

MILLIMAN REPORT

2022 WA Cares Fund Actuarial Study

Commissioned by the Office of the State Actuary

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I. OVERVIEW

The Washington State Office of the State Actuary (OSA) requested Milliman’s assistance to provide actuarial analysis for WA Cares Fund (formerly the Long-Term Services and Supports Trust Program) as an update to our 2020 Long-Term Services and Supports (LTSS) Trust Actuarial Study dated December 14, 2020.¹ This updated analysis was conducted not only to refresh underlying modeling assumptions but also to reflect more up-to-date program parameters. To the extent details on program features are not included in the current law² as of September 30, 2022, we relied on feedback from OSA and the Washington State Department of Social and Health Services (DSHS) for modeling parameters and assumptions.

We understand the findings in this report will help inform the WA Cares Fund Risk Management Framework, approved by the LTSS Trust Commission on November 10, 2021,³ by providing metrics for ongoing program monitoring and actuarial analysis. **Any estimates around required program revenue are not intended, and should not be used, for setting the program premium assessment.**

SCOPE OF ENGAGEMENT

OSA engaged Milliman as a contractor to perform this actuarial study, including the required technical modeling, as well as the actuarial analysis and discussion. The results of this study will be shared with OSA and DSHS to collectively aid OSA and DSHS’s responsibilities in supporting WA Cares Fund.

The scope of our engagement included the following components:

- Estimate needed baseline level premium assessment and year program fund is depleted (if any) over the requested analysis horizon.
- Model alternative program features.
- Perform sensitivity testing on specified parameters.
- Estimate additional program financial and non-financial metrics for the baseline including:
 - Yearly fund balance and cash flows (premiums, investment income, benefit payments, administrative expenses).
 - Yearly counts (total population, workforce, count of individuals paying premium, vested individuals, open claim counts, new claim counts).
- Provide final report summarizing the key results, methodology, and assumptions of the analysis.

USE OF TERMS “BASELINE” VERSUS “BASE PLAN”

We frequently use the terms “Baseline” and “Base Plan” throughout this report to describe our analysis. We include additional context for these terms below:

“Baseline”

- Baseline refers to analysis estimates of the program under current law using a set of demographic, economic, and morbidity assumptions.
- The Baseline results are presented as a range and reflect variation in the analysis for estimated uncertainty due to the voluntary components of the program and for certain program features not defined in current law.
- All outcomes in the range should be viewed as equally likely given the uncertainty of voluntary participation and undefined program features.

¹ Giese, C. et al. (December 14, 2020). 2020 Long-Term Services and Supports Trust Actuarial Study. Milliman Report. Retrieved on August 25, 2021 from <https://leg.wa.gov/osa/additionalservices/Documents/Milliman2020WALTSSTrustActuarial%20Study.pdf>

² Revised Code of Washington 50B.04 (2022). Retrieved on September 30, 2022 from <https://app.leg.wa.gov/RCW/default.aspx?cite=50B.04>

³ WA Cares Fund Risk Management Framework (November 10, 2021). Retrieved on September 30, 2022 from <https://leg.wa.gov/osa/additionalservices/Documents/LTSS.Trust.Commission.Risk.Management.FrameworkFINAL.pdf>

“Base Plan”

- Base Plan refers to a specific scenario from the Baseline.
- The Base Plan serves as an “anchor point” for program alternative and assumption sensitivity testing. This allows testing to be illustrated as incremental impacts to a point estimate for ease of presentation.
- The Base Plan is presented as a point estimate, but is not intended to be a most likely scenario.

COMMENTS ON LTSS DEFINITION AND LONG-TERM ACTUARIAL PROJECTIONS

For the purposes of this report, we use the terms LTSS and long-term care (LTC) interchangeably. LTSS is a range of services and supports for individuals who need assistance with daily living tasks, such as bathing, dressing, ambulation, transfers, toileting, medication administration or assistance, personal hygiene, transportation, and other health-related tasks. Often, this type of assistance is needed by individuals who experience functional limitations due to age or to physical or cognitive disability. LTSS includes services provided in:

- Institutional settings: Includes skilled, intermediate, and custodial care provided in an institutional facility setting, such as a nursing home or dedicated wing of a hospital. Coverage includes both the services rendered and the room and board in an institutional setting.
- Home and community-based settings (HCBS): Includes care provided in a person’s own home or in a community-based setting, such as an assisted living facility or adult family home. Coverage includes both the services rendered and the room and board in a community-based setting.

This report includes estimates projected many years into the future. Actual expenses and related required revenue will inevitably vary from the estimates shown throughout the report. Examples of items that are difficult to project years into the future include the level of utilization of LTC services over time, the duration of care needs, charge trends by site of care, the emergence of new service and care modalities, wage growth and labor force participation, mortality rates for individuals not receiving care, mortality rates for individuals receiving care, the effectiveness of regulations and procedures to determine coverage and qualifications for benefits, migration patterns into and out of Washington, and program participation for individuals that can voluntarily opt in or opt out of the program. Section VI provides further background on our modeling methodology and assumptions.

Per discussions with OSA and DSHS, we modeled the WA Cares Fund over a 75-year horizon, as 75 years is a common period over which to evaluate a public program using a “pay-as-you-go” (with initial pre-funding) approach through a dedicated trust fund. Timeframes using a different number of analysis years were outside the scope of this report. For the purposes of this report, the estimated level premium assessment and the estimated year the fund is depleted (if any) are only valid for a 75-year analysis horizon.

Any reader of this report should possess a certain level of expertise and background in actuarial projections related to financing LTSS / LTC benefits to assist in understanding the significance of the assumptions used and their impact on the illustrated results. The reader should be advised by actuaries or other professionals competent in the area of actuarial projections of the type in this report (among other experts) so as to properly interpret the estimates. The information included in this report should only be considered in its entirety. Please see Section VII for additional caveats and limitations regarding this report.

COMMENTS ON COVID-19

In preparing this study, we considered the potential impact of the COVID-19 pandemic. Given the substantial uncertainty regarding the impact of COVID-19 on long-term claim costs, including whether the pandemic will increase or decrease LTC costs in the future, we did not adjust the projections. At the time of publishing this report, it is not possible to predict the outcomes, particularly over the long-term projection period of this study; however, the COVID-19 pandemic could have a material impact on future costs. Section V of this report presents sensitivities to modeling assumptions, including sensitivities to morbidity, mortality, and economic assumptions. Morbidity, mortality, and the economy have all been affected by COVID-19 in some capacity. Additional background related to the pandemic’s recent impact on LTC insurance market experience and valuation assumptions were explored in a Society of Actuaries survey performed by Milliman.⁴

⁴ COVID-19 impact on long-term care insurance report: 2021 survey. Retrieved July 24, 2022 from <https://us.milliman.com/en/insight/covid19-impact-on-longterm-care-insurance-report-2021-survey>

II. BASELINE RESULTS

WA Cares Fund will provide LTC insurance coverage funded through premiums for a limited lifetime LTC benefit. The premium will take the form of an employee-only payroll deduction on all wages for non-exempted individuals and self-employment income, as applicable. Coverage is limited to individuals who qualify for benefits by contributing to the program for the required number of years in one of the program's three qualification pathways. Premiums collected will be deposited into a dedicated trust fund. Investment earnings on the fund will also be deposited into the fund, and benefits and administrative costs will be paid from the trust fund.

The model parameters are based on the program features as indicated by current law, along with additional clarifications of anticipated program parameters provided by OSA and DSHS. The required premium assessments shown in this section are calculated such that the present value of income is equal to the present value of benefits and expenses (expenditures), plus one year's expenditures immediately after the end of the 75-year period.

Exhibit 1 includes a detailed summary of the key program features under current law and the modeling design parameters used for the Baseline analysis. Exhibits 2, 3, and 4 contain additional modeling results under the Baseline for yearly program metrics and sensitivity testing due to modeling uncertainty arising from the structure and definition of certain program features in current law.

RESULTS SUMMARY

We estimate WA Cares Fund will require a level premium assessment on gross wages between 0.52% and 0.63% for the Baseline analysis to cover program expenditures over the 75-year period of 2023 through 2097. Please note, under current law, the maximum premium assessment allowed is 0.58%.⁵ The range for the Baseline was developed by varying the assumptions for participation rates for the program's voluntary components and varying the length of the assumed claim adjudication period. The results for the tests used to produce this range can be found in Section IV.

Sensitivity testing of other key modeling assumptions produces a premium assessment on gross wages between 0.37% and 1.23% to cover program expenditures over the 75-year period of 2023 through 2097. The results for the sensitivity tests used to produce this range can be found in Section V.

A key step in rate setting and the testing of rate adequacy under a risk management framework includes evaluating the sensitivity of the program results across different adverse conditions and the program's ability to adjust features when experience materializes differently from what was expected. Under WA Cares Fund, the level payroll premium assessment is highly sensitive to the underlying projection assumptions used in modeling. For example, **the level premium assessment increases by 67 basis points (to 1.23%) from the Base Plan under a more extreme test of modeling assumptions.** The Baseline and sensitivity testing results should be taken into consideration when evaluating the viability of the premium assessment and benefit features for WA Cares Fund, which we understand is a component of the WA Cares Fund Risk Management Framework.

The trust fund balance using the current law premium assessment of 0.58% is projected to be depleted for certain scenarios under the Baseline analysis over the 75-year period of 2023 through 2097. Under most Baseline scenarios tested, including the Base Plan scenario, the trust fund balance is positive for all 75 projection years. Considerations related to the Baseline fund analysis are included later in this section. Exhibit 4 shows the year the fund is depleted (if any) within the 75-year period for the Baseline scenarios.

WALKTHROUGH FROM 2020 STUDY RESULTS

The estimates in this report were produced by starting with the analysis completed for our 2020 LTSS Trust Actuarial Study (2020 Actuarial Study). Figure 1 shows the steps we performed to update our 2020 Actuarial Study analysis for this report (2022 Actuarial Study). Additional background on each step follows Figure 1.

In the 2020 Actuarial Study, we estimated the required premium assessment for our "Baseline" to range from 0.51% to 0.71% depending on the allowable investment strategy for the program, as well as the participation rates as a result of the private market opt-out and self-employed opt-in features. For the purposes of understanding the incremental impact of our updates, we focused on one of the scenarios from our 2020 Actuarial Study ("Base Plan" under the "Current Law" investment scenario), which yielded a required premium assessment of 0.66%. Similarly, while this report

⁵ Revised Code of Washington 50B.04.090: Premium assessment – Rate – Collection (2022). Retrieved on September 26, 2022 from <https://app.leg.wa.gov/RCW/default.aspx?cite=50B.04.080>

produces a "Baseline" required premium assessment range of 0.52% to 0.63%, we illustrate incremental impacts using a "Base Plan" scenario based on discussions with OSA and DSHS, which requires a premium assessment of 0.57%.

Note, the impacts to premium relative to the Base Plan presented in Figure 1 and throughout this report may vary from previous actuarial analysis completed subsequent to the 2020 Actuarial Study due to the modeling changes described in this section.

**Figure 1:
Washington Office of the State Actuary
Walkthrough from 2020 Study
Level Premium Assessment Required**

Test	Level Premium Assessment Required	Impact from Previous Step
2020 Study Baseline*	0.51% - 0.71%	
2020 Study Baseline - "Base Plan" for "Current Law" Scenario	0.66%	
Changes due to clarifications of program	0.60%	-0.07%
Changes to WA Cares Fund plan design	0.63%	0.03%
Changes to key assumptions	0.62%	-0.01%
Update to investment strategy	0.57%	-0.05%
2022 Study Baseline - "Base Plan"	0.57%	
2022 Study Baseline	0.52% - 0.63%	

* The 2020 Study Baseline range reflected testing of various participation scenarios and investment strategies.

[Changes due to clarifications of program](#)

As shown in Figure 1, the projected required premium assessment decreased by 7 basis points (0.07%) because of changes to program clarifications. This includes the following items.

- Update wage base definition (Decrease premium 0.08%)

As part of the 2020 Actuarial Study, we modeled the wage base consistent with covered earnings as defined in the 2020 Old-Age, Survivors, and Disability Insurance (OASDI) Trustees Report. After discussions with OSA, DSHS, and Washington State Employment Security Department (ESD), we received clarification that additional wages would subject to WA Cares Fund premium assessment that are excluded from the OASDI covered earnings definition (such as employee wages used for 125 cafeteria plan contributions). To convert our wage base from OASDI covered earnings to gross wages under WA Cares Fund, we use a projection of National Income and Product Accounts (NIPA) wages to covered earnings provided by the Social Security Administration, which increases covered earnings by roughly 10% in the first projection year.

- Change assumed adjudication period from 45 to 30 days (Increase premium 0.01%)

WA Cares Fund states DSHS must make a benefit determination within 45 days from receipt of a request by a beneficiary to use a benefit. In the 2020 Actuarial Study, it was assumed that beneficiaries were responsible for covering all costs incurred during the 45-day adjudication period (modeled as the "elimination period" in the 2020 Actuarial Study). OSA and DSHS provided guidance clarifying that under current law, WA Cares Fund does not have an elimination period, but it is unknown how long it will take, on average, to adjudicate claims. OSA and DSHS requested we assume an average claim adjudication period of 30 days, where costs incurred (if any) would be paid by the beneficiary during that 30-day period. Lowering the number of assumed days increases the modeled premium.

[Changes to WA Cares Fund plan design](#)

As shown in Figure 1, the projected required premium assessment increased by 3 basis points (0.03%) because of changes to WA Cares Fund plan design. This includes the following items.

- Self-employed “ground rules” (Decrease premium 0.02%)

Subsequent to the 2020 Actuarial Study, “ground rules” for how self-employed individuals can participate in the program were incorporated into WA Cares Fund.⁶ The program added the ground rules with the goal of mitigating potential adverse selection associated with this voluntary option. It is yet to be seen how effective the ground rules will be in accomplishing this goal. Due to this uncertainty, we considered the impact under different rates of participation and adverse selection. The Figure 1 Base Plan reflects a middle point from our testing as described in Section III. The 2020 Actuarial Study assumed the program collected premium assessments on 10% of wages from self-employed individuals, but paid program benefits as if 100% of self-employed individuals opt into the program. For the 2022 Base Plan, we assume the program collects premium assessments on 10% of wages, but pays program benefits as if 60% of self-employed individuals opt into the program.

- Exempted populations (Increase premium 0.04%)

Per current law,⁷ WA Cares Fund now allows several populations to be exempt from the program. These exemptions were not included in current law as of the 2020 Actuarial Study. The populations where WA Cares Fund now effectively becomes a voluntary program includes certain disabled military veterans, spouses and domestic partners of active-duty military members, employees with non-immigrant visas, and Washington workers with a permanent primary residence outside of the state. Section III includes additional background on the underlying Base Plan and scenarios included in the Baseline.

- 18-month program delay (Decrease premium 0.02%)

When the 2020 Actuarial Study was performed, the program was slated to first collect premium assessments on January 1, 2022. This was delayed 18 months until July 1, 2023, per current law.⁸ This delay impacts the required premium assessment because the starting level of benefits remains unchanged (i.e., we assume the starting lifetime pool of money as of 2026 will be \$36,500), while wages underlying the premium assessment are expected to increase over the 18-month period from January 1, 2022 to July 1, 2023. The increase in starting wages combined with the same starting lifetime benefit causes the modeled premium to decrease.

- Remove exclusion for those disabled before age 18 (Increase premium 0.02%)

Subsequent to the 2020 Actuarial Study, WA Cares Fund was modified to allow individuals whose disability onset occurred before age 18 to be eligible for program benefits (assuming they satisfy all other program requirements). Removing this exclusion increases the modeled premium.

- Add partial benefits for near retirees (Increase premium 0.01%)

Subsequent to the 2020 Actuarial Study, WA Cares Fund added partial benefits for “near retirees” (specifically, individuals born before January 1, 1968, per current law⁹). We updated modeling such that near retirees may receive 10% of the full benefit amount for each year of premium payments, up to 100%. For example, an individual with four years of vesting credits would receive 40% (= 4 / 10) of full benefits. According to current law, participation for near retirees is mandatory and no additional payment or action is required to become vested. Providing near retirees a pathway to partial benefits increases the modeled premium.

Changes to key assumptions

As shown in Figure 1, the projected required premium assessment decreased by 1 basis point (0.01%) because of changes to key assumptions. This includes the following items.

⁶ RCW 50B.04.090: Election of coverage-self-employed persons. (n.d.). Retrieved October 2, 2022, from <https://app.leg.wa.gov/RCW/default.aspx?cite=50B.04.090>

⁷ Revised Code of Washington 50B.04.055: Exemptions – Voluntary exemptions – Criteria, rules, and procedures (2022). Retrieved September 21, 2022 from <https://app.leg.wa.gov/RCW/default.aspx?cite=50B.04.055>

⁸ Revised Code of Washington 50B.04.060: Eligible beneficiaries – Determination – Services and benefits (2022). Retrieved on September 21, 2022 from <https://app.leg.wa.gov/RCW/default.aspx?cite=50B.04.060>

⁹ Revised Code of Washington 50B.04.050: Qualified individuals (2022). Retrieved September 20, 2022 from <https://app.leg.wa.gov/RCW/default.aspx?cite=50B.04.050>

- Utilize actual private market opt-out data (Increase premium 0.03%)

We incorporated actual private market opt-out experience from ESD provided on March 3, 2022. The ESD data included actual counts of reported private market exemptions and data on age and wage characteristics of the population filing for an exemption. We also reviewed the current level of private market exemptions and found the total counts to be similar to the data provided by ESD on March 3, 2022. See Section VI for more background. We did not have any opt out data available when developing the 2020 Actuarial Study. The increase to premium reflects using actual opt-out experience versus the participation scenario underlying the 2020 Base Plan.

- Update assumptions to 2022 OASDI Trustees Report (Decrease premium 0.04%)

For the 2020 Actuarial Study, we relied upon multiple assumptions from the 2020 OASDI Trustees Report. We updated these assumptions to use the latest version, the 2022 OASDI Trustees Report, as described in Section VI. The largest factor driving premiums lower for the 2022 Actuarial Study arises from the higher annual growth rates in wages in the 2022 OASDI Trustees Report versus the 2020 OASDI Trustees Report.

- Update Washington-specific wage adjustment and grade-off (Decrease premium 0.01%)

We updated our projection of Washington wages to use the latest Bureau of Labor Statistics (BLS) data, which shows Washington average income is roughly 16% higher than nationwide average income (prior data showed roughly a 14% difference). Additionally, for the 2020 Actuarial Study, we graded off the Washington-specific wage adjustment over 20 years, assuming that over time wages will approximate national average wages. We updated this pattern to instead grade off over 35 years after the latest BLS data revealed the Washington versus nationwide income ratio has not yet graded off since the 2020 Actuarial Study. The combination of these changes lowers the modeled premium.

- Other assumption updates (Increase premium 0.01%)

Other updates include refreshing assumptions related to cost of care, CPI, morbidity / incidence, and migration. These assumptions are discussed further in Section VI.

[Update to investment strategy](#)

As shown in Figure 1, the projected required premium assessment decreased by 5 basis points (0.05%) because of updates to the investment strategy. A description of this update is described below.

- Update investment strategy (Decrease premium 0.05%)

Under the “Current Law” scenario in the 2020 Actuarial Study (which is the investment strategy used for this illustration), we modeled a scenario where the program could only invest in Treasuries. Subsequent to the 2020 Actuarial Study, the Washington State Investment Board (SIB) determined its investment strategy and projected investment returns. Those returns are higher than those used in the 2020 Actuarial Study Base Plan. The resulting increase in investment income reduces the amount of premium income needed to fund the program over 75 years, therefore lowering the required premium rate.

FUND ANALYSIS

WA Cares Fund will use premiums and investment income deposited into a dedicated trust fund to finance the program’s benefits and expenses. Per discussions with OSA and DSHS, we modeled the trust fund on a “pay-as-you-go” basis over a 75-year horizon. In other words, we model additions to the trust fund each year for premiums collected and investment income earned (collectively, revenue) and subtractions to the trust fund each year for benefits and expenses paid (collectively, expenditures). This implies that for any given year in our modeling, the trust fund balance represents the past accumulation of revenue and expenditures.

A limitation of the “pay-as-you-go” basis approach is that it excludes the vesting of future benefits “earned” during the 75-year window, but paid after the 75-year window in the evaluation of the premium rate or fund balance. The WA Cares Fund Risk Management Framework will monitor emerging experience and long-term forecasts, with a stated goal of working towards maintaining or achieving fully funded status, including margin, over the measurement period (currently 75 years). Alternative approaches and time horizons should be considered as part of the WA Cares Fund Risk Management Framework. This could include timeframes different than the 75-year window and different

approaches for evaluating the fund, such as maintaining a fund level equal to the actuarial present value of future liabilities and including benefits after the 75-year window.

In this section, we examine the balance of the program's trust fund starting with the Base Plan assumptions, except we replace the modeled premium assessment of 0.57% with the premium assessment specified by the law of 0.58%. Exhibit 2 includes the estimated cash flows and fund balance by year.

Figure 2 below graphs the projected fund balance as a percentage of program expenditures by year. We also display expenditures by year (on an undiscounted basis) to show how expenditures vary over the 75-year analysis horizon. As shown in Figure 2, the fund balance increases in the early years of the 75-year analysis horizon when revenue exceeds expenditures. The WA Cares Fund vesting rules are a large driving factor of this pattern. The fund balance decreases in the later years of the 75-year analysis horizon when expenditures exceed revenue. By the last year of the projection, the fund balance is estimated to be approximately 270% of annual expenditures.

Figure 2: Fund Balance as a % of Program Expenditures, Assuming 0.58% Premium Assessment

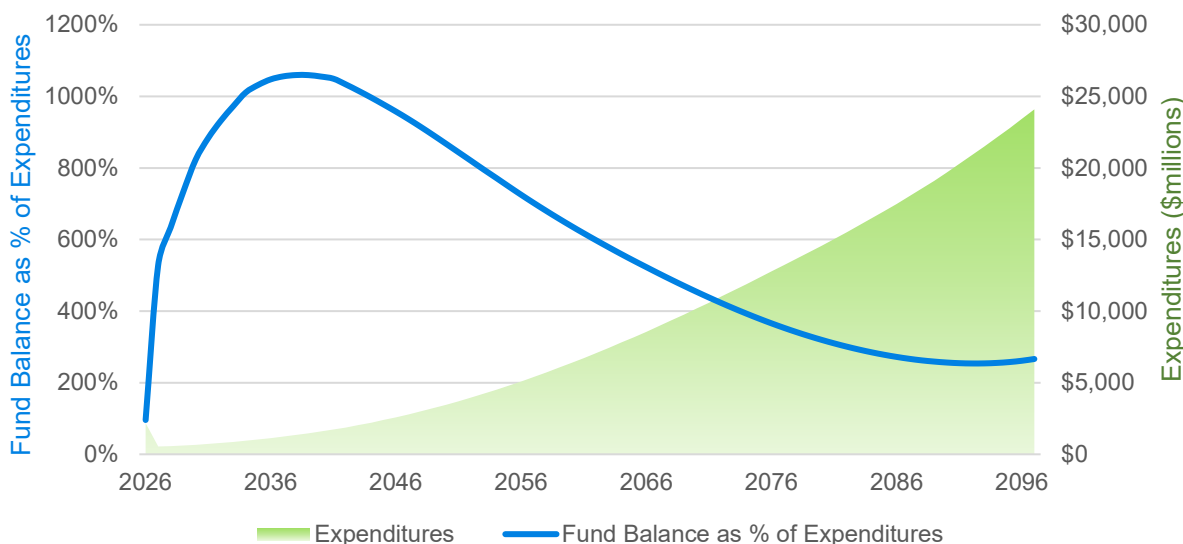
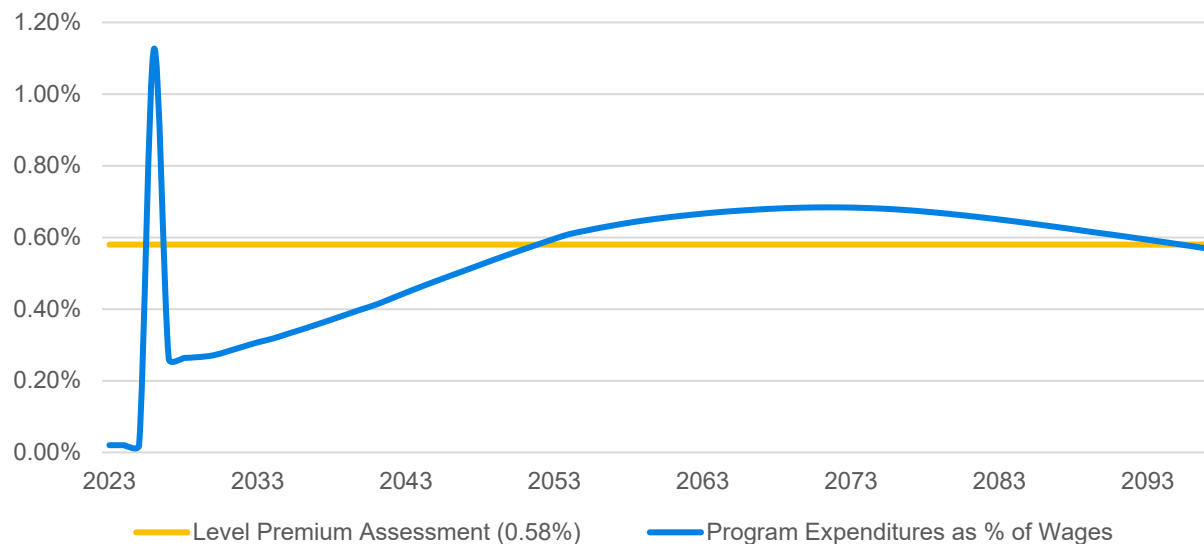


Figure 3 below shows the level 0.58% premium assessment over the 75-year projection window compared to the annual program expenditures expressed as a percentage of wages. This presentation illustrates how the relationship of expenditures versus assessed premiums changes over time, which helps to further demonstrate why the fund balance increases and decreases in Figure 2 above.

As shown in Figure 3, the program expenditures as a percentage of wages are estimated to spike as a result of projected “pent-up demand” when individuals can start claiming benefits in 2026. After returning to “normal” levels, the program expenditures as a percentage of wages are estimated to steadily increase as more of the population satisfies vesting requirements. After reaching a peak around 2070, program expenditures as a percentage of wages are estimated to start decreasing as wage growth (assumed to be 3.6% on an ultimate basis) outpaces the benefit indexing (assumed to be 2.4% on an ultimate basis).

Figure 3: Premium Assessment of 0.58% Versus Program Expenditures as a % of Wages

ADDITIONAL MODELING CONSIDERATIONS

As noted above, Exhibit 1 includes a detailed summary of the key program features under current law and the modeling design parameters used for the Baseline analysis. We provide below additional background on modeling considerations for certain program features.

- **Revenue sources:** WA Cares Fund will collect revenue from two sources (premiums and investment income), which will be deposited into a dedicated trust fund to finance the program's benefits and expenses.
 - Premium: The premium is calculated based on a flat percentage assessment applied to gross wages (including self-employment reported wages). Per discussions with ESD, we assumed gross wages do not include any deductions that might be applied when evaluating taxes on wages for Federal programs such as Medicare or Social Security. In other words, WA Cares Fund does not exclude wages related to employee contributions for healthcare premiums, as is done for the Medicare tax.
 - Investment income: To project investment income, we rely upon the SIB's investment strategy and projection of a 3.5% investment return over the first 15 years of the program. To project investment income beyond the first 15 years, we grade up to a 4.0% return assumption based on an examination of average, historical returns of the Bloomberg US Aggregate Bond Index since this is the benchmark index SIB intends to target long term.
- **Benefit eligibility:** Current law defines the benefit eligibility criteria as requiring assistance with at least three activities of daily living (ADLs). Since this definition requires further clarification, we relied upon DSHS' guidance to assume the type and minimum number of ADLs considered by care setting will be consistent with the current definitions used under the State of Washington Medicaid program. In Section V, we modeled the impact of higher or lower morbidity levels, which can be used to help gauge the impact if estimated claims differ from the projections due to a different definition of benefit eligibility.
- **Cost of care:** Given the WA Cares Fund benefit does not have a daily benefit maximum, we assume individuals will spend the average daily cost of care in Washington by care setting, based on average observed commercial rates. If the average cost of care for WA Cares Fund beneficiaries differed from the commercial rates due to factors such as incorporation of fee schedules or individuals choosing to use more or less expensive care, the resulting premium assessment could vary from the Baseline. In Section V, we modeled the impact of higher or lower cost of care levels.

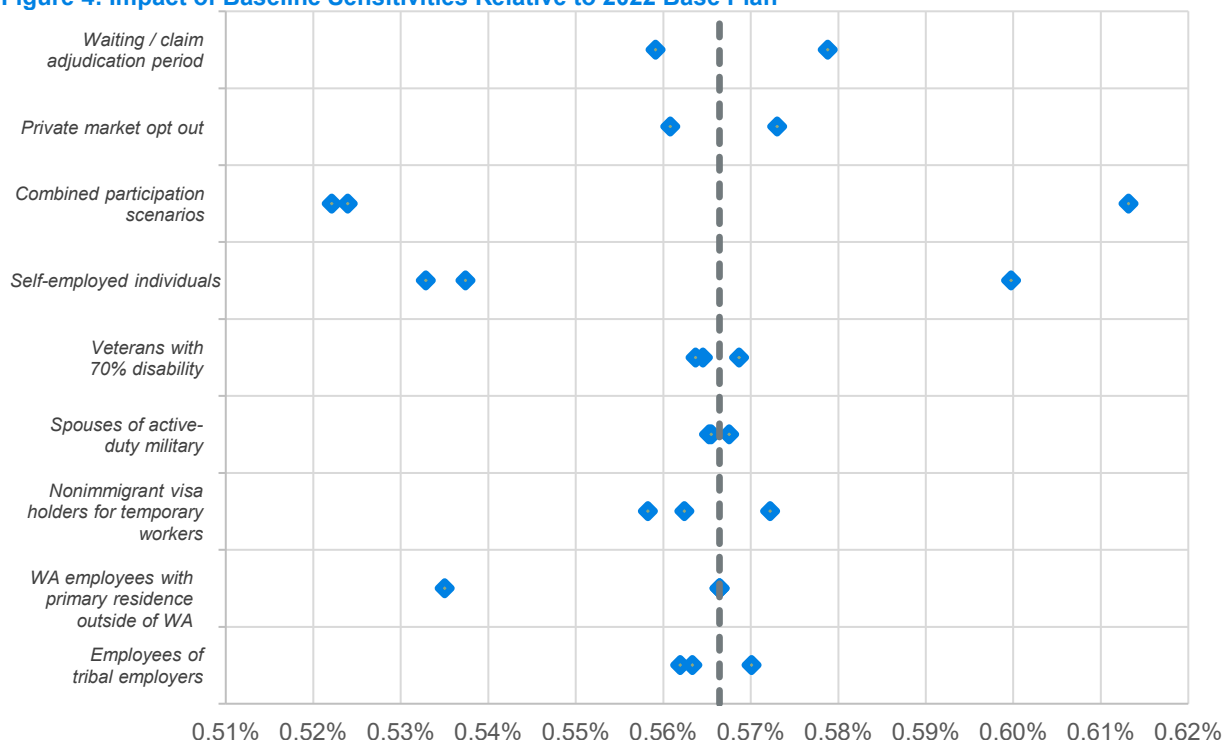
- **Inflation protection:** Current law states the lifetime benefit must be adjusted annually at a rate no greater than the Washington state CPI. Per conversations with OSA and DSHS, we assumed the remaining lifetime benefit inflated with CPI annually on July 1, with the first inflation applied on July 1, 2027. We would expect the premium assessment to be impacted if the benefit inflation is administered differently than expected. For example:
 - If the total lifetime benefits (i.e., lifetime benefits used plus lifetime benefits remaining) are inflated instead of just the lifetime benefits remaining, we would expect the premium assessment would be higher than we modeled in this report.
 - Tests in Section IV “Plan Alternatives” show the impact to the premium assessment if the timing of the benefit inflation is different than described above.
 - If benefits are inflated at a rate lower than CPI (as is allowed in current law), we would expect the premium assessment may differ from the Baseline. As part of the sensitivity testing in Section V, we tested the impact of higher and lower CPI than we assume for our Baseline.
- **Claim adjudication period:** Per current law, DSHS must make benefit determination within 45 days from receipt of a request by a beneficiary to use a benefit. Per DSHS’ request, for the Base Plan we assumed an average claim adjudication period of 30 days, where costs incurred (if any) would be paid by the beneficiary during that 30-day period. As part of the Baseline scenarios (presented in Section III), we also tested the premium assessment impact if the benefit determination is made in 15 and 45 days (and again, the beneficiary is responsible for LTSS costs during this time).
- **Private market opt-out:** WA Cares Fund allows individuals to opt out of the program through December 31, 2022 if they had qualifying private market LTC coverage prior to November 1, 2021. For this study we relied upon opt-out experience provided by ESD on March 3, 2022. If the exemption window is extended or otherwise altered, our assumptions may no longer be appropriate.
- **Expense payback:** Given the administrative structure of the program is not yet fully determined, we assumed administrative expenses to be 3.5% of premiums and 3.5% of benefits consistent with the assumptions used in the 2020 Actuarial Study, our discussions with OSA and DSHS, and our high-level review of other government programs and programs offering LTC benefits. We understand per discussions with DSHS that program expenses incurred before July 1, 2023 will need to be paid from the program’s fund within the first few months after premiums are collected. Given the high-level nature of our expense projections, we did not examine whether additional expenses related to the payback of administrative fees would require a change to the modeled expenses during the program’s first year.

III. BASELINE SENSITIVITIES

Section III examines Baseline sensitivity tests due to modeling uncertainty arising from the structure and definition of certain program features in current law. More specifically, this section tests the impact on the premium assessment for different waiting / claim adjudication periods (where the average number of days to adjudicate claims is unknown) and different participation levels of the various voluntary populations (where uncertainty exists given it is unknown how many individuals will choose to participate and what their risk levels will be).

Figure 4 below summarizes the level premium assessments produced by our sensitivity tests (blue markers) relative to the 2022 Base Plan (grey dashed line). A wider “gap” from the grey dashed line represents a higher sensitivity given the tests considered. Details on the tests modeled are included in the remainder of this section. Exhibit 4 provides a summary of the level premium assessments for each Baseline sensitivity test modeled. When combining the tests in this section, we estimate WA Cares Fund will require a level premium assessment on gross wages between 0.52% and 0.63% for the Baseline analysis.

Figure 4: Impact of Baseline Sensitivities Relative to 2022 Base Plan



WAITING / CLAIM ADJUDICATION PERIOD SENSITIVITIES

WA Cares Fund states DSHS must make an initial benefit determination (i.e., determine whether an individual satisfies the program’s benefit eligibility criteria) within 45 days from receipt of a request by an individual to use program benefits. Per OSA and DSHS, under the Base Plan we assume an average waiting / claim adjudication period of 30 days. LTC costs incurred (if any) during the first 30 days following an individual’s request would be paid by the individual (and not WA Cares Fund) while the claim is adjudicated. We also tested alternatives where program benefits are available 15 days and 45 days after satisfying the program’s benefit eligibility criteria.

Figure 5:
Washington Office of the State Actuary
Baseline Sensitivities – Waiting / Claim Adjudication Period
Level Premium Assessment Required

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan (30 days)	0.57%	N/A
15 days	0.58%	0.01%
45 days	0.56%	-0.01%

PRIVATE MARKET OPT-OUT SELECTION SENSITIVITIES

ESD's data on the private market exemptions allowed us to model the actual count of individuals and wage characteristics of individuals opting out of the program to date. The opt-out population counts and wages are removed from the assumed starting population. However, the ESD data does not provide any insight into the health status of individuals opting out.

We assume in our Base Plan modeling those individuals who opted out of the program through the private market exemption are, on average, "healthier" than the rest of the modeled population (i.e., their expected LTC costs are lower). This population is assumed to have lower costs because many of these individuals recently purchased private LTC coverage in order to qualify for the exemption and therefore either needed to pass underwriting recently or are actively working. We apply factors to decrease the expected claim costs of the opt-out population to reflect this assumption. Conversely, we apply factors to increase the claim costs of the remaining population (referred to as adverse selection), such that the combined expected claim costs for the remaining population and opt-out population is unchanged.

Because the level of adverse selection arising from the private market exemption feature is unknown, we performed tests applying 30% higher or lower claim cost factors compared to the factors assumed under our Base Plan to highlight the sensitivity of this assumption. Figure 6 below shows changing the claim cost factors by 30% affects the premium assessment by 0.01% or less.

Figure 6:
Washington Office of the State Actuary
Baseline Sensitivities – Private Market Opt Out
Level Premium Assessment Required

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan (assumed starting level of adverse selection)	0.57%	N/A
Higher adverse selection (30% increase to claim cost factors)	0.57%	0.01%
Lower adverse selection (30% decrease to claim cost factors)	0.56%	-0.01%

OTHER EXEMPTED POPULATIONS SENSITIVITIES

We tested the sensitivity of the premium assessment due to varying the participation assumptions for the following populations, whose participation in the program is voluntary:

- Self-employed individuals
- Veterans with 70% or higher (70%+) disability rating
- Spouses of active-duty military
- Nonimmigrant visa holders for temporary workers
- WA employees with primary residence outside of WA
- Employees of tribal employers

When individual choice or a voluntary aspect to participation is introduced into a program, unpredictability related to participation rates and adverse selection can make the evaluation of a program's rates and fund balance challenging. To highlight the sensitivity of the assumed participation level and potential adverse selection in our modeling, we examined various discrete scenarios by "carving in" certain percentages of expected total premiums and total claims for each of the exempted populations described above. Specifically, for most populations we performed the following tests:

- **0% participation scenario**, under which we assumed 0% of premiums would be collected and 0% of claims would be paid under WA Cares Fund for individuals in the given population
- **100% participation / no adverse selection scenario**, under which 100% of premiums would be collected and 100% of claims would be paid under WA Cares Fund for individuals in the given population
- **High / extreme adverse selection scenario**, under which 0% of premiums would be collected and 100% of claims would be paid under WA Cares Fund for individuals in the given population

The actual level of participation and adverse selection will vary from the discrete scenarios modeled. The scenarios are not intended to be bounds. The scenarios were selected to help highlight the sensitivity of the modeling assumptions given the size and characteristics of the exempted populations. The sensitivity tests are all compared to our Base Plan, which generally assumes a "middle point" of participation and adverse selection from the scenarios described above for each of the exempted populations.

[Combined Participation Scenarios](#)

We tested the sensitivity of varying the participation in all of the exempted populations simultaneously. Note, per OSA and DSHS direction, we exclude WA employees with a primary residence outside of WA for the "100% participation / No adverse selection" sensitivity. These individuals would not be eligible for benefits if they continued to live outside WA, so they may not be likely to participate. In the following sections, we show sensitivities for each population in isolation and provide more details on each exempted population.

Figure 7: Washington Office of the State Actuary Baseline Sensitivities – Combined Participation Scenarios Level Premium Assessment Required		
Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan ("middle point" of participation / adverse selection scenarios)	0.57%	N/A
0% participation	0.52%	-0.04%
100% participation / No adverse selection	0.52%	-0.04%
High adverse selection	0.61%	0.05%

[Self-employed individuals](#)

The current law allows self-employed individuals to voluntarily opt into the program, pursuant to the following "ground rules" which add some restrictions to self-employed individuals from moving in and out of the program.

- The opt-in choice would be limited to a three-year window for self-employed individuals to opt in once premium collection begins in 2023 (or going forward once an individual becomes self-employed).
- Once a self-employed individual has opted in, the opt-in is permanent.
- ESD would be given statutory authority to verify wages reported by self-employed individuals similar to the statutory authority they have for employer reporting of worker wages.

**Figure 8:
Washington Office of the State Actuary
Baseline Sensitivities – Self-Employed Individuals
Level Premium Assessment Required**

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan (“middle point” of participation / adverse selection scenarios)	0.57%	N/A
0% participation	0.53%	-0.03%
100% participation / No adverse selection	0.54%	-0.03%
High adverse selection	0.60%	0.03%

Veterans with 70%+ disability

WA Cares Fund statute allows veterans with a 70% or higher service-connected disability to opt out of the program. The discrete scenarios below considered different combinations of premiums and claims adjustments in the event the “average” veteran with 70%+ disability who opts in is different than the “average” non-veteran with 70%+ disability participating in the program. Our Base Plan assumes a middle-level of participation and adverse selection related to participation.

Given the relatively small size of this population (per BLS data, we estimate the employed number of veterans with 70%+ disability to be less than 25,000 in 2022), the impact of this exemption is relatively small.

**Figure 9:
Washington Office of the State Actuary
Baseline Sensitivities – Veterans with 70%+ Disability
Level Premium Assessment Required**

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan (“middle point” of participation / adverse selection scenarios)	0.57%	N/A
0% participation	0.56%	< -0.01%
100% participation / No adverse selection	0.56%	< -0.01%
High adverse selection	0.57%	< 0.01%

Spouses of active-duty military

WA Cares Fund statute allows spouses and domestic partners of active-duty military members to opt out of the program. The discrete scenarios below considered different combinations of premiums and claims adjustments in the event the “average” of spouses and domestic partners of active-duty military who opt in is different than the “average” non-spouse and non-domestic partners of active-duty military participating in the program. Our Base Plan assumes a middle-level of participation and adverse selection related to participation.

Given the relatively small size of this population (per data provided by DSHS combined with Department of Labor (DOL) statistics, we estimate the employed spouses and domestic partners of active-duty military to be less than 15,000 in 2022), the impact of this exemption is relatively small.

**Figure 10:
Washington Office of the State Actuary
Baseline Sensitivities – Spouses of Active-Duty Military
Level Premium Assessment Required**

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan (“middle point” of participation / adverse selection scenarios)	0.57%	N/A
0% participation	0.57%	< -0.01%
100% participation / No adverse selection	0.57%	< -0.01%
High adverse selection	0.57%	< 0.01%

Nonimmigrant visa holders for temporary workers

WA Cares Fund statute allows workers on non-immigrant visas for temporary work to opt out of the program. The discrete scenarios below considered different combinations of premiums and claims adjustments in the event the “average” worker on a non-immigrant visa who opts in is different than the “average” non-worker on a non-immigrant visa participating in the program. Our Base Plan assumes a middle-level of participation and adverse selection related to participation.

Given the relatively small size of this population (we assumed there were nearly 23,000 individuals holding H2A visas¹⁰ and 30,000 individuals holding H1B visas¹¹ in Washington in 2020), the impact of this exemption is relatively small.

**Figure 11:
Washington Office of the State Actuary
Baseline Sensitivities – Nonimmigrant Visa Holders for Temporary Workers
Level Premium Assessment Required**

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan (“middle point” of participation / adverse selection scenarios)	0.57%	N/A
0% participation	0.56%	< -0.01%
100% participation / No adverse selection	0.56%	-0.01%
High adverse selection	0.57%	0.01%

WA employees with primary residence outside of WA

WA Cares Fund statute allows individuals working in Washington but who do not reside in Washington to opt out of the program. Given this population would not currently be eligible to receive benefits under WA Cares Fund (since they do not reside in the state), under the Base Plan we assume that 0% of the population would elect to participate. As a result, the “0% participation” scenario is equal to the Base Plan. In a situation where this population was not exempt and there is 100% participation, we would still assume that this population would only “participate” by contributing to the premium assessment and would not receive any benefits as long as they reside outside Washington, which would decrease the program’s required premium assessment. We do not include a high adverse selection sensitivity for the same reason – individuals living outside the state are not eligible for benefits.

¹⁰ *Yearbook of Immigration Statistics 2019. (April 30, 2021).* Department of Homeland Security. Retrieved August 31, 2021 from <https://www.dhs.gov/immigration-statistics/yearbook/2019>.

¹¹ “Top H1B Visa Sponsor by Work State : 2020 H1B Visa Reports.” Myvisajobs.com. Retrieved August 23, 2021, from, www.myvisajobs.com/Reports/2020-H1B-Visa-Category.aspx?T=WS#LCA.

Figure 12:
Washington Office of the State Actuary
Baseline Sensitivities – WA Employees with Primary Residence Outside of WA
Level Premium Assessment Required

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan (same as 0% participation scenario)	0.57%	N/A
0% participation / No adverse selection	0.57%	0.00%
100% participation	0.54%	-0.03%

Employees of tribal governments

As sovereign nations, tribal governments and the businesses they operate are not automatically included in WA Cares Fund. WA Cares Fund allows tribal governments to elect coverage for all of the tribe's businesses and allows tribal governments to opt out of the program at any time. The discrete scenarios below considered different combinations of premiums and claims adjustments in the event the "average" employee of tribal employers who opts in is different than the "average" non-employee of tribal employers participating in the program. Our Base Plan assumes a middle-level of participation and adverse selection related to participation. We run a high adverse selection sensitivity despite the fact the opt-in decision lies with the tribal government rather than with the employee to highlight the sensitivity of this assumption, but adverse selection may be less since choice is not made by an individual.

Given the relatively small size of this population (we estimate the employees of tribal employers to be approximately 37,000 in 2022 based on data from 2019¹²), the impact of this exemption is relatively small.

Figure 13:
Washington Office of the State Actuary
Baseline Sensitivities – Employees of Tribal Employers
Level Premium Assessment Required

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan ("middle point" of participation / adverse selection scenarios)	0.57%	N/A
0% participation	0.56%	< -0.01%
100% participation / No adverse selection	0.56%	< -0.01%
High adverse selection	0.57%	< 0.01%

¹² *Homepage*. Washington Tribes. (2022, May 26). Retrieved October 2, 2022, from <https://www.washingtontribes.org/>

IV. PLAN ALTERNATIVES

Section IV focuses on analyzing the impact of changing Base Plan parameters, specifically with regard to benefit indexing timing, investment policy, and daily benefit cap as requested by OSA and DSHS. Exhibit 5 provides a summary of the level premium assessments for each plan alternative modeled.

BENEFIT INDEX ALTERNATIVES

The starting lifetime benefits are assumed to be \$36,500 on July 1, 2026 per discussions with OSA and DSHS. However, current law does not explicitly define when benefits are inflated after July 1, 2026. Per guidance from OSA and DSHS, we modeled benefits would first inflate on July 1, 2027 and annually thereafter for the Base Plan, and tested two alternatives:

1. Benefits first inflate on January 1, 2027 and will inflate annually on January 1 of each year thereafter.
2. Benefits first inflate on January 1, 2028 and will inflate annually on January 1 of each year thereafter.

Figure 14: Washington Office of the State Actuary Plan Alternatives – Benefit Index Level Premium Assessment Required		
Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan (Annual inflation applied on July 1, started in 2027)	0.57%	N/A
Annual inflation applied on January 1, started in 2027	0.57%	< 0.01%
Annual inflation applied on January 1, started in 2028	0.56%	-0.01%

INVESTMENT POLICY ALTERNATIVES

The net investment earned rates used in our Base Plan and plan alternative are based on discussions with OSA and SIB. The starting investment return assumption of 3.5% and overall investment strategy was obtained from SIB.

1. *Base Plan vector*: Investment returns start at 3.5% for 15 years, then grade up to 4.0% over 15 years, then remain at 4.0% over the rest of the projection. We grade up to 4.0% based on an examination of the average return over the last 20 years of the Bloomberg US Aggregate Bond Index (which is the benchmark index SIB plans to target over the long run).
2. *Alternative vector*: As an alternative to the Base Plan, we model a 70% / 30% blend between the Base Plan investment approach and equities, respectively. This is modeled by blending the Base Plan vector with an assumed constant 8% equity return using 70% and 30% weights, respectively. We understand a state constitutional amendment would be needed to allow investing in equities.

Figure 15: Washington Office of the State Actuary Plan Alternatives – Investment Policy Level Premium Assessment Required		
Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan (3.5% grade to 4.0%)	0.57%	N/A
30% allocation in equities (4.9% grade to 5.2%)	0.53%	-0.03%

DAILY BENEFIT ALTERNATIVES

WA Cares Fund statute allows beneficiaries to combine the program's "benefit units," which effectively causes the program to have no daily benefit limit when covering approved services. Therefore, we assume under the Base Plan that individuals will incur the average daily cost of care in Washington observed in the private market. We further test the impact of the cost of care assumption in Section V.

DSHS requested we test two plan alternatives that add a daily benefit limit to WA Cares Fund. The alternatives presented in the figure below test the impact of capping the daily benefit allowed at \$150 and \$240, respectively, indexed with CPI. For reference, 6 hours of care for a home health aide in 2021 in Washington was estimated to cost \$207 (per the 2021 Genworth Cost of Care Survey¹³). This equals about \$240 in 2026 using 3% annual home health care trend, or $\$207 * 1.03^{(2026 - 2021)} = \240 .

Figure 16: Washington Office of the State Actuary Plan Alternatives – Daily Benefit Level Premium Assessment Required		
Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan (No daily benefit limit)	0.57%	n/a
\$150 daily benefit limit	0.54%	-0.03%
\$240 daily benefit limit	0.55%	-0.01%

¹³ Genworth cost of Care Survey - Genworth Financial. (n.d.). Retrieved October 2, 2022, from <https://pro.genworth.com/riiproweb/productinfo/pdf/282102.pdf>

V. ASSUMPTION SENSITIVITIES

Section V examines sensitivity tests of key assumptions to highlight the potential impact on the modeled premium assessment and fund balance. The tests were selected to illustrate the modeling sensitivity of various assumptions only and are not intended to be bounds.

The testing shows both the estimated premium assessment rate and projected fund balance are highly sensitive to the underlying modeling assumptions. Assumption sensitivity testing results should be taken into consideration as part of the WA Cares Fund Risk Framework. The sensitivity of the modeling results under different conditions, and the program’s ability to adjust features when experience materializes differently from expectations, are vital components for the ongoing monitoring of the program.

Figure 17 below summarizes the level premium assessments produced by our sensitivity tests for each modeling assumption category (blue markers) relative to the 2022 Base Plan (grey dashed line). A wider “gap” from the grey dashed line represents greater sensitivity. Details on the tests modeled are included in the remainder of this section. Exhibit 6 provides a summary of the required premium assessments for each sensitivity test modeled.

Figure 17: Impact of Assumption Sensitivities in Isolation Relative to 2022 Base Plan (0.57%)

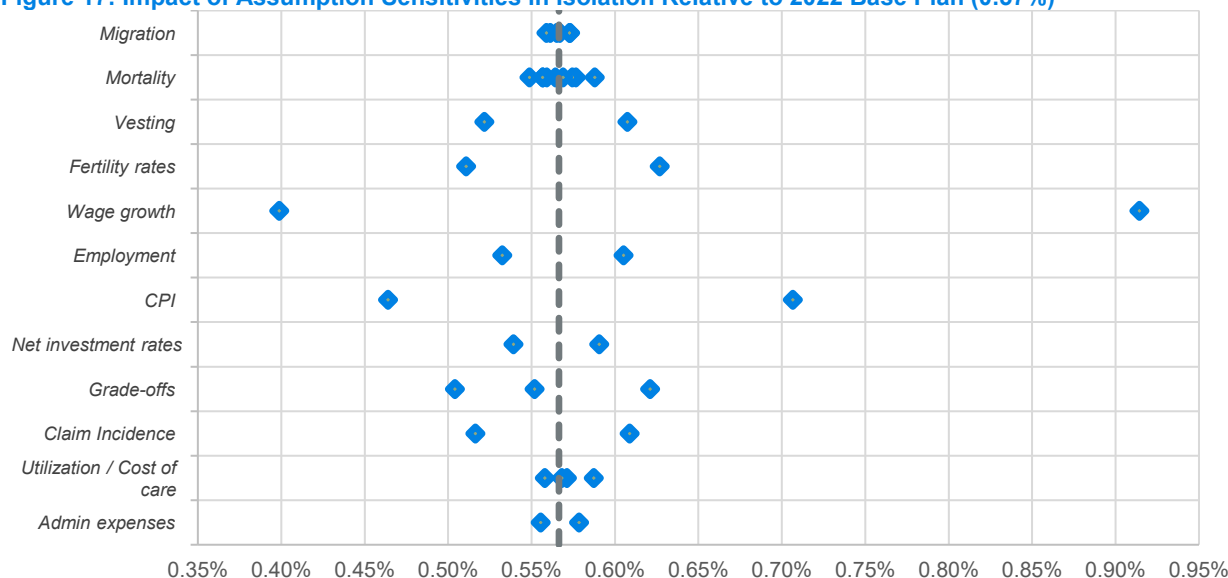


Figure 17 shows the premium assessment rate is highly sensitive to the underlying modeling assumptions. The sensitivity of the premium assessment under different conditions should be considered under the WA Cares Fund Risk Framework in monitoring the premium assessment.

Figure 18 below graphs the projected fund balance as a percentage of program expenditures by year for the Base Plan (blue line), as well as each of the assumption sensitivities (gray lines). As shown in Figure 18, the fund balance growth / decline and level of fund balance varies greatly based on the sensitivity test. Many sensitivity tests are projected to have a positive fund balance throughout the 75-year window, while other tests result in depleted fund balances, including an extreme test where the fund balance is depleted in year 2054. For presentation purposes in the graph, we do not show lines graphed when the fund balance as a percentage of program expenditures exceeds 2000%. We also do not show lines graphed below 0%, which implies the fund would be depleted.

Figure 18: Fund Balance as a % of Program Expenditures for Base Plan and Assumption Sensitivities

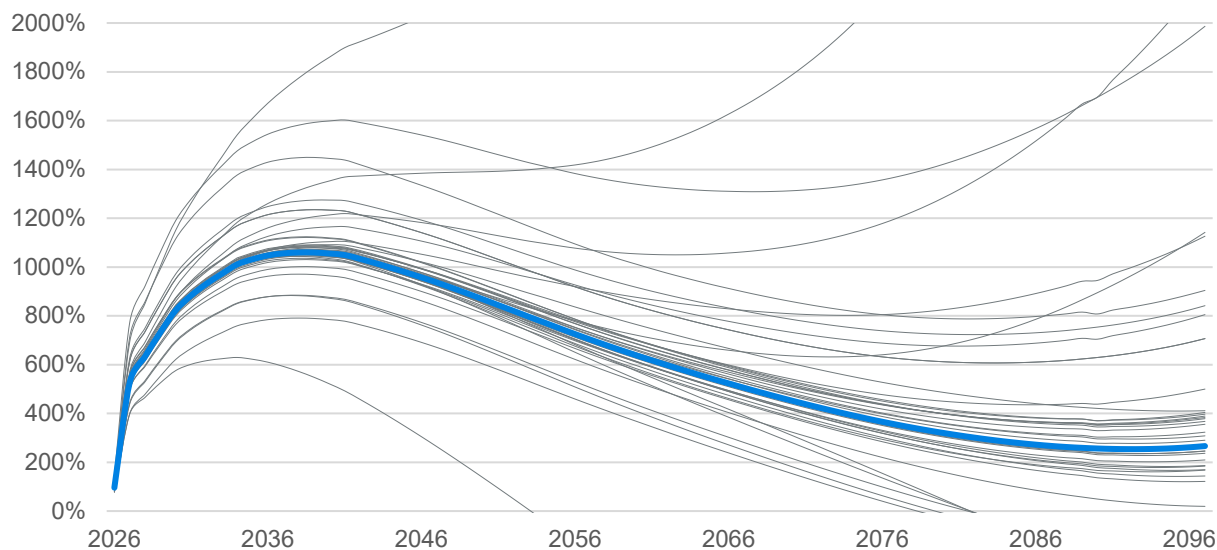


Figure 18 shows the fund balance is highly sensitive to the underlying modeling assumptions. The sensitivity of the fund balance under different conditions should be considered under the WA Cares Fund Risk Framework in monitoring the fund balance.

SENSITIVITY TESTING TO MIGRATION

State-to-state migration and net immigration to the state impact the projected cash flows for the program. The Baseline assumes a net annual migration consistent with projections from the Washington State Office of Financial Management. We ran two sensitivities, with an increase and decrease of 25% to the assumed net migration counts, where net migration represents the difference between individuals entering the state and individuals leaving the state.

**Figure 19:
Washington Office of the State Actuary
Assumption Sensitivities - Migration
Level Premium Assessment Required**

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan	0.57%	n/a
Higher net migration	0.56%	-0.01%
Lower net migration	0.57%	0.01%

SENSITIVITY TESTING TO MORTALITY

We applied separate mortality rates to the active (or non-disabled) lives and disabled lives. Mortality rates have generally been decreasing by age over the last 100 years, and we assume future improvement of mortality rates in the Baseline based on OASDI projections. As mortality rates decrease, the population is expected to survive longer. A population living longer will increase the demand for LTC, all else equal.

We ran six sensitivities, increasing and decreasing mortality rates at each age by 10% for all lives, as well as tests where we only change the mortality for active lives and disabled lives. Additionally, we ran three mortality improvement scenarios (no improvement, high improvement, and low improvement, where the high and low scenarios are derived from the 2022 OASDI projections).

Figure 20:
Washington Office of the State Actuary
Assumption Sensitivities - Mortality
Level Premium Assessment Required

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan	0.57%	n/a
Higher mortality	0.56%	-0.01%
Lower mortality	0.58%	0.01%
Higher active mortality	0.56%	-0.01%
Lower active mortality	0.57%	0.01%
Higher disabled mortality	0.56%	< -0.01%
Lower disabled mortality	0.57%	< 0.01%
No mortality improvement	0.56%	-0.01%
High mortality improvement	0.59%	0.02%
Low mortality improvement	0.55%	-0.02%

SENSITIVITY TESTING TO VESTING

To become qualified to receive WA Cares Fund benefits, individuals must pay the premium assessment for a specified number of years. For the purposes of this report, we refer to the required number of years an individual must pay the premium assessment to become a qualified individual as the “vesting period.” Excluding near-retirees, the Baseline assumes an individual is vested (i.e., they are considered a “qualified individual”) by premium payments in three of the last six years or 10 total years during an individual’s work history.

We ran two sensitivities on the vesting assumption excluding near-retirees, increasing and decreasing the percentage of individuals who are vested in each year by 10%. For some cohorts, we did not increase by a full 10% to keep the vesting rates below the assumed ultimate vesting rate cap.

Figure 21:
Washington Office of the State Actuary
Assumption Sensitivities - Vesting
Level Premium Assessment Required

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan	0.57%	n/a
Higher vesting	0.61%	0.04%
Lower vesting	0.52%	-0.04%

SENSITIVITY TESTING TO FERTILITY RATES

The Baseline uses fertility rates from the 2022 OASDI Trustees Report calibrated to Washington experience. Sensitivity runs are conducted using the high and low birth rates observed by state across the country (i.e., the “high fertility rates” test sets the Washington birth rate to the state with the highest birth rate). As birth rates increase, the funding requirement decreases. As more children are born, the average age of the population lowers, and there are more working individuals relative to the elderly, which results in a larger wage base.

Figure 22:
Washington Office of the State Actuary
Assumption Sensitivities – Fertility Rates
Level Premium Assessment Required

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan	0.57%	n/a
Higher fertility rates	0.51%	-0.06%
Lower fertility rates	0.63%	0.06%

SENSITIVITY TESTING TO WAGE GROWTH

As wages increase, the premium base increases and the premium rate necessary to fund program benefits decreases. While it is possible that increased wages can result in price inflation, we ignore this potential impact in the wage sensitivities shown here. The Baseline wage growth is taken from the 2022 OASDI Trustees Report intermediate assumption, assumed to be 3.55% on an ultimate basis. We conducted sensitivity runs using both the low and high Trustees Report assumptions (2.35% and 4.77% in the ultimate year, respectively).

Figure 23: Washington Office of the State Actuary Assumption Sensitivities – Wage Growth Level Premium Assessment Required		
Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan	0.57%	n/a
Higher wage growth trend	0.40%	-0.17%
Lower wage growth trend	0.91%	0.35%

SENSITIVITY TESTING TO EMPLOYMENT

The percentage of the population we assume is employed impacts the number of individuals paying premiums into the program, and ultimately the revenue the program is able to collect. We test two variations of employment, where we increase and decrease the count of workers in each year by 5%. For this test, we assume the annual increase or decrease in employment only impacts the number of individuals paying premiums and does not have an impact on the assumed vesting rate for individuals, which could be affected by changes in employment levels.

Figure 24: Washington Office of the State Actuary Assumption Sensitivities – Employment Level Premium Assessment Required		
Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan	0.57%	n/a
Higher employment	0.53%	-0.03%
Lower employment	0.61%	0.04%

SENSITIVITY TESTING TO CONSUMER PRICE INDEX

The Baseline assumes the \$36,500 pool of money (as of July 2026) will be inflated at a rate consistent with a regional CPI – assumed to have an ultimate rate of 2.4%. In this section we test sensitivities under which CPI will be annually 0.5% higher or lower than in our Baseline modeling.

Figure 25: Washington Office of the State Actuary Assumption Sensitivities - CPI Level Premium Assessment Required		
Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan	0.57%	n/a
Higher CPI trend	0.71%	0.14%
Lower CPI trend	0.46%	-0.10%

SENSITIVITY TESTING TO INVESTMENT RATES

The investment rate determines the level of investment income earned on the program fund balance. As the investment rate earned by the fund increases, the necessary revenue funded through the premium assessment decreases. Alternatively, if investment rates decrease, less is earned on the program fund balance, requiring increased funding

through the premium assessment. We tested increasing or decreasing the net investment earned rates by 100 basis points for each year of the projection.

Figure 26:
Washington Office of the State Actuary
Assumption Sensitivities – Investment Rates
Level Premium Assessment Required

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan	0.57%	n/a
Higher net investment earned rates	0.54%	-0.03%
Lower net investment earned rates	0.59%	0.02%

SENSITIVITY TESTING TO GRADE-OFFS

We observe recent Washington wages to be approximately 16% higher than the national average. For our Baseline modeling, we maintain the 16% differential for the first 10 years of projected wages, and then grade off the Washington-specific wage adjustment over the subsequent 25 years, such that our projected wages will approximate national average wages from OASDI by year 35 of the projection. We ran a sensitivity where we “turn off” this grade-off, which increases the premium base and decreases the required premium assessment.

Using a similar approach, we modeled CPI as 2.75% (consistent with OSA’s long-term assumption of Washington CPI) until 2030, and then over 25 years grade down to OASDI’s nationwide CPI projection of 2.40%, such that CPI beginning in 2055 and for the rest of the projection is 2.40%. We ran a sensitivity where we “turn off” grading down the CPI and thus use 2.75% CPI for the entire projection, which increases benefits and increases the required premium assessment.

We tested scenarios where we removed grade-offs for each assumption in isolation and an additional test where we removed both grade-offs at the same time, which has opposing impacts on the required premium assessment and produces a result similar to the Base Plan. Removing both grade-offs at the same time reflects that wage growth and CPI trends may be positively correlated (e.g., CPI could be considered a component of wage growth).

Figure 27:
Washington Office of the State Actuary
Assumption Sensitivities – Grade-Off Assumptions
Level Premium Assessment Required

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan	0.57%	n/a
No grade-off of WA-to-nationwide income ratio	0.50%	-0.06%
No grade-off of WA-to-nationwide CPI trend ratio	0.62%	0.05%
No grade-off of WA-to-nationwide income and CPI trend ratios	0.55%	-0.01%

SENSITIVITY TESTING TO CLAIM INCIDENCE

Incidence refers to the annual rate at which the population requires the use of LTSS. If incidence rates decrease, fewer people will require LTSS and funding requirements will be lower. We ran sensitivities increasing and decreasing incidence rates by 20%. As an example, if the baseline incidence rate was 15% for a 90-year-old male, we would have tested the impact of changing the incidence rate to 18% ($15\% \times (1 + 20\%) = 18\%$) and 12% ($15\% \times (1 - 20\%) = 12\%$).

Figure 28:
Washington Office of the State Actuary
Assumption Sensitivities – Incidence Assumptions
Level Premium Assessment Required

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan	0.57%	n/a
Higher incidence rates	0.61%	0.04%
Lower incidence rates	0.52%	-0.05%

SENSITIVITY TESTING TO UTILIZATION / COST OF CARE

WA Cares Fund statute allows beneficiaries to combine the program's "benefit units," which effectively causes the program to have no daily benefit limit when covering approved services. Therefore, we assume under the Base Plan that individuals will incur the average daily cost of care in Washington observed in the private market. We test four sensitivities related to benefit utilization and the cost of care.

Under the Baseline, we project many beneficiaries will utilize and exhaust their full lifetime benefit (i.e., \$36,500 as of July 2026 and inflated thereafter). Since the tests on cost of care and utilization change the benefit amount utilized on a daily basis, but do not change the lifetime pool of money available to beneficiaries, the impact to the premium assessment is relatively low.

- The first two sensitivities test increasing or decreasing the assumed cost of care by 33%. As seen in the figure below, these tests change the premium assessment by 1 basis point or less.
- We ran an additional sensitivity assuming care at home is received every day (i.e., 100% days utilization) rather than roughly 5 out of every 7 days as assumed in the Baseline, which also has an impact of less than 1 basis point.
- Finally, we tested the impact of immediately paying out the entire lifetime benefit upon a beneficiary going on claim. This sensitivity increased the premium assessment by 2 basis points.

Figure 29:
Washington Office of the State Actuary
Assumption Sensitivities – Utilization / Cost of Care
Level Premium Assessment Required

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan	0.57%	n/a
Higher mix cost of care	0.57%	< 0.01%
Lower mix cost of care	0.56%	-0.01%
100% days utilization for care at home	0.57%	< 0.01%
Immediate lifetime pool payout	0.59%	0.02%

SENSITIVITY TESTING TO ADMINISTRATIVE EXPENSES

Under the Baseline, we assume administrative expenses equal to 3.5% of premium and 3.5% of claims. We tested two sensitivities on administrative expenses – higher (4.5% of premium and 4.5% of claims) and lower (2.5% of premium and 2.5% of claims).

Figure 30:
Washington Office of the State Actuary
Assumption Sensitivities – Administrative Expenses
Level Premium Assessment Required

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan	0.57%	n/a
Higher admin expenses	0.58%	0.01%
Lower admin expenses	0.56%	-0.01%

SENSITIVITY TESTING TO COMBINED ASSUMPTIONS

We modeled several “combined” scenarios to further highlight the modeling sensitivity for certain key assumptions, including instances where some economic assumptions may be positively correlated (e.g., if wages increase, the CPI will move in the same “direction” and also increase).

1. **Higher wage growth, CPI trend:** increased the annual wage growth and CPI by 50 basis points.
2. **Lower wage growth, CPI trend:** decreased the annual wage growth and CPI by 50 basis points.
3. **Combined “positive” scenario:** increased the wage growth to use the high rates from the 2022 OASDI Trustees Report, decreased CPI by 50 basis points annually, increased net investment earned rates by 100 basis points annually, decreased incidence by 20%, decreased the assumed cost of care by 33%, increased mortality by 10%, and decreased vesting by 10%.
4. **Combined “adverse” scenario:** decreased the wage growth to use the low rates from the 2022 OASDI Trustees Report, increased CPI by 50 basis points annually, decreased net investment earned rates by 100 basis points annually, increased incidence by 20%, increased the assumed cost of care by 33%, decreased mortality by 10%, and increased vesting by 10%.

Figure 31:
Washington Office of the State Actuary
Assumption Sensitivities – Combined Assumptions
Level Premium Assessment Required

Test	Level Premium Assessment Required	% Change from Base Plan
Base Plan	0.57%	n/a
Higher wage growth, CPI trend	0.57%	0.01%
Lower wage growth, CPI trend	0.56%	-0.01%
Combined positive scenario	0.37%	-0.20%
Combined adverse scenario	1.23%	0.67%

VI. METHODOLOGY AND ASSUMPTIONS

We project LTC beneficiaries and costs using Milliman's modeling software, MG-ALFA®. The projection starts with the 2016 population of the state of Washington by age, sex, and region, and is projected forward through 2097. The projected Washington population is estimated based on the number of births, deaths, and net migrants in each future year.

To calculate the LTC beneficiaries and costs for the projected population in each year, the model utilizes Milliman's proprietary *LTC Guidelines (Guidelines)* calibrated from an insured basis to the estimated Washington population characteristics. The *Guidelines* provide frequencies, continuance curves, utilization assumptions, and claims costs developed from a large number of product designs based on data from the past two decades. The *Guidelines* incorporate both private and public sector data sources. The *Guidelines* are updated triennially to reflect the most comprehensive and current information available in the market.

The projection is for the 75-year period 2023 through 2097. A 75-year projection has been established by the Social Security Administration (SSA) and the Centers for Medicare and Medicaid Services (CMS) as the standard projection period for determining the financial status of a public insurance program. The 75-year period covers the expected lifetime of the vast majority of residents just entering their working ages. Thus, a 75-year projection period covers all the working years and all of the benefit years of those just beginning their participation. The model produces year-by-year cash flow projections, such that the value and scope of the program can be estimated for any of the years in the 75-year projection period.

Revenue to the program consists of premiums and interest earned on the account balance. Expenditures to the program consist of benefit payments for covered services and administrative expenses. We projected each of these items on a year-by-year basis for 75 years.

DEMOGRAPHIC ASSUMPTIONS

The demographic assumptions relate to the projection of the population of Washington. The covered population is of fundamental importance in the estimation of costs. The income to the program depends on the number of contributors and the outgo of the program depends on the number of beneficiaries, most of whom are aged 65 or over. Estimates of the number of contributors and of the number of beneficiaries are based on the population projection.

The estimate of the resident population starts with the census count of the resident population for Washington by age and sex as of 2016. We use a 2016 starting population to build up a stable disabled population and appropriately reflect LTC prevalence at the time of first program payments (2026). The model projects the Washington population by estimating the number of births, deaths, and net migrants for each future year.

We reviewed the projected population over the 75-year horizon for reasonableness compared to forecasts in the 2022 Old-Age, Survivors, and Disability Insurance (OASDI) Trustees Report and the Washington Office of Financial Management (OFM) "Forecast of the State Population" from December 2021¹⁴ (2021 OFM Population Forecast). Our reasonableness review included examining for each year the projected total population count of Washington versus nationwide and the distribution of the population by attained age (i.e., less than 20, 20 to 64, and 65-plus).

Starting population

The estimate of the 2016 starting population is from the American Community Survey (ACS) five-year data release files. This survey was used to tabulate state population estimates by age and sex and is the starting point for the Washington population projection. We reviewed the projected 2020 population from our model compared with the latest ACS data for reasonableness (the most recent year available at the time of this report was 2020).

Migration

We project three types of migration separately in our modeling:

1. *State-to-state in-migration* – We project the number of individuals that will move into Washington each year from another U.S. state using historical data from the ACS county-to-county migration forecast.¹⁵ We assume

¹⁴ Washington Office of Financial Management (2021). Retrieved August 1, 2022 from <https://ofm.wa.gov/washington-data-research/population-demographics/population-forecasts-and-projections/state-population-forecast>

¹⁵ American Community Survey (2017). Retrieved September 19, 2022 from <https://www.census.gov/content/census/en/data/tables/2017/demo/geographic-mobility/county-to-county-migration-2013-2017.html>

the age-gender distribution of the individuals moving into Washington from another U.S. state in any year will resemble the age-gender distribution of Washingtonians already living in the state in that year.

2. *State-to-state out-migration* – The methodology and assumptions used to project state-to-state out-migration mirrors the methodology we use to project state-to-state in-migration. We project the number of individuals that will move out of Washington each year to another U.S. state using historical data from the ACS county-to-county migration forecast. We assume the age-gender distribution of the individuals moving out of Washington to another U.S. state in any year will resemble the age-gender distribution of all Washingtonians living in the state in that year.
3. *Net international immigration* – We project individuals who move into / out of Washington from / to a different country on a net basis (i.e., net international immigration equals individuals moving into Washington from another country minus individuals moving out of Washington to a different country). Our projection for this estimate is also based on information from the ACS country-to-country migration forecast. The age-gender distribution for this population is based on ACS data that is specific to individuals moving into and out of the United States. We do not model or track the legal status of immigrants or emigrants.

We calibrate the total net migration resulting from the above three projections based primarily on the 2021 OFM Population Forecast. Total net migration is calculated as state-to-state in-migration minus state-to-state out-migration plus net international immigration. The OFM forecast projects net migration through calendar year 2041, at which point the ultimate annual net migration is estimated to be 61,300. Beyond 2041, we use a combination of the OFM “Forecast of the State Population” from December 2019¹⁶ and 2021,¹⁷ where we grade off net migration from 61,300 in 2041 to 55,000 (the midpoint of the ultimate net migration from the 2019 and 2021 forecasts) in 2051. We assume annual net migration will be 55,000 for the remainder of our projection window through 2097.

Births

The number of births in Washington are estimated using state-specific birth rates from the Centers for Disease Control and Prevention’s (CDC’s) National Vital Statistics Report on births. These birth rates are trended according to the nationwide fertility rate projection provided in the 2022 OASDI Trustees Report. We model births by applying these fertility rates to the projected female population in Washington by age and projection year.

Deaths

We applied separate mortality rates to the active lives (i.e., individuals not currently meeting the benefit trigger) and disabled lives.

- Active life mortality: Current and projected U.S. active life mortality rates by age and sex were calculated using multiple sources, including the Milliman *LTC Guidelines*, 2022 OASDI Trustees Report (after backing out disabled life mortality), Society of Actuaries (SOA) 2012 Individual Annuity Mortality (IAM) table (after backing out disabled life mortality), and SOA Intercompany data
- Disabled life mortality: Current and projected U.S. disabled life mortality rates by age, sex, duration, and care setting were calculated from the Milliman *LTC Guidelines*

The projected U.S. mortality rates were calibrated to Washington using the CDC’s age-adjusted mortality rates by state. This data shows that Washington’s mortality rates are 6% to 10% less than the national average.

Mortality improvement rates by age and sex were estimated from the 2022 OASDI Trustees Report. The Trustees Report mortality rates are projected through 2100. We assume mortality improvement applies to both active and disabled lives.

¹⁶ OFM 2019 Forecast of the State Population: Population by age and sex (2019). Retrieved September 19, 2022 from https://ofm.wa.gov/sites/default/files/public/dataresearch/pop/stfc/stfc_2019.xlsx

¹⁷ OFM 2021 Forecast of the State Population: Population by age and sex (2021). Retrieved September 19, 2022 from https://ofm.wa.gov/sites/default/files/public/dataresearch/pop/stfc/stfc_2021.xlsx

ECONOMIC ASSUMPTIONS

Economic parameters concerning trends in the labor force, wages, and costs of LTC services are of primary importance for the projection of the income and outgo of the program. Because WA Cares Fund is financed by a payroll premium assessment, the labor force participation and wage level will directly affect annual program income. The index used to trend benefits is important because it affects program liabilities in the future. The interest rate assumption is important because it affects the interest income earned on the fund account balance.

We reviewed the projected workers and wages over the 75-year horizon for reasonableness compared to data from Washington State's Paid Family and Medical Leave (PFML) program provided by ESD and the 2022 OASDI Trustees Report. Our reasonableness review included examining the estimated total count of workers and total wages against recent PFML program experience (after removing the PFML program wage cap) and projected counts of workers and wages each year versus the 2022 OASDI Trustees Report.

Labor force participation and unemployment

The U.S. labor force participation rates (LFPR) and unemployment rates (UR) by age and sex are from the 2022 OASDI Trustees Report. These rates are adjusted to Washington-specific levels using the ratio of Washington LFPR to U.S. LFPR, and Washington UR to U.S. UR. Washington-specific and U.S. employment data for this adjustment comes from the U.S. Bureau of Labor Statistics (BLS) Local Area Unemployment Statistics. This data is used to project the labor force and unemployment rate in each year of the projection period. The labor force is calculated in order to estimate the payroll assessment base in each year. The labor force calculations do not consider workers' legal status.

Wages

Projections of U.S. average taxable earnings through 2100 are found in the 2022 OASDI Trustees Report. Taxable earnings are the amount of covered earnings subject to the Social Security payroll tax. In order to estimate WA Cares Fund wage base, we make the following adjustments to the OASDI taxable earnings:

- We adjust from nationwide to Washington-specific earnings using the ratio of the average income in Washington over the average income in the United States. Income data for this adjustment comes from BLS Occupational Employment Statistics, which shows Washington average income is approximately 16% higher than nationwide average income (as observed over calendar years 2017 to 2021). For our projection, we maintain the 16% differential for the first 10 years of the projection, and then grade off the Washington-specific wage adjustment over the subsequent 25 years, such that our projected wages will approximate national average wages from OASDI by year 35 of the projection. We chose to grade off the Washington-specific wage adjustment given Washington average income and nationwide average income have historically been closer together with the exception of approximately the last 10 years.
- We convert the taxable earnings into covered earnings using the ratio of taxable earnings to covered earnings from the 2022 OASDI Trustees Report. Covered earnings represent the wage base subject to the Medicare tax after adjusting for the Social Security wage limit.
- Certain wages will be subject to WA Cares Fund premium assessment that are excluded from the OASDI covered earnings definition (such as employee wages used for 125 cafeteria plan contributions). To convert our wage base from OASDI covered earnings to gross wages under WA Cares Fund, we multiply by the ratio of National Income and Product Accounts (NIPA) wages to covered earnings provided by the Social Security Administration.

Average gross wages subject to WA Cares Fund premium assessment are multiplied by the labor force in a given year to determine the premium assessment base in that year.

Benefit inflation index

We inflate benefits using the Washington Consumer Price Index (CPI-WA). To develop a CPI-WA projection vector, we start with OSA's assumption of 2.75% as presented in the 2021 Report on Financial Condition and Economic Experience Study.¹⁸ In-line with the grade-off of wages described above, we grade down 2.75% CPI-WA to 2.40%, which is the projected CPI value from the 2022 OASDI Trustees Report, over a period of 25 years beginning in 2030, such that in 2055 and thereafter, we use a value of 2.40% for CPI-WA for the remainder of the projection.

¹⁸ 2021 Report on Financial Condition and Economic Experience Study (2021). Retrieved September 19, 2022 from <https://leg.wa.gov/osa/presentations/Documents/2021.RFC-EES.pdf>

Cost of care

As WA Cares Fund does not employ a daily benefit maximum, we assume individuals will incur the average Washington cost of care each day at private market rates depending on what services they are receiving (e.g., skilled nursing facility, assisted living facility, or home health care). We determined the median cost of care in Washington using the 2021 Genworth Cost of Care Survey¹⁹ and inflated the values into the future using 4% facility (nursing home and assisted living) trend and 3% home health care trend. The cost of care trends were selected based on our judgment and observed recent cost of care trends by care setting.

Vesting

In order to become eligible for benefits, a worker must become vested (or in other words, become insured). To vest in WA Cares Fund benefit, an individual must work and pay premiums for a specified number of years. We used the 2006 Social Security Earnings Public Use Microdata File²⁰ (2006 is the most recent year the Microdata File was assembled) as our starting point to estimate the percentage of Washingtonians that would become vested by age, sex, and projection year. This data provides annual earnings information (i.e., a lifetime earnings profile) for a 1% random sample of all Social Security numbers issued before January 1, 2007.

Individuals are fully vested if they work more than 500 hours per year for three of the last six years, or for 10 years total over their lifetimes. To find the percentage of the working population meeting these requirements, we observed the work histories of the random sample of data. For each age, the percentage of individuals who had recorded income for three of the previous six years or eight years total is tabulated. We used eight instead of 10 years in this tabulation because becoming insured under this program provides an added incentive to continue working for those who are almost insured. For each year of the program, we vary the number of years of work history to be included in this tabulation. For example, in year 10 of the program, we only considered work history for individuals going back 10 years to estimate vesting percentages. Because of this, the vesting percentages by age and gender vary in each program year. We used the American Time Use Survey to determine the percentage of workers who work more than 500 hours per year (approximately 95%) and applied this percentage to the vesting percentages by age, gender, and program year.

We adjusted our vesting assumptions for several subsets of the population.

- We observed that females' work histories changed significantly over the course of the data collection period (1951 through 2006), with the last five to ten years (i.e., 1996 to 2006) approximately equal to males' work histories. As such, we set the female vesting percentages equal to the male vesting percentages.
- We did not vary vesting assumptions for individuals who migrate into Washington from another state or country. This may be a conservative assumption because we are implicitly assuming individuals are able to apply their full work histories as they move into Washington from other states. However, our testing of this assumption generally showed smaller impacts to the calculated premium assessment and seemed appropriate given that we do not know how many individuals moving into the state lived in Washington previously and would move into the state with some relevant work history.
- Since there is no minimum age for disability, we also considered benefits for individuals with intellectual or developmental disabilities (IDDs). To determine the vesting rates for this cohort, we reviewed employment data for the IDD population.²¹ Ultimately, we applied a 0.56 factor to our baseline vesting percentages to account for the fact that individuals in this population overall may be less likely to have stable, continuous work history.
- Individuals born before January 1, 1968 (or "near retirees") are eligible to receive prorated benefits, or 10% of the full benefit amount for each year of premium payments up to 100%. For this population, we separately tabulate the percentage of individuals by number of years of recorded wages, since the years of wages will determine the prorated benefit amount. After segmenting near retirees by years vested, we apply a prorating adjustment to the assumed benefit for each cohort. For example, for individuals we project will have four years of vesting credits, we multiply their projected benefits by 40% ($= 4 / 10$).

¹⁹ Genworth Cost of Care Survey: Median Cost Data Tables (2022). Retrieved September 28, 2022 from <https://pro.genworth.com/riiproweb/productinfo/pdf/282102.pdf>

²⁰ Social Security Administration Earnings Public-Use File, 2006 (2006). Retrieved September 19, 2022 from <https://www.ssa.gov/policy/docs/microdata/epuf/index.html>

²¹ American Community Survey Public Use Microdata Sample 2020: Counts of employed and unemployed Washington residents with and without a disability by age (2020). Retrieved September 19, 2022 from <https://data.census.gov/>

Interest rates

The net investment earned rates (NIER) used in our Base Plan and plan alternative (shown in Figure 15) are based on discussions with OSA, DSHS, and Washington State Investment Board (SIB).

1. *Base Plan vector*: Based on the investment plan prepared by SIB,²² investment returns start at 3.5% for 15 years, then grade up to 4.0% over 15 years, then remain at 4.0% over the rest of the projection. We grade up to 4.0% based on an examination of the average return over the last 20 years of the Bloomberg U.S. Aggregate Bond Index (which is the benchmark index SIB plans to target over the long run).
2. *Alternative vector*: As an alternative to the baseline, we model a 70% / 30% blend between the Base Plan investment approach (cited above) and equities, respectively. This is modeled by blending the base vector with an assumed constant 8% equity return using 70% and 30% weights, respectively. Note, if a constitutional amendment were to pass the Legislature and be approved by Washington voters allowing WA Cares Fund to be invested in asset classes such as equities, then SIB would determine the investment policy which could lead to a different asset allocation and assumption than what is described here.

The NIER reflects expected investments returns on WA Cares Fund account balance net of investment expenses and the cost of defaults.

MORBIDITY ASSUMPTIONS

To calculate the LTC beneficiaries and costs for the projected population in each year, we started with data and research from the Milliman *LTC Guidelines*. The *Guidelines* provide claim frequencies, continuance curves, utilization assumptions, and claims costs from a large number of fully insured LTC product designs sold over the past two decades. The *Guidelines* incorporate both private and public sector data sources and are periodically updated to reflect the most comprehensive and current information available in the market. The first set of *Guidelines* was developed in 1992 and is updated regularly, with the most recent edition completed in 2020.

As discussed below, we adjusted the *Guidelines* data from an insured basis to the estimated Washington population characteristics for a general population. We did not assume any future morbidity improvement as part of our modeling.

Given WA Cares Fund is the first-of-its-kind social insurance LTC program in the United States, there is no data direct source to use for comparison at this time. To review our projections for reasonableness, we reviewed model output for various claim statistics by projection year (such as claim incidence and prevalence rates) based on our judgement and observations of projections for other of LTC programs.

Benefit eligibility criteria

A person's ability to perform activities of daily living (ADLs) and / or cognitive ability in addition to physical abilities are frequently used as indications of the need for LTC services (and serve as the foundation for benefit eligibility criteria for many LTC programs). Current law defines the benefit eligibility criteria for WA Cares Fund as requiring assistance with at least three ADLs. Since this definition requires further clarification, for the purposes of this actuarial study we relied upon direction from OSA and DSHS to assume the type and minimum number of ADLs considered by care setting to be consistent with the current definitions used under the State of Washington Medicaid program.²³ These definitions provided by OSA and DSHS cover care for people with cognitive impairment and specialty care needs.

Benefit utilization

Our model assumes, in the absence of a daily benefit cap, that individuals will generally incur the average cost of care per day observed in the private market for receiving benefits by care setting. We further adjust utilization at the beginning of a claim to reflect that WA Cares Fund will cover higher, one-time costs related to helping individuals stay in their home. We assume home care beneficiaries incur services five out of seven days per week.

²² Long-Term Services & Supports Trust Account (2022). Retrieved September 20, 2022 from https://www.sib.wa.gov/docs/policies/2_35_600.pdf

²³ Washington Administrative Code (2015). Retrieved October 15, 2020 from <https://apps.leg.wa.gov/wac/default.aspx?cite=388-106-0210> and <https://apps.leg.wa.gov/wac/default.aspx?cite=388-106-0210>

Since there is no minimum age for disability, we also considered benefits for individuals with intellectual or developmental disabilities. We examined the prevalence by age and gender of intellectual or developmental disability among adults from an academic study²⁴ and calculated the incremental impact of providing benefits to the subset of these individuals that we assume would meet the vesting requirements. We assumed IDD individuals would utilize the entire benefit pool of money upon becoming vested. As an example, an IDD individual assumed to be vested in 2026 is modeled to receive the full pool of money of \$36,500 in that year.

Individuals born before January 1, 1968 (or “near retirees”) are eligible to receive prorated benefits, or 10% of the full benefit amount for each year of premium payments up to 100%. We apply a utilization adjustment to the projected benefits to account for individuals exhausting their partial benefits more quickly than they would exhaust their full benefits. This is because we assume individuals with partial benefits would likely still use a similar benefit amount per day as individuals with full benefits; they would just use it more quickly.

Incidence

Incidence refers to the rate at which the population requires the use of LTSS. The Milliman *LTC Guidelines* incidence rates are representative of a fully insured population. A fully insured population will have different morbidity from the population under this program for a few reasons, including:

- Insured data may have inherent anti-selection as it reflects individuals who choose to purchase care and may have reason to believe they will need care in the future.
- Insured data reflects a higher-income population, which is generally composed of individuals with lower annual incidence rates, all else equal.
- Most individuals insured in the private market had to complete underwriting, ensuring they were relatively healthy at least when they first purchased coverage. There is no underwriting qualification associated with WA Cares Fund, although individuals will need to be at least healthy enough to satisfy vesting requirements.

We calibrated the incidence rates to a general population basis using a variety of data sources, including selection factors from the *Guidelines* and other industry general population prevalence studies. While general population data exists, morbidity data reflecting a “public option” program does not exist and was not used for this actuarial study. It is unknown how individuals will react to having a public benefit available.

PARTICIPATION AND ADVERSE SELECTION

Universal mandatory programs can be assured that the experience of the group will be average, because everyone will be in the program. Voluntary programs or programs with voluntary components (such as WA Cares Fund), however, are subject to anti-selection (i.e., those with higher-than-average costs will be most likely to enroll). We outline below modeling considerations for WA Cares Fund features that add voluntary aspects to the program. When individual choice or a voluntary aspect to participation is introduced into a program, unpredictability related to participation rates and adverse selection can make rate setting and projections challenging.

Private Market Opt-Out

WA Cares Fund allows individuals to opt out of the program through December 31, 2022 if they had qualifying private market LTC coverage prior to November 1, 2021. To model the impact of this provision, we reflected actual opt-out data provided by ESD on March 3, 2022. Note, the total count of opt outs as of October 10, 2022 (roughly 476,000 approved applications, provided by ESD) is similar to the March data. We used the following methodology to incorporate the ESD data into our projections.

- **Truncated Data Adjustments**

For privacy reasons, the information provided by ESD censored wage information for the top 5% of the opt-out population. We use aggregate data provided by ESD to estimate the average wage for the censored population. Additionally, ESD indicated that the data provided only represented approximately 92.5% of approved individuals who had opted out of the program. We made an adjustment to account for the remaining 7.5% of the opt-out population for whom we did not have age or wage data.

²⁴ Durbin, A., et al. (June 20, 2019). Prevalence of intellectual and developmental disabilities among first generation adult newcomers, and the health and health service use of this group: A retrospective cohort study. Peer-reviewed academic study. Retrieved September 1, 2020, from <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0215804>.

Ultimately, we assume approximately 473,000 individuals have approved requests for opting out of the program. This includes:

- Approximately 416,000 with approved opt-out requests for whom we have age and wage data for each individual
- Approximately 22,000 individuals who represent the top 5% of wage earners for whom we have age data, but need to estimate the average wages
- Approximately 35,000 individuals whom ESD does not have data on, whom we assume follow age and wage distributions consistent with the remainder of the opt-out population

▪ **Average Wages**

Per the ESD data, we project the average annual 2021 wages for the opt-out population to be approximately \$188,000, trended to 2022. We assume wages for the opt-out population are consistent with the WA Cares Fund wage base.

▪ **Gender Distribution**

Given the ESD data does not contain information related to gender, we assume a 50% / 50% split between males and females for the opt-out population.

▪ **Wage Growth**

We project the wages of the opt-out population to grow in line with our projections for the general population (approximately 3.5% annual growth).

▪ **Morbidity**

We assume in our Base Plan modeling those individuals who opted out of the program through the private market exemption are, on average, “healthier” than the rest of the modeled population (i.e., their expected LTC costs are lower) since many individuals in this population recently purchased private LTC coverage in order to qualify for the exemption and therefore either needed to pass underwriting recently or are actively working. We apply factors to decrease the expected claim costs of the opt-out population to reflect this assumption (referred to as positive selection). These factors are derived from group selection factors from Milliman’s *LTC Guidelines* and “wear off” over time, as the impact of the private market opt-out decreases.

Conversely, we apply factors to increase the claim costs of the remaining population (referred to as adverse selection), such that the combined expected claim costs for the total population is consistent with the total population without any private market opt out.

[Self-Employed Opt-In](#)

WA Cares Fund allows participation for self-employed individuals to be fully voluntary, where they are only enrolled after “opting in” to the program. Self-employed individuals will be subject to the following “ground rules”:

1. Limiting opt-in to a three-year window for self-employed individuals to opt in once premium collection begins in 2023 (or going forward once an individual becomes self-employed).
2. Once an individual has opted in, the opt-in is permanent.
3. ESD would be given statutory authority to verify income reported by the self-employed similar to the statutory authority they have to do so for employer reporting of worker wages.

While the goal of the ground rules is to reduce self-employed adverse selection, it is yet to be seen how effective the ground rules will be in accomplishing this goal. Due to this uncertainty, we examined various discrete scenarios by carving in certain percentages of premiums and claims to model the potential impact of adverse selection due to this provision. The discrete scenarios considered different combinations of premiums and claims adjustments in the event the “average” self-employed individual who opts in is different than the “average” non-self-employed individual participating in the program. These scenarios are found in Section IV of this report.

We rely upon ACS data²⁵ to project the self-employed population in Washington in each year of the projection. This data indicates approximately 10% of the current Washington civilian employed population is self-employed workers, or approximately 362,000 individuals as of 2020.

Exemptions for Other Populations

WA Cares Fund statute allows several populations the choice to be exempt from the program. As a result, WA Cares Fund effectively becomes a voluntary program for individuals in the following populations:

- Certain disabled military veterans
- Spouses and domestic partners of active-duty military members
- Employees with non-immigrant visas
- Washington workers with a permanent primary resident outside of the state

Due to uncertainty surrounding the participation of the following cohorts, we examined various discrete scenarios by carving in certain percentages of premiums and claims to model the potential impact of adverse selection as a result of these exemptions. The discrete scenarios considered different combinations of premiums and claims adjustments in the event the “average” individual who opts in from these populations is different than the “average” individual participating in the program from other populations. These scenarios are found in Section IV of this report. This section also includes additional background on the populations mentioned above, including the projected size of each population.

ADMINISTRATIVE EXPENSES

Given the administrative structure of the program is not yet fully determined, we assumed administrative expenses to be 3.5% of premiums and 3.5% of benefits consistent with the assumptions used in the 2020 Actuarial Study, our discussions with OSA and DSHS, and our high-level review of other government programs and programs offering LTC benefits. This assumption is intended to reflect the average, long-term administrative needs of the program and may not be consistent with how expenses will fluctuate on an annual basis.

²⁵ American Community Survey (ACS) 5-Year Estimates Subject Tables: Class of worker by sex for the civilian employed population 16 years and over (2020). Retrieved September 19, 2022 from <https://data.census.gov/cedsci/table?q=S2408&g=0400000US53&tid=ACSST5Y2020.S2408>

VII. CAVEATS AND LIMITATIONS

This report was prepared for the internal use of the Washington Office of the State Actuary (OSA) and the Washington Department of Social and Health Services (DSHS) and it should not be distributed, in whole or in part, to any external parties without the prior permission of Milliman, subject to the following exception:

- This report shall be a public record that shall be subject to disclosure to the State Legislature and its committees, persons participating in legislative reviews and deliberations, and parties making a request pursuant to the Washington Public Records Act

We do not intend this information to benefit or create a legal liability to any third party. This communication must be read in its entirety.

The information in this report contains actuarial modeling and analysis regarding LTC benefits provided under WA Cares Fund. It may not be appropriate, and should not be used, for other purposes.

In completing this analysis, we relied on information provided by OSA, DSHS, SIB, ESD, and publicly available data, which we accepted without audit. However, we did review this information for general reasonableness.

Many assumptions were used to construct the estimates in this report. Actual results will differ from the projections in this report. Experience should be monitored as it emerges, and corrective actions taken when necessary.

Guidelines issued by the American Academy of Actuaries require actuaries to include their professional qualifications in all actuarial communications. Chris Giese, Al Schmitz, Annie Gunnlaugsson, and Evan Pollock are members of the American Academy of Actuaries and meet the qualification standards for performing the analyses in this report.

The terms of the Personal Service Contract with OSA, effective December 2, 2021, apply to this engagement.

EXHIBITS

Exhibit 1 Washington Office of the State Actuary Plan Parameter Grid - Summary of Current Law and Modeled Parameters for Baseline Analysis			
Program Specification	Current Law Summary	Law Reference	Modeled Parameter for Baseline Analysis
Covered Services	"Approved services" including in-home personal care, assisted living services, nursing home services, and other services.	RCW 50B.04.010	Comprehensive services, with focus on nursing home, assisted living, adult day care, and care at home (with adjustments for immediate payout of potential larger non-service expenses).
Minimum Age for Benefits	18	RCW 50B.04.010	18
Benefit Eligibility	Eligibility determination will include an evaluation that the individual requires assistance with at least 3 ADLs.	RCW 50B.04.060	Washington State Medicaid definition proxy.
Daily Benefit Amount	Eligible beneficiaries may combine benefit units to receive more approved services per day as long as the total number of lifetime benefit units has not been exceeded.	RCW 50B.04.060	None
Lifetime Maximum Benefit	"Benefit unit" means up to \$100 paid by DSHS on a specific date. An eligible beneficiary may not receive more than the dollar equivalent of 365 benefit units over the course of the eligible beneficiary's lifetime.	RCW 50B.04.010	\$36,500 starting in 7/1/26.
Benefit Index	The benefit unit must be adjusted annually at a rate no greater than the WA state CPI, as determined solely by the council. Any changes adopted by the council shall be subject to revision by the legislature.	RCW 50B.04.010	Remaining lifetime benefit inflated annually on 7/1 to WA-CPI, with the first inflation adjustment applied on 7/1/27.
Benefit Structure	If DSHS reimburses an LTSS provider for approved services provided to an eligible beneficiary and the payment is less than the benefit unit, only the portion of the benefit unit that is used shall be taken into consideration when calculating the person's remaining lifetime limit on receipt of benefits.	RCW 50B.04.060	Reimbursement, commercial rates.
Waiting / Claim Adjudication Period	DSHS must make benefit determination within 45 days from receipt of a request by a beneficiary to use a benefit.	RCW 50B.04.060	Assume that the first 30 days of benefit will be paid by the beneficiary as claims are adjudicated. Note: we also ran two Baseline sensitivities assuming 15 days and 45 days, respectively.
"Vesting" Requirements for Full Benefits	Individual has paid the premium assessment, either: (a) A total of 10 years without interruption of 5+ consecutive years; (b) 3 years within the last 6 years from the date of application for benefits. Individual must have worked 500+ hours during each year from (a) or (b).	RCW 50B.04.050	3 of last 6 years, or 10 years total, with 500+ annual hours requirement.
Near-retiree "Vesting" Requirements for Partial Benefits	Individuals born before 1/1/1968 may receive 1/10 of benefit units for each year of premium payments up to 100%. Individual must have worked 500+ hours during each year.	RCW 50B.04.050	Partial vesting for those born before 1/1/1968.
Portability	Must reside in Washington state.	RCW 50B.04.010	Must reside and receive care in Washington state.
Program Revenue Source	Beginning 7/1/23, ESD will assess a premium of 0.58% of an individual's wages. Beginning 1/1/26, and biennially thereafter, the premium rate shall be set by the pension funding council at a rate no greater than 0.58%.	RCW 50B.04.080	Payroll premium assessment applied to gross wages, where applicable wages were defined through discussions with ESD.
Investment Policy	All investments made by the state investment board shall be made with the degree of judgment and care required under RCW 43.33A.140 and the investment policy established by the state investment board.	RCW 50B.04.110	Starting net investment earned rate of a 3.5% grading up to a 4.0%, where returns reflect SIB's short-term return expectations and long-term benchmark consistent with their investment policy.
Tribal Employers	A federally recognized tribe may elect coverage or opt out at any time for any reason it deems necessary.	RCW 50B.04.095	Various participation / adverse selection scenarios.
Self-Employed Opt In	Any self-employed person may elect coverage (before 7/1/2026, or within 3 years of becoming self-employed for the first time). Once elected, the individual may not withdraw coverage.	RCW 50B.04.090	Various participation / adverse selection scenarios.
Private Market Opt Out	An employee who attests to having LTC insurance purchased before 11/1/21, may apply for an exemption. Exempt employees are permanently ineligible for coverage. ESD must accept applications for exemptions only from 10/1/21-12/31/22.	RCW 50B.04.085	Counts of private market exemptions and their respective wages will be based on currently available ESD data, with scenarios for adverse selection.
Other Exempted Populations	Beginning 1/1/2023, ESD shall accept & approve voluntary exemptions from: (a) US Military veteran with service-connected disability of 70%+ (b) Spouses & domestic partners of active duty military members (c) Nonimmigrant visa holders for temporary workers (d) An employee of a WA employer, but maintains a permanent, primary residence outside of WA.	RCW 50B.04.055	Various participation / adverse selection scenarios.

Exhibit 2
Washington Office of the State Actuary
Cash Flows for 2022 Base Plan Assumptions with 0.58% Premium Assessment
All Values Discounted to 2023 (\$millions)

Fiscal Year Ending 6/30	Discount Adjustment ¹	Yearly Program Revenue		Yearly Program Expenditures		Yearly Program Cash Flows ²	Fund Balance
		Premium	Investment Income	Benefit Payments	Expenses		
2024	0.983	\$918	\$16	\$0	\$32	\$886	\$902
2025	0.950	\$952	\$47	\$0	\$33	\$919	\$1,837
2026	0.918	\$975	\$79	\$0	\$34	\$941	\$2,794
2027	0.887	\$998	\$78	\$1,837	\$99	(\$939)	\$1,839
2028	0.857	\$1,021	\$72	\$410	\$50	\$562	\$2,411
2029	0.828	\$1,044	\$91	\$423	\$51	\$570	\$2,990
2030	0.800	\$1,070	\$111	\$438	\$53	\$579	\$3,580
2031	0.773	\$1,088	\$131	\$454	\$54	\$579	\$4,169
2032	0.746	\$1,107	\$151	\$483	\$56	\$568	\$4,747
2033	0.721	\$1,123	\$170	\$514	\$57	\$552	\$5,308
2034	0.697	\$1,139	\$189	\$545	\$59	\$535	\$5,853
2035	0.673	\$1,156	\$207	\$573	\$61	\$523	\$6,385
2036	0.650	\$1,175	\$225	\$608	\$62	\$505	\$6,899
2037	0.628	\$1,194	\$242	\$643	\$64	\$486	\$7,393
2038	0.607	\$1,212	\$258	\$680	\$66	\$465	\$7,867
2039	0.587	\$1,229	\$276	\$718	\$68	\$443	\$8,319
2040	0.567	\$1,244	\$294	\$756	\$70	\$418	\$8,745
2041	0.547	\$1,260	\$311	\$795	\$72	\$392	\$9,146
2042	0.528	\$1,275	\$327	\$834	\$74	\$367	\$9,521
2043	0.509	\$1,289	\$343	\$879	\$76	\$335	\$9,863
2044	0.491	\$1,302	\$358	\$923	\$78	\$300	\$10,171
2045	0.474	\$1,313	\$371	\$967	\$80	\$266	\$10,444
2046	0.456	\$1,325	\$384	\$1,010	\$82	\$233	\$10,683
2047	0.440	\$1,336	\$395	\$1,052	\$84	\$200	\$10,888
2048	0.424	\$1,346	\$405	\$1,094	\$85	\$166	\$11,059
2049	0.408	\$1,354	\$414	\$1,135	\$87	\$131	\$11,195
2050	0.393	\$1,361	\$422	\$1,176	\$89	\$96	\$11,295
2051	0.378	\$1,369	\$429	\$1,216	\$90	\$62	\$11,361
2052	0.364	\$1,375	\$434	\$1,255	\$92	\$28	\$11,391
2053	0.350	\$1,380	\$438	\$1,291	\$93	(\$5)	\$11,388
2054	0.336	\$1,383	\$437	\$1,327	\$95	(\$39)	\$11,348
2055	0.323	\$1,386	\$435	\$1,360	\$96	(\$70)	\$11,277
2056	0.311	\$1,398	\$432	\$1,392	\$98	(\$92)	\$11,184
2057	0.299	\$1,410	\$428	\$1,423	\$99	(\$112)	\$11,069
2058	0.287	\$1,421	\$423	\$1,452	\$101	(\$132)	\$10,935
2059	0.276	\$1,430	\$418	\$1,478	\$102	(\$150)	\$10,782
2060	0.266	\$1,439	\$411	\$1,503	\$103	(\$167)	\$10,612
2061	0.255	\$1,448	\$405	\$1,525	\$104	(\$182)	\$10,426
2062	0.246	\$1,456	\$397	\$1,546	\$105	(\$195)	\$10,227
2063	0.236	\$1,463	\$389	\$1,564	\$106	(\$207)	\$10,016
2064	0.227	\$1,469	\$381	\$1,581	\$107	(\$219)	\$9,792
2065	0.218	\$1,474	\$372	\$1,595	\$107	(\$229)	\$9,559
2066	0.210	\$1,478	\$363	\$1,608	\$108	(\$238)	\$9,316
2067	0.202	\$1,482	\$353	\$1,619	\$109	(\$245)	\$9,065
2068	0.194	\$1,485	\$344	\$1,628	\$109	(\$252)	\$8,808
2069	0.187	\$1,487	\$334	\$1,636	\$109	(\$258)	\$8,545
2070	0.179	\$1,489	\$323	\$1,642	\$110	(\$262)	\$8,277
2071	0.173	\$1,490	\$313	\$1,646	\$110	(\$265)	\$8,006
2072	0.166	\$1,491	\$303	\$1,648	\$110	(\$267)	\$7,734
2073	0.160	\$1,491	\$292	\$1,648	\$110	(\$267)	\$7,462
2074	0.153	\$1,491	\$282	\$1,647	\$110	(\$266)	\$7,191
2075	0.148	\$1,490	\$271	\$1,643	\$110	(\$263)	\$6,923
2076	0.142	\$1,490	\$261	\$1,638	\$109	(\$258)	\$6,660
2077	0.136	\$1,489	\$251	\$1,632	\$109	(\$252)	\$6,403
2078	0.131	\$1,487	\$241	\$1,623	\$109	(\$245)	\$6,153
2079	0.126	\$1,486	\$232	\$1,613	\$108	(\$236)	\$5,913
2080	0.121	\$1,485	\$223	\$1,602	\$108	(\$226)	\$5,682
2081	0.117	\$1,483	\$214	\$1,590	\$108	(\$215)	\$5,463
2082	0.112	\$1,481	\$206	\$1,578	\$107	(\$203)	\$5,256
2083	0.108	\$1,480	\$198	\$1,564	\$107	(\$191)	\$5,061
2084	0.104	\$1,478	\$191	\$1,550	\$106	(\$178)	\$4,879
2085	0.100	\$1,476	\$184	\$1,536	\$105	(\$165)	\$4,711
2086	0.096	\$1,475	\$178	\$1,522	\$105	(\$151)	\$4,556
2087	0.092	\$1,474	\$173	\$1,507	\$104	(\$137)	\$4,417
2088	0.089	\$1,473	\$167	\$1,492	\$104	(\$123)	\$4,292
2089	0.085	\$1,473	\$163	\$1,477	\$103	(\$108)	\$4,182
2090	0.082	\$1,472	\$159	\$1,462	\$103	(\$93)	\$4,087
2091	0.079	\$1,471	\$156	\$1,448	\$102	(\$78)	\$4,007
2092	0.076	\$1,471	\$153	\$1,433	\$102	(\$64)	\$3,942
2093	0.073	\$1,471	\$151	\$1,419	\$101	(\$49)	\$3,891
2094	0.070	\$1,470	\$149	\$1,404	\$101	(\$34)	\$3,856
2095	0.067	\$1,470	\$148	\$1,390	\$100	(\$19)	\$3,836
2096	0.065	\$1,470	\$147	\$1,375	\$100	(\$4)	\$3,832
2097	0.062	\$1,470	\$148	\$1,359	\$99	\$12	\$3,844
2098	0.060	\$1,470	\$148	\$1,343	\$98	\$28	\$3,873

¹ For illustration purposes, we use the Base Plan investment returns vector to discount cash flows to 2023.

² Excludes investment income.

**Exhibit 3
Washington Office of the State Actuary
Headcounts for 2022 Baseline**

Fiscal Year Ending 6/30	End of Year Counts (000s)				Fiscal Year Totals (000s) Workers		Fiscal Year Migration Totals (000s)			
	State Residents	State Workforce	Vested Individuals ¹	Open Claim Counts	Contributing to Program	New Claim Counts	In-Migration State-to-State	Out-Migration State-to-State	Net Migration from Out-of- Country	Total Net Migration
2024	7,900	3,800	0	0	2,700 - 3,400	0	120	95	25	50
2025	8,000	3,900	0	0	2,700 - 3,400	0	120	100	25	45
2026	8,000	3,900	0	0	2,700 - 3,500	0	125	100	25	50
2027	8,100	3,900	2,800 - 3,400	25 - 35	2,700 - 3,500	25 - 50	125	105	25	45
2028	8,200	3,900	2,800 - 3,400	25 - 35	2,800 - 3,500	10 - 20	130	105	25	50
2029	8,200	3,900	2,900 - 3,500	25 - 35	2,800 - 3,600	10 - 20	135	110	25	50
2030	8,300	4,000	3,000 - 3,600	25 - 35	2,800 - 3,600	10 - 20	135	110	25	50
2031	8,400	4,000	3,100 - 3,700	25 - 35	2,800 - 3,600	15 - 25	140	115	30	55
2032	8,500	4,000	3,100 - 3,800	25 - 35	2,900 - 3,700	15 - 25	140	115	30	55
2033	8,500	4,100	3,200 - 3,800	25 - 35	2,900 - 3,700	15 - 25	145	120	30	55
2034	8,600	4,100	3,200 - 3,900	25 - 35	2,900 - 3,700	15 - 25	145	120	30	55
2035	8,700	4,100	3,300 - 4,000	25 - 35	3,000 - 3,800	15 - 25	150	125	30	55
2036	8,700	4,100	3,400 - 4,100	25 - 35	3,000 - 3,800	20 - 30	150	125	30	55
2037	8,800	4,200	3,400 - 4,100	25 - 35	3,000 - 3,800	20 - 30	155	125	30	60
2038	8,900	4,200	3,500 - 4,200	25 - 35	3,100 - 3,900	20 - 30	155	125	30	60
2039	8,900	4,200	3,600 - 4,300	25 - 35	3,100 - 3,900	20 - 30	155	130	30	55
2040	9,000	4,200	3,700 - 4,400	25 - 35	3,100 - 3,900	25 - 35	160	130	30	60
2041	9,100	4,200	3,800 - 4,500	25 - 35	3,100 - 4,000	25 - 35	160	130	30	60
2042	9,100	4,300	3,800 - 4,600	25 - 35	3,200 - 4,000	25 - 35	165	135	30	60
2043	9,200	4,300	3,900 - 4,700	25 - 35	3,200 - 4,000	30 - 40	160	130	30	60
2044	9,200	4,300	4,000 - 4,800	25 - 35	3,200 - 4,100	30 - 40	160	130	30	60
2045	9,300	4,300	4,100 - 4,900	25 - 35	3,200 - 4,100	30 - 45	155	130	30	55
2046	9,400	4,300	4,200 - 5,000	25 - 35	3,300 - 4,100	35 - 45	155	125	30	60
2047	9,400	4,400	4,300 - 5,200	25 - 35	3,300 - 4,200	35 - 45	155	125	30	60
2048	9,500	4,400	4,400 - 5,300	25 - 35	3,300 - 4,200	35 - 50	150	125	30	55
2049	9,500	4,400	4,500 - 5,400	25 - 35	3,300 - 4,200	40 - 50	150	125	30	55
2050	9,600	4,400	4,600 - 5,500	25 - 35	3,400 - 4,200	40 - 55	150	120	30	60
2051	9,600	4,400	4,600 - 5,600	25 - 35	3,400 - 4,300	45 - 55	145	120	30	55
2052	9,700	4,400	4,700 - 5,700	25 - 35	3,400 - 4,300	45 - 60	145	120	30	55
2053	9,700	4,500	4,800 - 5,800	25 - 35	3,400 - 4,300	45 - 60	145	120	30	55
2054	9,700	4,500	4,900 - 5,800	25 - 35	3,500 - 4,400	50 - 65	145	120	30	55
2055	9,800	4,500	5,000 - 5,900	25 - 35	3,500 - 4,400	50 - 65	145	120	30	55
2056	9,800	4,500	5,000 - 6,000	25 - 35	3,500 - 4,400	55 - 70	145	120	30	55
2057	9,900	4,500	5,100 - 6,100	25 - 35	3,500 - 4,400	55 - 70	145	120	30	55
2058	9,900	4,500	5,200 - 6,200	25 - 35	3,600 - 4,500	60 - 75	145	120	30	55
2059	10,000	4,500	5,300 - 6,300	25 - 35	3,600 - 4,500	60 - 75	145	120	30	55
2060	10,000	4,600	5,300 - 6,400	25 - 35	3,600 - 4,500	60 - 80	145	120	30	55
2061	10,000	4,600	5,400 - 6,500	25 - 35	3,600 - 4,500	65 - 80	145	120	30	55
2062	10,100	4,600	5,500 - 6,500	25 - 35	3,600 - 4,600	65 - 85	145	120	30	55
2063	10,100	4,600	5,500 - 6,600	25 - 35	3,700 - 4,600	70 - 85	145	120	30	55
2064	10,200	4,600	5,600 - 6,700	25 - 35	3,700 - 4,600	70 - 85	150	120	30	60
2065	10,200	4,600	5,700 - 6,800	25 - 35	3,700 - 4,600	70 - 90	150	120	30	60
2066	10,300	4,700	5,700 - 6,800	25 - 35	3,700 - 4,700	75 - 90	150	120	30	60
2067	10,300	4,700	5,800 - 6,900	25 - 35	3,700 - 4,700	75 - 95	150	120	30	60
2068	10,400	4,700	5,800 - 7,000	25 - 35	3,800 - 4,700	75 - 95	150	120	30	60
2069	10,400	4,700	5,900 - 7,000	25 - 35	3,800 - 4,700	80 - 95	150	120	30	60
2070	10,400	4,700	5,900 - 7,100	25 - 35	3,800 - 4,700	80 - 100	150	120	30	60
2071	10,500	4,700	6,000 - 7,100	25 - 35	3,800 - 4,800	80 - 100	150	120	30	60
2072	10,500	4,700	6,000 - 7,200	25 - 35	3,800 - 4,800	80 - 100	150	120	30	60
2073	10,600	4,800	6,100 - 7,200	25 - 35	3,800 - 4,800	85 - 105	150	120	30	60
2074	10,600	4,800	6,100 - 7,300	25 - 35	3,900 - 4,800	85 - 105	150	120	30	60
2075	10,600	4,800	6,100 - 7,300	25 - 35	3,900 - 4,800	85 - 105	150	120	30	60
2076	10,700	4,800	6,200 - 7,400	25 - 35	3,900 - 4,800	85 - 105	150	120	30	60
2077	10,700	4,800	6,200 - 7,400	25 - 35	3,900 - 4,900	85 - 110	150	120	30	60
2078	10,800	4,800	6,300 - 7,500	25 - 35	3,900 - 4,900	90 - 110	150	120	30	60
2079	10,800	4,900	6,300 - 7,500	25 - 35	3,900 - 4,900	90 - 110	150	120	30	60
2080	10,800	4,900	6,300 - 7,500	25 - 35	3,900 - 4,900	90 - 110	150	120	30	60
2081	10,900	4,900	6,400 - 7,600	25 - 35	4,000 - 4,900	90 - 110	150	120	30	60
2082	10,900	4,900	6,400 - 7,600	25 - 30	4,000 - 5,000	90 - 115	150	120	30	60
2083	10,900	4,900	6,400 - 7,600	20 - 30	4,000 - 5,000	90 - 115	150	120	30	60
2084	11,000	4,900	6,400 - 7,700	20 - 30	4,000 - 5,000	90 - 115	150	120	30	60
2085	11,000	5,000	6,500 - 7,700	20 - 30	4,000 - 5,000	95 - 115	150	120	30	60
2086	11,100	5,000	6,500 - 7,700	20 - 30	4,000 - 5,000	95 - 115	150	120	30	60
2087	11,100	5,000	6,500 - 7,800	20 - 30	4,000 - 5,000	95 - 115	150	120	30	60
2088	11,100	5,000	6,600 - 7,800	20 - 30	4,100 - 5,100	95 - 115	150	120	30	60
2089	11,200	5,000	6,600 - 7,800	20 - 30	4,100 - 5,100	95 - 115	150	120	30	60
2090	11,200	5,100	6,600 - 7,900	20 - 30	4,100 - 5,100	95 - 115	150	120	30	60
2091	11,300	5,100	6,600 - 7,900	20 - 30	4,100 - 5,100	95 - 120	150	120	30	60
2092	11,300	5,100	6,700 - 7,900	20 - 30	4,100 - 5,100	95 - 120	150	120	30	60
2093	11,300	5,100	6,700 - 8,000	20 - 30	4,100 - 5,200	95 - 120	150	120	30	60
2094	11,400	5,100	6,700 - 8,000	20 - 30	4,200 - 5,200	95 - 120	150	120	30	60
2095	11,400	5,200	6,800 - 8,000	20 - 30	4,200 - 5,200	95 - 120	150	120	30	60
2096	11,500	5,200	6,800 - 8,100	20 - 30	4,200 - 5,200	95 - 120	150	120	30	60
2097	11,500	5,200	6,800 - 8,100	20 - 30	4,200 - 5,300	95 - 120	150	120	30	60
2098	11,500	5,200	6,800 - 8,100	20 - 30	4,200 - 5,300	100 - 120	150	120	30	60

¹ Vested individuals here represents the sum of "near-retirees," individuals meeting the "3 of the last 6" criteria, and individuals meeting the "10 years total" criteria. Vested individuals includes individuals who have exhausted benefits.

Exhibit 4
Washington Office of the State Actuary
2022 Baseline Sensitivities - Level Premium Assessment Required

Plan Design	Level Premium Assessment Required	% Change from Base Plan	Year When Fund Depleted at 0.58% in 75-Year Window
<i>Waiting / Claim Adjudication Period Sensitivities</i>			
Base Plan (30 days)	0.57%	n/a	n/a
15 days	0.58%	0.01%	n/a
45 days	0.56%	-0.01%	n/a
<i>Private Market Opt Out Sensitivities</i>			
Base Plan	0.57%	n/a	n/a
High adverse selection (30% increase to selection for those opting out)	0.57%	0.01%	n/a
Low adverse selection (30% decrease to selection for those opting out)	0.56%	-0.01%	n/a
<i>Other Exempted Populations</i>			
<i>Self-employed individuals</i>			
Base Plan ("middle-point" of participation / adverse selection scenarios)	0.57%	n/a	n/a
0% participation	0.53%	-0.03%	n/a
100% participation / No adverse selection	0.54%	-0.03%	n/a
High adverse selection	0.60%	0.03%	2084
<i>Veterans with 70%+ disability</i>			
Base Plan ("middle-point" of participation / adverse selection scenarios)	0.57%	n/a	n/a
0% participation	0.56%	< -0.01%	n/a
100% participation / No adverse selection	0.56%	< -0.01%	n/a
High adverse selection	0.57%	< 0.01%	n/a
<i>Spouses of active-duty military</i>			
Base Plan ("middle-point" of participation / adverse selection scenarios)	0.57%	n/a	n/a
0% participation	0.57%	< -0.01%	n/a
100% participation / No adverse selection	0.57%	< -0.01%	n/a
High adverse selection	0.57%	< 0.01%	n/a
<i>Nonimmigrant visa holders for temporary workers</i>			
Base Plan ("middle-point" of participation / adverse selection scenarios)	0.57%	n/a	n/a
0% participation	0.56%	< -0.01%	n/a
100% participation / No adverse selection	0.56%	-0.01%	n/a
High adverse selection	0.57%	0.01%	n/a
<i>WA employees with primary residence outside of WA</i>			
Base Plan (same as 0% participation scenario)	0.57%	n/a	n/a
0% participation	0.57%	0.00%	n/a
100% participation / No adverse selection	0.54%	-0.03%	n/a
<i>Employees of tribal employers</i>			
Base Plan ("middle-point" of participation / adverse selection scenarios)	0.57%	n/a	n/a
0% participation	0.56%	< -0.01%	n/a
100% participation / No adverse selection	0.56%	< -0.01%	n/a
High adverse selection	0.57%	< 0.01%	n/a
<i>Combined participation scenarios</i>			
Base Plan ("middle-point" of participation / adverse selection scenarios)	0.57%	n/a	n/a
0% participation	0.52%	-0.04%	n/a
100% participation / No adverse selection	0.52%	-0.04%	n/a
High adverse selection	0.61%	0.05%	2078
15 day elimination period and high adverse selection	0.63%	0.06%	2074
45 day elimination period and 100% participation	0.52%	-0.05%	n/a

Exhibit 5
Washington Office of the State Actuary
2022 Base Plan Alternatives - Level Premium Assessment Required

Plan Design	Level Premium Assessment Required	% Change from Base Plan	Year When Fund Depleted at 0.58% in 75-Year Window
<i>Benefit Index Alternatives</i>			
Base Plan (Annual inflation applied on July 1, started in 2027)	0.57%	n/a	n/a
Annual inflation applied on January 1, started in 2027	0.57%	< 0.01%	n/a
Annual inflation applied on January 1, started in 2028	0.56%	-0.01%	n/a
<i>Investment Policy Alternatives</i>			
Base Plan (3.5% grade to 4.0%)	0.57%	n/a	n/a
30% allocation in equities (4.9% grade to 5.2%)	0.53%	-0.03%	n/a
<i>Daily Benefit Alternatives</i>			
Base Plan (no daily benefit)	0.57%	n/a	n/a
\$150 daily benefit	0.54%	-0.03%	n/a
\$240 daily benefit	0.55%	-0.01%	n/a

Exhibit 6
Washington Office of the State Actuary
2022 Base Plan Assumption Sensitivities - Level Premium Assessment Required

Plan Design	Level Premium Assessment Required	% Change from Base Plan	Year When Fund Depleted at 0.58% in 75-Year Window
Migration			
Base Plan	0.57%	n/a	n/a
Higher net migration	0.56%	-0.01%	n/a
Lower net migration	0.57%	0.01%	n/a
Mortality			
Base Plan	0.57%	n/a	n/a
Higher mortality	0.56%	-0.01%	n/a
Lower mortality	0.58%	0.01%	n/a
Higher active mortality	0.56%	-0.01%	n/a
Lower active mortality	0.57%	0.01%	n/a
Higher disabled mortality	0.56%	< -0.01%	n/a
Lower disabled mortality	0.57%	< 0.01%	n/a
No mortality improvement	0.56%	-0.01%	n/a
High mortality improvement	0.59%	0.02%	n/a
Low mortality improvement	0.55%	-0.02%	n/a
Vesting			
Base Plan	0.57%	n/a	n/a
Higher vesting	0.61%	0.04%	2080
Lower vesting	0.52%	-0.04%	n/a
Fertility Rates			
Base Plan	0.57%	n/a	n/a
Higher fertility rates	0.51%	-0.06%	n/a
Lower fertility rates	0.63%	0.06%	2082
Wage Growth			
Base Plan	0.57%	n/a	n/a
Higher wage growth trend	0.40%	-0.17%	n/a
Lower wage growth trend	0.91%	0.35%	2060
Employment			
Base Plan	0.57%	n/a	n/a
Higher employment	0.53%	-0.03%	n/a
Lower employment	0.61%	0.04%	2082
Consumer Price Index (CPI)			
Base Plan	0.57%	n/a	n/a
Higher CPI trend	0.71%	0.14%	2070
Lower CPI trend	0.46%	-0.10%	n/a
Investment Earnings			
Base Plan	0.57%	n/a	n/a
Higher net investment earned rates	0.54%	-0.03%	n/a
Lower net investment earned rates	0.59%	0.02%	n/a
Combined Assumptions			
Base Plan	0.57%	n/a	n/a
Higher wage growth, CPI trend	0.57%	0.01%	n/a
Lower wage growth, CPI trend	0.56%	-0.01%	n/a
Combined "positive" scenario	0.37%	-0.20%	n/a
Combined "adverse" scenario	1.23%	0.67%	2053
Grade-Offs			
Base Plan	0.57%	n/a	n/a
No grade-off of WA-to-nationwide income ratio	0.50%	-0.06%	n/a
No grade-off of WA-to-nationwide CPI trend ratio	0.62%	0.05%	2082
No grade-off of WA-to-nationwide income and CPI trend ratios	0.55%	-0.01%	n/a
Morbidity Assumptions			
Base Plan	0.57%	n/a	n/a
Higher incidence rates	0.61%	0.04%	2079
Lower incidence rates	0.52%	-0.05%	n/a
Utilization / Cost of Care			
Base Plan	0.57%	n/a	n/a
Higher mix cost of care	0.57%	< 0.01%	n/a
Lower mix cost of care	0.56%	-0.01%	n/a
100% days utilization for care at home	0.57%	< 0.01%	n/a
Immediate lifetime pool payout	0.59%	0.02%	n/a
Administrative Expenses			
Base Plan	0.57%	n/a	n/a
Higher admin expenses	0.58%	0.01%	n/a
Lower admin expenses	0.56%	-0.01%	n/a

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