  - Milliman Guidelines rates were converted to force of decrement when calculating the expected values.
- Step 4: Develop adjustment factors based on historical actual-to-expected ratios for the experience variables below. CalPERS experience receives full credibility in areas with 271 or more claims. Otherwise, CalPERS experience receives partial or zero credibility.
  - Claim duration and site of care
  - Marital status
  - Policy type
  - Benefit period and site of care
  - Gender
  - Incurred age group and site of care
  - Incurred age group and claim duration
  - Additional subgroup factors for smaller age bands were calculated for age group 90+

Appendix C

Assumptions (continued)

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 baseline claim recovery rates are developed using CalPERS' total claim data as of June 30, 2023, excluding data after December 31, 2022. The claim recovery adjustment factors are developed based on actual-to-expected ratios during 2011 to 2022, excluding 2020 and 2021. The study includes the following steps:

- Step 1: Summarize historical claim exposure by claim duration and claim site of care.
- Step 2: Summarize historical claim recoveries by claim duration and claim site of care.
- Step 3: Calculate recovery rates by using claim recoveries divided by claim exposure.
- Step 4: Apply adjustment factors by claim durations.
- Step 5: Apply overall adjustment factor based on experience with incurred age 75 and above. The projection model currently cannot accommodate the claim recovery assumption by incurred ages. This adjustment is to reflect that as the population becomes older, future claim recoveries will become lower corresponding to the population age.

Claim Utilization Rates

The baseline claim utilization rates are developed using CalPERS' total claim data as of June 30, 2023, excluding data after December 31, 2022. The adjustment factors for the claim utilization assumption are developed based on experience during years 2013 to 2022. 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: Calculate benefit period adjustment factors using the relative ratios between the various benefit period groups.
- Step 4: Calculate product series adjustment factors for LTC2 to LTC4 as ratios to LTC1 utilizations.
- Step 5: Derive utilization rate by site of care and MDB range for LTC1 using historical data.
- 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.

Active 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' experience.

The active mortality study for the June 30, 2023 valuation uses the program's mortality and exposure data as of June 30, 2023, filtered for years 2011 to 2022 and policy duration 15+, excluding 2020 and 2021. The following steps are used to develop the mortality assumption:

- Step 1: Summarize death counts and active exposures.
  - Death and exposure data are divided into several categories: 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.

Appendix C

Assumptions (continued)

- Step 2: Apply duration adjustment factors to IAM 2012 rates reflecting the Program's experience level.
- Step 3: Develop attained age group factors based on actual-to-expected ratios while reflecting gender variations.
- Step 4: Develop marital status factors which vary by age groups based actual-to-expected ratios.
- Step 5: Mortality improvement assumption is applied to active lives using 100% of SOA Projection Scale G2. Mortality in 2016 is considered the average mortality level during the study period and the cumulative improvement from 2016 to the valuation year is accounted for in the projection.

Lapse

The lapse study for the June 30, 2023 valuation uses the program's lapse and exposure data as of June 30, 2023, excluding data after December 31, 2020. Lapse rates are calculated as the number of voluntary lapses divided by the 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 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.

Expenses

This valuation reflects the following expense assumptions:

- The third-party administrator (TPA) cost assumptions reflect the terms in the extended contract with illumifin as of the valuation date. Expenses after the contract period are assumed to increase at an annual inflation rate of 2.3% plus additional fees per the contract terms.
- CalPERS operating expenses are projected based on expense cashflows during fiscal year 2022-23 and are assumed to increase with inflation each year. Additional bank transaction fees are projected based on a percentage of cashflow amount with annual inflation.
- Projected operating expenses 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. Credit card fees are assumed as a percentage of total premium cashflow, with annual increases accounting for contract fee increases and inflation.

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 finds 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

A rate increase may prompt healthier participants to lapse or reduce benefits to lower the impact of the rate increase. Therefore, the total risk pool can become less healthy after a rate increase. Higher risk may be assumed for participants that remained in the program or that did not convert to less expensive policies.

The Program's previous valuations reflected claim incidence anti-selection assumptions related to the shock lapses and conversions associated with the 2012 stabilization Plan. The anti-selection rates graded down over 10 years up to year 2026. Last year's valuation reflected the anti-selection assumption related to the shock lapses associated with the 2021 premium increase plan. The anti-selection rates graded down over 10 years and were applied up to year 2031 and beyond.

In the 6/30/2023 valuation, the claim incidence assumption was refined based on the experience data from 2011 and 2022, excluding 2020 and 2021. A large portion of this data reflected the elevated level of claim incidence subsequent to the 2012 stabilization plan and subsequent to the 2021 premium increase plan. In addition, this year's claim incidence assumption update refined the rates variation between inflation and non-inflation policies and between lifetime and non-lifetime policies. As such, this year's updated claim incidence assumption is considered sufficient for projecting future new claims for this valuation, and the previous years' anti-selection assumptions were no longer applied in this valuation.

Appendix D – Summary of Policy Benefits

Summary of Model Cells Included in 6/30/2023 Projection

Product Series	Plan Type	HHC	ALF	Benefit Period	Elimination Period	Inflation	Underwriting Type	Policy Count	Annualized Premium
LTC1	Comprehensive	50% HHC	50% ALF	2 Year	90	Inflation	LF	199	672,460
LTC1	Comprehensive	50% HHC	50% ALF	2 Year	90	Inflation	MGI	99	284,033
LTC1	Comprehensive	50% HHC	50% ALF	2 Year	90	Inflation	SF	106	319,828
LTC1	Comprehensive	50% HHC	50% ALF	2 Year	90	No Inflation	LF	4,803	9,834,123
LTC1	Comprehensive	50% HHC	50% ALF	2 Year	90	No Inflation	MGI	1,944	3,542,485
LTC1	Comprehensive	50% HHC	50% ALF	2 Year	90	No Inflation	SF	1,898	3,407,589
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	Inflation	LF	1,101	5,801,248
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	Inflation	MGI	605	2,583,830
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	Inflation	SF	492	2,228,114
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	No Inflation	LF	4,471	13,224,744
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	No Inflation	MGI	1,800	4,643,806
LTC1	Comprehensive	50% HHC	50% ALF	3 Year	90	No Inflation	SF	1,589	3,928,962
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	Inflation	LF	795	4,872,857
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	Inflation	MGI	702	3,549,808
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	Inflation	SF	494	2,748,784
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	No Inflation	LF	8,166	26,078,471
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	No Inflation	MGI	5,143	14,887,891
LTC1	Comprehensive	50% HHC	50% ALF	6 Year	90	No Inflation	SF	4,352	12,357,618
LTC1	Comprehensive	50% HHC	50% ALF	10 Year	90	No Inflation	LF	4,138	19,609,760
LTC1	Comprehensive	50% HHC	50% ALF	10 Year	90	No Inflation	MGI	1,978	9,014,494
LTC1	Comprehensive	50% HHC	50% ALF	10 Year	90	No Inflation	SF	1,750	7,848,947
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	Inflation	LF	4,039	37,501,528
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	Inflation	MGI	4,209	31,829,395
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	Inflation	SF	2,651	21,683,175
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	No Inflation	LF	1,967	9,000,642
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	No Inflation	MGI	1,843	7,620,342
LTC1	Comprehensive	50% HHC	50% ALF	Lifetime	90	No Inflation	SF	1,315	5,188,610
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	2 Year	90	Inflation	LF	43	108,029
LTC1	Facilities Only		50% ALF	2 Year	90	Inflation	MGI	15	43,404
LTC1	Facilities Only		50% ALF	2 Year	90	Inflation	SF	24	59,404
LTC1	Facilities Only		50% ALF	2 Year	90	No Inflation	LF	1,640	2,927,659
LTC1	Facilities Only		50% ALF	2 Year	90	No Inflation	MGI	434	639,698
LTC1	Facilities Only		50% ALF	2 Year	90	No Inflation	SF	501	700,715
LTC1	Facilities Only		50% ALF	3 Year	90	Inflation	LF	260	1,154,851
LTC1	Facilities Only		50% ALF	3 Year	90	Inflation	MGI	160	556,198
LTC1	Facilities Only		50% ALF	3 Year	90	Inflation	SF	134	480,004
LTC1	Facilities Only		50% ALF	3 Year	90	No Inflation	LF	1,825	4,476,620
LTC1	Facilities Only		50% ALF	3 Year	90	No Inflation	MGI	543	1,115,989
LTC1	Facilities Only		50% ALF	3 Year	90	No Inflation	SF	571	1,192,358
LTC1	Facilities Only		50% ALF	6 Year	90	Inflation	LF	89	511,639
LTC1	Facilities Only		50% ALF	6 Year	90	Inflation	MGI	51	241,336
LTC1	Facilities Only		50% ALF	6 Year	90	Inflation	SF	77	408,983
LTC1	Facilities Only		50% ALF	6 Year	90	No Inflation	LF	1,997	5,877,196
LTC1	Facilities Only		50% ALF	6 Year	90	No Inflation	MGI	610	1,564,133
LTC1	Facilities Only		50% ALF	6 Year	90	No Inflation	SF	684	1,605,295

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 6/30/2023 Projection

(LTC1 Continued)

Product Series	Plan Type	HHC	ALF	Benefit Period	Elimination Period	Inflation	Underwriting Type	Policy Count	Annualized Premium
LTC1	Facilities Only		50% ALF	10 Year	90	No Inflation	LF	920	3,878,442
LTC1	Facilities Only		50% ALF	10 Year	90	No Inflation	MGI	282	1,099,963
LTC1	Facilities Only		50% ALF	10 Year	90	No Inflation	SF	341	1,272,033
LTC1	Facilities Only		50% ALF	Lifetime	90	Inflation	LF	580	4,557,433
LTC1	Facilities Only		50% ALF	Lifetime	90	Inflation	MGI	311	1,962,800
LTC1	Facilities Only		50% ALF	Lifetime	90	Inflation	SF	347	2,268,836
LTC1	Facilities Only		50% ALF	Lifetime	90	No Inflation	LF	384	1,611,151
LTC1	Facilities Only		50% ALF	Lifetime	90	No Inflation	MGI	204	677,743
LTC1	Facilities Only		50% ALF	Lifetime	90	No Inflation	SF	180	590,004
LTC1	Facilities Only		50% ALF	In-Nonforfeiture	90	Inflation	LF	1	0
LTC1	Facilities Only		50% ALF	In-Nonforfeiture	90	No Inflation	LF	3	0
LTC1	Facilities Only		50% ALF	In-Nonforfeiture	90	No Inflation	SF	1	0
LTC1	Partnership	50% HHC	50% ALF	6 Mo	30	Inflation	LF	151	149,953
LTC1	Partnership	50% HHC	50% ALF	6 Mo	30	Inflation	MGI	50	32,563
LTC1	Partnership	50% HHC	50% ALF	6 Mo	30	Inflation	SF	42	27,085
LTC1	Partnership	50% HHC	50% ALF	1 Year	30	Inflation	LF	550	958,977
LTC1	Partnership	50% HHC	50% ALF	1 Year	30	Inflation	MGI	205	249,231
LTC1	Partnership	50% HHC	50% ALF	1 Year	30	Inflation	SF	232	271,858
LTC1	Partnership	50% HHC	50% ALF	2 Year	30	Inflation	LF	885	2,298,331
LTC1	Partnership	50% HHC	50% ALF	2 Year	30	Inflation	MGI	325	636,579
LTC1	Partnership	50% HHC	50% ALF	2 Year	30	Inflation	SF	383	705,342
LTC1	Partnership	50% HHC	50% ALF	In-Nonforfeiture	30	Inflation	LF	72	0
LTC1	Partnership	50% HHC	50% ALF	In-Nonforfeiture	30	Inflation	MGI	51	0
LTC1	Partnership	50% HHC	50% ALF	In-Nonforfeiture	30	Inflation	SF	11	0
LTC1 Subtotal								**78,832**	**311,175,382**

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 6/30/2023 Projection

Product Series	Plan Type	HHC	ALF	Benefit Period	Elimination Period	Inflation	Underwriting Type	Policy Count	Annualized Premium
LTC2	Comprehensive	50% HHC	70% ALF	2 Year	90	Inflation	LF	40	150,475
LTC2	Comprehensive	50% HHC	70% ALF	2 Year	90	Inflation	SF	4	25,940
LTC2	Comprehensive	50% HHC	70% ALF	2 Year	90	No Inflation	LF	962	1,864,765
LTC2	Comprehensive	50% HHC	70% ALF	2 Year	90	No Inflation	MGI	9	24,844
LTC2	Comprehensive	50% HHC	70% ALF	2 Year	90	No Inflation	SF	7	15,110
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	Inflation	LF	193	1,307,863
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	Inflation	MGI	1	7,689
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	Inflation	SF	1	12,048
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	No Inflation	LF	1,267	3,548,635
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	No Inflation	MGI	10	30,403
LTC2	Comprehensive	50% HHC	70% ALF	3 Year	90	No Inflation	SF	8	21,540
LTC2	Comprehensive	50% HHC	70% ALF	6 Year	90	Inflation	LF	12	81,212
LTC2	Comprehensive	50% HHC	70% ALF	6 Year	90	No Inflation	LF	1,213	4,341,590
LTC2	Comprehensive	50% HHC	70% ALF	6 Year	90	No Inflation	MGI	16	60,336
LTC2	Comprehensive	50% HHC	70% ALF	6 Year	90	No Inflation	SF	16	58,516
LTC2	Comprehensive	50% HHC	70% ALF	10 Year	90	No Inflation	LF	819	3,729,361
LTC2	Comprehensive	50% HHC	70% ALF	10 Year	90	No Inflation	MGI	5	30,672
LTC2	Comprehensive	50% HHC	70% ALF	10 Year	90	No Inflation	SF	4	20,611
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	Inflation	LF	596	5,939,783
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	Inflation	MGI	4	47,654
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	Inflation	SF	7	72,071
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	No Inflation	LF	536	2,752,213
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	No Inflation	MGI	7	31,530
LTC2	Comprehensive	50% HHC	70% ALF	Lifetime	90	No Inflation	SF	1	2,703
LTC2	Facilities Only		70% ALF	2 Year	90	Inflation	LF	5	19,856
LTC2	Facilities Only		70% ALF	2 Year	90	No Inflation	LF	178	275,939
LTC2	Facilities Only		70% ALF	3 Year	90	Inflation	LF	24	121,936
LTC2	Facilities Only		70% ALF	3 Year	90	No Inflation	LF	253	588,901
LTC2	Facilities Only		70% ALF	6 Year	90	Inflation	LF	5	28,857
LTC2	Facilities Only		70% ALF	6 Year	90	No Inflation	LF	173	473,025
LTC2	Facilities Only		70% ALF	10 Year	90	No Inflation	LF	124	407,550
LTC2	Facilities Only		70% ALF	10 Year	90	No Inflation	MGI	1	6,226
LTC2	Facilities Only		70% ALF	10 Year	90	No Inflation	SF	1	2,930
LTC2	Facilities Only		70% ALF	Lifetime	90	Inflation	LF	68	433,827
LTC2	Facilities Only		70% ALF	Lifetime	90	Inflation	MGI	1	17,078
LTC2	Facilities Only		70% ALF	Lifetime	90	No Inflation	LF	31	136,921
LTC2	Partnership	50% HHC	70% ALF	6 Mo	30	Inflation	LF	39	36,379
LTC2	Partnership	50% HHC	70% ALF	1 Year	30	Inflation	LF	69	131,724
LTC2	Partnership	50% HHC	70% ALF	2 Year	30	Inflation	LF	81	254,467
LTC2 Subtotal								**6,791**	**27,113,179**

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 6/30/2023 Projection

Product Series	Plan Type	HHC	ALF	Benefit Period	Elimination Period	Inflation	Underwriting Type	Policy Count	Annualized Premium
LTC3	Comprehensive	70% HHC	70% ALF	2 Year	90	Inflation	LF	448	1,068,600
LTC3	Comprehensive	70% HHC	70% ALF	2 Year	90	Inflation	MGI	59	100,154
LTC3	Comprehensive	70% HHC	70% ALF	2 Year	90	Inflation	SF	53	100,533
LTC3	Comprehensive	70% HHC	70% ALF	2 Year	90	No Inflation	LF	831	1,613,314
LTC3	Comprehensive	70% HHC	70% ALF	2 Year	90	No Inflation	MGI	146	216,466
LTC3	Comprehensive	70% HHC	70% ALF	2 Year	90	No Inflation	SF	142	196,898
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	Inflation	LF	996	3,550,839
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	Inflation	MGI	166	410,553
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	Inflation	SF	175	457,739
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	No Inflation	LF	1,136	2,429,292
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	No Inflation	MGI	126	187,915
LTC3	Comprehensive	70% HHC	70% ALF	3 Year	90	No Inflation	SF	138	172,433
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	Inflation	LF	1,065	4,901,306
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	Inflation	MGI	218	771,586
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	Inflation	SF	183	700,690
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	No Inflation	LF	1,967	5,602,093
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	No Inflation	MGI	438	939,360
LTC3	Comprehensive	70% HHC	70% ALF	6 Year	90	No Inflation	SF	347	719,566
LTC3	Comprehensive	70% HHC	70% ALF	10 Year	90	No Inflation	LF	5	20,442
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	Inflation	LF	700	4,610,412
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	Inflation	MGI	5	44,691
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	Inflation	SF	4	28,124
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	No Inflation	LF	788	3,378,613
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	No Inflation	MGI	14	63,867
LTC3	Comprehensive	70% HHC	70% ALF	Lifetime	90	No Inflation	SF	9	24,342
LTC3	Comprehensive	70% HHC	70% ALF	In-Nonforfeiture	90	No Inflation	LF	95	0
LTC3	Comprehensive	70% HHC	70% ALF	In-Nonforfeiture	90	No Inflation	MGI	9	0
LTC3	Comprehensive	70% HHC	70% ALF	In-Nonforfeiture	90	No Inflation	SF	12	0
LTC3	Facilities Only		70% ALF	2 Year	90	Inflation	LF	81	164,634
LTC3	Facilities Only		70% ALF	2 Year	90	Inflation	MGI	5	7,859
LTC3	Facilities Only		70% ALF	2 Year	90	Inflation	SF	13	18,202
LTC3	Facilities Only		70% ALF	2 Year	90	No Inflation	LF	174	271,681
LTC3	Facilities Only		70% ALF	2 Year	90	No Inflation	MGI	23	17,952
LTC3	Facilities Only		70% ALF	2 Year	90	No Inflation	SF	41	41,317
LTC3	Facilities Only		70% ALF	3 Year	90	Inflation	LF	170	528,718
LTC3	Facilities Only		70% ALF	3 Year	90	Inflation	MGI	25	56,004
LTC3	Facilities Only		70% ALF	3 Year	90	Inflation	SF	45	106,581
LTC3	Facilities Only		70% ALF	3 Year	90	No Inflation	LF	208	375,605
LTC3	Facilities Only		70% ALF	3 Year	90	No Inflation	MGI	25	32,114
LTC3	Facilities Only		70% ALF	3 Year	90	No Inflation	SF	50	42,965
LTC3	Facilities Only		70% ALF	6 Year	90	Inflation	LF	96	384,251
LTC3	Facilities Only		70% ALF	6 Year	90	Inflation	MGI	9	31,934
LTC3	Facilities Only		70% ALF	6 Year	90	Inflation	SF	13	37,186
LTC3	Facilities Only		70% ALF	6 Year	90	No Inflation	LF	282	726,041
LTC3	Facilities Only		70% ALF	6 Year	90	No Inflation	MGI	27	39,649
LTC3	Facilities Only		70% ALF	6 Year	90	No Inflation	SF	30	68,252
LTC3	Facilities Only		70% ALF	Lifetime	90	Inflation	LF	98	431,232
LTC3	Facilities Only		70% ALF	Lifetime	90	Inflation	MGI	1	2,889
LTC3	Facilities Only		70% ALF	Lifetime	90	No Inflation	LF	114	356,393
LTC3	Facilities Only		70% ALF	In-Nonforfeiture	90	No Inflation	LF	11	0
LTC3	Facilities Only		70% ALF	In-Nonforfeiture	90	No Inflation	MGI	2	0
LTC3	Facilities Only		70% ALF	In-Nonforfeiture	90	No Inflation	SF	3	0
LTC3	Partnership	70% HHC	70% ALF	6 Mo	30	Inflation	LF	8	12,000
LTC3	Partnership	70% HHC	70% ALF	1 Year	30	Inflation	LF	31	71,911
LTC3	Partnership	70% HHC	70% ALF	2 Year	30	Inflation	LF	46	183,454
LTC3 Subtotal								**11,906**	**36,318,650**

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 6/30/2023 Projection

Product Series	Plan Type	HHC	ALF	Benefit Period	Elimination Period	Inflation	Underwriting Type	Policy Count	Annualized Premium
LTC4	Comprehensive	100% HHC	100% ALF	2 Year	90	Inflation	LF	192	624,141
LTC4	Comprehensive	100% HHC	100% ALF	2 Year	90	No Inflation	LF	140	392,144
LTC4	Comprehensive	100% HHC	100% ALF	3 Year	90	Inflation	LF	569	2,509,527
LTC4	Comprehensive	100% HHC	100% ALF	3 Year	90	No Inflation	LF	338	1,096,360
LTC4	Comprehensive	100% HHC	100% ALF	3 Year	90	No Inflation	MGI	1	1,247
LTC4	Comprehensive	100% HHC	100% ALF	6 Year	90	Inflation	LF	414	2,258,616
LTC4	Comprehensive	100% HHC	100% ALF	6 Year	90	No Inflation	LF	153	662,619
LTC4	Comprehensive	100% HHC	100% ALF	10 Year	90	Inflation	LF	240	1,479,998
LTC4	Comprehensive	100% HHC	100% ALF	10 Year	90	No Inflation	LF	128	620,152
LTC4	Comprehensive	100% HHC	100% ALF	In-Nonforfeiture	90	No Inflation	LF	15	0
LTC4	Partnership	100% HHC	100% ALF	6 Mo	30	Inflation	LF	6	16,259
LTC4	Partnership	100% HHC	100% ALF	1 Year	30	Inflation	LF	10	38,676
LTC4	Partnership	100% HHC	100% ALF	2 Year	30	Inflation	LF	19	139,979
LTC4	Partnership	100% HHC	100% ALF	In-Nonforfeiture	30	No Inflation	LF	1	0
LTC4 Subtotal								**2,226**	**9,839,718**
Grand Total								**99,755**	**384,446,929**

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

Summary of Coverage Conversions during Fiscal Year 2022-23

The following table summarizes the percentages of the total in-force population that elected to convert to less expensive policies in order to offset the 25% premium increase during fiscal year 2022-23.

Coverage Conversions as Percentages of Total Population

	Converted To									
Initial Coverage	6 Year w Inflation	3 Year w Inflation	2 Year w Inflation	1 Year w Inflation	Half Year w Inflation	Lifetime wo Inflation	10 Year wo Inflation	6 Year wo Inflation	3 Year wo Inflation	2 Year wo Inflation
Lifetime w Inflation	0.5%	0.0%	0.0%			0.8%	0.0%	0.0%	0.0%	0.0%
10 Year w Inflation	0.0%	0.0%					0.0%		0.0%	
6 Year w Inflation		0.2%	0.0%					0.4%	0.0%	
3 Year w Inflation			0.2%						0.5%	
2 Year w Inflation				0.0%						0.1%
1 Year w Inflation					0.1%					
Lifetime wo Inflation								0.9%	0.0%	
10 Year wo Inflation								2.2%	0.1%	0.0%
6 Year wo Inflation									1.3%	1.7%
3 Year wo Inflation										2.8%
Total										**12.0%**
Among the above also Reduced Inflation Percentage or Maximum Daily Benefit										2.8%
Reduced Inflation Percentage or Maximum Daily Benefit Only										**5.4%**
Grand Total										**17.4%**

Appendix E – Demographic Information

Data

We relied on the in-force data and claim information supplied by the third-party administrator (TPA) illumifin and have evaluated that data for reasonableness and consistency. The principal materials we used were provided by the TPA and internal financial reports and included:

1. Data extracts from TPA'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 99,755 in-force participants averaging an attained age of 77 years and a policy duration of 24 years.

In-force Participants as of 6/30/2023 - Demographics and Policy Benefits

The following distributions of all in-force participants as of June 30, 2023 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 Policies In-force as of 6/30/2023

By Benefit Period and Elimination Period

Benefit Period	Elimination Period	Policy Count	Percent	Annualized Premium	Percent
6 Month	30 Day	296	0%	274,240	0%
1 Year	30 Day	1,097	1%	1,722,376	0%
2 Year	30 Day	1,739	2%	4,218,150	1%
In-Nonforfeiture	30 Day	135	0%	0	0%
2 Year	90 Day	15,259	15%	29,750,251	8%
3 Year	90 Day	19,476	20%	58,983,631	15%
6 Year	90 Day	29,837	30%	97,590,696	25%
10 Year	90 Day	10,736	11%	49,041,580	13%
Lifetime	90 Day	21,014	21%	142,866,005	37%
In-Nonforfeiture	90 Day	166	0%	0	0%
Total		**99,755**	**100%**	**384,446,929**	**100%**

By Issue-Age Band and Gender

Issue-Age Band	Policy Count				Annualized Premium			
	Females	Males	Total	Percent	Females	Males	Total	Percent
< 30	396	214	610	1%	825,432	462,016	1,287,447	0%
30-39	3,800	2,240	6,040	6%	9,707,302	5,710,832	15,418,134	4%
40-44	5,278	2,823	8,101	8%	15,914,054	8,493,483	24,407,538	6%
45-49	9,877	5,238	15,115	15%	33,814,832	18,005,606	51,820,438	13%
50-54	14,391	8,219	22,610	23%	53,122,927	30,510,071	83,632,998	22%
55-59	14,540	8,923	23,463	24%	58,846,203	36,735,126	95,581,330	25%
60-64	9,464	6,407	15,871	16%	41,980,414	29,091,222	71,071,635	18%
65-69	3,887	2,381	6,268	6%	19,279,277	12,136,525	31,415,802	8%
70-74	1,039	413	1,452	1%	5,796,268	2,477,257	8,273,525	2%
75-79	165	42	207	0%	1,023,674	390,131	1,413,805	0%
80-84	14	4	18	0%	108,150	16,126	124,275	0%
85-89	0	0	0	0%	0	0	0	0%
90-94	0	0	0	0%	0	0	0	0%
95+	0	0	0	0%	0	0	0	0%
Total	**62,851**	**36,904**	**99,755**	**100.0%**	**240,418,533**	**144,028,396**	**384,446,929**	**100.0%**

By Attained Age and Gender

Attained-Age Band	Policy Count				Annualized Premium			
	Females	Males	Total	Percent	Females	Males	Total	Percent
< 30	8	4	12	0%	11,166	5,297	16,463	0%
30-39	42	24	66	0%	61,726	35,525	97,251	0%
40-44	75	44	119	0%	180,692	94,028	274,720	0%
45-49	225	110	335	0%	510,736	260,387	771,123	0%
50-54	659	386	1,045	1%	1,626,412	915,237	2,541,649	1%
55-59	1,490	918	2,408	2%	3,811,238	2,404,276	6,215,514	2%
60-64	3,311	1,917	5,228	5%	9,269,941	5,428,424	14,698,366	4%
65-69	6,317	3,405	9,722	10%	19,640,250	10,721,488	30,361,739	8%
70-74	10,762	6,011	16,773	17%	37,591,432	21,282,294	58,873,726	15%
75-79	14,508	8,632	23,140	23%	55,510,497	33,096,915	88,607,412	23%
80-84	12,304	7,661	19,965	20%	50,626,000	32,729,250	83,355,250	22%
85-89	7,783	4,941	12,724	13%	35,068,293	22,726,954	57,795,247	15%
90-94	4,027	2,355	6,382	6%	19,306,399	11,571,220	30,877,619	8%
95+	1,340	496	1,836	2%	7,203,750	2,757,099	9,960,849	3%
Total	**62,851**	**36,904**	**99,755**	**100.0%**	**240,418,533**	**144,028,396**	**384,446,929**	**100.0%**

Appendix E

Distributions of Policies In-force as of 6/30/2023 (continued)

By Plan Type

Plan Type	Policy Count	Percent	Annualized Premium	Percent
Partnership (Comprehensive)	3,267	3%	6,214,766	2%
Comprehensive	80,866	81%	330,395,740	86%
Facilities Only	15,622	16%	47,836,423	12%
Total	**99,755**	**100%**	**384,446,929**	**100%**

By Inflation

Inflation	Policy Count	Percent	Annualized Premium	Percent
No Inflation	71,891	72%	218,150,898	57%
Inflation	27,864	28%	166,296,031	43%
Total	**99,755**	**100%**	**384,446,929**	**100%**

By Marriage Status at Time of Issue

Marital Status	Gender	Policy Count	Percent	Annualized Premium	Percent
Married	F	42,949	43%	160,977,741	42%
Married	M	30,736	31%	118,586,413	31%
Single	F	19,902	20%	79,440,792	21%
Single	M	6,168	6%	25,441,983	7%
Total		**99,755**	**100%**	**384,446,929**	**100%**

By Premium Mode

Premium Mode	Policy Count	Percent	Annualized Premium	Percent
Monthly	75,080	75%	295,514,305	77%
Quarterly	19,132	19%	65,906,512	17%
Semi-Annually	3,179	3%	12,729,475	3%
Annually	2,364	2%	10,296,637	3%
Total	**99,755**	**100%**	**384,446,929**	**100%**

By Underwriting Type

Underwriting Type	Policy Count	Percent	Annualized Premium	Percent
LF	57,353	57%	222,250,695	58%
MGI	22,919	23%	89,956,393	23%
SF	19,483	20%	72,239,841	19%
Total	**99,755**	**100%**	**384,446,929**	**100%**

By Product Series

Product Series	Policy Count	Percent	Annualized Premium	Percent
LTC 1	78,832	79%	311,175,382	81%
LTC 2	6,791	7%	27,113,179	7%
LTC 3	11,906	12%	36,318,650	9%
LTC 4	2,226	2%	9,839,718	3%
Total	**99,755**	**100%**	**384,446,929**	**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%)

MDB / DBA – Maximum daily benefit, or daily benefit amount. This is the maximum dollar amount limit that the LTC policy would reimburse for eligible services each day or, is used to calculate other benefit limit amounts such as the monthly or total coverage amount.

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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