OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

2024 Experience Study

Prepared by:

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July 22, 2025

Board of Trustees
Oregon Public Employees Retirement System

Re: 2024 Experience Study – Oregon Public Employees Retirement System

Dear Members of the Board:

The results of an actuarial valuation are based on the actuarial methods and assumptions used in the valuation. These methods and assumptions are used in developing employer contribution rates, disclosing employer liabilities pursuant to GASB requirements, and for analyzing the fiscal impact of proposed legislative amendments.

This experience study report has been prepared exclusively for the Oregon Public Employees Retirement System (PERS) and its governing PERS Board (Board). **The study recommends to the Board the actuarial methods and assumptions to be used in the December 31, 2024 and 2025 actuarial valuations of PERS. The latter actuarial valuation will be used to calculate actuarially determined employer contribution rates for the 2027-2029 biennium.**

Except where otherwise noted, the analysis in this study was based on data for the experience period from January 1, 2017 to December 31, 2024 as provided by PERS. PERS is solely responsible for the validity, accuracy, and comprehensiveness of this information; the results of our analysis can be expected to differ and may need to be revised if the underlying data supplied is incomplete or inaccurate.

This analysis also relied, without audit, on information (some oral and some in writing) supplied by PERS staff as well as a capital market outlook provided by Meketa, survey capital market outlook information published by Horizon Actuarial Services, and information presented to the Oregon Investment Council. This information includes, but is not limited to, statutory provisions, employee data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different, and our calculations may need to be revised. In assessing the Milliman capital market outlook presented in this report, per Actuarial Standards of Practice we disclose reliance upon a model developed by Milliman colleagues who are credentialed investment professionals with expertise in capital outlook modeling.

Milliman's work is prepared solely for the use and benefit of the Oregon Public Employees Retirement System.

Milliman does not intend to benefit or create a legal duty to any third-party recipient of this report. No third-party recipient of Milliman's work product should rely upon this report. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are retirement actuaries and, for the analysis of the RHIPA program, healthcare actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the principles prescribed by the Actuarial Standards Board and the *Code of Professional Conduct* and *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States* published by the American Academy of Actuaries. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein. Assumptions related to the healthcare trend rates for the RHIPA program discussed in this report were determined by Milliman actuaries qualified in such matters.

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Scott Preppernau, FSA, EA, MAAA
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1. Executive Summary

This experience study report has been prepared exclusively for the Oregon Public Employees Retirement System (PERS) and the PERS Board (Board) in order to analyze the system's experience from January 1, 2017 through December 31, 2024 and to recommend actuarial methods and assumptions to be used in the December 31, 2024 and 2025 actuarial valuations of PERS.

A summary of the recommended method and assumption changes contained in this report as well as items reviewed at the May 2025 and/or July 2025 Board meetings follows:

Economic Assumptions

- The **current investment return assumption of 6.90%** per year is lower than the median expectation based on an analysis of PERS's current target asset allocation using several capital market outlook models. The median annualized geometric return for the 10-year outlook developed by the Oregon State Treasury staff in collaboration with Oregon Investment Council advisors Meketa and Aon was 7.3%, with an underlying inflation assumption of 2.3%. The median annualized geometric return for a 10-year time horizon based on Milliman's December 31, 2024 capital market outlook was 7.07% and for a 20-year time horizon was 7.39%. However, significant volatility and uncertainty remain**. The current assumption of 6.90% continues to be reasonable.**
- Maintain the **system payroll growth assumption of 3.40%**.
- Update the assumption for future administrative expenses.
- Update the RHIPA health cost trend (i.e., healthcare cost inflation) assumption.

Demographic Assumptions

- Adjust mortality assumptions to use the new "Pub-2016" base tables, matched to observed PERS-specific experience.
- Increase the individual member salary increase assumption's merit/longevity component for one member category based on observations of the last 12 years of experience. The individual member salary increase assumption consists of the sum of inflation, real wage growth, and merit/longevity components, with the latter varying by member. We also recommend maintaining an assumed additional 2% annual increase specifically for calendar year 2025 above the long-term assumptions, which was first adopted in the 2022 Experience Study to reflect significant bargained increases already known at that time.
- Adjust retirement rates for certain member categories and service bands to more closely align with recent and expected future experience.
- Lower assumed rates of ordinary (non-duty) disability incidence to more closely match recent experience.
- Adjust the Tier One/Tier Two unused sick leave assumption for one member category to reflect recently observed experience.
- Decrease the likelihood of program participation for non-disabled and disabled retirees in the RHIA retiree healthcare program.
- Decrease the RHIPA likelihood of program participation assumption for most service bands.

Actuarial Methods and Allocation Procedures

- Determine effect of SB 849 on School District rate collar at the July 2025 PERS Board meeting.

2. Actuarial Methods and Allocation Procedures

Overview

Actuarial methods and allocation procedures are used as part of the valuation to determine actuarial accrued liabilities, to determine normal costs, to allocate costs to individual employers and to amortize unfunded liabilities. The following Board guiding objectives were considered in developing recommended actuarial methods and allocation procedures:

- Transparency of shortfall and funded status calculations
- Predictable and stable employer contribution rates
- Protection of the plan's funded status to enhance benefit security for members
- Equity across generations of taxpayers funding the program
- Actuarial soundness - crafting policy that will fully fund the system if assumptions are met
- Compliance with GASB (Governmental Accounting Standards Board) requirements

The actuarial methods used for the December 31, 2023 actuarial valuation and the changes recommended for the December 31, 2024 and 2025 actuarial valuations are shown in the table below.

Method	Used for December 31, 2023 Valuation	Recommended for December 31, 2024 and 2025 Valuations
Cost method	Entry Age Normal (EAN)	No change
UAL Amortization method	UAL amortized as a level percent of combined Tier One/Tier Two and OPSRP payroll	No change

Method	Used for December 31, 2023 Valuation	Recommended for December 31, 2024 and 2025 Valuations
UAL Amortization period	▪ UAL bases – Closed amortization from the first rate-setting valuation in which experience is recognized – Tier One/Tier Two – UAL was re-amortized over 22 years effective December 31, 2019 as directed by Senate Bill 1049. Future Tier One/Tier Two UAL gains or losses will be amortized over 20 years. – OPSRP – 16 Years – RHIA/RHIPA charges – 10 years – RHIA/RHIPA credits – amortized over a rolling 20-year period when in actuarial surplus ▪ Newly established side accounts – Aligned with the new Tier One/Tier Two base from the most recent rate-setting valuation ▪ Newly established transition liabilities or surpluses – 19 ½ years from the date joining the SLGRP (State & Local Government Rate Pool) ▪ Side account amortization calculations and Pre-SLGRP liability and surplus calculations (including transition liabilities and surpluses) include a lag adjustment to reflect the delay between the rate-setting valuation date and when the new rate is effective 18 months later	No change
Asset valuation method	Market value	No change
Exclusion of reserves from valuation assets	Contingency Reserve, Capital Preservation Reserve, and Tier One Rate Guarantee Reserve (RGR) excluded from valuation assets. RGR is not excluded from valuation assets when RGR is negative (i.e., when the RGR is a deficit reserve).	No change
Allocation of Benefits in Force (BIF) Reserve	The BIF is allocated to each rate pool in proportion to the retiree liability attributable to the rate pool.	No change

<table>
<tr><th>Method</th><th>Used for December 31, 2023 Valuation</th><th>Recommended for December 31, 2024 and 2025 Valuations</th></tr>
<tr><td>Rate collar</td><td>Change in UAL Rate contribution rate component limited to:
• 3% of payroll for Tier One/Tier Two SLGRP (State & Local Government Rate Pool) and Tier One/Tier Two School District Rate Pool
• 1% of payroll for OPSRP
• 4% of payroll for Tier One/Tier Two UAL Rate of independent employers, but not less than one-third of the difference between the uncollared and collared UAL Rate
Additionally, the UAL Rate is not allowed to decrease for a rate pool until the pool's funded percentage excluding side accounts is over 87% and would not reflect the full collar width until reaching 90% funded.</td><td>No change, except for need to determine how to reflect SB 849 in School District 2027-2029 Tier One/Tier Two UAL Rate collar calculations. Determination will be made at the July 2025 PERS Board meeting, based on materials presented at that meeting.</td></tr>
<tr><td rowspan="2">Liability allocation for actives with multiple employers</td><td>▪ Allocate Actuarial Accrued Liability 5% (0% for police & fire) based on account balance with each employer and 95% (100% for police & fire) based on service with each employer</td><td>No change</td></tr>
<tr><td>▪ Allocate Normal Cost to current employer</td><td>No change</td></tr>
<tr><td>System-average offset for member redirect contributions</td><td>▪ 2.40% of Tier One/Tier Two payroll
▪ 0.65% of OPSRP payroll</td><td>No change</td></tr>
</table>

The methods and procedures are described in greater detail on the following pages.

Actuarial Cost Method

The total contribution cost of the program, over time, will be equal to the benefits paid less actual investment earnings and is not affected directly by the actuarial cost method. The actuarial cost method is simply a tool to allocate projected costs to past, current, or future years and thus primarily affects the timing of cost recognition.

The December 31, 2023 valuation used the Entry Age Normal (EAN) actuarial cost method, which allocates costs as a level percentage of payroll across the full projected working career. EAN is the required method under governmental financial reporting standards, though the Board could choose to use a different method for employer contribution rate calculations. Oregon PERS adopted EAN for all purposes with the December 31, 2012 valuation. Employing a consistent cost allocation method for both financial reporting and contributions is more understandable to interested parties as only one set of liability and normal cost calculations will be made for each member, employer, and rate pool. The EAN approach is widely used in the actuarial and public plan sponsor community because it provides an actuarially sound estimate of the projected long-term contribution costs of a retirement program as a level percentage of payroll if all assumptions are met. The benefits of this method are unchanged from when the Board previously adopted it, and **we recommend continuing to use the EAN actuarial cost method**.

Amortization Method

Unfunded Actuarial Liability

The unfunded actuarial liability (UAL) is amortized as a level percentage of projected combined payroll (Tier One/Tier Two plus OPSRP) in order to better maintain level contribution rates as payroll for the closed group of Tier One/Tier Two members declines and payroll of OPSRP members increases. **We recommend this methodology continue.**

The Board-selected method in recent years has been to amortize UAL over the following closed periods as a level percent of projected payroll from the first rate-setting valuation in which the experience is recognized:

- Tier One/Tier Two – 20 years
- OPSRP – 16 years
- RHIA/RHIPA charges when funded status is below 100% – 10 years
- RHIA/RHIPA credits when funded status is over 100% – 20 year rolling period

Senate Bill 1049 was signed into law in June 2019 and required a one-time re-amortization of all existing Tier One/Tier Two UAL over a closed 22-year period at the December 31, 2019 rate-setting actuarial valuation which set actuarially determined contribution rates for the 2021-2023 biennium. The remaining amortization period of this closed amortization base will continue to decrease. In the 2020 Experience Study, the Board adopted a 20-year closed amortization for the previously unanticipated Tier One/Tier Two UAL arising as of the December 31, 2021 rate-setting actuarial valuation date and continued that policy in the 2022 Experience Study. **We recommend the Board maintain the 20-year closed, layered amortization approach for previously unanticipated increases or decreases in Tier One/Tier Two UAL as of each future rate-setting actuarial valuation date**.

RHIA & RHIPA Amortization

Retiree Healthcare (RHIA and RHIPA) benefits are only available to closed groups, since only Tier One/Tier Two members are eligible for the programs (RHIPA is further restricted to state employees). Starting with the

2020 Experience Study, the Board has adopted an amortization period for these programs that differs depending on whether a program is less than 100% funded or over 100% funded.

When RHIA or RHIPA are less than 100% funded, previously unanticipated increases or decreases in UAL between subsequent odd-year valuations are amortized as a level percentage of combined valuation payroll over a closed 10-year period from the valuation in which they are first recognized.

If RHIA or RHIPA are in actuarial surplus (over 100% funded), the surplus is amortized over a rolling 20-year period over Tier One/Tier Two payroll. The resulting negative UAL rate can offset the normal cost rate of the program, but not below a net 0.00% contribution rate. If the program subsequently were to fall below 100% funded, the newly arising UAL would then be amortized over combined Tier One/Tier Two and OPSRP payroll following a 10-year closed, layered amortization policy.

We recommend no changes to this policy.

Contribution Time Lag Adjustment

The current funding policy does not apply any contribution time lag adjustment to regular UAL contribution rates for the 18-month delay between the rate-setting actuarial valuation date at which new contribution rates are calculated and the July 1st date on which rates first take effect. When contribution rates are increasing as an outcome of the actuarial valuation's calculations, such a time lag adjustment would add a small additional rate increase to account for the fact the new higher contribution rate did not take effect retroactively at the actuarial valuation date. When contribution rates decrease, a similar dynamic would lead to an additional rate decrease from the time lag adjustment. Any time lag adjustments would not be expected to have a material effect in total if System experience has gains and losses that approximately offset over time.

While the practice of adjusting for a time lag has intuitive appeal, previous experience for Oregon PERS led to the elimination of such an adjustment in the past. Given the complexities of a system with several hundred employers receiving individually determined contribution rates that reflect various combinations of pooled and unpooled individual employer experience, a time lag adjustment would not be one simple calculation for the system. The last time Oregon PERS did employ a time lag adjustment as part of the regular UAL contribution calculation methodology was in the early 2000s. Our understanding is the experience at that time led to persistent (but typically small) differences in contribution rate components paid by employers in the same experience-sharing pool, increased difficulty for stakeholders in reconciling rate changes from biennium to biennium, and increased difficulty for employers in understanding how their rates were calculated. This experience led to the decision to remove time lag adjustments from contribution rate calculations.

The current funding policy *does* apply contribution time lag adjustments to side account amortization calculations and pre-SLGRP liability and surplus calculations (including transition liabilities and surpluses) for the 18-month delay between the rate-setting actuarial valuation date at which new contribution rates are calculated and the July 1st date on which rates first take effect.

Unlike regular UAL, side accounts and Pre-SLGRP amounts are single balances that amortize to zero over time, without the addition of new amortization layers related to future experience. Side accounts are always a rate offset, while pre-SLGRP amounts can be a rate offset or a rate charge. A single balance amortization has a fixed end point, instead of cycling through new and offsetting gains and losses in future biennia as is the case for regular UAL. The management of expiring rate adjustments at the end of the amortization period is meaningfully improved by incorporating a time lag adjustment. Because the time lag adjustment builds in the actual rate offset or rate charge level in effect for the 18 months following the rate-setting actuarial valuation date, in the situations where recent experience has significantly changed the offset rate this will help mitigate the possibility of the single balance drawing down to zero well before the intended expiration date of the rate offset or rate charge.

Side Accounts and Transition Liabilities/Surpluses

Prior to the 2010 Experience Study, side accounts and transition liabilities/surpluses were amortized over a fixed-date period ending on December 31, 2027. To better match the amortization periods for new side accounts and new transition liabilities with the amortization of the Tier One/Tier Two UAL and to avoid issues related to a shortening initial amortization period, the PERS Board adopted amortization procedures which are not tied to a fixed date as part of the 2010 Experience Study. Those procedures were further updated in the 2022 Experience Study. The current amortization procedures are:

- All transition liabilities/surpluses and other Pre-SLGRP amounts are amortized to the June 30th date 18 months after the nominal December 31 expiration date. For example, balances originally scheduled to expire on December 31, 2027 have been adjusted to amortize through June 30, 2029. This aligns with the usual biennial rate-setting cycle and allows PERS staff to handle the expiration of Pre-SLGRP amounts as part of the regular biennial rate-setting process, rather than requiring an off-cycle change in rates. Any new transition liabilities or surpluses in the future will follow similar timing, such that the amortization period will be 19½ years (18 years from when the employer joins the SLGRP, plus 1½ years to align with the rate-setting timing).

- Side accounts amortize to a fixed period projected to end on December 31. Unlike Pre-SLGRP amounts, side account balances are specifically identified employer assets which PERS can track and which fluctuate with actual investment experience. As a result, PERS has established a separate process to manage the side account expiration process separately from the usual biennial cycle.

- A contribution time lag adjustment is applied to both side accounts and transition liabilities/surpluses, as discussed above.

We recommend no changes to this policy.

Asset Valuation Method

Effective December 31, 2004, the Board adopted market value as the actuarial value of assets, replacing the four-year smoothing method previously used to determine the actuarial asset value, which is used for shortfall (UAL) calculations. Although asset smoothing is a common method for smoothing contribution rates in public sector plans, the smoothed asset value provides a less transparent measure of the plan's funded status and UAL. Market value provides more transparency to members and other interested parties regarding the funded status of the plan. Instead of smoothing the rate calculation's asset input, a rate collar method (described below) is used to smooth contribution rate output and systematically spread large rate increases across several biennia.

We recommend no change to the asset valuation method.

Excluded Reserves

Statute provides that the Board may establish Contingency and Capital Preservation reserve accounts to mitigate gains and losses of invested capital and other contingencies, including certain legal expenses or judgments. In addition, statute requires the establishment and maintenance of a Rate Guarantee or Deficit reserve to fund earnings crediting to Tier One member regular accounts when actual earnings are below the investment return assumption selected by the Board.

The Contingency and Capital Preservation reserves are excluded from the valuation assets used for employer rate-setting calculations. **We recommend no change to the treatment of the Contingency and Capital Preservation reserves.**

The Rate Guarantee Reserve (RGR) was positive as of December 31, 2023 but can become negative (in deficit status) if, over time, the required crediting on Tier One member accounts exceeds the investment earnings actually achieved on those accounts. The RGR was negative from the December 31, 2008 valuation to the December 31, 2012 valuation. All else being equal, excluding a negative reserve increases the level of valuation assets used in employer rate-setting calculations. This occurs because subtracting a negative amount is mathematically equivalent to adding a positive amount of the same magnitude. If the negative reserve was larger in absolute value than the sum of the other reserves, this approach would lead to the actuarial value of assets used in shortfall (UAL) calculations being larger than the market value of assets.

As part of the 2010 Experience Study, the Board decided to only exclude the RGR from assets when it is in positive surplus position, and not to subtract a negative RGR (which would increase the actuarial value of assets) when it is in deficit status. **We recommend this treatment of the RGR continue.**

Rate Collar Method

Effective December 31, 2004, a rate collar method was adopted that limits biennium to biennium changes in contribution rates to be within a specified “collar” range. The PERS Board reviewed the components of the rate collar methodology over the course of several Board meetings in 2020 and 2021 to determine whether any changes to the parameters of the rate collar would be desirable, which culminated in changes that were adopted with the 2020 Experience Study. **With the current study, we recommend no changes to the rate collar method described below.**

Rate Collar Method: The Unfunded Actuarial Liability (UAL) Rate component for a rate pool (e.g., Tier One/Tier Two SLGRP, Tier One/Tier Two School Districts, OPSRP), is confined to a collared range based on the prior biennium’s collared UAL Rate component (prior to consideration of side account offsets, SLGRP transition liability or surplus rates, pre-SLGRP liability rate charges or offsets, or member redirect offsets). Other parameters of the rate collar are as follows:

- **Collar width:**
    - Tier One/Tier Two State & Local Government Rate Pool (SLGRP) and Tier One/Tier Two School District Rate Pool: 3% of payroll
    - OPSRP: 1% of payroll (experience for the OPSRP UAL Rate is pooled at a state-wide level)
    - Tier One/Tier Two UAL Rates for independent employers: greater of 4% of payroll or one-third of the difference between the employer’s collared and uncollared UAL Rate at the last rate-setting valuation. In addition, the UAL Rate will not be allowed to be less than 0.00% of payroll for any independent employer with a funded status (excluding side accounts) less than 100%.
- **UAL Decrease restrictions:** the UAL Rate component for any rate pool will not decrease from the prior biennium’s collared UAL Rate component if the pool’s funded status is 87% (excluding side accounts) or lower; the allowable decrease will phase into the full collar width from 87% funded to 90% funded.

The rate collar is applied for each rate pool (or independent employer) prior to any adjustments to the employer contribution rate for side accounts, transition liabilities, or pre-SLGRP pooled liabilities. The rate collar only applies to employer contribution rates for pension benefits. Rates attributable to RHIA and RHIPA (retiree medical) programs are not subject to the collar.

As discussed at the May and July PERS Board meetings, Senate Bill 849 reduced the Tier One/Tier Two UAL Rate component paid by School Districts during the 2025-2027 biennium compared to the originally adopted rate, though the resulting direct 2025-2027 contribution from School Districts is still greater than the 2025-2027 uncollared rate calculated in the December 31, 2023 rate-setting actuary valuation. The Board will make a policy decision regarding whether the originally scheduled 2025-2027 rate or the revised 2025-2027 rate after reflecting temporary funding provided by Senate Bill 849 will constitute the "prior biennium's current collared UAL Rate" for purposes of applying the rate collar methodology to the 2027-2029 biennium. We anticipate a decision at the July 25, 2025 Board meeting, which we will reflect in the December 31, 2024 advisory actuarial valuation. The information to assist that decision is in the July 2025 Board materials.

Liability Allocation for Actives with Multiple Employers

Over the course of a member's working career, a member may work for more than one employer covered under the Tier One/Tier Two program. Since employer Tier One/Tier Two contribution rates are developed on an individual employer basis, while also considering any rate pooling structures, the member's liability should be allocated between the member's various Tier One/Tier Two employers. If all of the member's employers participate in the same rate pool, the allocation has no effect on rates. However, if the employers in question are in different rate pools, or some are independent, the method to allocate liability among employers can have an impact on the employers' calculated contribution rates.

When a member retires, PERS allocates the cost of the retirement benefit between the employers the member worked for based on the calculation approach that produces the member's retirement benefit. If the member's benefit is calculated under the Money Match approach, the cost is allocated in proportion to the member's account balance attributable to each employer. If the member's benefit is calculated under the percent of final average pay Full Formula approach, the cost is allocated in proportion to the service attributable to each employer.

In the period prior to the 2003 system reforms and shortly thereafter, the vast majority of retirement benefits were calculated under the Money Match approach, so the member liability in valuations prior to December 31, 2006 had been allocated in proportion to the member's account balance attributable to each employer. With no new member contributions to Tier One/Tier Two, however, this procedure meant no liability was allocated to employers for service after December 31, 2003 in the valuation. As Money Match approach calculations became less predominant and retirements under the Full Formula approach become more prevalent, a change in the procedure to allocate liability among employers was warranted.

Effective with the December 31, 2006 valuation, a change was made to allocate a member's actuarial accrued liability among employers based on a weighted average of the Money Match methodology, which utilizes member account balance, and the Full Formula methodology, which utilizes service. The methodologies were weighted according to the percentage of the system-wide actuarial accrued liability for new retirements projected to be attributable to the Money Match and Full Formula approaches, respectively, as of the next rate-setting valuation. For the December 31, 2022 and December 31, 2023 valuations, the Money Match method was weighted 5% for general service members and 0% for police & fire members.

The total actuarial liability for Tier One/Tier Two active members estimated to be attributable to the Money Match approach as of December 31, 2024 is 3% for general service members and less than 1% for police & fire members. This continues the decreasing trend of Money Match benefits seen in prior Experience Studies.

We recommend the Money Match approach continue to be weighted 5% for general service members. This weighting will continue to be reviewed with each experience study and updated, as necessary. For police & fire members, we recommend the allocation continue to be based entirely on the Full Formula approach.

As in prior valuations, the member's normal cost will continue to be assigned fully to their current employer.

Offset for Member Redirect Contributions

Senate Bill 1049 from the 2019 legislative session provided that a portion of the 6% of pay member contribution would be redirected from the Individual Account Program (IAP) to the Employee Pension Stability Account (EPSA) beginning July 1, 2020. The EPSA amounts will be used to help fund Tier One/Tier Two and OPSRP defined benefits. Absent modification to governing law, the redirect to EPSA will remain in effect until the system-wide funded status including side accounts in a rate-setting actuarial valuation is 90% or greater.

The member redirect only applies to members whose pay exceeds a specified monthly salary threshold. This threshold was originally set at $2,500 per month ($30,000 per year for a 12-month employee) for 2020, with increases indexed to inflation in subsequent years. House Bill 2906 from the 2021 legislative session subsequently increased this threshold to $3,333 per month ($40,000 per year for a 12-month employee) effective in 2022. As of 2025, the monthly threshold has increased to $3,777 per month ($45,324 per year for a 12-month employee).

For members with pay above the monthly threshold, the amount redirected from the IAP to the EPSA is as follows:

- Tier One/Tier Two: 2.50% of pay
- OPSRP: 0.75% of pay

Beginning with the 2021-2023 biennium rates which were set in 2020, the PERS Board has adopted employer contribution rates that are based on a total gross actuarially calculated contribution rate along with an assumed offset for the average level of member redirect contribution for each tier. For the 2021-2023 biennium, the projected system-average member redirect offset was 2.45% of pay for Tier One/Tier Two and 0.70% of pay for OPSRP. Those projected offsets were based on the $2,500 per month threshold in the 2019 legislation. The 0.05% of pay difference between the redirect amount for affected individual members and the assumed system-average offset was due to the proportion of pay expected to fall below the statutory redirect monthly threshold. For the 2023-2025 and 2025-2027 biennium's contribution rate calculations, the projected system-average member redirect offset is 2.40% of pay for Tier One/Tier Two and 0.65% of pay for OPSRP. The increase from 0.05% to 0.10% in the pay difference between the redirect amount for an individual and the assumed offset was due to the revised pay threshold from House Bill 2906.

Based on our updated analysis reflecting individual member pay from the December 31, 2023 actuarial valuation reflecting the current inflation-adjusted pay threshold, we recommend the following assumed member redirect offset amounts for the 2027-2029 biennium:

- Tier One/Tier Two: 2.40% of pay
- OPSRP: 0.65% of pay

These amounts are unchanged from the current assumption.

3. Economic Assumptions

Overview

Actuarial Standard of Practice (ASOP) No. 27, *Selection of Assumptions for Measuring Pension Obligations,* provides guidance on selecting assumptions used in measuring obligations under defined benefit pension plans. ASOP No. 27 suggests that assumptions be developed using the actuary's professional judgment, taking into consideration past experience and the actuary's expectations regarding the future. The process for selecting assumptions involves:

- Identifying the types of assumptions used in the measurement and evaluating relevant data
- Considering factors specific to the measurement along with other general factors
- Selecting a reasonable assumption

Under ASOP No. 27, an actuary should use professional judgment to select reasonable assumptions. An assumption is considered reasonable if:

- It is appropriate for the purpose of the measurement,
- It reflects relevant historical and current data,
- It reflects the actuary's estimate of future experience, the actuary's observation of estimates inherent in market data, or a combination thereof, and
- It is expected to have no significant bias, except when provisions for adverse deviation are included and disclosed.

A summary of the economic assumptions used for the December 31, 2023 actuarial valuation and those recommended for the December 31, 2024 and 2025 actuarial valuations is shown below:

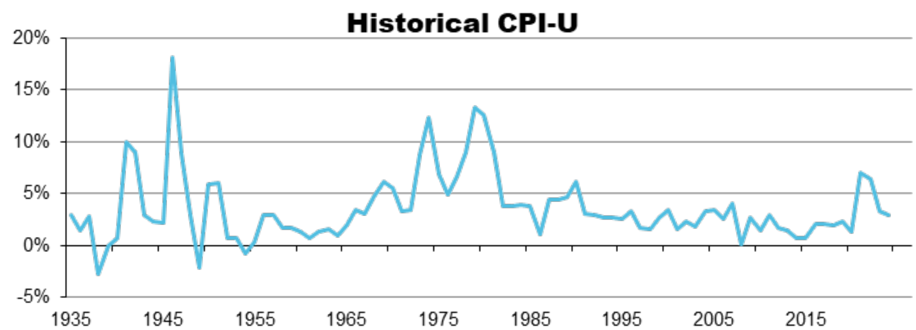
Assumption	Used for December 31, 2023 Valuation	Recommended for December 31, 2024 and 2025 Valuations
Inflation (other than healthcare)	2.40%	2.40%
Real wage growth	1.00%	1.00%
System payroll growth	3.40%	3.40%
Regular investment return	6.90%	While current capital market outlooks are higher than the current assumption, the current 6.90% assumption is reasonable. The Board will select the assumption at its July 25, 2025 meeting
Variable account investment return	Same as regular investment return	Same as regular investment return
Combined Tier One/Tier Two & OPSRP administrative expenses	$64 million/year	$72 million/year

Assumption	Used for December 31, 2023 Valuation	Recommended for December 31, 2024 and 2025 Valuations
RHIPA health cost trend rates		
▪ 2025 cost trend rate	6.60%	6.20%
▪ Ultimate cost trend rate	3.80%	3.80%
▪ Year reaching ultimate rate	2074	2073

The recommended assumptions shown above, in our opinion, were selected in a manner consistent with the guidance of ASOP No. 27. Each of the above assumptions is described in detail below and on the following pages.

Inflation

The assumed inflation rate is a building block for all other economic assumptions. It affects assumptions including investment return, system payroll growth, and the RHIPA health cost trend rate.



In selecting an appropriate inflation assumption, we consider both historical data and the breakeven inflation rates implied by recent yields of long-term Treasury Inflation Protection Securities (TIPS) and Treasury bonds. The chart above shows the historical annual inflation rate for the years ending December 31 from 1935 through 2024 as reported by the Bureau of Labor Statistics. The mean and median annual rates over this period are **3.62%** and **2.90%** respectively.

Historical inflation rates vary significantly from period to period and may not be an indication of future inflation rates. Given the presence of a TIPS market, we can calculate an estimated breakeven inflation rate by comparing yields on regular Treasury securities to the yields on TIPS. The table below shows yields as of December 31, 2024, for 10-year and 30-year Treasury bonds and TIPS.

	As of 12/31/2024	
	10-Year	**30-Year**
Treasury Yield	4.58%	4.78%
TIPS Yield	2.24%	2.48%
Breakeven Inflation	**2.34%**	**2.30%**

We also considered forward-looking estimates of inflation measures prepared by prominent organizations with the need and expertise to forecast long-term inflation: Social Security's intermediate inflation projection average of 2.42% over the period 2025-2034 (with an ultimate rate of **2.40%**), the Cleveland Fed's inflation expectation model projection 2.44% inflation over 10 years and **2.52%** over 30 years, the Medicare Trustees' intermediate assumption of 3.20% inflation for ten years and **2.40%** thereafter, and the Congressional Budget Office's projection of CPI of an average of 2.28% inflation over the period 2024-2035 (with an ultimate rate of **2.20%**). These measures were taken from, respectively, the 2025 OASDI Trustees Report, data published on the website of the Federal Reserve Bank of Cleveland, the 2025 Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds, and *The Budget and Economic Outlook: 2025 to 2035* published by the CBO in January 2025.

Based on the information shown above, **we believe the current assumption of 2.40% is reasonable and recommend no change**.

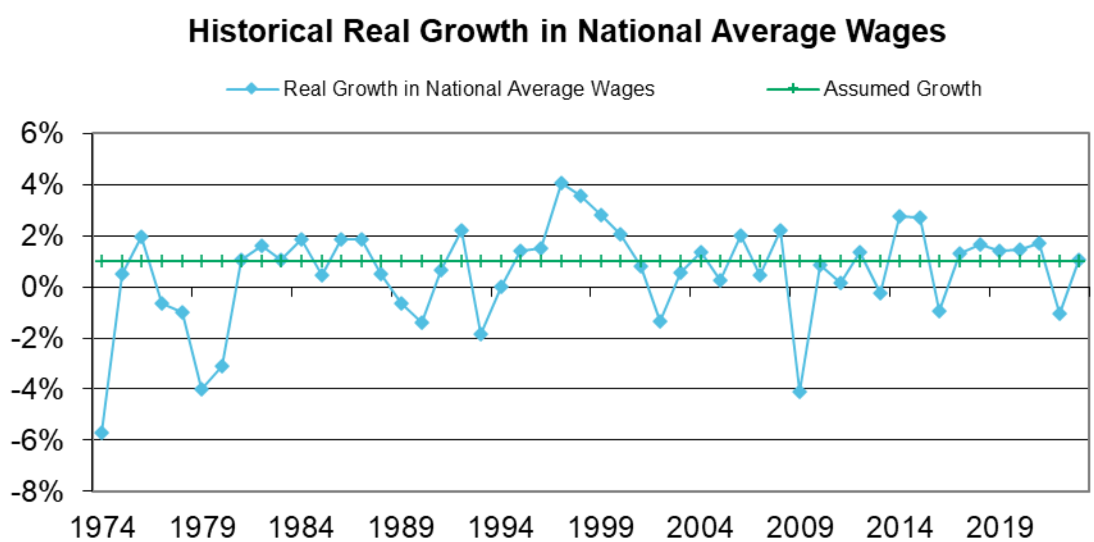
Real Wage Growth

The assumed individual salary increase assumption for each member is the sum of three components:

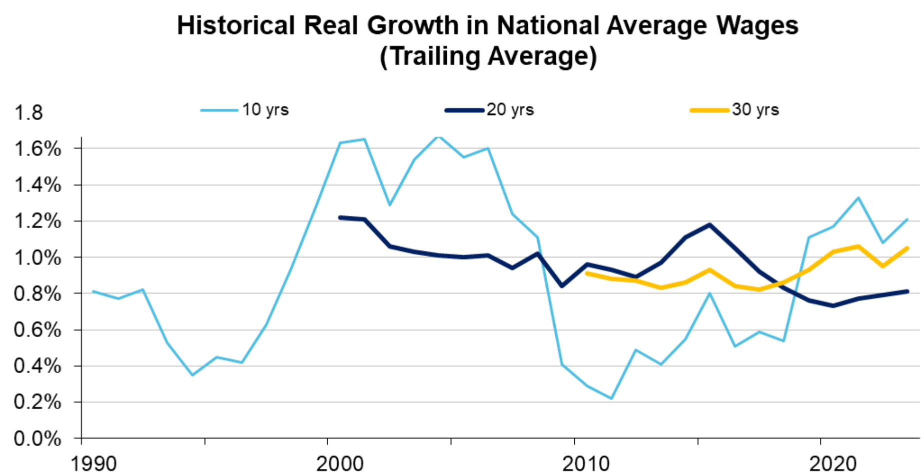
- Inflation,
- Real wage growth, and
- Merit and longevity wage growth.

Real wage growth represents the increase in wages above inflation for an entire population due to improvements in productivity and competitive pressures. Merit and longevity wage growth, in contrast, represent the increases in wages for an individual due to factors such as performance, promotion, or seniority.

The chart below shows the real growth in national average wages over the past fifty years based on data compiled by the Social Security Administration.



While the change in any one year has been volatile, the change over longer periods of time is more stable as shown in the chart below, which depicts the 10, 20, and 30 year trailing average reflecting data since 1981. (For example, the 10-year trailing average shown for 1990 in the chart reflects data from 1981 through 1990.)

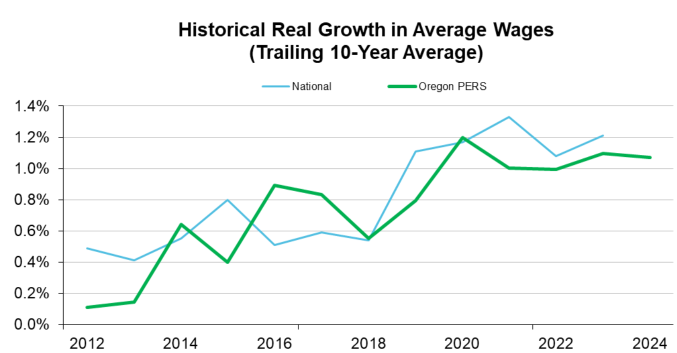


While the 10-year trailing average is still somewhat volatile, the 20- and 30-year averages have generally remained between 0.80% and 1.20% during the period shown. The table below shows the trailing average over various periods as of December 31, 2023, which was the most recently available data at the time of this report's development.

Length of Period Ending December 31, 2023	Average Real Growth in National Average Wages
10 years	1.21%
20 years	0.81%
30 years	1.05%
40 years	0.92%
50 years	0.56%

We also considered the Social Security Administration's current long-term intermediate wage growth assumption of 1.13% in our analysis.

Finally, we compared how the recent 10-year trailing average of changes in national average wages compared to the average change in Oregon PERS salary, as shown in the graph below:



In general, the direction and trend for recent System experience has been consistent with the patterns of changes in national average wages. The Oregon PERS experience for the most recent comparable 10-year period has lagged the trailing average for national data, but this relationship can vary greatly over a one- or two-year period, as shown in the comparison of the 2020 and 2021 data points above.

Based on the combination of historical data and Social Security's outlook for future experience, **we consider the current assumption of 1.00% to continue to be reasonable and appropriate.**

System Payroll Growth

Real wage growth combined with inflation represents the expected growth in total system payroll for a stable active employee population. Changes in payroll due to an increase or decline in the headcount of the active employee population are customarily not captured by this assumption unless there is a reason to build in a known expectation of significant long-term changes in the active working population. For Oregon PERS, we do not have any reason to assume such changes and so assume a stable population for purposes of the system payroll growth assumption.

The system payroll growth assumption is used to develop the annual amount necessary to amortize the unfunded actuarial liability (UAL) as a level percentage of projected future system payroll. For any given amount of UAL, a lower system payroll growth assumption will produce a higher near-term contribution rate to amortize the UAL over a given time period, while a higher assumption will produce a lower near-term contribution rate. For this reason, a lower system payroll growth assumption is considered more conservative in terms of the contribution rate development, as it is less likely to result in actual payroll growth (and contribution dollars) falling below the assumption.

The table below compares actual trailing experience for Oregon PERS in terms of growth in overall valuation payroll (the middle column) and the average per-member payroll (the right column). The increase in overall valuation payroll has exceeded the per-member average due to modest increases in System active member headcount during these time periods.

Length of Period Ending December 31, 2023	Oregon PERS Average Annualized Growth in Valuation Payroll	Oregon PERS Average Annualized Growth in Average Payroll
5 years	7.1%	5.4%
10 years	5.9%	4.1%
15 years	4.3%	3.5%
20 years	4.6%	3.4%

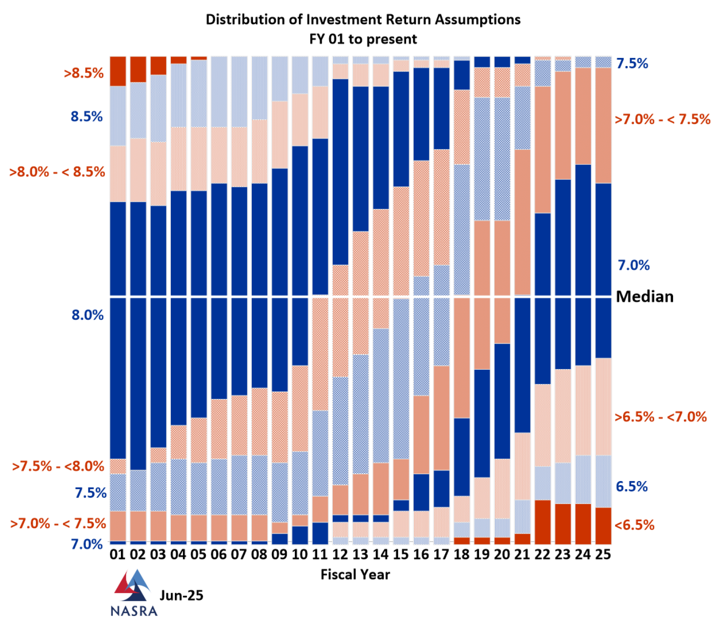
Since we are recommending the inflation assumption remain at 2.40% and the real wage growth assumption remain at 1.00%, **we recommend that the payroll growth assumption continue to be 3.40% which is equal to the sum of these two assumptions.**

Investment Return

The assumed rate of investment return is used to calculate the present value as of the actuarial valuation date of future projected system benefit payments, to project interest credits applied to member accounts until retirement, to convert member account balances to monthly retirement allowances under the Money Match formula, and to convert the retirement allowance to actuarially equivalent optional joint & survivor forms of benefit. As such, it is the most important assumption used in valuing the plan's liabilities and developing contribution rates. The assumption is intended to reflect the long-term expected average future return on the portfolio of assets that fund the benefits.

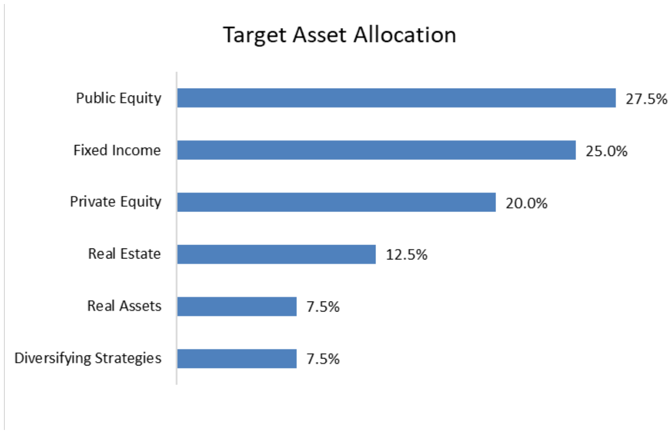
To provide some perspective on this assumption, the chart below shows the assumptions used by the 131 largest US public sector systems in a regularly updated survey published by the National Association of State Retirement Administrators (NASRA). As can be seen from the chart (updated by NASRA in March 2024), the Oregon PERS assumption of 6.90% used in the prior valuation is currently below the median assumption for large US public sector systems, which is 7.00%. The arithmetic average (mean) of the return assumptions in the chart is 6.91%. Over most of the period covered by the chart, the consensus view among investment professionals regarding future expected returns decreased, largely driven by lower interest rates (which are associated with lower long-term expected future returns for fixed income investments) and higher price-to-earnings ratios for equities (associated with lower expected future returns for equity investments). After the significant rises in interest rates and equity market losses experienced in 2022, this pattern has begun to reverse as discussed further below. However, in general large pension systems have not made significant changes to their long-term forward-looking outlook based on these developments.

NASRA Public Fund Survey
Assumed Investment Return



Regular Accounts

Based on the Oregon Investment Council's (OIC) Statement of Investment Objectives and Policy Framework for the Oregon Public Employees Retirement Fund, including revisions adopted at the OIC meeting on January 25, 2023, we understand the current target asset allocation is as follows:



To develop an analytical basis for the Board's selection of the investment return assumption, we use long-term real return outlooks developed by Milliman's capital market outlook team for each of the asset classes in which the plan is invested based on the OIC's long-term target asset allocation to develop nominal expected returns. Since the OIC uses broader asset classes than those for which Milliman's investment professionals develop long-term return assumptions, we received assistance from Meketa, OIC's primary investment consultant, to map each OIC asset class to the classes in Milliman's model shown below. Each asset class assumption is based on a consistent set of underlying assumptions, including the inflation assumption. These assumptions are not based on average historical returns but instead are based on a forward-looking capital market outlook economic model. Based on the target allocation and investment return assumptions for each of the asset classes, our model's 50th percentile output is developed as follows:

Asset Class	Target Allocation	Annual Arithmetic Mean	20-Year Annualized Geometric Mean	Annual Standard Deviation
Global Equity	27.500%	8.18%	6.63%	18.30%
Private Equity	25.500%	12.46%	8.38%	30.00%
Core Fixed Income	25.000%	4.70%	4.61%	4.44%
Real Estate	12.250%	8.00%	6.69%	16.79%
Master Limited Partnerships	0.750%	8.89%	5.62%	26.46%
Infrastructure	1.500%	8.13%	6.75%	17.18%
Hedge Fund of Funds – Multi-strategy	1.250%	6.36%	5.90%	8.74%
Hedge Fund Equity-Hedge	0.625%	6.87%	6.01%	11.81%
Hedge Fund – Macro	5.625%	5.78%	5.52%	6.11%
Portfolio – Net of Investment Expenses	100.000%	8.22%	7.43%*	13.48%

*****The Milliman model's ***20-year annualized geometric median is 7.39%***.*

Based on capital market outlook for real returns developed by credentialed investment professionals at Milliman, including assumed inflation of 2.32%.

We compared the expected return to the range of returns developed using a mean-variance model and the capital market assumptions developed by Milliman to a similar analysis presented at the May OIC meeting that we understood was developed collaboratively by Oregon State Treasury staff and their two investment consultants, Meketa and Aon. These capital market outlooks were developed based on year-end 2024 market conditions. In addition, we modeled the returns projected for the OIC's asset allocation using the 10-year capital market outlook from the 2024 Survey of Capital Market Assumptions published by Horizon Actuarial Services in August 2024. We understand the Horizon survey reflects inputs from 41 different firms who participated in the survey and reflects their capital market outlook models from the first half of 2024. Returns shown below are net of passive investment expenses. In our modeling, we assumed that expenses incurred for active management are offset by additional returns gained from active management.

The table below compares the median of expected annualized returns calculated on a geometric basis for regular accounts based on Milliman's analysis detailed above, the OIC capital market outlook, and the consensus outlook from the Horizon survey. Note that the combination of significant recent changes in financial market and the time lag since the Horizon survey information was collected, as discussed below, helps explain why the Horizon survey results are lower than the other data points shown in the following table.

	OIC	Horizon	Milliman 10-year	Milliman 20-year
Median annualized geometric return	**7.3%**	7.43%	7.07%	7.39%
Assumed inflation	2.3%	2.42%	2.37%	2.32%
Timeframe modeled	10 years	10 years	10 years	20 years

It is common practice among public pension systems for the investment return assumption to be a multiple of either a tenth- or quarter-point (i.e., 0.10% or 0.25%). The lack of additional precision in selected assumptions is justified and reasonable due to the inability to have precise knowledge in advance regarding future investment returns. The median annualized return for the 10-year outlook from the OIC (reflecting input from their advisors Meketa and Aon) was 7.3%. The median annualized return based on Milliman's real return capital market outlook was 7.07% over 10 years and 7.39% over 20 years. Those model outputs are based on the forward-looking return expectations of the investment professionals from those firms and before any potential active management adjustments. When the last experience study was conducted as of December 31, 2022, similar forward-looking 20-year outlooks from the OIC and Milliman were 7.6% and 7.46%, respectively.

Both the OIC and Milliman models use capital market assumptions developed at the beginning of 2025. Note that the Horizon survey results were based on expectations in the first half of 2024.

Actual future investment returns are not determined by the assumed rate of return. Selecting an assumed return materially above the 50th percentile implies a materially greater than 50% chance of actual long-term future experience falling short of the selected assumption. Conversely, selecting an assumed return below the 50th percentile implies a greater likelihood that actual long-term experience will exceed the long-term assumption.

While this update of capital market outlooks produced median expectations greater than the current investment return assumption, it would also be reasonable for the PERS Board to maintain the investment return assumption at the current level of 6.90%. Prior to the 2022 Experience Study, there had been a consistent pattern of lower forward-looking return expectations that evolved over the prior decade. While outlooks have risen recently, significant volatility and uncertainty remain. Given the current environment, maintaining an assumption below the 50th percentile of forward-looking capital market outlooks would be reasonable and prudent.

Variable Account

The variable account is invested entirely in global equity. As a result, the annual expected arithmetic (single-year) return is higher than for the regular account, but so is the standard deviation. The result is a long-term compounded geometric average annual return similar to the regular account, based on Milliman's capital market outlook. Prior to the December 31, 2012 valuation, the compound geometric variable account return was assumed to be higher than the regular account return. Beginning with that valuation, the variable account return assumption was set equal to the regular account return assumption, as the relationship between the various asset classes no longer warranted such a distinction in our opinion. **We recommend continuing to set the variable account return assumption equal to the regular account return assumption.**

Administrative Expenses

In accordance with GASB Statements No. 67 and No. 68, the long-term investment return assumption is gross of administrative expenses. To account for expected administrative expenses, we develop an assumed dollar amount, based on recent and expected future experience, to add to the normal cost in the calculation of contribution rates with the goal of funding administrative expenses via the normal cost rate each year as they occur. Continuing with the practice introduced in the prior experience study, we recommend developing a total system-wide dollar amount (Tier One/Tier Two and OPSRP) and then allocating the assumed administrative expense to normal cost for each tier in proportion to payroll.

The total assumed administrative expenses in the December 31, 2023 valuation was $64 million per year. A summary of recent actual administrative expenses for the system is shown below.

	System-Wide (Tier One/Tier Two + OPSRP) Pension Administrative Expense		
Year	Dollar Amount ($ millions)	Percentage of Beginning of Year Assets	Percentage of Projected Payroll
2020	$56.5	0.09%	0.49%
2021	$59.9	0.09%	0.50%
2022	$61.5	0.08%	0.48%
2023	$66.2	0.09%	0.48%
2024	$68.5	0.09%	0.45%

Based on discussion with PERS staff, we understand the increase recent was driven largely by work required for the implementation of Senate Bill 1049, but that this higher level of expenses is expected to persist in the near future as the cost of modernization efforts replace some of the Senate Bill 1049 implementation costs that will wind down. As a result, **we recommend setting the assumed system-wide administrative expenses for the December 31, 2024 and December 31, 2025 actuarial valuations at $72 million.** This amount reflects recent historical experience with an expectation of inflation-related growth for the next two years.

RHIPA Subsidy Cost Trend Rates

Trend rates are used to estimate increases in the employer cost of the RHIPA subsidy. Based on analysis performed by Milliman's healthcare actuaries, we recommend updates detailed below to the healthcare cost trend assumption. The healthcare cost trends are based on the Society of Actuaries (SOA) published report on long-term medical trend. That report includes detailed research performed by a committee of economists and actuaries including a representative for Milliman. Milliman uses this model as the foundation for the trend that it recommends to our clients for OPEB valuations. The model produces long-range trend assumptions built on long-term relationships between certain key economic factors.

Note that the following chart shows sample rates of the assumptions developed for RHIPA subsidy cost trends. A full chart can be found in the appendices.

Year	Used for December 31, 2022 and 2023 Valuations	Recommended for December 31, 2024 and 2025 Valuations
2023	6.6%	N/A
2024	7.0%	N/A
2025	6.4%	6.2%
2026	5.7%	5.7%
2027	5.1%	5.2%
2028	4.9%	5.1%
2029	4.8%	4.9%
2030	4.6%	4.8%
2035	4.2%	4.2%
2040	4.2%	4.2%
2045	4.2%	4.2%
2050	4.2%	4.2%
2060	4.3%	4.3%
2070	4.0%	4.0%
2073+	3.8%	3.8%

4. Demographic Assumptions

Overview

Actuarial Standard of Practice (ASOP) No. 27, *Selection of Assumptions for Measuring Pension Obligations,* provides guidance on selecting assumptions used in measuring obligations under defined benefit pension plans. The general process for recommending assumptions as defined in ASOP No. 27 is as follows:

- Identifying the types of assumptions used in the measurement and evaluating relevant data
- Considering factors specific to the measurement along with other general factors
- Selecting a reasonable assumption

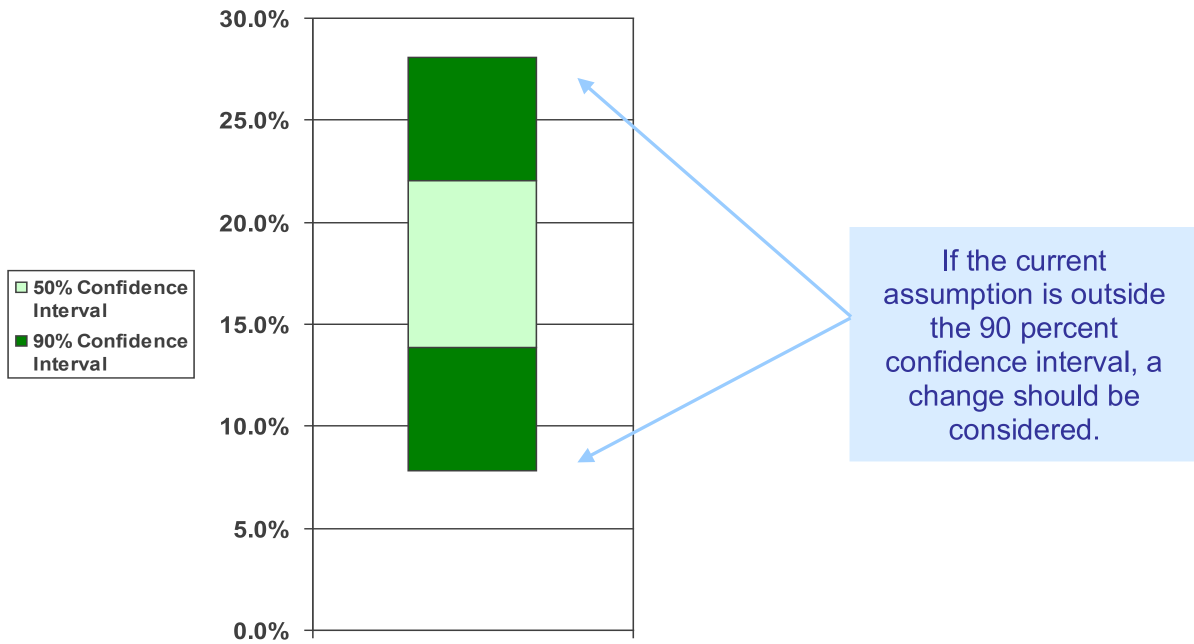
Under ASOP No. 27, an actuary should use professional judgment to select reasonable assumptions. An assumption is considered reasonable if:

- It is appropriate for the purpose of the measurement,
- It reflects relevant historical and current data,
- It reflects the actuary's estimate of future experience, the actuary's observation of estimates inherent in market data, or a combination thereof, and
- It is expected to have no significant bias, except when provisions for adverse deviation are included and disclosed.

The purpose of the demographic experience study is to compare actual experience against expected experience based on the assumptions used in the most recent actuarial valuation. The observation period for most assumptions analyzed in this study is January 1, 2017 through December 31, 2024, and the current assumptions are those adopted by the Board for the December 31, 2023 actuarial valuation. If the actual experience differs significantly from the overall expected experience, or if the pattern of actual experience by age, sex, or duration does not follow the expected pattern, new assumptions are considered.

For several assumptions shown below, confidence intervals have been used to measure observed experience against current assumptions to determine the reasonableness of the assumption. The floating bars represent the 50 percent and 90 percent confidence intervals around the observed experience. The 90 percent confidence interval represents the range around the observed rate that could be expected to contain the true rate during the period of study with 90 percent probability. The size of the confidence interval depends on the number of observations and the likelihood of occurrence. If an assumption is outside the 90 percent confidence interval and there is no other information to explain the observed experience, a change in assumption should be considered. A change may also be considered when the observed experience is within the 90 percent confidence interval, depending on the specific situation. A sample graph with confidence intervals is shown below:

Overview (continued)



The demographic assumptions used for the December 31, 2023 actuarial valuation and the recommended assumptions for the December 31, 2024 and December 31, 2025 actuarial valuations are shown in detail in the following sections.

A summary of the changes recommended to the Board are as follows:

- Adjust mortality assumptions to use the new “Pub-2016” base tables, matched to PERS-specific mortality experience.
- Increase the individual member salary increase assumption’s merit/longevity component for one member category based on observations of the last 12 years of experience. The individual member salary increase assumption consists of the sum of inflation, real wage growth, and merit/longevity components, with the latter varying by member. We also recommend maintaining the additional 2% annual increase for 2025 above the long-term assumptions, which was first adopted in the 2022 Experience Study to reflect significant bargained increases already known at that time.
- Adjust retirement rates for certain member categories and service bands to more closely align with recent and expected future experience.
- Lower assumed rates of ordinary (non-duty) disability incidence to more closely match recent experience.
- Adjust the Tier One/Tier Two unused sick leave assumption for one of the nine member categories to reflect recently observed experience.
- Decrease the likelihood of program participation for non-disabled and disabled retirees in the RHIA retiree healthcare program.
- Decrease the RHIPA likelihood of program participation assumption for most service bands.

The recommended assumptions, in our opinion, were selected in a manner consistent with the requirements of ASOP No. 27.

Mortality

Mortality rates are used to project the length of time benefits will be paid to current and future retirees and beneficiaries. The selection of a mortality assumption affects plan liabilities because the estimated present value of retiree benefits depends on how long the benefit payments are expected to continue. There are statistically credible differences in the mortality rates among non-disabled retired members, disabled retired members, and non-retired members. As a result, experience for each of these groups is reviewed independently and each group receives its own mortality assumptions.

A summary of the current assumed mortality rates and recommended changes is shown below:

Assumption	Used for December 31, 2022 and 2023 Valuations	Recommended for December 31, 2024 and 2025 Valuations
Non-Disabled Annuitant Mortality	**Pub-2010 Benefits-Weighted Non-Disabled <u>Retiree</u>, Sex Distinct, Generational Projection with Unisex Social Security Data Scale**	**Pub-2016 Benefits-Weighted Non-Disabled <u>Retiree</u>, Sex Distinct, Generational Projection with Unisex Social Security Data Scale**
▪ School District male	Blend 80% Teachers and 20% General Employees, no set back	No change
▪ Other General Service male (and male beneficiary)	General Employees, set back 12 months	No change
▪ Police & Fire male	Public Safety, no set back	No change
▪ School District female	Teachers, no set back	No change
▪ Other General Service female (and female beneficiary)	General Employees, no set back	No change
▪ Police & Fire female	Public Safety, set back 12 months	No change
Disabled Retiree Mortality	**Pub-2010 <u>Disabled Retiree</u>, Sex Distinct, Generational Projection with Unisex Social Security Data Scale**	**Pub-2016 <u>Disabled Retiree</u>, Sex Distinct, Generational Projection with Unisex Social Security Data Scale**
▪ Police & Fire male	Blended 50% Public Safety, 50% Non-Safety, no set back	Blended 20% Public Safety, 80% Non-Safety, no set back
▪ Other General Service male	Non-Safety, set forward 24 months	120% of Non-Safety, no set back
▪ Police & Fire female	Blended 50% Public Safety, 50% Non-Safety, no set back	Blended 20% Public Safety, 80% Non-Safety, no set back
▪ Other General Service female	Non-Safety, set forward 12 months	120% of Non-Safety, no set back
Non-Annuitant Mortality	**Pub-2010 <u>Employee</u>, Sex Distinct, Generational Projection with Unisex Social Security Data Scale**	**Pub-2016 <u>Employee</u>, Sex Distinct, Generational Projection with Unisex Social Security Data Scale**
▪ School District male	125% of same table and set back as Non-Disabled Annuitant assumption	120% of same table and set back as Non-Disabled Annuitant assumption
▪ Other General Service male	115% of same table and set back as Non-Disabled Annuitant assumption	120% of same table and set back as Non-Disabled Annuitant assumption

Mortality *(continued)*

Assumption	Used for December 31, 2022 and 2023 Valuations	Recommended for December 31, 2024 and 2025 Valuations
▪ Police & Fire male	125% of same table and set back as Non-Disabled Annuitant assumption	120% of same table and set back as Non-Disabled Annuitant assumption
▪ School District female	100% of same table and set back as Non-Disabled Annuitant assumption	120% of same table and set back as Non-Disabled Annuitant assumption
▪ Other General Service female	125% of same table and set back as Non-Disabled Annuitant assumption	120% of same table and set back as Non-Disabled Annuitant assumption
▪ Police & Fire female	100% of same table and set back as Non-Disabled Annuitant assumption	120% of same table and set back as Non-Disabled Annuitant assumption

Mortality Improvement Scale

Mortality rates are expected to continue to decrease in the future, and the resulting increased longevity should be anticipated in the actuarial valuation. For Oregon PERS, this is done through the use of a generational mortality assumption, which combines a base mortality table and a separate mortality improvement scale to project the pace of future life expectancy increases. The base mortality table defines the mortality rates assumed at each age in a single specific calendar year, while the mortality improvement scale projects how quickly the mortality rates at each individual age are assumed to improve in future calendar years.

The current mortality improvement scale is based on 60-year unisex average mortality improvement rates by age, calculated using Social Security data through 2019, which was the most recent publicly available data at the time of the prior experience study. **We do not recommend updating the mortality improvement scale.**

Note that Social Security data has been published through 2022, but we chose not to reflect the most recent three years in setting our forward-looking assumption as the effect of the COVID-19 pandemic is significant in the 2020-2022 data and would skew the analysis to an extent not expected to be predictive of future mortality. The effect of the pandemic on long-term mortality rates is unknown and is a subject of significant uncertainty among experts who attempt to model such experience. The Retirement Plan Experience Committee (RPEC) of the Society of Actuaries has continued to suspend its usual practice of providing an annual update to their "MP" mortality improvement scale once the update would have been due to reflect 2020-2021 experience. As noted in their report published in October 2023, RPEC "*does not believe it would be appropriate to incorporate, without adjustment, the substantially higher rates of mortality experience from 2020-2021 …to forecast future mortality.*" In their October 2024 report they stated, "*there is not yet sufficient post-pandemic data upon which to develop an updated MP scale.*" Similarly, for this study we believe it is best to continue to reflect Social Security experience only through 2019 when determining an assumption for future mortality improvement.

In our professional opinion, the current mortality improvement scale meets the *"best actuarial information on mortality at the time"* standard mandated by ORS 238.607. A full listing of the current mortality improvement scale rates is included in the appendix.

Non-Disabled Annuitant Mortality

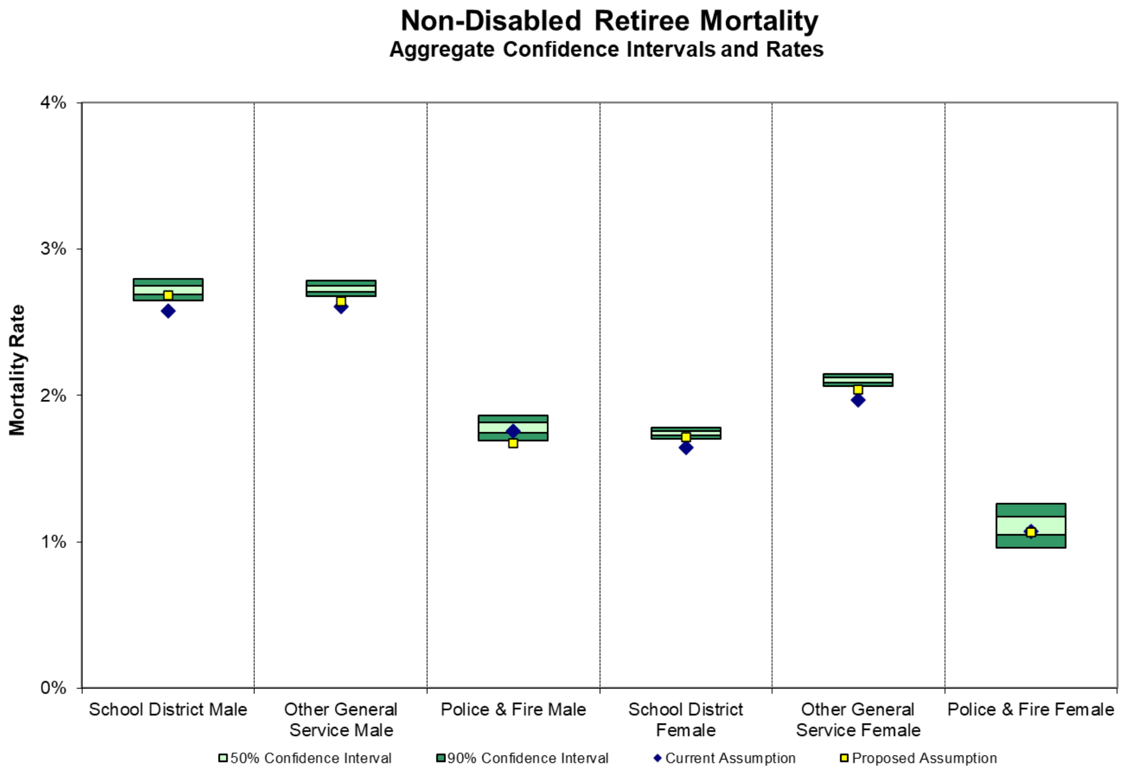
Mortality assumptions for non-disabled retired members are separated into six groups based on employment category and gender (school district males, school district females, police & fire males, police & fire females, other general service males, other general service females). Beneficiaries were combined with non-school district general service members of the same gender.

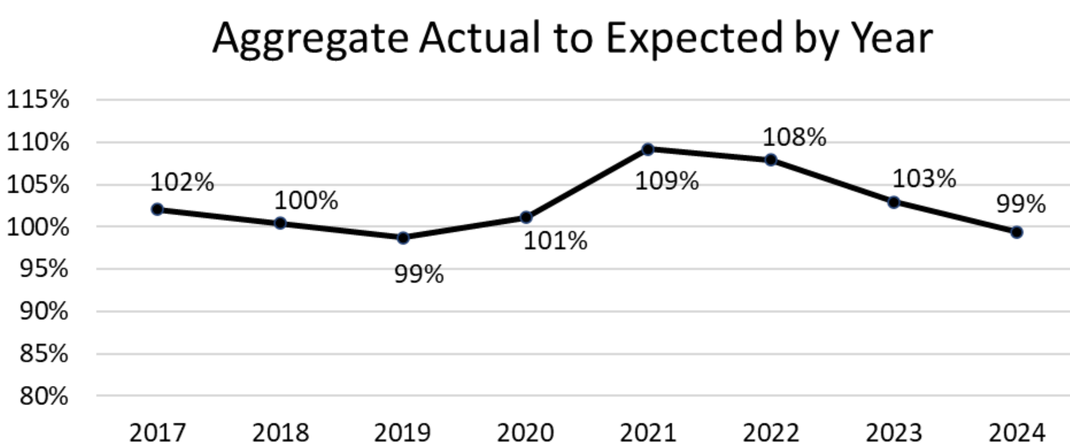
To assist in review of the current mortality assumptions' reasonability, we calculated the ratio of actual deaths to expected deaths (A/E ratio) during the experience study's data observation period for each of the six groups described above. In the prior study, mortality assumptions were targeted to achieve an A/E ratio of approximately 100 percent on a benefits-weighted basis. In the current study, A/E ratios for all groups were greater than 100 percent, and the aggregate mortality rate experience for several groups are outside the 90% confidence interval. However, review of year-by-year experience during the study period—as shown in the "Aggregate Actual to Expected by Year" graph below—shows that A/E ratios were highest in 2021 and 2022 and were likely pandemic-related. Actual mortality experience showed A/E ratios have drawn closer to 100% since 2022.

We recommend updating the assumption to use the recently-published Pub-2016 mortality tables, as discussed below. In calibrating the recommended assumptions, we targeted aggregate A/E ratios modestly greater than 100% when all experience data is considered, as shown in the table below. We also confirmed that the recommended assumptions produced ratios near 100% when data from the outlier years of 2021 and 2022 were excluded.

	Benefits-Weighted ($1,000s of monthly benefits)		Current Assumption		Recommended Assumption	
	Exposures	Actual Deaths	Expected Deaths	A/E Ratio	Expected Deaths	A/E Ratio
School District male	455,661	12,403	11,738	106%	12,219	102%
Other General Service male (and male beneficiary)	822,949	22,456	21,442	105%	21,753	103%
Police & Fire male	282,980	5,036	4,970	101%	4,736	106%
School District female	763,021	13,294	12,542	106%	13,092	102%
Other General Service female (and female beneficiary)	829,399	17,463	16,346	107%	16,902	103%
Police & Fire female	38,991	433	417	104%	415	104%

Mortality *(continued)*





We recommend moving from the Pub-2010 base mortality tables to the Pub-2016 base mortality tables (published by the Society of Actuaries in May 2025) as the underlying base mortality tables for generational mortality assumptions in the current study. The Pub-2016 mortality tables reflect observed experience from calendar years 2013-2019, with 2016 as the middle of the observation period. The tables are based exclusively upon data gathered from large public sector pension systems (including Oregon PERS) and represent the most current study specific to the mortality experience of US public pension plans.

Mortality *(continued)*

In the Pub-2016 study, different gender-distinct base mortality tables were published for three separate employee and retiree categories: teachers, public safety personnel, and general employees. When selecting a base table to match the mortality rates of Oregon PERS, we started from the category table most applicable to the portion of the population under consideration, and then adjusted, if needed, to more closely align with recent Oregon PERS experience. At times we use a "set back" to adjust the mortality rates. A "set back" of 12 months, for example, treats all members as if they were 12 months younger than they really are when applying the mortality table, which results in lower assumed mortality rates and longer life expectancy for members.

A summary of the current and recommended non-disabled retiree mortality assumptions is shown below. Because the Pub-2016 base tables were broadly consistent with the Pub-2010 tables they replaced and the general changes in longevity expectations they reflected were consistent with Oregon PERS experience, we did not need to make any changes to existing group-specific adjustments we apply to the base tables.

	Used for December 31, 2022 and 2023 Valuations	Recommended for December 31, 2024 and 2025 Valuations
Basic Table	**Pub-2010 Benefits-Weighted Non-Disabled Retiree, Sex Distinct, Generational Projection with Unisex Social Security Data Scale**	**Pub-2016 Benefits-Weighted Non-Disabled Retiree, Sex Distinct, Generational Projection with Unisex Social Security Data Scale**
School District male	Blend 80% Teachers and 20% General Employees, no set back	No change
Other General Service male (and male beneficiary)	General Employees, set back 12 months	No change
Police & Fire male	Public Safety, no set back	No change
School District female	Teachers, no set back	No change
Other General Service female (and female beneficiary)	General Employees, no set back	No change
Police & Fire female	Public Safety, set back 12 months	No change

Disabled Retiree Mortality

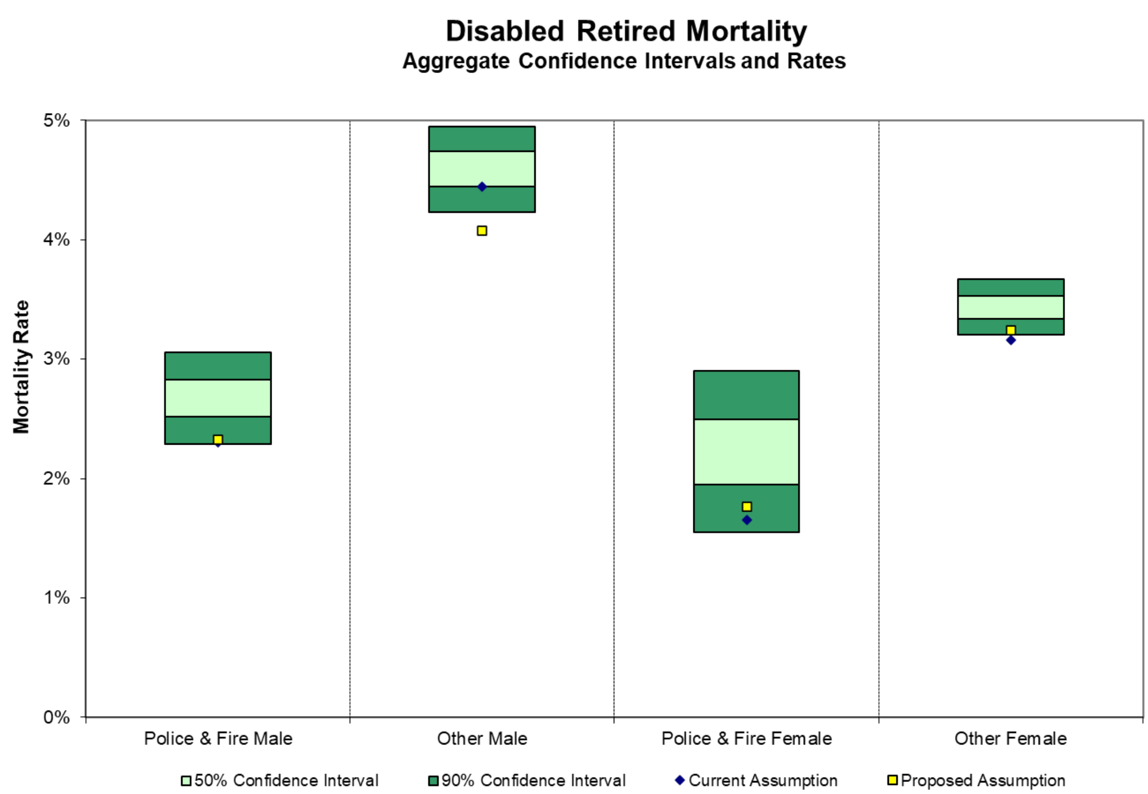
Disabled members are expected to experience higher mortality rates at a given age than non-disabled retired members. As a result, disabled member mortality experience is analyzed separately from that of non-disabled annuitants and beneficiaries. We recommend using the Pub-2016 Disabled Retiree base mortality tables and the 60-year average unisex Social Security mortality improvement scale as the starting point for setting disabled mortality assumptions in the current study. This will maintain a consistent basis for disabled and non-disabled retiree assumptions, as has been the case in prior studies.

In prior studies, we have recommended applying adjustments to the underlying disabled mortality tables published by the SOA where needed in order to more closely match assumptions to recent Oregon PERS experience. For this study, we compared recent Oregon PERS experience to the Pub-2016 Disabled Retiree mortality tables on a benefits-weighted approach to see whether similar adjustments would be advisable.

Mortality *(continued)*

	Benefits-Weighted ($1,000s of monthly benefits)		Current Assumption		Recommended Assumption	
	Exposures	Actual Deaths	Expected Deaths	A/E Ratio	Expected Deaths	A/E Ratio
Disabled Police & Fire male	17,561	469	404	116%	409	115%
Disabled General Service male	20,664	949	919	103%	842	113%
Disabled Police & Fire female	3,673	82	61	134%	65	126%
Disabled General Service female	30,810	1,058	974	109%	998	106%

Using a benefits-weighted approach, the selected variations of the Pub-2016 Disabled Retiree mortality tables fell within a 90 percent confidence interval around observed experience for all groups except disabled general service males. The effect of the COVID-19 pandemic in the 2021 and 2022 data is more significant for disabled general service males than the other disabled groups. Specifically, the A/E ratio for this group significantly improves when the years 2021 and 2022 are excluded, while the change in A/E ratio for the other disabled groups is minimal under the same scenario. Given the sensitivity of the general service male analysis to pandemic-related experience, we are recommending a forward-looking mortality assumption lower than the confidence interval derived from the experience of the full study period.



Mortality *(continued)*

A summary of current and recommended disabled retiree mortality assumptions is shown below:

	Used for December 31, 2022 and 2023 Valuations	Recommended for December 31, 2024 and 2025 Valuations
Basic Table	**Pub-2010 Disabled Retiree, Sex Distinct, Generational Projection with Unisex Social Security Data Scale**	**Pub-2016 Disabled Retiree, Sex Distinct, Generational Projection with Unisex Social Security Data Scale**
Disabled Police & Fire male	Blended 50% Public Safety, 50% Non-Safety, no set back	Blended 20% Public Safety, 80% Non-Safety, no set back
Disabled General Service male	Non-Safety, set forward 24 months	120% of Non-Safety, no set back
Disabled Police & Fire female	Blended 50% Public Safety, 50% Non-Safety, no set back	Blended 20% Public Safety, 80% Non-Safety, no set back
Disabled General Service female	Non-Safety, set forward 12 months	120% of Non-Safety, no set back

Non-Annuitant Mortality

The non-annuitant mortality assumption applies to active members and dormant members (those members who have terminated employment but have a vested right to a future benefit). As with the other mortality assumptions, we recommend using the Pub-2016 base mortality tables and the 60-year average unisex Social Security mortality improvement scale as the starting point for setting mortality assumptions for this group. This will maintain a consistent basis for mortality assumptions, as has been the case in prior studies.

For a given age and gender, an employed person is on average less likely to die in a given year than a retired person of the same age and gender. We recommend using separate Pub-2016 Non-Disabled Retiree and Pub-2016 Employee mortality tables for non-disabled annuitants and non-annuitants, respectively. Each Non-Disabled Retiree table published by the SOA has a corresponding Employee table, which reflects differences in the anticipated mortality rates for the retiree and employee populations.

For each population subgroup, we recommend using the Pub-2016 Employee base mortality table (including adjustments) that corresponds to the Non-Disabled Retiree table selected for that subgroup and then adjusting the mortality rates with a scaling factor of 120% to better match recent Oregon PERS experience. For example, mortality for non-annuitant General Service females will be assumed to follow the Pub-2016 Employee base mortality table for the general employees job category, with no set back, and will be projected generationally using the Social Security unisex mortality improvement scale (all of which parallels treatment for the corresponding retiree group), and will then be scaled by a factor of 120% to better match the aggregate Oregon PERS-specific experience of the relevant employee group.

The relative values of corresponding Pub-2016 Employee and Non-Disabled Retiree base mortality tables were developed by the SOA based on a much larger population than that of Oregon PERS. As a result, we believe it is preferable to reflect that relationship as the starting point when developing non-annuitant versions of the recommended non-disabled annuitant mortality tables for Oregon PERS. The analysis below compares recent experience in aggregate for the non-annuitant population under this approach. This comparison was done on a headcount-weighted basis only since the final level of retirement benefits cannot be predicted with certainty for current active members.

Mortality *(continued)*

	Headcount-Weighted		Current Assumption		Recommended Assumption	
	Exposures	Actual Deaths	Expected Deaths	A/E Ratio	Expected Deaths	A/E Ratio
Total Non-Annuitant Experience	1,786,828	2,603	2,127	122%	2,426	107%

In aggregate, using the recommended Pub-2016 Employee base mortality tables corresponding to the relevant recommended Non-Disabled Retiree mortality tables for each subgroup and adjusted as noted below produces an A/E ratio of 107%. For a headcount-weighted analysis, we prefer an A/E ratio near 110% to approximate an outcome similar to targeting 100 percent on a benefits-weighted basis. The actual A/E ratio of 107% is significantly closer to that 110% target than the current assumptions.

A summary of the current and recommended non-annuitant mortality assumptions is shown below:

	Used for December 31, 2022 and 2023 Valuations	Recommended for December 31, 2024 and 2025 Valuations
Basic Assumption	**Pub-2010 Employee, Sex Distinct, Generational Projection with Unisex Social Security Data Scale**	**Pub-2016 Employee, Sex Distinct, Generational Projection with Unisex Social Security Data Scale**
School District male	125% of Employee table with same job category and set back as Non-Disabled Retiree assumption	120% of Employee table with same job category and set back as Non-Disabled Retiree assumption
Other General Service male	115% of Employee table with same job category and set back as Non-Disabled Retiree assumption	120% of Employee table with same job category and set back as Non-Disabled Retiree assumption
Police & Fire male	125% of Employee table with same job category and set back as Non-Disabled Retiree assumption	120% of Employee table with same job category and set back as Non-Disabled Retiree assumption
School District female	100% of Employee table with same job category and set back as Non-Disabled Retiree assumption	120% of Employee table with same job category and set back as Non-Disabled Retiree assumption
Other General Service female	125% of Employee table with same job category and set back as Non-Disabled Retiree assumption	120% of Employee table with same job category and set back as Non-Disabled Retiree assumption
Police & Fire female	100% of Employee table with same job category and set back as Non-Disabled Retiree assumption	120% of Employee table with same job category and set back as Non-Disabled Retiree assumption

Retirement Assumptions

The retirement assumptions used in the actuarial valuation include the following assumptions:

- Retirement from active status
- Probability a Tier One/Tier Two member will elect a lump sum option at retirement
- Percentage of members who elect to purchase credited service at retirement
- Probability a member will remain an Oregon resident during retirement

Retirement from Active Status

Members are eligible to retire as early as age 55 (50 for police & fire members), or earlier for Tier One/Tier Two if the member has 30 years of service. In our analysis, we have found significant differences in the retirement patterns based on length of service, employment category (general service or police & fire), and current eligibility for immediate unreduced benefits.

A summary of the early, normal, and unreduced retirement dates under the plan are as follows:

Employment Category	Tier	Normal Retirement Age	Early Retirement Age	Unreduced Retirement
General Service	1	58	55	30 years of service
General Service	2	60	55	30 years of service
General Service	OPSRP	65	55	Age 58 with 30 years
Police & Fire	1 or 2	55	50	30 years of service, or age 50 with 25 years of service
Police & Fire	OPSRP	55	50	Age 53 with 25 years
State Judiciary	N/A	65	60	60 if Plan B; N/A if Plan A

Structure for Retirement Rates

The structure of the PERS retirement rate assumption separates rates by job classification and by service level. General service rates differ across three service bands: less than 15 years, 15 to 29 years, and 30 or more years of service. Each service band has different assumptions for school districts versus all other general service members. Police & fire rates employ the following three service bands: less than 13 years, 13 to 24 years, and 25 or more years of service.

The service band structure anticipates that many members' retirement decisions will contemplate the amount of their retirement benefit and the affordability of retirement.

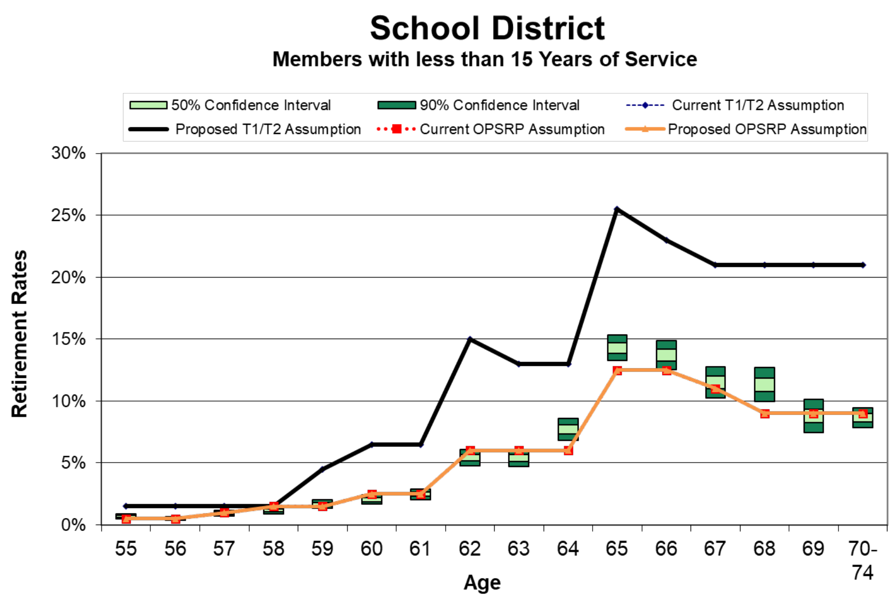
Retirement Assumptions *(continued)*

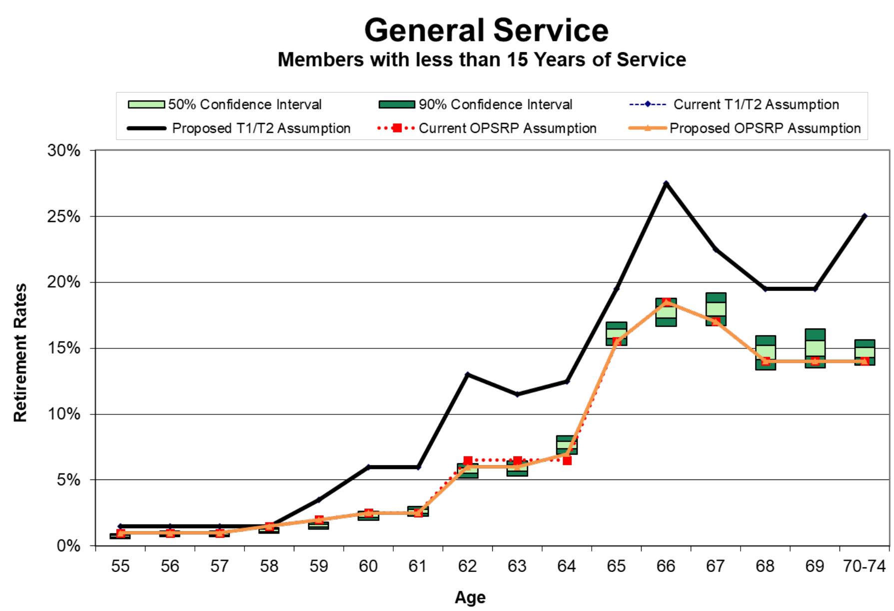
School District and General Service Retirement Rates

Members with Less Than 15 Years of Service

Retirement decisions by members with less than 15 years of service are likely to be heavily influenced by the availability of resources other than PERS benefits, including Social Security, prior employment, spousal benefits, and savings.

The following charts show the current assumed rates of retirement, the confidence interval around observed experience, and the recommended retirement rate assumption for school district and general service members retiring with less than 15 years of service. Given that all new entrants since August 2003 are in OPSRP, most recent experience in this service band is for OPSRP members.



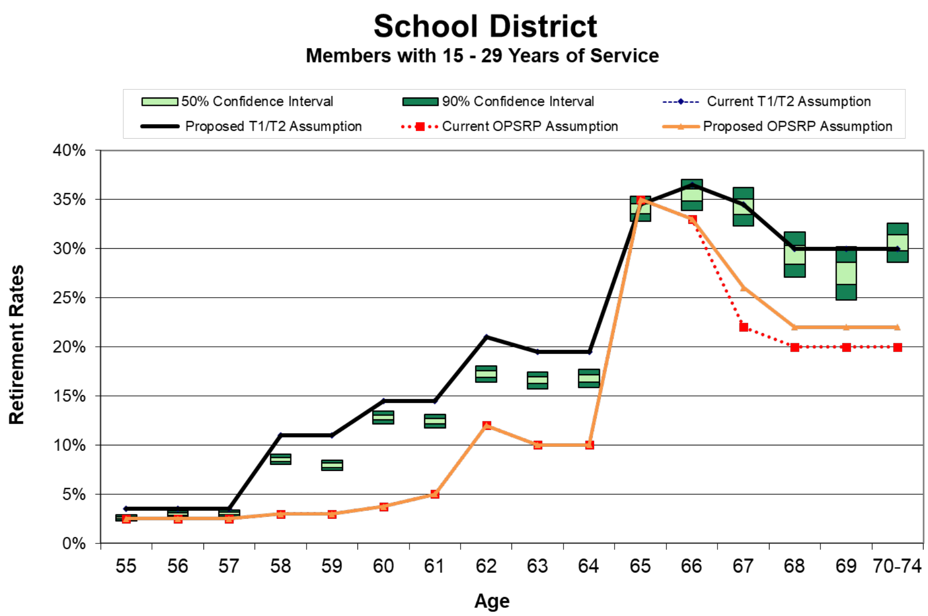


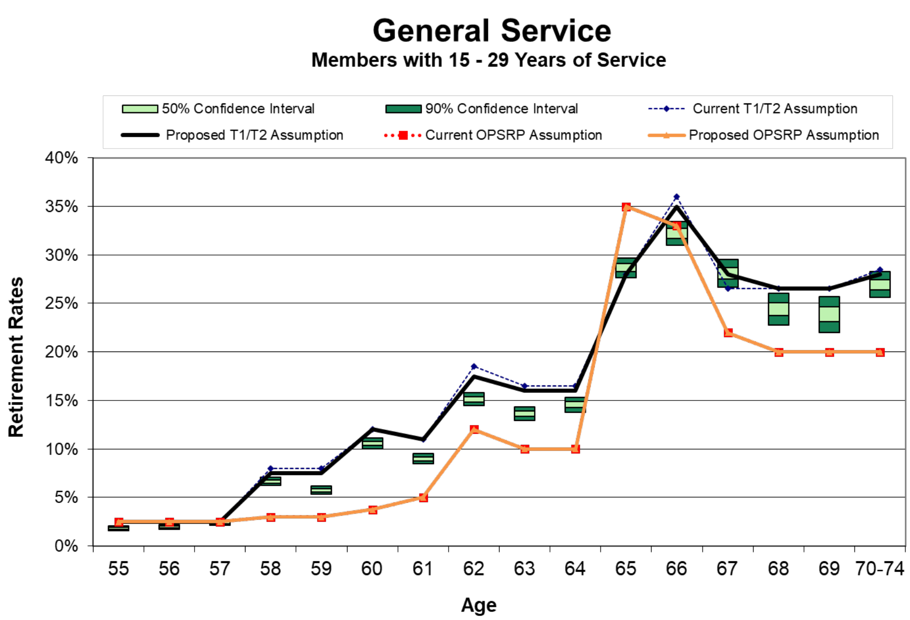
Retirement Assumptions *(continued)*

Members with 15 to 29 Years of Service

Retirement decisions by members with 15 to 29 years of service are likely to be influenced by the structure of PERS benefits as well as the availability of other resources, including Social Security, prior employment, spousal benefits, and savings.

The following charts show the current assumed rates of retirement, the confidence interval around observed experience, and the recommended retirement rate assumption for school district and general service members retiring with 15 to 29 years of service. Most experience in this service band is for Tier One and Tier Two, but a growing number of OPSRP members (whose service will be in the lower part of this range) are represented. Given this, the combined experience's confidence interval is between the two assumptions.



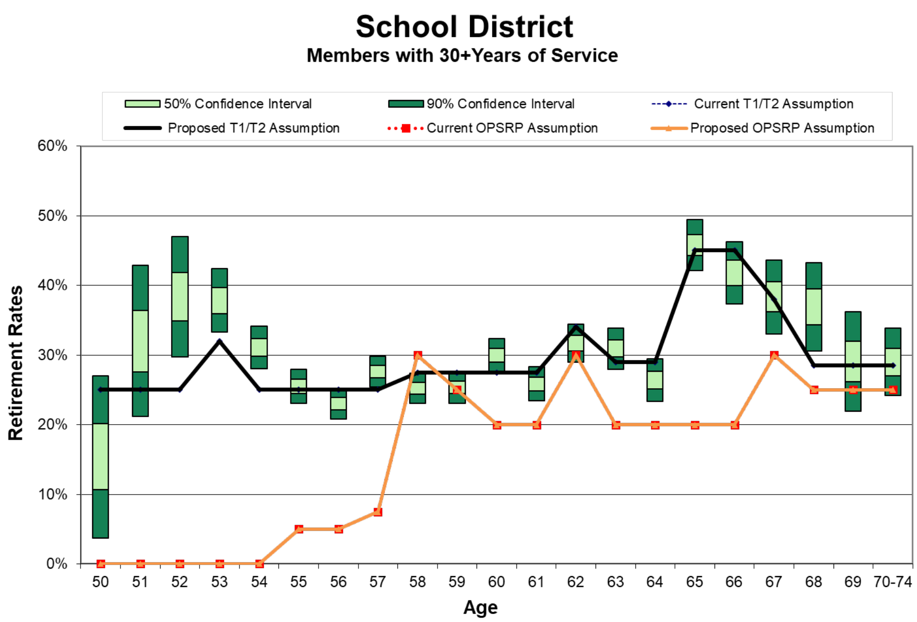


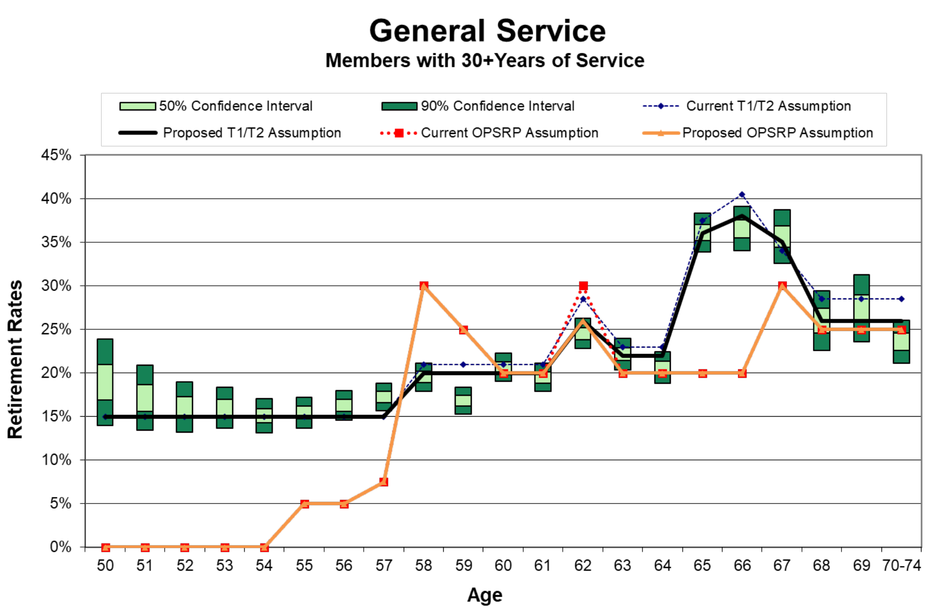
Retirement Assumptions *(continued)*

Members with 30 or More Years of Service

Tier One/Tier Two members with 30 or more years of service are eligible for unreduced PERS benefits at any age (OPSRP members are first eligible for unreduced benefits at age 58). As a result, retirement rates at all ages are relatively high, with a spike when Social Security benefits become available.

The following charts show the current assumed rates of retirement, the confidence interval around observed experience and the recommended retirement rate assumption for school district and other general service members retiring with 30 or more years of service. All experience is for Tier One members. OPSRP assumptions are set based on professional judgment regarding the expected relationship to Tier One/Tier Two experience given the different plan provisions between tiers.





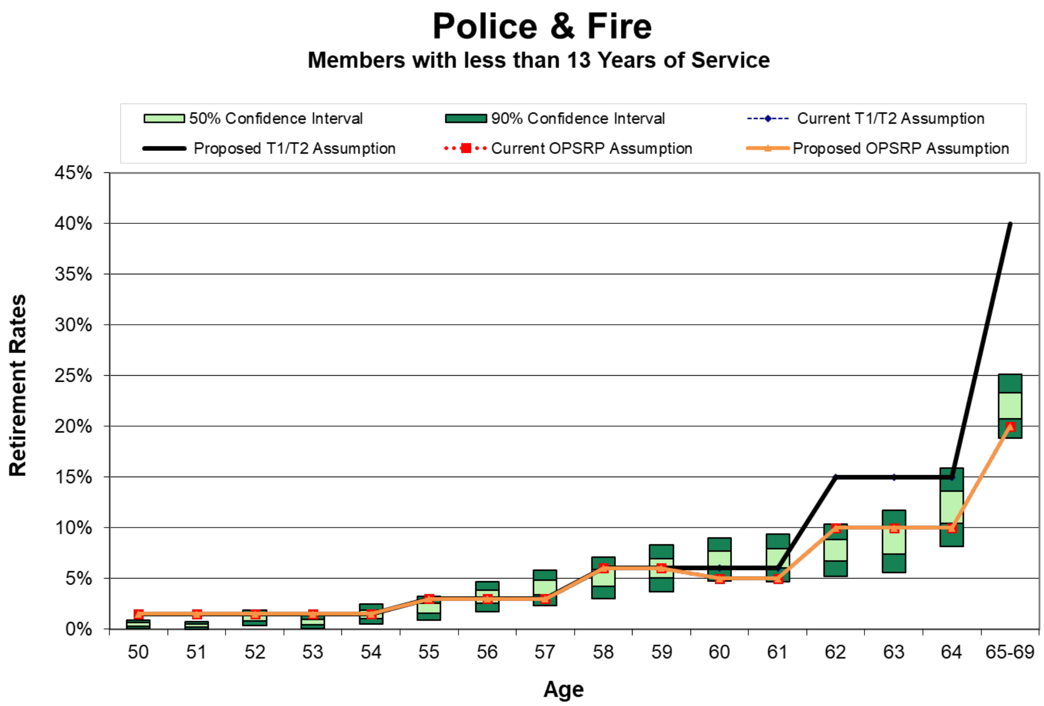
Retirement Assumptions *(continued)*

Police & Fire

Members with Less Than 13 Years of Service

The retirement assumption for police & fire members differs for members retiring with less than 13 years of service, those retiring with 13 to 24 years of service, and those retiring with 25 or more years of service. Retirement decisions by members with less than 13 years of service are likely to be heavily influenced by the availability of resources other than PERS benefits, including Social Security, prior employment, spousal benefits, and savings.

The following graph shows the current assumed rates of retirement, the confidence interval around observed experience and the recommended retirement rate assumption for police & fire members retiring with less than 13 years of service. Given that all new entrants since August 2003 are in OPSRP, almost all recent experience in this service band is for OPSRP members.

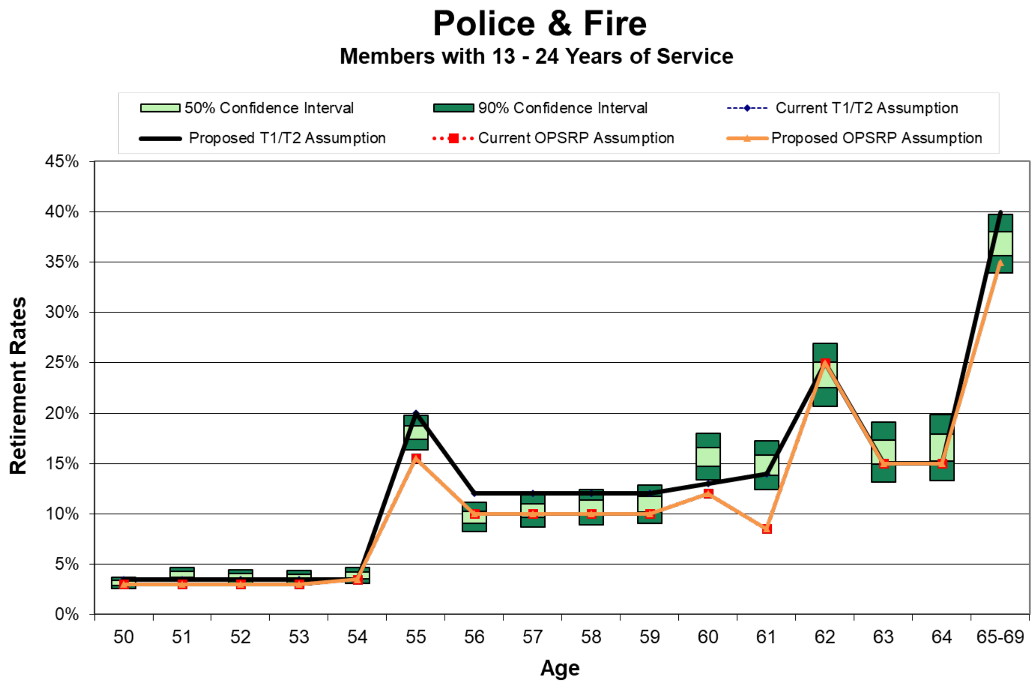


Retirement Assumptions *(continued)*

Members with 13 to 24 Years of Service

Retirement rates for members with 13 to 24 years of service are likely to be influenced by the structure of PERS benefits as well as the availability of other resources, including Social Security, prior employment, spousal benefits, and savings.

The following chart shows the current assumed rates of retirement, the confidence interval around observed experience, and the recommended retirement rate assumption for police & fire members retiring with 13 to 24 years of service. Most recent experience for members in this service band is for Tier One and Tier Two members, but a growing number of OPSRP members (whose service will be in the lower part of this range) are represented.

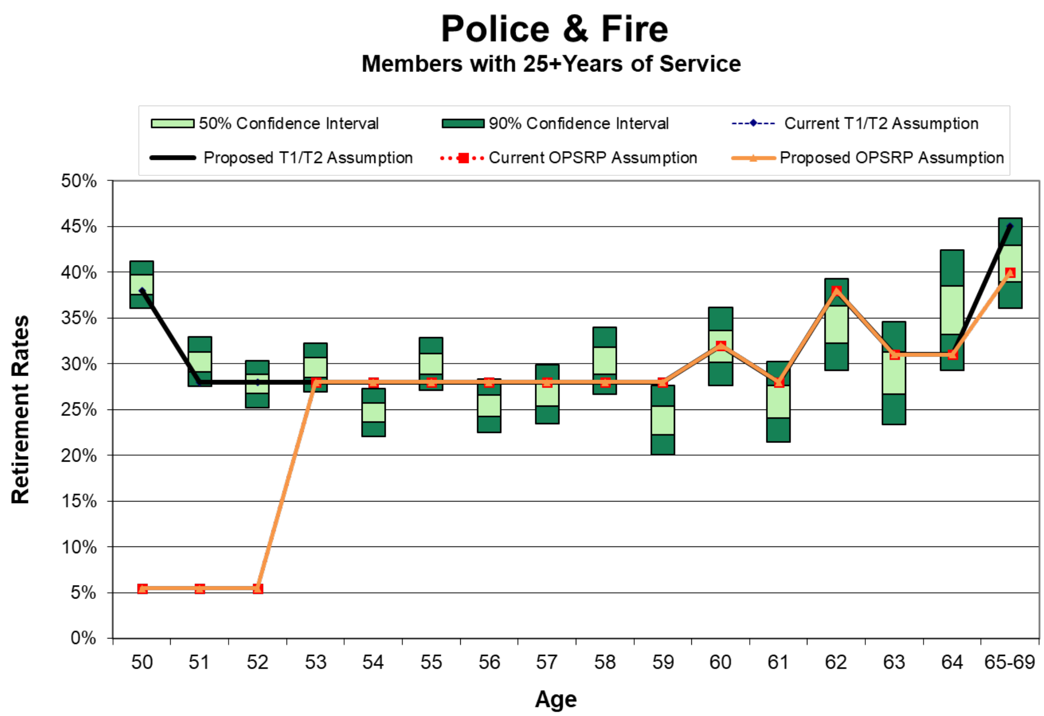


Retirement Assumptions *(continued)*

Members with 25 or More Years of Service

Tier One/Tier Two police & fire members with 25 or more years of service can retire immediately starting at age 50 (age 53 for OPSRP) with unreduced retirement benefits. As a result, retirement rates at all ages are relatively high, with a spike at first eligibility for unreduced benefits, and another increase when Social Security benefits first become available.

The following chart shows the current assumed rates of retirement, the confidence interval around observed experience, and the recommended retirement rate assumption for police & fire members retiring with 25 or more years of service. All experience for members in this service band is for Tier One/Tier Two members. OPSRP assumptions are set based on professional judgment regarding the expected relationship to Tier One/Tier Two experience given the different plan provisions between tiers.

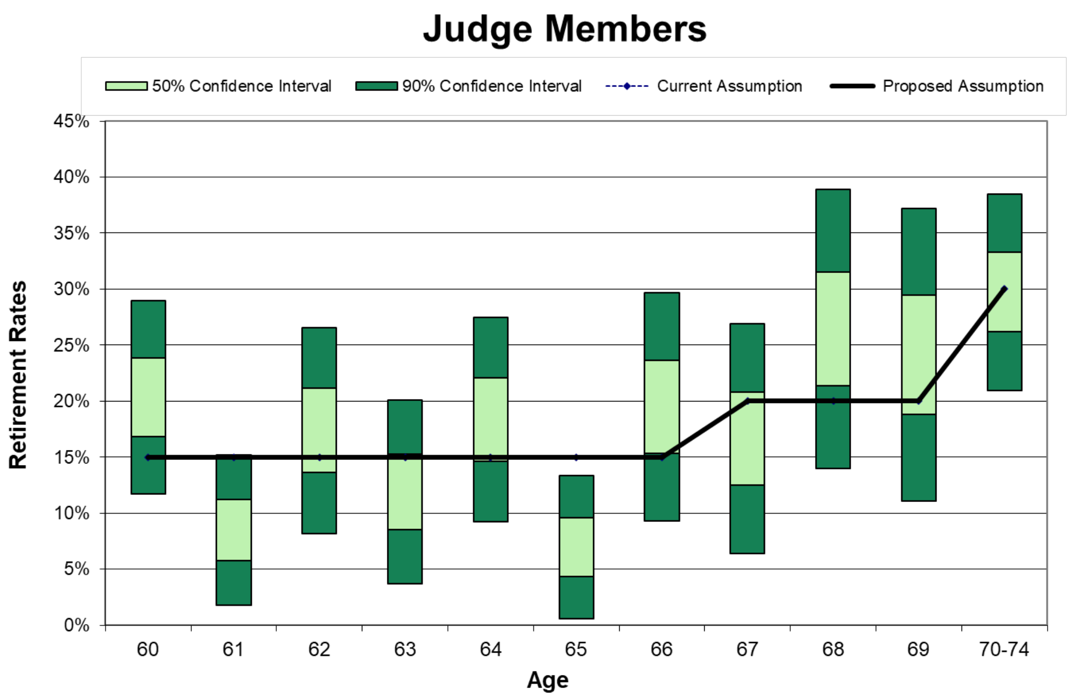


Retirement Assumptions *(continued)*

Judges

The vast majority of members of the State Judiciary elect to receive PERS benefits under Plan B. These benefits are available on an unreduced basis immediately upon retirement eligibility at age 60. As a result, there is relatively little variation in retirement rates by age for these members.

The following chart shows the current assumed rates of retirement, the confidence interval around observed experience, and the recommended retirement rate assumption for members of the State Judiciary.



Retirement Assumptions *(continued)*

Summary of Recommended Retirement Rates

The following table summarizes our recommended Tier One/Tier Two retirement rates:

Tier One/Tier Two Recommended for December 31, 2024 and 2025 Valuations										
	Police & Fire			General Service			School Districts			Judges
Age	< 13 yrs	13-24 yrs	25+ yrs	<15 yrs	15-29 yrs	30+ yrs	<15 yrs	15-29 yrs	30+ yrs	
Less than 50						15.0%			25.0%	
50	1.5%	3.5%	38.0%			15.0%			25.0%	
51	1.5%	3.5%	28.0%			15.0%			25.0%	
52	1.5%	3.5%	28.0%			15.0%			25.0%	
53	1.5%	3.5%	28.0%			15.0%			32.0%	
54	1.5%	3.5%	28.0%			15.0%			25.0%	
55	3.0%	20.0%	28.0%	1.5%	2.5%	15.0%	1.5%	3.5%	25.0%	
56	3.0%	12.0%	28.0%	1.5%	2.5%	15.0%	1.5%	3.5%	25.0%	
57	3.0%	12.0%	28.0%	1.5%	2.5%	15.0%	1.5%	3.5%	25.0%	
58	6.0%	12.0%	28.0%	1.5%	7.5%	20.0%	1.5%	11.0%	27.5%	
59	6.0%	12.0%	28.0%	3.5%	7.5%	20.0%	4.5%	11.0%	27.5%	
60	6.0%	13.0%	32.0%	6.0%	12.0%	20.0%	6.5%	14.5%	27.5%	15.0%
61	6.0%	14.0%	28.0%	6.0%	11.0%	20.0%	6.5%	14.5%	27.5%	15.0%
62	15.0%	25.0%	38.0%	13.0%	17.5%	26.0%	15.0%	21.0%	34.0%	15.0%
63	15.0%	15.0%	31.0%	11.5%	16.0%	22.0%	13.0%	19.5%	29.0%	15.0%
64	15.0%	15.0%	31.0%	12.5%	16.0%	22.0%	13.0%	19.5%	29.0%	15.0%
65	40.0%	40.0%	45.0%	19.5%	28.0%	36.0%	25.5%	34.5%	45.0%	15.0%
66	40.0%	40.0%	45.0%	27.5%	35.0%	38.0%	23.0%	36.5%	45.0%	15.0%
67	40.0%	40.0%	45.0%	22.5%	28.0%	35.0%	21.0%	34.5%	38.0%	20.0%
68	40.0%	40.0%	45.0%	19.5%	26.5%	26.0%	21.0%	30.0%	28.5%	20.0%
69	40.0%	40.0%	45.0%	19.5%	26.5%	26.0%	21.0%	30.0%	28.5%	20.0%
70	100.0%	100.0%	100.0%	25.0%	28.0%	26.0%	21.0%	30.0%	28.5%	30.0%
71	100.0%	100.0%	100.0%	25.0%	28.0%	26.0%	21.0%	30.0%	28.5%	30.0%
72	100.0%	100.0%	100.0%	25.0%	28.0%	26.0%	21.0%	30.0%	28.5%	30.0%
73	100.0%	100.0%	100.0%	25.0%	28.0%	26.0%	21.0%	30.0%	28.5%	30.0%
74	100.0%	100.0%	100.0%	25.0%	28.0%	26.0%	21.0%	30.0%	28.5%	30.0%
75+	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Retirement Assumptions *(continued)*

The following table summarizes our recommended OPSRP retirement rates:

OPSRP Recommended for December 31, 2024 and 2025 Valuations									
	Police & Fire			General Service			School Districts		
Age	< 13 yrs	13-24 yrs	25+ yrs	<15 yrs	15-29 yrs	30+ yrs	<15 yrs	15-29 yrs	30+ yrs
50	1.5%	3.0%	5.5%						
51	1.5%	3.0%	5.5%						
52	1.5%	3.0%	5.5%						
53	1.5%	3.0%	28.0%						
54	1.5%	3.5%	28.0%						
55	3.0%	15.5%	28.0%	1.0%	2.5%	5.0%	0.5%	2.5%	5.0%
56	3.0%	10.0%	28.0%	1.0%	2.5%	5.0%	0.5%	2.5%	5.0%
57	3.0%	10.0%	28.0%	1.0%	2.5%	7.5%	1.0%	2.5%	7.5%
58	6.0%	10.0%	28.0%	1.5%	3.0%	30.0%	1.5%	3.0%	30.0%
59	6.0%	10.0%	28.0%	2.0%	3.0%	25.0%	1.5%	3.0%	25.0%
60	5.0%	12.0%	32.0%	2.5%	3.75%	20.0%	2.5%	3.75%	20.0%
61	5.0%	8.5%	28.0%	2.5%	5.0%	20.0%	2.5%	5.0%	20.0%
62	10.0%	25.0%	38.0%	6.0%	12.0%	26.0%	6.0%	12.0%	30.0%
63	10.0%	15.0%	31.0%	6.0%	10.0%	20.0%	6.0%	10.0%	20.0%
64	10.0%	15.0%	31.0%	7.0%	10.0%	20.0%	6.0%	10.0%	20.0%
65	20.0%	35.0%	40.0%	15.5%	35.0%	20.0%	12.5%	35.0%	20.0%
66	20.0%	35.0%	40.0%	18.5%	33.0%	20.0%	12.5%	33.0%	20.0%
67	20.0%	35.0%	40.0%	17.0%	22.0%	30.0%	11.0%	26.0%	30.0%
68	20.0%	35.0%	40.0%	14.0%	20.0%	25.0%	9.0%	22.0%	25.0%
69	20.0%	35.0%	40.0%	14.0%	20.0%	25.0%	9.0%	22.0%	25.0%
70	100.0%	100.0%	100.0%	14.0%	20.0%	25.0%	9.0%	22.0%	25.0%
71	100.0%	100.0%	100.0%	14.0%	20.0%	25.0%	9.0%	22.0%	25.0%
72	100.0%	100.0%	100.0%	14.0%	20.0%	25.0%	9.0%	22.0%	25.0%
73	100.0%	100.0%	100.0%	14.0%	20.0%	25.0%	9.0%	22.0%	25.0%
74	100.0%	100.0%	100.0%	14.0%	20.0%	25.0%	9.0%	22.0%	25.0%
75+	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Retirement Assumptions *(continued)*

Lump Sum Option at Retirement

At retirement, a Tier One/Tier Two member has the option of electing a total lump sum distribution equal to two times the member's account balance, a partial lump sum distribution equal to the member's account balance with a reduced monthly allowance, or a monthly allowance with no lump sum distribution. The percentage of active Tier One/Tier Two members electing a lump sum distribution at retirement has declined slightly from the prior experience study. The results of our experience analysis are as follows:

Election at Retirement	Number of Retired Members	Percentage of Retirements	Assumption Used for December 31, 2023 Valuation	Assumption Recommended for December 31, 2024 and 2025 Valuations
Partial Lump Sum	646	1.6%	0.0%	0.0%
Total Lump Sum	405	1.0%	0.0%	0.0%

When a member elects a total or partial lump sum under Money Match or a partial lump sum under Full Formula, they give up the value of future COLAs (cost of living allowances) on the lump sum amount. A total lump sum election under Full Formula may cause the member to give up significantly more. Because there are no new contributions to member accounts and the system is projected to become dominated by Full Formula over time, we expect the total lump sum rate to decline over time.

Elections of both partial and total lump sums have declined steadily for a number of years, so that experience in recent years is even lower than shown in the table. Based on the data shown above and this continuing trend, we recommend continuing to assume no members elect either total or partial lump sum distributions for purposes of the valuation.

Purchase of Credited Service

A member has the option of purchasing service at retirement to enhance their retirement benefits. Service may be purchased under one or more of the following categories:

- Purchase of forfeited service
- Credit for waiting time
- Credit for educational service
- Credit for military service
- Credit for seasonal positions
- Credit for police officers and firefighters
- Purchase of retirement credit for disability time

Most purchases are full cost purchases, meaning the member pays both the member and employer cost to obtain the service. Since the member pays the full cost of the service purchased, the purchase produces no impact or only a small impact on projected Tier One/Tier Two employer costs. The most common, and predictable, non-full-cost service purchase made by members is purchasing credit for the six-month waiting period at the beginning of PERS-eligible employment. Thus, for valuation purposes, we have included an adjustment to account for those members who are expected to make the waiting period service purchase.

Retirement Assumptions *(continued)*

For Money Match retirements, the purchase of credited service is generally cost-neutral to the system, because the member is depositing both the member and employer contributions. Therefore, in reviewing actual experience, we examined non-Money Match retirements. The following table shows the number of members who retired in the experience period and elected to purchase credit for the six-month waiting period:

	Count	Number Electing to Purchase Waiting Time Service	Percentage of Retirements Electing to Purchase	Assumption Used for December 31, 2023 Valuation	Assumption Recommended for December 31, 2024 and 2025 Valuations
Non-Money Match Retirements	22,789	17,385	76%	75%	75%

We recommend no changes to the assumption of non-Money Match retirements purchasing credited service for the six-month waiting period.

Oregon Residency Status

Tier One/Tier Two members who are eligible for a “tax remedy” upward benefit adjustment under Senate Bill 656 or House Bill 3349 only receive the adjustment if they remain residents of Oregon for tax purposes while retired. Since a member’s residency status may change multiple times during retirement, the residency status of a newly retired member may not be representative of that member’s probability of remaining an Oregon resident later in retirement. As such, we analyzed the entire current population of retired members and beneficiaries who are potentially eligible for a tax remedy and compared that to the number who are currently receiving a tax remedy. The results of that analysis are as follows:

Number Eligible for Tax Remedy	Number Receiving Tax Remedy	Percentage Receiving Tax Remedy	Assumption Used for December 31, 2023 Valuation	Assumption Recommended for December 31, 2024 and 2025 Valuations
112,421	93,135	83%	85%	85%

We recommend no changes to the assumption of the percentage of potentially eligible future retirees who are projected to receive a tax remedy benefit adjustment under Senate Bill 656 or House Bill 3349.

Disability Incidence Assumptions

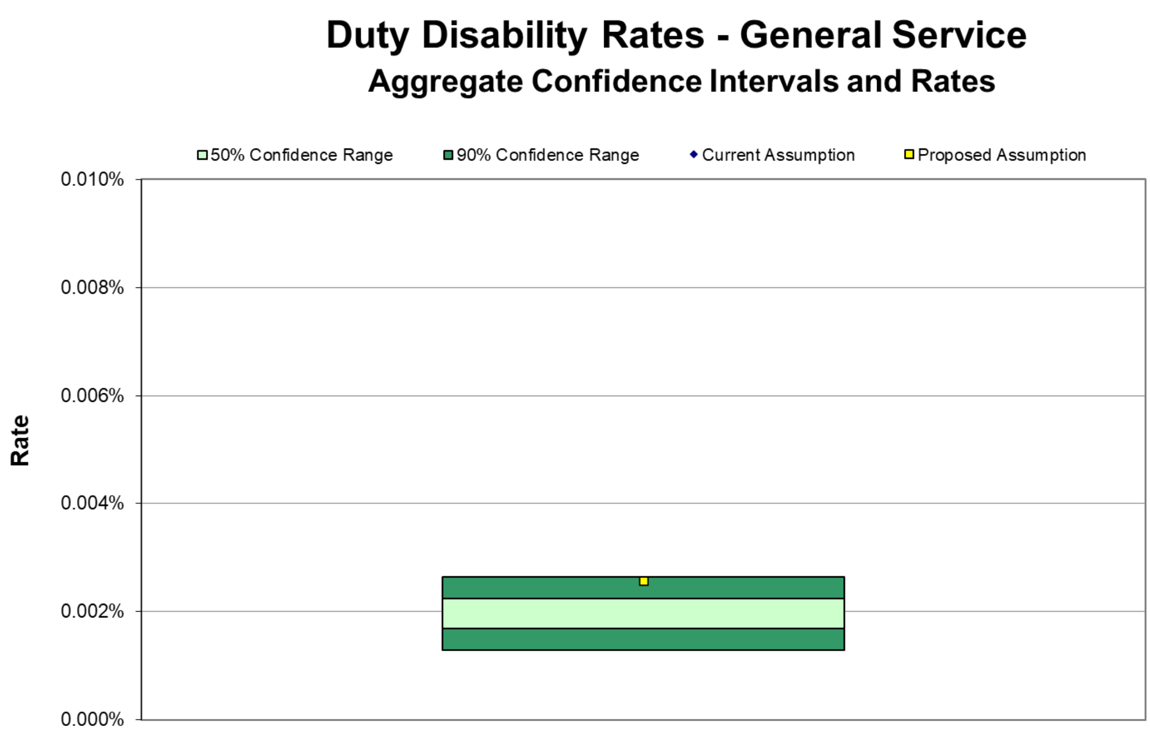
The Plan provides duty and non-duty disability benefits to members. Members are eligible to receive duty disability benefits if they become disabled as a direct result of a job-related injury or illness, regardless of length of service. Members are eligible for non-duty disability benefits (also referred to as “ordinary” disability) if they become disabled after ten years of service (six years if a judge), but prior to normal retirement eligibility.

Duty disability incidence rates are developed separately for police & fire and general service members. Ordinary (non-duty) disability rates are developed for the system as a whole.

Duty Disability

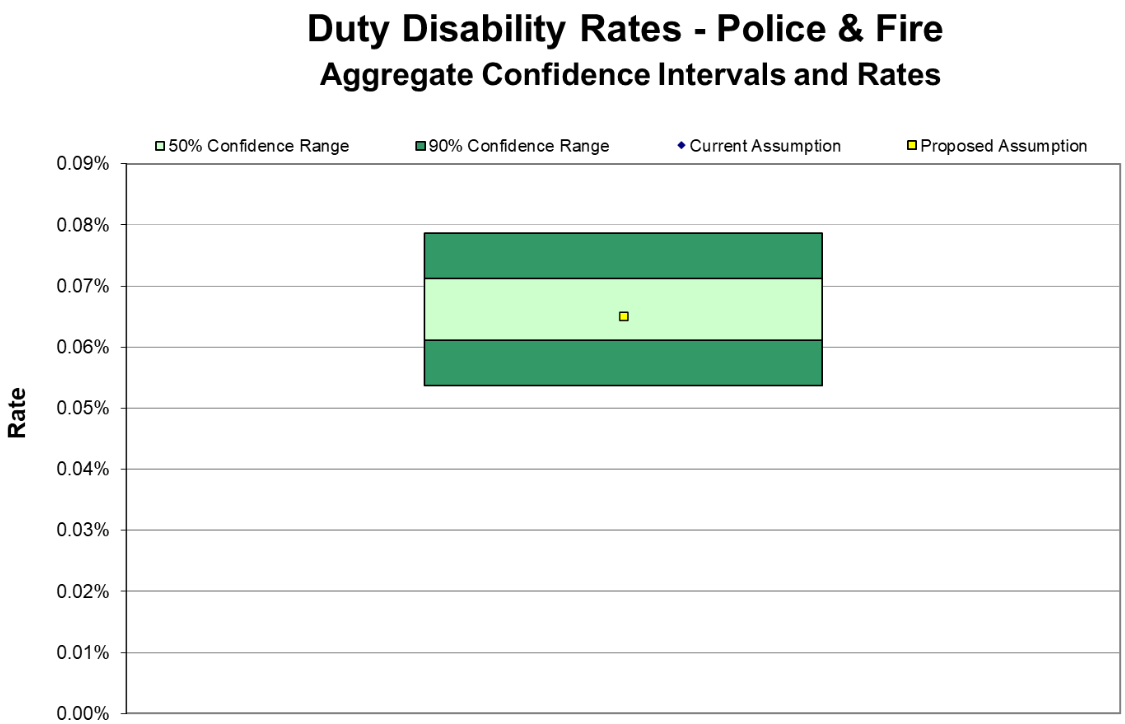
Due to the limited amount of experience data available at some ages, this assumption employs a standard table adjusted to fit within the aggregate confidence interval.

The current assumed aggregate incidence for general service members is within the 90 percent confidence interval of the actual disability experience. As such, we recommend maintaining the current assumption and continuing to monitor experience in the next study.



Disability Incidence Assumptions *(continued)*

The current assumed aggregate incidence for police & fire members is within the 50 percent confidence interval of the actual disability experience. As such, we recommend maintaining the current assumption and continuing to monitor experience in the next study.

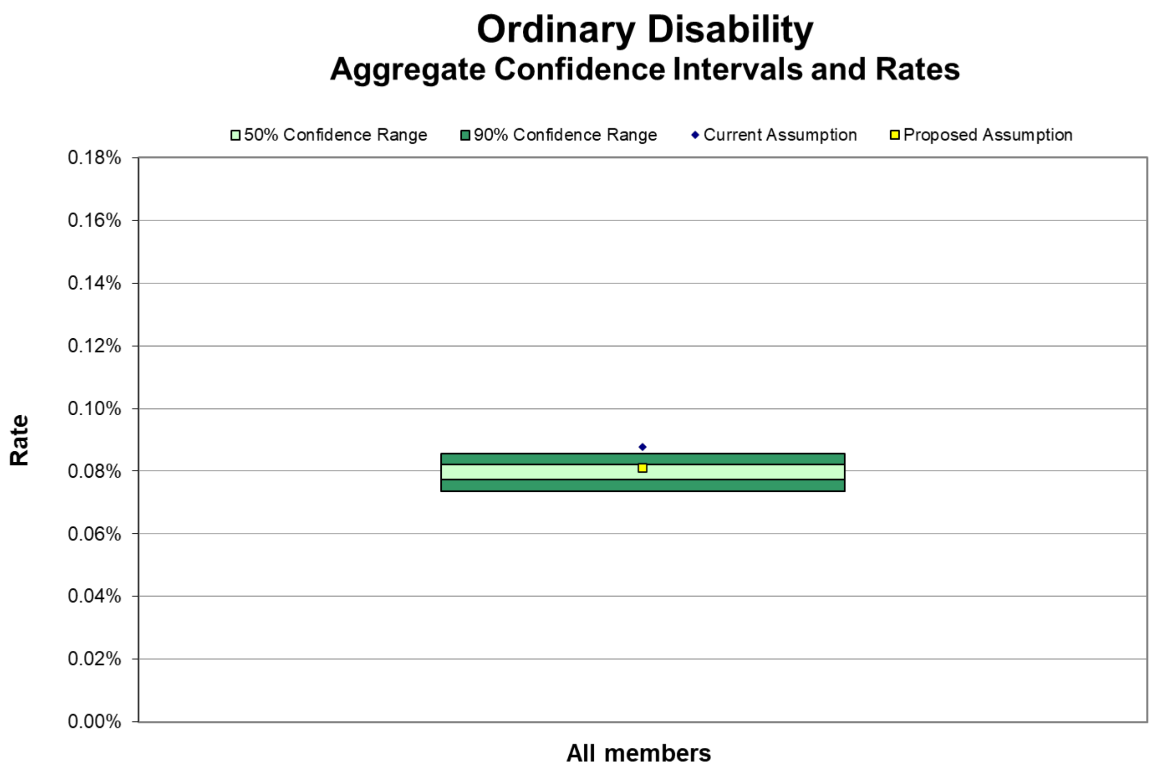


Ordinary (Non-Duty) Disability

As with duty disability, the experience data for ordinary disability is limited at specific ages. Therefore, this assumption also uses a standard table adjusted to fit within the aggregate confidence interval. Based on the actual disability incidence in the experience observation period, we recommend lowering the ordinary disability incidence assumption.

The data underlying the ordinary disability study showed a pattern wherein a member's record would only be recognized as a disability retirement (rather than a service retirement or other separation from service) after a lag period that could span over a year. Because such lagged experience is not yet available for 2024, the final year of our study, we included in our analysis an assumption as to additional disabilities occurring in 2024 that will not be apparent until the subsequent reporting period. This assumption was based on an average of such records observed in the first seven years of the study.

Disability Incidence Assumptions *(continued)*



The following table summarizes our recommended disability incidence rate assumptions:

	Percentage of the 1985 Disability Class 1 Rates (Sample rates shown for ages 20–55)	
	December 31, 2023 Valuation	**Recommended December 31, 2024 and 2025 Valuations**
Duty Disability		
• Police & Fire	25% (0.0075%–0.2113%)	25% (0.0075%–0.2113%)
• General Service	0.6% (0.0002%–0.0051%)	0.6% (0.0002%–0.0051%)
Ordinary Disability	20% with 0.14% cap (0.0060%–0.1400%)	20% with 0.12% cap (0.0060%–0.1200%)

Termination Assumptions

Not all active members are expected to continue working for covered employers until retirement. Termination rates represent the probability that a member will leave covered employment for a cause other than retirement, disability, or death at any given point during their working career.

Termination rates have been developed as service-based assumptions. The service-based assumptions reflect the experience of Tier One, Tier Two, and OPSRP members, with each group affecting the period of the table relating to the relevant service amount.

Assumptions are developed for the following groups:

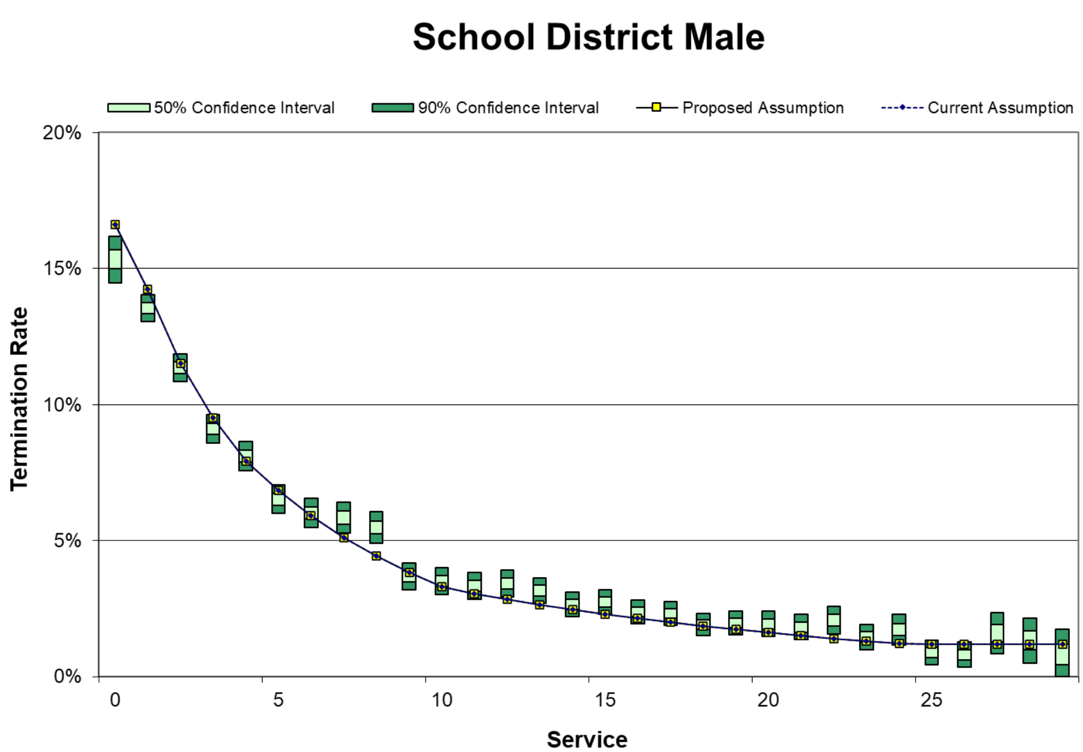
- School District males
- School District females
- Other General Service males
- Other General Service females
- Police & Fire (unisex table)

Termination Rates

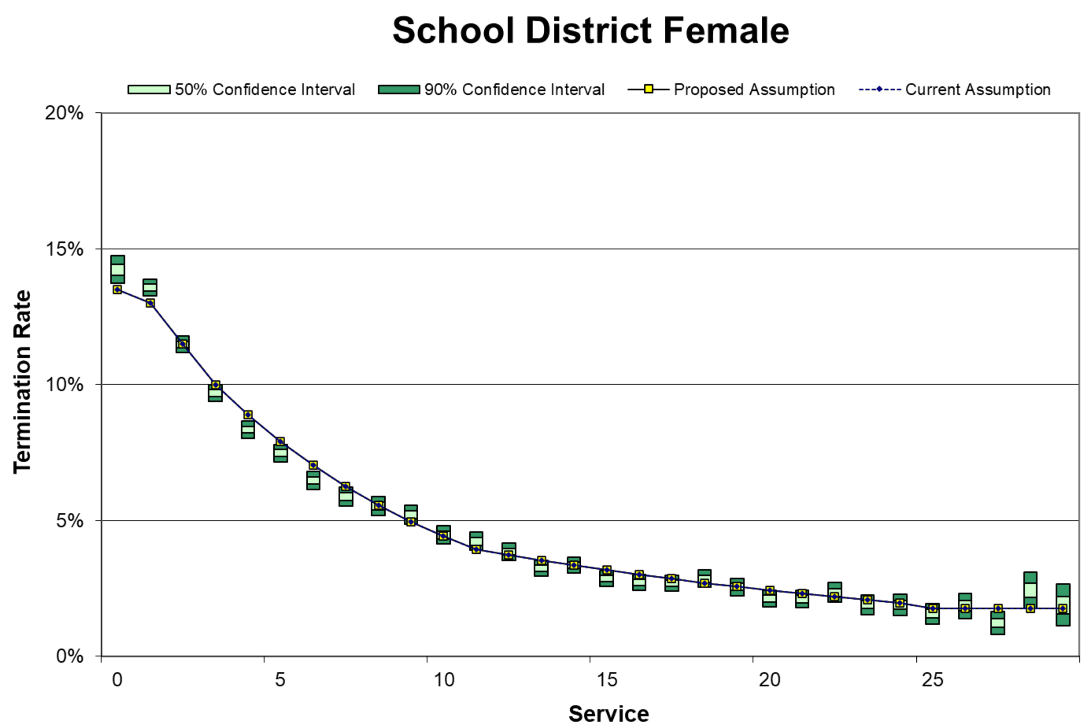
The following charts show the confidence interval around observed experience and the recommended rates of termination by year of service. These charts are based on the observed experience of members in the relevant group during the study period. We recommend maintaining the current assumption for all members and, as is standard procedure, evaluating experience again with the next study.

Full listings of recommended termination assumptions are included in the appendix.

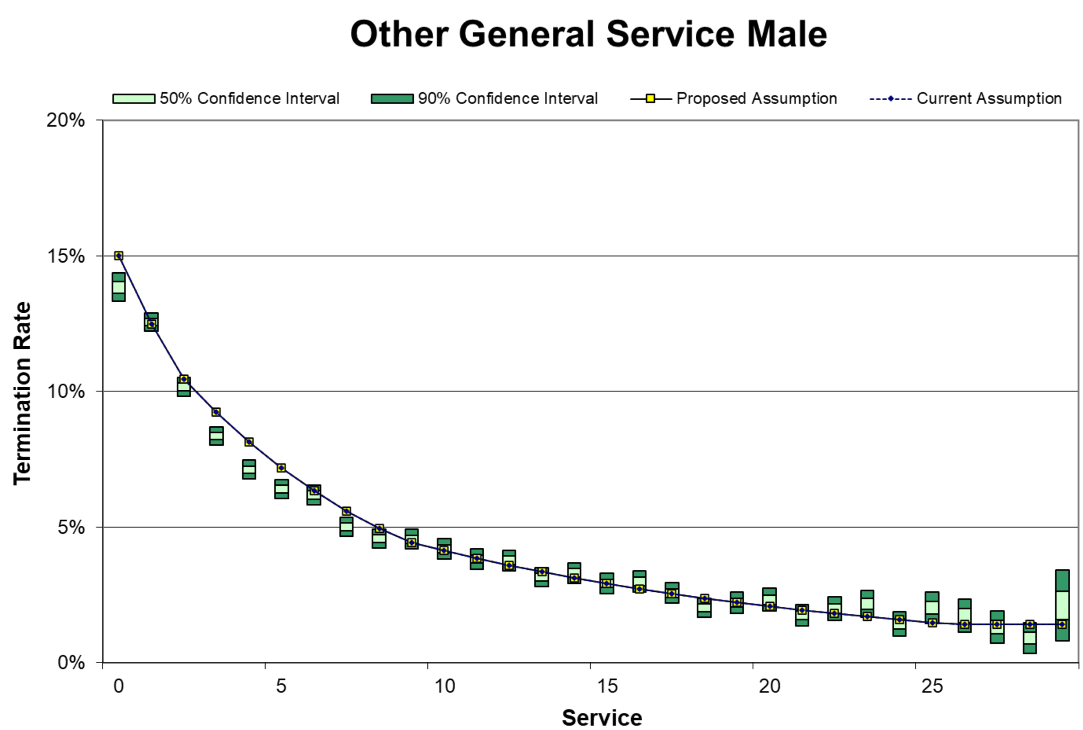
School Districts



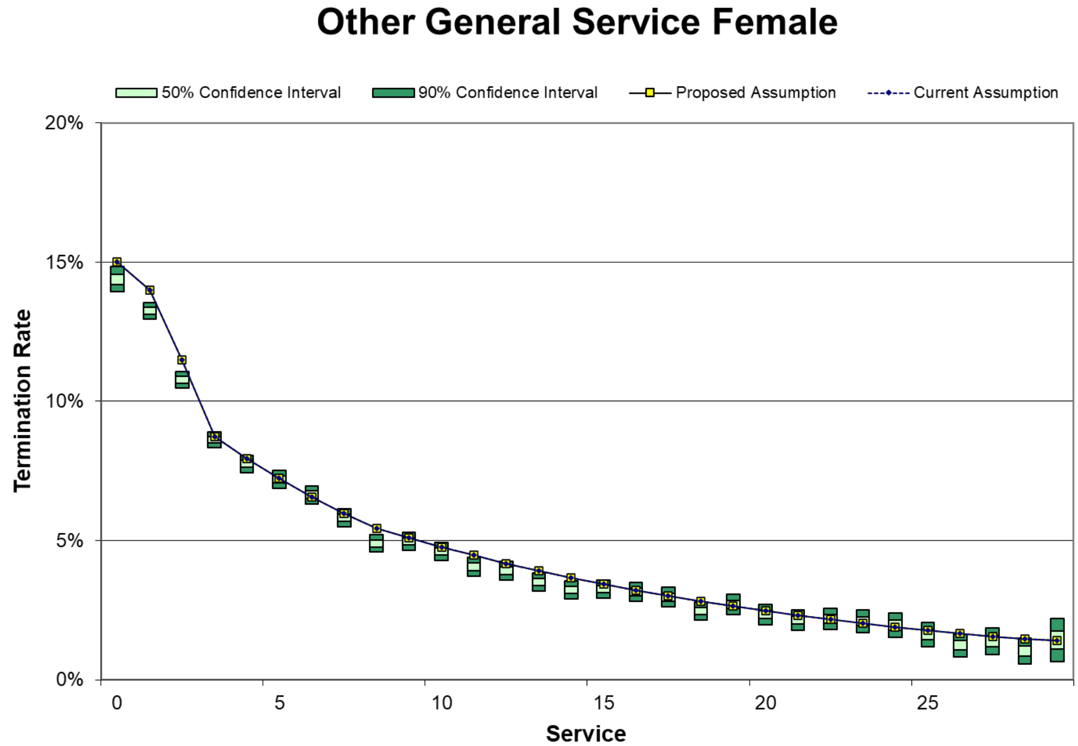
Termination Assumptions *(continued)*



General Service

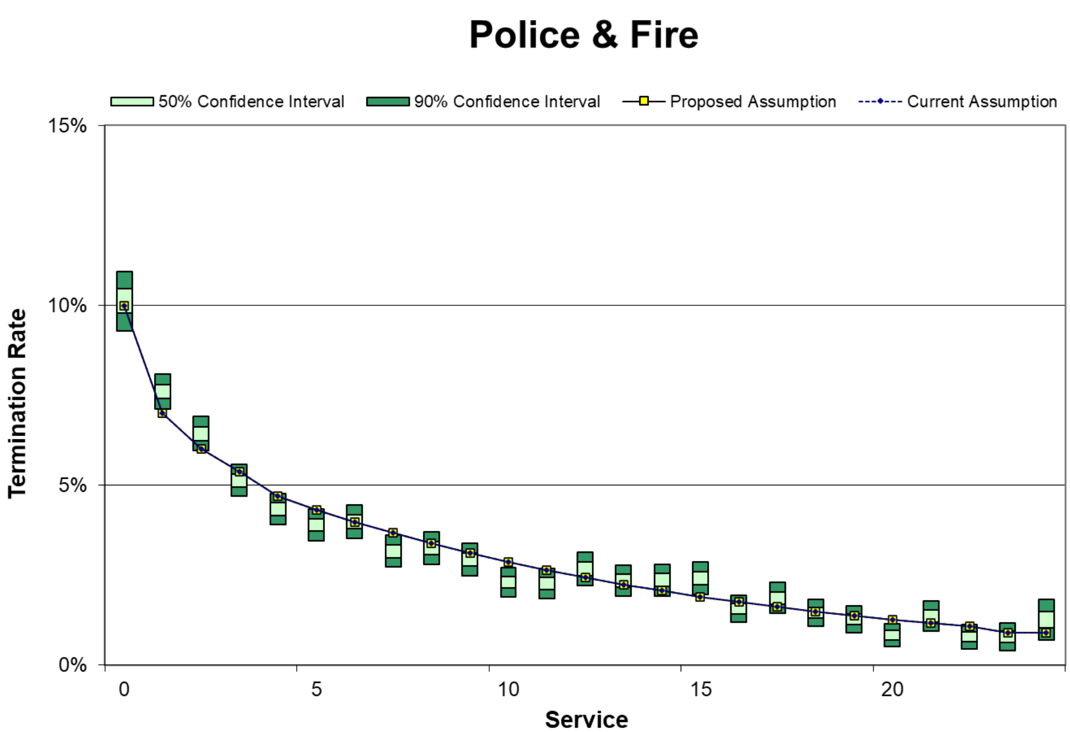


Termination Assumptions *(continued)*



Police & Fire

All police & fire members were rated together, with no variation by group or gender.



Salary Increase Assumptions

The salary increase assumptions analyzed with demographic experience were:

- Annual individual member merit/longevity salary increases
- Unused sick leave adjustments to final average salary at time of retirement for eligible members
- Unused vacation cash out adjustments to final average salary at time of retirement for eligible members

Annual Individual Member Merit/Longevity Salary Increases

The merit (or longevity) scale component of the annual individual member salary increase assumption is used in conjunction with the inflation and real wage growth assumptions to project annual individual member salary increases. In developing this assumption, our analysis first determined the gross salary increases received by members during the observation period on a payroll weighted basis. The assumed merit (or longevity) component of the overall annual increase was then determined by backing out the annualized increase in average valuation salary of 4.08% for the 12-year study period, which represents the realized combined effect of actual inflation and real wage growth for the period.

In order to capture experience across a broader range of budget, collective bargaining, and economic cycles, our initial analysis covered observed salary experience from 2012 through 2024. However, after discussion with PERS staff, certain data points were excluded due to the existence of one-off salary changes that are not expected to be indicative of anticipated future salary experience. These were:

- School district salary experience for 2020 was lower than most other years in the study. We understand at least part of the reason was due to furloughs effective in Spring 2020 during the early months of the pandemic. Reported salary experience for 2020 was replaced with the average of 2019 and 2021 experience.

- Salary increases for many other (i.e., non-school district) general service members in 2017 and 2019 and for many police & fire members in 2019 were affected by bargained changes wherein the 6% of pay member contribution would no longer be “picked up” by the employer for a large number of members. Those members then received an additional 6.95% of pay salary increase when the change occurred.

In the previous experience study, the Board adopted a special “select period assumption” of an additional 2% merit/longevity increase to apply for two specific years. This was to recognize that high inflation and job market pressures led to unusually high salary increases for at least a portion of PERS active members. In particular, agreements for State workers who are members of AFSCME and SEIU provided for additional across-the-board increase of about 6.5% in each of two consecutive years. The additional “select period assumption” was adopted to project assumed2024 and 2025 salary increases. The historical salary analysis for this experience study backs out the extra 2% “select” assumption for 2024 to avoid double counting.

Assumptions are developed for the following groups:

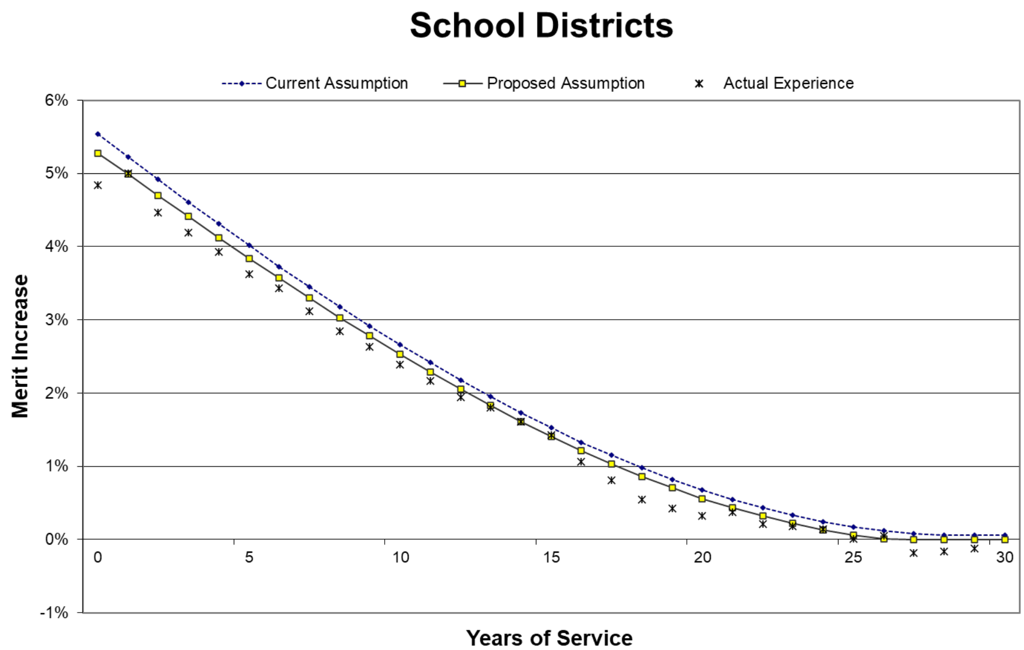
- School Districts
- Other General Service
- Police & Fire

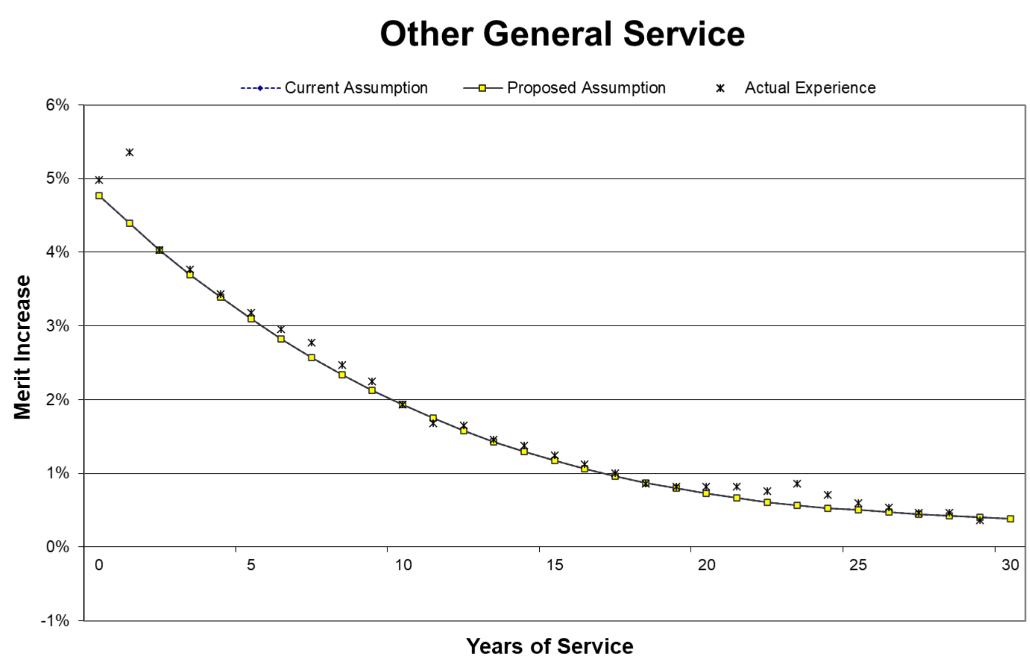
The following charts show the current assumed rates of merit/longevity salary increases, the average of merit/longevity salary increases based on the included experience (per the discussion above) over the study’s experience observation period, and the recommended rates of assumed merit/longevity salary increases. We

Salary Increase Assumptions *(continued)*

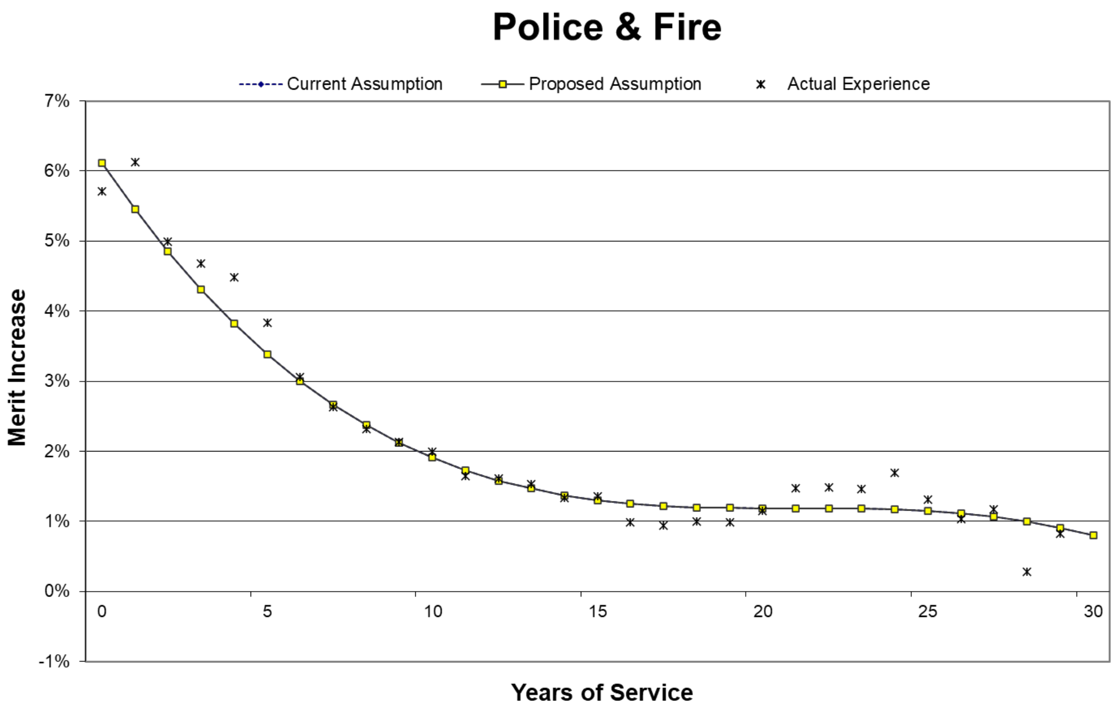
recommend lowering the current merit/longevity salary increase assumption for the school district group and maintaining the current assumption for the general service and police & fire groups.

Note that to determine the gross salary increase assumption that would apply for an individual member in the valuation, the relevant merit/longevity assumption shown below would be added to the adopted system payroll growth assumption (for example, 3.40%).





Salary Increase Assumptions *(continued)*



Additional Salary Increase Assumption for 2025

The increased merit/longevity salary assumptions shown above are based on a normal-course process for reviewing and updating this assumption. However, as discussed above and similar to the prior experience study, due to the high inflation environment of recent years and job market pressures, we anticipate that there may be unusually high salary increases for at least a portion of PERS active members in the near term. This expectation has been supported both by recent collective bargaining agreements covering large groups of PERS members and by input we've received from System stakeholders.

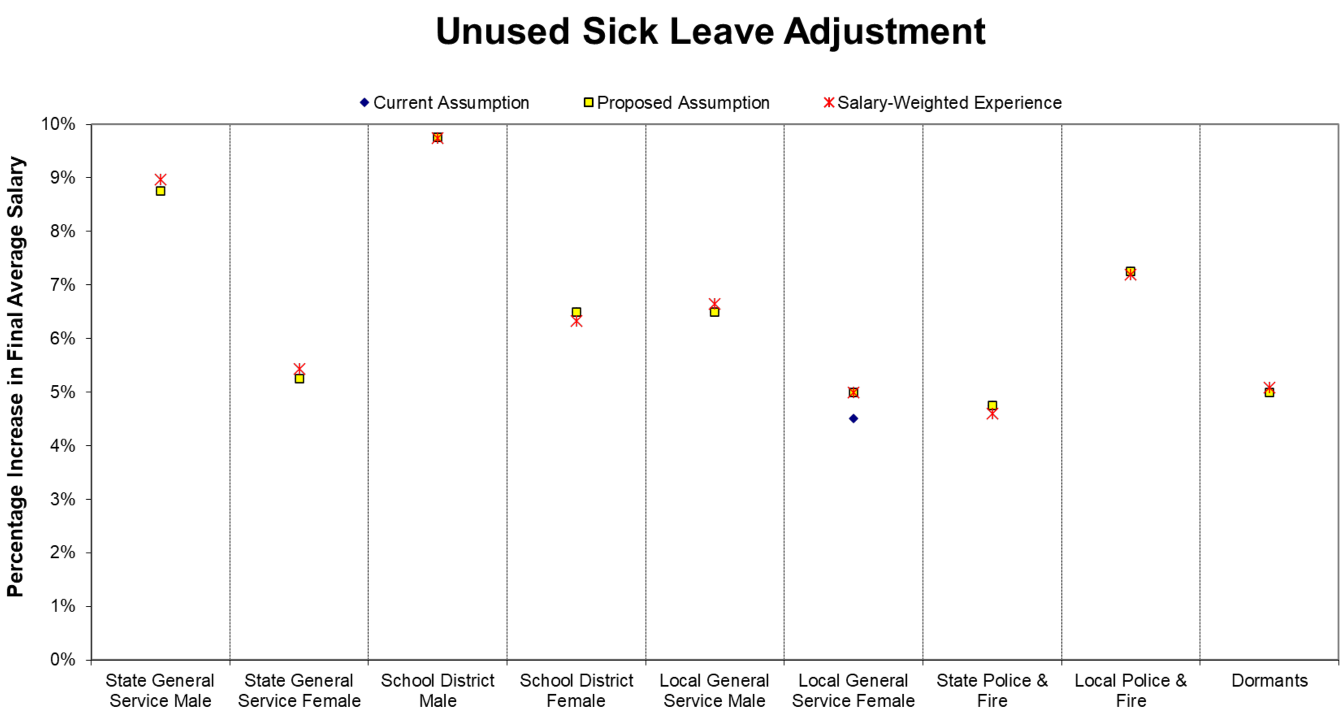
In recognition of this expectation and with the intent to mitigate or fully avoid potential salary experience losses in the upcoming December 31, 2024 actuarial valuation, **we recommend maintaining the additional "select period" salary increase assumption. That assumption will apply as an extra 2% assumed annual increase in pay to the standard increase assumption for the 2025 calendar year**.

Salary Increase Assumptions *(continued)*

Unused Sick Leave Adjustment at Time of Retirement

Employers may elect to participate in the Unused Sick Leave Program. This program allows Tier One/Tier Two members to convert the value of one-half of their accumulated sick leave into additional retirement benefits. Our assumption represents the percentage increase in a member's final average salary due to the inclusion of the value of 50 percent of the member's accumulated sick leave and is only applied to the projected benefit of members whose employers participate in the program.

For active members, there are currently eight sets of rates developed by employer group, employment category (general service or police & fire), and gender. In addition, a single rate is developed for eligible dormant members. The chart below shows the current assumption, the six-year average of the observed experience, and the recommended assumption for each of the groups studied.

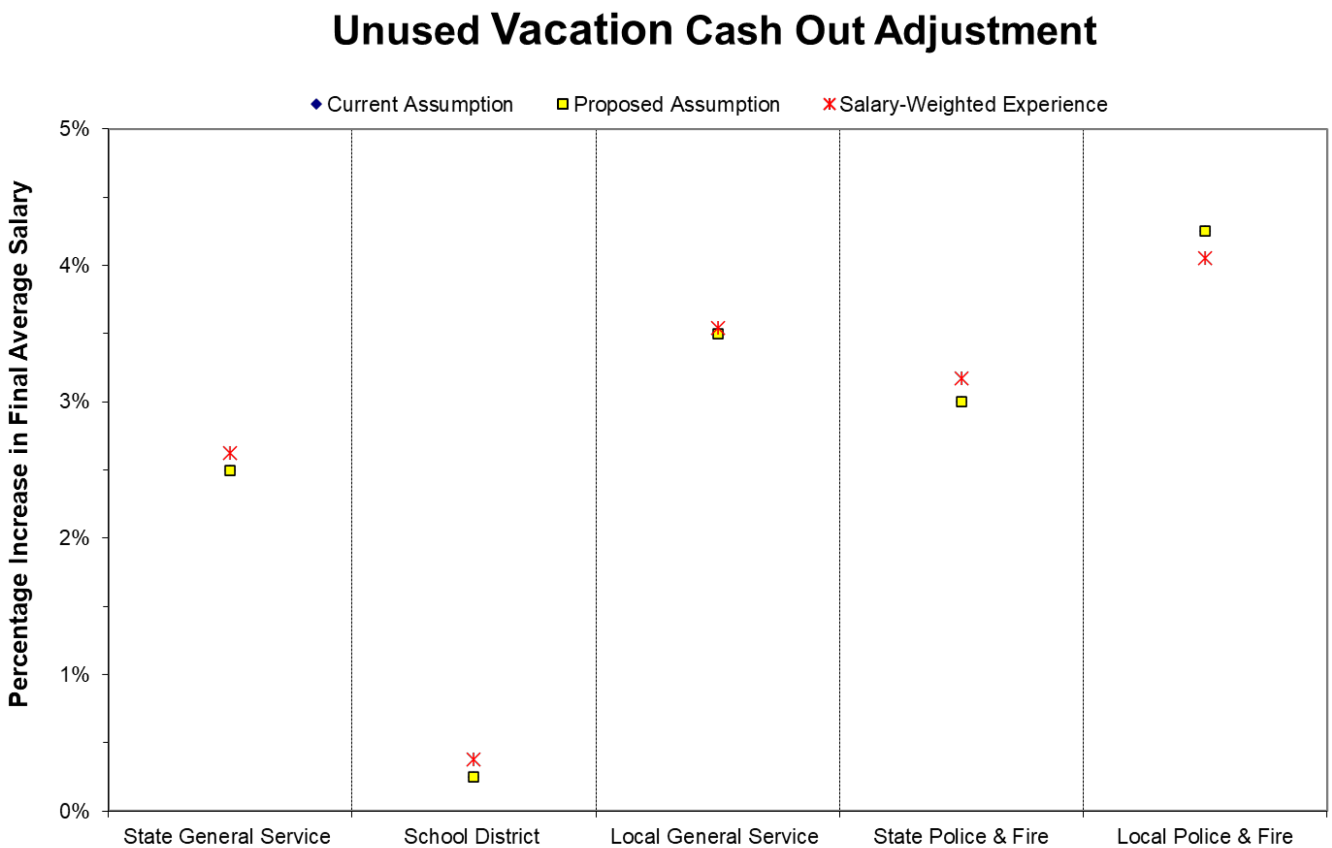


The non-retired Tier One/Tier Two population continues to decrease in size. While decreasing in number, we anticipate the remaining group over time will have an increasing level of average service. As a result of these factors, we have continued to see the average unused sick leave adjustment per eligible member increase for some groups. We recommend increasing the assumption for Local General Service Females and maintaining the current assumption for all other groups.

Salary Increase Assumptions *(continued)*

Unused Vacation Cash Out Adjustment

Tier One members are eligible to include the value of any lump sum payment of unused vacation pay in the calculation of their final average salary. The assumption shown below represents the percentage increase in a member's final average salary expected to result from this provision. We recommend maintaining the current assumption and continuing to monitor experience in the next study.



Retiree Healthcare Assumptions

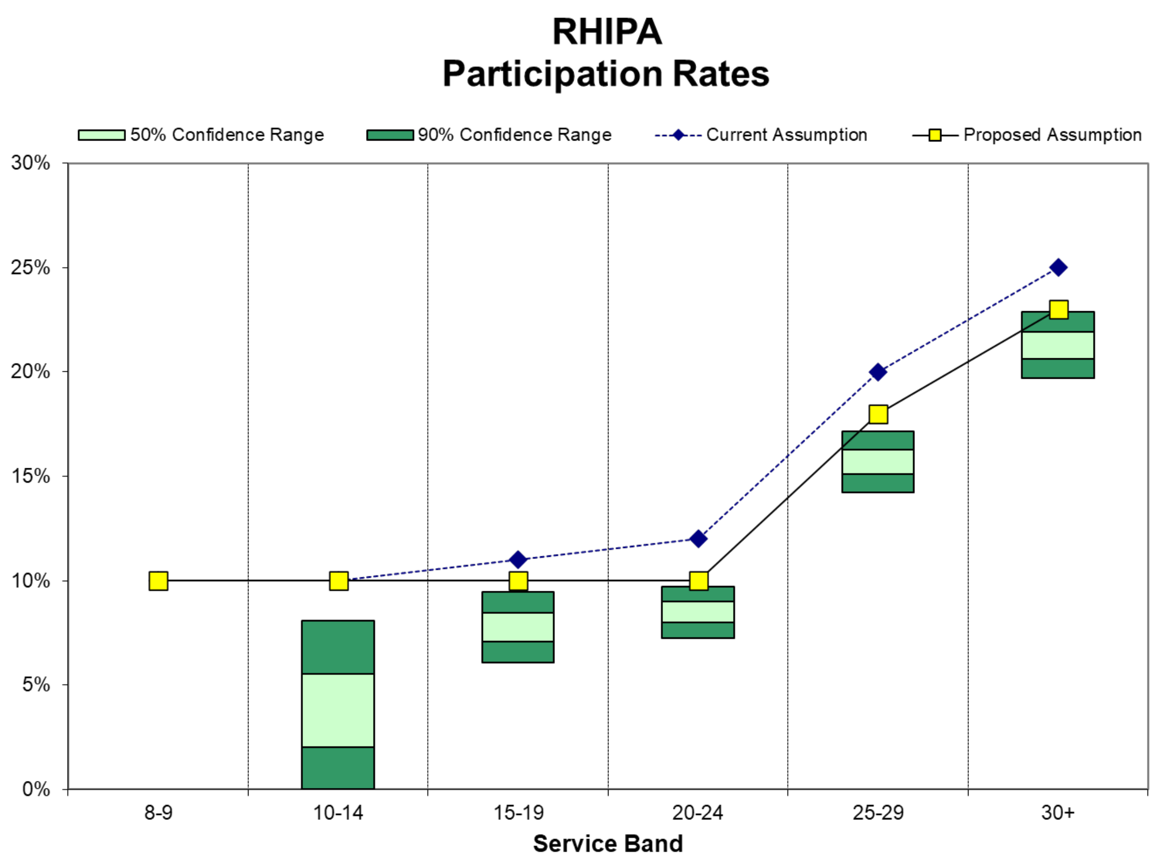
There are two retiree healthcare programs offered to eligible Tier One/Tier Two members: the Retiree Health Insurance Premium Account (RHIPA) and the Retiree Health Insurance Account (RHIA).

RHIPA

RHIPA is a program for eligible retirees from State of Oregon employment that provides a subsidized pre-Medicare insurance plan. In the previous valuation, the participation rate assumption for future eligible retirees varied based on service at the time of retirement, as the level of employer-paid benefits in the RHIPA program varies by service level. We recommend continuing this structure for the assumption.

The current participation assumptions are consistently higher than recent observed participation experience. We recommend decreasing the assumed participation level at most age ranges, as shown below. The level of participation in RHIPA may be affected, at least in part, by economic conditions, cost of coverage, competition from alternative programs available to retirees, and the impact of healthcare reform legislation becoming effective. Since changes in these factors could change participation rates in RHIPA quickly, we recommend that PERS monitor RHIPA participation levels of future eligible retirees on a regular basis.

The data underlying this study showed a pattern wherein members would sometimes not appear until one or two years after retirement. This may be due to a combination of participant behavior and administrative delay. Because such time-lagged experience is not yet available for the final two years of our study, we included in our analysis an assumption as to the number of additional enrollments not yet reported for members who retired during 2023 or 2024. This assumption was based on the number of such records observed in 2021 and 2022.

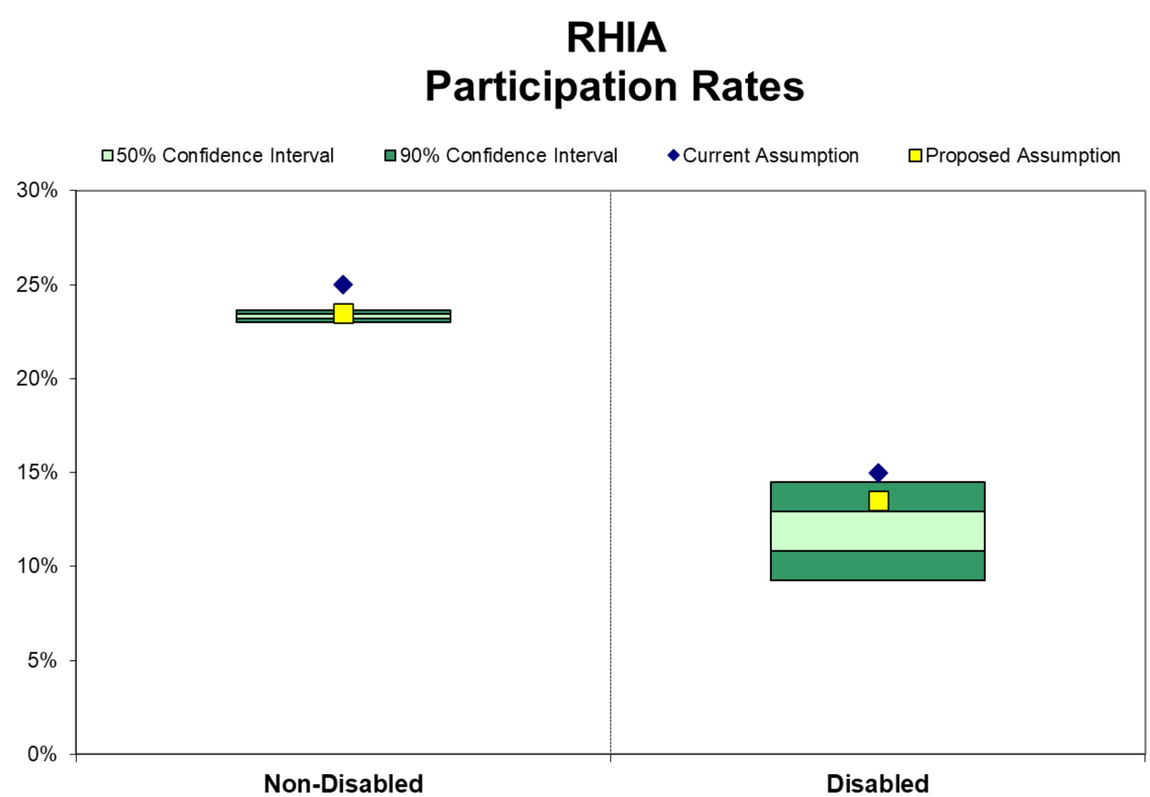


Retiree Healthcare Assumptions *(continued)*

RHIA

RHIA is a subsidized Medicare supplemental insurance program offered to all eligible Tier One/Tier Two retirees. Actual participation rates during the period of study were approximately 23% for non-disabled retirees, compared to the current assumption of 25%. For disabled retirees, actual participation rates were approximately 12%, compared to the current assumption of 15%. As shown in the table below, we recommend decreasing the non-disabled assumption to 23.5% and decreasing the disabled assumption to 13.5%.

The data underlying this study showed a pattern wherein members would sometimes not appear until one or two years after retirement (or reaching age 65 if already retired). This may be due to a combination of participant behavior and administrative delay. Because such time-lagged experience is not yet available for the final two years of our study, we included in our analysis an assumption as to the number of additional enrollments not yet reported for members who retired (or reached age 65 if already retired) during 2023 or 2024. This assumption was based on the number of such records observed in 2021 and 2022.



5. Appendix

Data

Except where noted, the analysis in this study was based on data for the experience period from January 1, 2017 to December 31, 2024 as provided by the Oregon Public Employees Retirement System (PERS). PERS is solely responsible for the validity, accuracy, and comprehensiveness of this information; the results of our analysis can be expected to differ and may need to be revised if the underlying data supplied is incomplete or inaccurate.

The member data was summarized according to the actual and potential member decrements for each year in the study. Actual and potential decrements were grouped according to age or service depending on the demographic assumption.

Assumption Tables

A complete listing of all the assumptions, methods and procedures presented to the Board for review on July 25, 2025 that are recommended to be used in the December 31, 2024 and December 31, 2025 actuarial valuations are summarized on the following pages.

Methods and Procedures

Actuarial cost method: Entry Age Normal

UAL amortization method: Level percent of combined Tier One, Tier Two, and OPSRP payroll

UAL amortization period:

- Closed, layered amortization from the first rate-setting valuation in which newly arising UAL (from either experience different than assumption or assumption or method changes) is recognized
  - Tier One/Tier Two – 20 years
  - OPSRP – 16 years
  - RHIA/RHIPA – 10 years
  - Senate Bill 1049 was signed into law in June 2019 and required a one-time re-amortization of Tier One /Tier Two UAL over a closed 22-year period at the December 31, 2019 rate-setting actuarial valuation. This base will continue to be amortized as a closed period, with 16 years remaining as of the December 31, 2025 rate-setting actuarial valuation.
- In general, side accounts are aligned with a 20-year period from the most recent rate-setting valuation. Employers who make lump sum payments in accordance with the rules under OAR 459-009-0086(9) may select a shorter amortization period of either 6, 10, or 16 years since the most recent rate-setting valuation.
- When RHIA or RHIPA is in an actuarial surplus position with a negative UAL, the actuarial surplus for that program is amortized over Tier One/Tier Two payroll using a rolling 20-year amortization basis. The resulting negative UAL Rate would be allowed to offset the Normal Cost Rate of the program, but not below a combined contribution rate of 0.0%.
- As of the December 31, 2022 actuarial valuation, amortization periods for existing transition liabilities/surpluses and other Pre-SLGRP amounts were extended 18 months to align with the biennial rate-setting cycle so that the associated rate offsets will expire coincident with the usual timing for biennial rate changes. New transition liabilities will be amortized over the 19½ year period beginning when the employer joins the SLGRP.

- Regular UAL Rate amortization bases are not adjusted for the 18-month time lag between the rate-setting actuarial valuation date and the date the calculated rate becomes effective. Rate adjustments for side accounts and Pre-SLGRP amounts, including transition liabilities and surpluses, are adjusted for the 18-month lag.

Asset valuation method: Market value

Excluded reserves: Contingency Reserve, Capital Preservation Reserve. Rate Guarantee Reserve is excluded only when it is positive.

Contribution Rate Stabilization Method: The UAL Rate contribution rate component for a rate pool (e.g., Tier One/Tier Two SLGRP, Tier One/Tier Two School Districts, OPSRP) is confined to a collared range based on the prior biennium's collared UAL Rate contribution rate component (prior to consideration of side account offsets, SLGRP transition liability or surplus rates, or pre-SLGRP liability rate charges or offsets).

Collar Width: the rate pool's new UAL Rate contribution rate component will generally not increase or decrease from the prior biennium's collared UAL Rate contribution rate component by more than the following amount:

- Tier One/Tier Two SLGRP and Tier One/Tier Two School District Pool: 3% of payroll
- OPSRP: 1% of payroll
- Tier One/Tier Two rates for independent employers: greater of 4% of payroll or one-third of the difference between the collared and uncollared UAL Rate at the prior rate-setting valuation. In addition, the UAL Rate will not be allowed to be less than 0.00% of payroll for any Tier One/Tier Two independent employer with a funded status (excluding side accounts) less than 100%.

UAL Rate decrease restrictions**:** the UAL Rate for any rate pool will not be allowed to decrease if the pool's funded status is 87% (excluding side accounts) or lower; the allowable decrease will phase into the full collar width from 87% funded to 90% funded.

Liability Allocation for Actives with Several Employers: Allocate Actuarial Accrued Liability 5% (0% for police & fire) based on account balance with each employer and 95% (100% for police & fire) based on service with each employer.

Allocate Normal Cost to current employer.

Projected System-Average Level of Member Redirect Contributions:

- Tier One/Tier Two – 2.40% of payroll
- OPSRP – 0.65% of payroll

Allocation of Benefits-In-Force (BIF) Reserve: The BIF is allocated to each rate pool in proportion to the retiree liability attributable to the rate pool.

Recommended Economic Assumptions

Inflation	2.40%
Real wage growth	1.00%
Payroll growth	3.40%
Investment return	While current capital market outlooks are higher than the current assumption, the current 6.90% assumption is reasonable. The Board will select the assumption at its July 25, 2025 meeting.
Interest crediting	
▪ Regular account	Equal to investment return assumption
▪ Variable account	Equal to investment return assumption
RHIPA subsidy cost trend rates	
▪ 2025 trend rate	6.20%
▪ Ultimate trend rate	3.80%
▪ Year reaching ultimate trend	2073

Recommended Demographic Assumptions

Mortality

The tables below show mortality rates for 2025 for the described groups and ages.

Non-Disabled Retiree Mortality												
Age	**School District Male**		**Other General Service Male**		**Police & Fire Male**		**School District Female**		**Other General Service Female**		**Police & Fire Female**	
	Pub2016 Retiree, Blended 80% Teachers/20% General Employees, Generational w/Social Security Data Scale, 0 year setback		Pub2016 Retiree, General Employees, Generational w/Social Security Data Scale, 1 year setback		Pub2016 Retiree, Public Safety, Generational w/Social Security Data Scale, 0 year setback		Pub2016 Retiree, Teachers, Generational w/Social Security Data Scale, 0 year setback		Pub2016 Retiree, General Employees, Generational w/Social Security Data Scale, 0 year setback		Pub2016 Retiree, Public Safety, Generational w/Social Security Data Scale, 1 year setback	
Year of Birth	**1950**	**1960**	**1950**	**1960**	**1950**	**1960**	**1950**	**1960**	**1950**	**1960**	**1950**	**1960**
50	0.001714	0.001536	0.001604	0.001440	0.002360	0.002115	0.000870	0.000780	0.003051	0.002734	0.001746	0.001568
51	0.001859	0.001662	0.003336	0.002989	0.002530	0.002263	0.000934	0.000835	0.003133	0.002802	0.001898	0.001701
52	0.001999	0.001788	0.003578	0.003200	0.002712	0.002426	0.000994	0.000889	0.003192	0.002855	0.002058	0.001840
53	0.002156	0.001933	0.003827	0.003423	0.002906	0.002604	0.001061	0.000951	0.003263	0.002925	0.002231	0.001996
54	0.002323	0.002086	0.004095	0.003670	0.003106	0.002789	0.001126	0.001012	0.003322	0.002984	0.002407	0.002157
55	0.003014	0.002712	0.004379	0.003932	0.003324	0.002991	0.002123	0.001910	0.003403	0.003062	0.002600	0.002335
56	0.003273	0.002948	0.004690	0.004220	0.003575	0.003220	0.002243	0.002020	0.003486	0.003140	0.002812	0.002530
57	0.003556	0.003207	0.005032	0.004532	0.003831	0.003454	0.002371	0.002138	0.003567	0.003217	0.003054	0.002751
58	0.003864	0.003480	0.005388	0.004858	0.004131	0.003721	0.002512	0.002262	0.003707	0.003339	0.003313	0.002987
59	0.004195	0.003775	0.005778	0.005204	0.004457	0.004011	0.002659	0.002393	0.003887	0.003497	0.003594	0.003237
60	0.004548	0.004088	0.006179	0.005560	0.004818	0.004331	0.002814	0.002530	0.004094	0.003680	0.003910	0.003518
61	0.004926	0.004424	0.006592	0.005926	0.005224	0.004691	0.002986	0.002682	0.004305	0.003866	0.004261	0.003830
62	0.005329	0.004775	0.006995	0.006281	0.005684	0.005094	0.003176	0.002847	0.004555	0.004083	0.004656	0.004181
63	0.005768	0.005153	0.007420	0.006650	0.006217	0.005554	0.003393	0.003031	0.004830	0.004316	0.005084	0.004557
64	0.006248	0.005560	0.007855	0.007018	0.006817	0.006066	0.003644	0.003243	0.005159	0.004591	0.005564	0.004971
65	0.006773	0.006008	0.008337	0.007419	0.007499	0.006653	0.003957	0.003511	0.005556	0.004929	0.006101	0.005429
66	0.007356	0.006513	0.008860	0.007860	0.008280	0.007331	0.004320	0.003825	0.006040	0.005348	0.006690	0.005935
67	0.008004	0.007073	0.009464	0.008379	0.009176	0.008108	0.004761	0.004207	0.006618	0.005847	0.007360	0.006516
68	0.008743	0.007725	0.010146	0.008965	0.010214	0.009025	0.005278	0.004663	0.007307	0.006456	0.008097	0.007154
69	0.009583	0.008468	0.010956	0.009680	0.011399	0.010072	0.005907	0.005219	0.008113	0.007169	0.008942	0.007901
70	0.010564	0.009344	0.011887	0.010503	0.012758	0.011284	0.006636	0.005869	0.009035	0.007992	0.009888	0.008737
71	0.011687	0.010347	0.012978	0.011479	0.014312	0.012671	0.007499	0.006640	0.010087	0.008931	0.010966	0.009699
72	0.012988	0.011511	0.014259	0.012625	0.016063	0.014237	0.008483	0.007518	0.011282	0.009999	0.012177	0.010781
73	0.014475	0.012842	0.015751	0.013960	0.018024	0.015991	0.009610	0.008526	0.012636	0.011210	0.013536	0.011997
74	0.016195	0.014382	0.017465	0.015494	0.020225	0.017961	0.010867	0.009651	0.014159	0.012575	0.015066	0.013366
75	0.018198	0.016210	0.019447	0.017271	0.022718	0.020236	0.012328	0.010981	0.015905	0.014168	0.016787	0.014908
76	0.020496	0.018313	0.021744	0.019369	0.025500	0.022784	0.014010	0.012517	0.017887	0.015982	0.018760	0.016711
77	0.023079	0.020641	0.024366	0.021771	0.028559	0.025543	0.015920	0.014239	0.020104	0.017980	0.020982	0.018747
78	0.025991	0.023246	0.027280	0.024399	0.031924	0.028553	0.018140	0.016224	0.022574	0.020190	0.023423	0.020949
79	0.029287	0.026193	0.030532	0.027307	0.035644	0.031879	0.020715	0.018527	0.025394	0.022712	0.026121	0.023362
80	0.033069	0.029607	0.034162	0.030554	0.039812	0.035643	0.023735	0.021249	0.028643	0.025643	0.029124	0.026048
81	0.037424	0.033573	0.038256	0.034250	0.044498	0.039920	0.027241	0.024438	0.032424	0.029088	0.032512	0.029108
82	0.042520	0.038299	0.042883	0.038470	0.049853	0.044904	0.031360	0.028247	0.036867	0.033208	0.036352	0.032612
83	0.048456	0.043867	0.048213	0.043427	0.055941	0.050643	0.036140	0.032717	0.042000	0.038022	0.040795	0.036746
84	0.055468	0.050571	0.054317	0.049173	0.062989	0.057428	0.041719	0.038036	0.048001	0.043764	0.045898	0.041551
85	0.063396	0.058150	0.061495	0.056066	0.070811	0.064952	0.047983	0.044012	0.054662	0.050139	0.051889	0.047308
86	0.072581	0.067047	0.069588	0.063830	0.079776	0.073693	0.055141	0.050937	0.062224	0.057479	0.058617	0.053767
87	0.082843	0.076990	0.079045	0.073017	0.089726	0.083387	0.063018	0.058566	0.070537	0.065554	0.066439	0.061373
88	0.094410	0.088272	0.089701	0.083364	0.100941	0.094378	0.071822	0.067153	0.079835	0.074644	0.075223	0.069909
89	0.107154	0.100693	0.101824	0.095204	0.113349	0.106514	0.081532	0.076616	0.090069	0.084638	0.085263	0.079720
90	0.121332	0.114591	0.115248	0.108298	0.127318	0.120244	0.092490	0.087351	0.101548	0.095906	0.096496	0.090678
91	0.137098	0.130133	0.130259	0.123022	0.142800	0.135546	0.104844	0.099518	0.114105	0.108308	0.109299	0.103226
92	0.154500	0.147390	0.146529	0.139085	0.159753	0.152402	0.118676	0.113215	0.127656	0.121781	0.122864	0.116622
93	0.173523	0.166371	0.163854	0.156314	0.178150	0.170808	0.134021	0.128497	0.142206	0.136345	0.136795	0.130500
94	0.194110	0.187047	0.182166	0.174658	0.197932	0.190729	0.150887	0.145397	0.157828	0.152085	0.150968	0.144746
95	0.215516	0.208509	0.201475	0.194143	0.218444	0.211341	0.168726	0.163240	0.174132	0.168470	0.165525	0.159501
96	0.237345	0.230320	0.221173	0.213982	0.239354	0.232269	0.187276	0.181733	0.191041	0.185386	0.180213	0.174354
97	0.259139	0.251974	0.241123	0.233986	0.260329	0.253131	0.206195	0.200494	0.208460	0.202696	0.195232	0.189454
98	0.280393	0.272914	0.261127	0.253907	0.280951	0.273456	0.225125	0.219120	0.226189	0.220156	0.210783	0.204955
99	0.300629	0.292610	0.280924	0.273430	0.300790	0.292766	0.243670	0.237171	0.243981	0.237473	0.226978	0.220924
100	0.320456	0.311908	0.300197	0.292189	0.320456	0.311908	0.262341	0.255344	0.262341	0.255344	0.243733	0.237232
101	0.340926	0.332165	0.319591	0.311066	0.340926	0.332165	0.282025	0.274778	0.282025	0.274778	0.261633	0.254654
102	0.359680	0.350437	0.340040	0.331301	0.359680	0.350437	0.300777	0.293048	0.300777	0.293048	0.281292	0.274063
103	0.379056	0.369686	0.358745	0.349526	0.379056	0.369686	0.320517	0.312594	0.320517	0.312594	0.299995	0.292286
104	0.397715	0.388272	0.378109	0.368762	0.397715	0.388272	0.340076	0.332002	0.340076	0.332002	0.319716	0.311812
105	0.415537	0.406078	0.396761	0.387341	0.415537	0.406078	0.359310	0.351130	0.359310	0.351130	0.339260	0.331205
106	0.430705	0.420901	0.414581	0.405144	0.430705	0.420901	0.376550	0.367979	0.376550	0.367979	0.358483	0.350323
107	0.446532	0.436805	0.429715	0.419933	0.446532	0.436805	0.394590	0.385995	0.394590	0.385995	0.375684	0.367132
108	0.457746	0.448224	0.445550	0.435844	0.457746	0.448224	0.411926	0.403357	0.411926	0.403357	0.393722	0.385146
109	0.458758	0.449665	0.456785	0.447283	0.458758	0.449665	0.428489	0.419996	0.428489	0.419996	0.411061	0.402510
110	0.459863	0.451200	0.457840	0.448765	0.459863	0.451200	0.444218	0.435850	0.444218	0.435850	0.427632	0.419156
111	0.458989	0.450343	0.458989	0.450343	0.458989	0.450343	0.457025	0.448415	0.457025	0.448415	0.443374	0.435022
112	0.460233	0.452016	0.458117	0.449487	0.460233	0.452016	0.460233	0.452016	0.460233	0.452016	0.456156	0.447563
113	0.461573	0.453786	0.459405	0.451202	0.461573	0.453786	0.461573	0.453786	0.461573	0.453786	0.459405	0.451202
114	0.463009	0.455654	0.460788	0.453015	0.463009	0.455654	0.463009	0.455654	0.463009	0.455654	0.460788	0.453015
115	0.464542	0.457621	0.462268	0.454925	0.464542	0.457621	0.464542	0.457621	0.464542	0.457621	0.462268	0.454925
116	0.463846	0.456935	0.463846	0.456935	0.463846	0.456935	0.463846	0.456935	0.463846	0.456935	0.463846	0.456935
117	0.463150	0.456249	0.463150	0.456249	0.463150	0.456249	0.463150	0.456249	0.463150	0.456249	0.463150	0.456249
118	0.462455	0.455565	0.462455	0.455565	0.462455	0.455565	0.462455	0.455565	0.462455	0.455565	0.462455	0.455565
119	0.461761	0.454882	0.461761	0.454882	0.461761	0.454882	0.461761	0.454882	0.461761	0.454882	0.461761	0.454882
120	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

Recommended Demographic Assumptions *(continued)*

	Beneficiary Mortality				Disabled Retired Mortality			
Age	Male		Female		Police & Fire Male	Police & Fire Female	General Service Male	General Service Female
	Pub2016 Retiree, General Employees, Generational w/Social Security Data Scale, 1 year setback		Pub2016 Retiree, General Employees, Generational w/Social Security Data Scale, 0 year setback		Blended 20% Pub2016 Public Safety Disabled Retiree/80% Non-Safety Disabled Retiree, Generational w/Social Security Data Scale, 0 year setback		120% of Pub2016 Non-Safety Disabled Retiree, Generational w/Social Security Data Scale, 0 year setback	
Year of Birth	1950	1960	1950	1960	1950	1950	1950	1950
50	0.001604	0.001440	0.003051	0.002734	0.009166	0.007836	0.012370	0.010482
51	0.003336	0.002989	0.003133	0.002802	0.009867	0.008425	0.013350	0.011307
52	0.003578	0.003200	0.003192	0.002855	0.010592	0.009033	0.014366	0.012164
53	0.003827	0.003423	0.003263	0.002925	0.011349	0.009659	0.015429	0.013049
54	0.004095	0.003670	0.003322	0.002984	0.012154	0.010329	0.016562	0.013995
55	0.004379	0.003932	0.003403	0.003062	0.013033	0.011056	0.017804	0.015027
56	0.004690	0.004220	0.003486	0.003140	0.013984	0.011855	0.019144	0.016160
57	0.005032	0.004532	0.003567	0.003217	0.015014	0.012711	0.020601	0.017374
58	0.005388	0.004858	0.003707	0.003339	0.016150	0.013658	0.022206	0.018722
59	0.005778	0.005204	0.003887	0.003497	0.017376	0.014675	0.023941	0.020168
60	0.006179	0.005560	0.004094	0.003680	0.018679	0.015762	0.025789	0.021721
61	0.006592	0.005926	0.004305	0.003866	0.019465	0.016025	0.026808	0.021945
62	0.006995	0.006281	0.004555	0.004083	0.020138	0.016282	0.027633	0.022142
63	0.007420	0.006650	0.004830	0.004316	0.020708	0.016560	0.028288	0.022342
64	0.007855	0.007018	0.005159	0.004591	0.021203	0.016855	0.028804	0.022540
65	0.008337	0.007419	0.005556	0.004929	0.021646	0.017184	0.029220	0.022759
66	0.008860	0.007860	0.006040	0.005348	0.022088	0.017582	0.029592	0.023040
67	0.009464	0.008379	0.006618	0.005847	0.022581	0.018075	0.029998	0.023420
68	0.010146	0.008965	0.007307	0.006456	0.023183	0.018711	0.030531	0.023963
69	0.010956	0.009680	0.008113	0.007169	0.023950	0.019522	0.031277	0.024721
70	0.011887	0.010503	0.009035	0.007992	0.024960	0.020516	0.032344	0.025775
71	0.012978	0.011479	0.010087	0.008931	0.026271	0.021779	0.033818	0.027190
72	0.014259	0.012625	0.011282	0.009999	0.027907	0.023342	0.035728	0.028998
73	0.015751	0.013960	0.012636	0.011210	0.029871	0.025220	0.038072	0.031208
74	0.017465	0.015494	0.014159	0.012575	0.032164	0.027451	0.040847	0.033874
75	0.019447	0.017271	0.015905	0.014168	0.034874	0.030116	0.044163	0.037080
76	0.021744	0.019369	0.017887	0.015982	0.037966	0.033212	0.047948	0.040818
77	0.024366	0.021771	0.020104	0.017980	0.041389	0.036648	0.052070	0.044959
78	0.027280	0.024399	0.022574	0.020190	0.045110	0.040380	0.056519	0.049424
79	0.030532	0.027307	0.025394	0.022712	0.049112	0.044380	0.061247	0.054148
80	0.034162	0.030554	0.028643	0.025643	0.053412	0.048513	0.066255	0.059019
81	0.038256	0.034250	0.032424	0.029088	0.057995	0.052492	0.071496	0.063900
82	0.042883	0.038470	0.036867	0.033208	0.063062	0.056705	0.077234	0.069031
83	0.048213	0.043427	0.042000	0.038022	0.068717	0.061298	0.083615	0.074617
84	0.054317	0.049173	0.048001	0.043764	0.075314	0.066640	0.091122	0.081144
85	0.061495	0.056066	0.054662	0.050139	0.082745	0.072738	0.099689	0.088681
86	0.069588	0.063830	0.062224	0.057479	0.092247	0.079713	0.111071	0.097298
87	0.079045	0.073017	0.070537	0.065554	0.102990	0.087202	0.124102	0.106498
88	0.089701	0.083364	0.079835	0.074644	0.114945	0.095348	0.138662	0.116420
89	0.101824	0.095204	0.090069	0.084638	0.127898	0.103980	0.154490	0.126835
90	0.115248	0.108298	0.101548	0.095906	0.142104	0.114027	0.171874	0.138062
91	0.130259	0.123022	0.114105	0.108308	0.157252	0.124875	0.190321	0.150261
92	0.146529	0.139085	0.127656	0.121781	0.173227	0.136584	0.209625	0.163644
93	0.163854	0.156314	0.142206	0.136345	0.190011	0.149277	0.229739	0.178434
94	0.182166	0.174658	0.157828	0.152085	0.207725	0.163125	0.250823	0.194846
95	0.201475	0.194143	0.174132	0.168470	0.225880	0.177815	0.272316	0.212480
96	0.221173	0.213982	0.191041	0.185386	0.244444	0.193371	0.294242	0.231310
97	0.241123	0.233986	0.208460	0.202696	0.263327	0.209732	0.316553	0.251186
98	0.261127	0.253907	0.226189	0.220156	0.282348	0.226749	0.339089	0.271845
99	0.280924	0.273430	0.243981	0.237473	0.301190	0.244129	0.361508	0.292876
100	0.300197	0.292189	0.262341	0.255344	0.320456	0.262341	0.384547	0.314810
101	0.319591	0.311066	0.282025	0.274778	0.340926	0.282025	0.409111	0.338430
102	0.340040	0.331301	0.300777	0.293048	0.359680	0.300777	0.431616	0.360933
103	0.358745	0.349526	0.320517	0.312594	0.379056	0.320517	0.454868	0.384620
104	0.378109	0.368762	0.340076	0.332002	0.397715	0.340076	0.477258	0.408091
105	0.396761	0.387341	0.359310	0.351130	0.415537	0.359310	0.498644	0.431172
106	0.414581	0.405144	0.376550	0.367979	0.430705	0.376550	0.516846	0.451860
107	0.429715	0.419933	0.394590	0.385995	0.446532	0.394590	0.535838	0.473509
108	0.445550	0.435844	0.411926	0.403357	0.457746	0.411926	0.549296	0.494311
109	0.456785	0.447283	0.428489	0.419996	0.458758	0.428489	0.550509	0.514187
110	0.457840	0.448765	0.444218	0.435850	0.459863	0.444218	0.551836	0.533062
111	0.458989	0.450343	0.457025	0.448415	0.458989	0.457025	0.550787	0.548430
112	0.458117	0.449487	0.460233	0.452016	0.460233	0.460233	0.552280	0.552280
113	0.459405	0.451202	0.461573	0.453786	0.461573	0.461573	0.553888	0.553888
114	0.460788	0.453015	0.463009	0.455654	0.463009	0.463009	0.555611	0.555611
115	0.462268	0.454925	0.464542	0.457621	0.464542	0.464542	0.557451	0.557451
116	0.463846	0.456935	0.463846	0.456935	0.463846	0.463846	0.556615	0.556615
117	0.463150	0.456249	0.463150	0.456249	0.463150	0.463150	0.555780	0.555780
118	0.462455	0.455565	0.462455	0.455565	0.462455	0.462455	0.554946	0.554946
119	0.461761	0.454882	0.461761	0.454882	0.461761	0.461761	0.554114	0.554114
120	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

Recommended Demographic Assumptions *(continued)*

Non-Annuitant Mortality

Age	School District Male		Other General Service Male		Police & Fire Male		School District Female		Other General Service Female		Police & Fire Female	
	120% of Pub2016 Employee, Blended 80% Teachers/20% General Employees, Generational w/Social Security Data Scale, 0 year setback		120% of Pub2016 Employee, General Employees, Generational w/Social Security Data Scale, 1 year setback		120% of Pub2016 Employee, Public Safety, Generational w/Social Security Data Scale, 0 year setback		120% of Pub2016 Employee, Teachers, Generational w/Social Security Data Scale, 0 year setback		120% of Pub2016 Employee, General Employees, Generational w/Social Security Data Scale, 0 year setback		120% of Pub2016 Employee, Public Safety, Generational w/Social Security Data Scale, 1 year setback	
Year of Birth	**1950**	**1960**	**1950**	**1960**	**1950**	**1960**	**1950**	**1960**	**1950**	**1960**	**1950**	**1960**
30	0.000422	0.000411	0.000617	0.000602	0.000527	0.000514	0.000171	0.000167	0.000250	0.000244	0.000263	0.000256
31	0.000437	0.000425	0.000631	0.000615	0.000543	0.000528	0.000185	0.000180	0.000265	0.000257	0.000289	0.000282
32	0.000448	0.000435	0.000647	0.000629	0.000556	0.000540	0.000212	0.000206	0.000291	0.000283	0.000304	0.000295
33	0.000471	0.000456	0.000647	0.000629	0.000585	0.000567	0.000226	0.000219	0.000319	0.000309	0.000330	0.000321
34	0.000487	0.000471	0.000649	0.000630	0.000602	0.000582	0.000254	0.000246	0.000348	0.000336	0.000358	0.000347
35	0.000515	0.000497	0.000667	0.000644	0.000631	0.000608	0.000268	0.000259	0.000376	0.000362	0.000387	0.000374
36	0.000536	0.000515	0.000695	0.000671	0.000663	0.000637	0.000298	0.000286	0.000406	0.000390	0.000415	0.000400
37	0.000573	0.000548	0.000728	0.000699	0.000700	0.000668	0.000329	0.000314	0.000453	0.000432	0.000445	0.000427
38	0.000624	0.000592	0.000778	0.000743	0.000738	0.000700	0.000376	0.000357	0.000487	0.000462	0.000492	0.000469
39	0.000679	0.000639	0.000831	0.000788	0.000793	0.000746	0.000411	0.000386	0.000538	0.000506	0.000540	0.000512
40	0.000738	0.000689	0.000900	0.000847	0.000848	0.000791	0.000460	0.000429	0.000589	0.000550	0.000591	0.000556
41	0.000798	0.000738	0.000984	0.000919	0.000903	0.000835	0.000495	0.000458	0.000655	0.000606	0.000642	0.000599
42	0.000865	0.000796	0.001069	0.000989	0.000967	0.000890	0.000542	0.000499	0.000704	0.000647	0.000708	0.000655
43	0.000944	0.000864	0.001148	0.001056	0.001029	0.000942	0.000603	0.000552	0.000765	0.000700	0.000770	0.000709
44	0.001026	0.000934	0.001239	0.001134	0.001091	0.000993	0.000648	0.000591	0.000840	0.000765	0.000831	0.000761
45	0.001114	0.001011	0.001343	0.001224	0.001161	0.001054	0.000705	0.000640	0.000896	0.000814	0.000905	0.000825
46	0.001206	0.001091	0.001441	0.001308	0.001247	0.001128	0.000763	0.000690	0.000968	0.000876	0.000975	0.000885
47	0.001306	0.001178	0.001554	0.001406	0.001329	0.001199	0.000833	0.000751	0.001052	0.000948	0.001060	0.000959
48	0.001419	0.001277	0.001663	0.001499	0.001437	0.001293	0.000900	0.000810	0.001132	0.001018	0.001142	0.001030
49	0.001530	0.001374	0.001795	0.001615	0.001542	0.001384	0.000965	0.000867	0.001210	0.001087	0.001220	0.001098
50	0.001667	0.001494	0.001924	0.001728	0.001659	0.001487	0.001044	0.000936	0.001316	0.001179	0.001326	0.001190
51	0.001816	0.001624	0.002079	0.001863	0.001788	0.001599	0.001121	0.001002	0.001405	0.001256	0.001414	0.001268
52	0.001959	0.001752	0.002245	0.002008	0.001922	0.001719	0.001193	0.001067	0.001515	0.001355	0.001529	0.001368
53	0.002120	0.001900	0.002414	0.002159	0.002076	0.001860	0.001273	0.001141	0.001619	0.001451	0.001637	0.001464
54	0.002291	0.002057	0.002600	0.002331	0.002239	0.002011	0.001352	0.001214	0.001734	0.001557	0.001752	0.001570
55	0.002485	0.002236	0.002796	0.002511	0.002426	0.002183	0.001442	0.001298	0.001846	0.001661	0.001878	0.001686
56	0.002680	0.002414	0.003014	0.002712	0.002638	0.002376	0.001532	0.001380	0.001985	0.001788	0.002000	0.001800
57	0.002898	0.002613	0.003243	0.002921	0.002871	0.002589	0.001646	0.001485	0.002134	0.001924	0.002149	0.001936
58	0.003139	0.002827	0.003494	0.003150	0.003118	0.002809	0.001761	0.001586	0.002283	0.002057	0.002307	0.002080
59	0.003380	0.003041	0.003757	0.003384	0.003411	0.003069	0.001886	0.001697	0.002455	0.002209	0.002479	0.002233
60	0.003646	0.003277	0.004040	0.003635	0.003723	0.003346	0.002034	0.001828	0.002648	0.002380	0.002672	0.002404
61	0.003913	0.003514	0.004316	0.003880	0.004052	0.003639	0.002203	0.001979	0.002849	0.002559	0.002860	0.002571
62	0.004205	0.003769	0.004623	0.004151	0.004426	0.003966	0.002395	0.002146	0.003059	0.002742	0.003082	0.002767
63	0.004506	0.004026	0.004923	0.004412	0.004828	0.004314	0.002619	0.002340	0.003289	0.002939	0.003311	0.002967
64	0.004832	0.004300	0.005241	0.004682	0.005270	0.004689	0.002850	0.002536	0.003538	0.003148	0.003559	0.003180
65	0.005181	0.004596	0.005573	0.004959	0.005732	0.005085	0.003109	0.002758	0.003801	0.003372	0.003837	0.003414
66	0.005544	0.004909	0.005916	0.005249	0.006408	0.005674	0.003396	0.003007	0.004092	0.003623	0.004116	0.003652
67	0.005952	0.005259	0.006283	0.005563	0.007159	0.006325	0.003722	0.003288	0.004385	0.003875	0.004422	0.003915
68	0.006389	0.005646	0.006684	0.005906	0.008007	0.007075	0.004062	0.003589	0.004718	0.004169	0.004753	0.004200
69	0.006868	0.006069	0.007134	0.006304	0.008938	0.007897	0.004452	0.003933	0.005064	0.004475	0.005099	0.004506
70	0.007397	0.006542	0.007652	0.006761	0.009985	0.008832	0.004878	0.004315	0.005438	0.004810	0.005470	0.004834
71	0.007976	0.007062	0.008227	0.007277	0.011167	0.009887	0.005341	0.004729	0.005849	0.005179	0.005880	0.005201
72	0.008614	0.007635	0.008879	0.007861	0.012490	0.011069	0.005849	0.005184	0.006284	0.005569	0.006325	0.005600
73	0.009309	0.008259	0.009605	0.008513	0.013960	0.012385	0.006401	0.005678	0.006754	0.005992	0.006793	0.006020
74	0.010066	0.008939	0.010402	0.009229	0.015616	0.013868	0.007017	0.006232	0.007257	0.006445	0.007306	0.006481
75	0.010907	0.009715	0.011302	0.010037	0.017496	0.015585	0.007710	0.006868	0.007829	0.006974	0.007862	0.006982
76	0.012347	0.011032	0.012303	0.010959	0.019621	0.017531	0.008856	0.007913	0.008438	0.007539	0.008477	0.007551
77	0.013967	0.012492	0.013422	0.011992	0.021970	0.019650	0.010168	0.009094	0.009085	0.008126	0.009139	0.008165
78	0.015785	0.014118	0.014610	0.013067	0.024570	0.021975	0.011650	0.010420	0.009771	0.008739	0.009845	0.008805
79	0.017850	0.015965	0.015901	0.014221	0.027484	0.024581	0.013368	0.011956	0.010504	0.009394	0.010587	0.009469
80	0.020214	0.018097	0.017315	0.015487	0.030784	0.027561	0.015346	0.013739	0.011317	0.010132	0.011383	0.010181

Recommended Demographic Assumptions *(continued)*

Mortality Improvement Scale

Unisex Social Security Data Mortality Projection Scale					
Based on 60-year average of experience through 2019					
Age	**Improvement Rate**	**Age**	**Improvement Rate**	**Age**	**Improvement Rate**
15	1.35%	50	1.09%	85	0.86%
16	1.26%	51	1.11%	86	0.79%
17	1.16%	52	1.11%	87	0.73%
18	1.03%	53	1.09%	88	0.67%
19	0.90%	54	1.07%	89	0.62%
20	0.78%	55	1.05%	90	0.57%
21	0.69%	56	1.04%	91	0.52%
22	0.61%	57	1.03%	92	0.47%
23	0.53%	58	1.04%	93	0.42%
24	0.46%	59	1.05%	94	0.37%
25	0.39%	60	1.06%	95	0.33%
26	0.33%	61	1.07%	96	0.30%
27	0.28%	62	1.09%	97	0.28%
28	0.26%	63	1.12%	98	0.27%
29	0.25%	64	1.16%	99	0.27%
30	0.26%	65	1.19%	100	0.27%
31	0.28%	66	1.21%	101	0.26%
32	0.29%	67	1.23%	102	0.26%
33	0.31%	68	1.23%	103	0.25%
34	0.34%	69	1.23%	104	0.24%
35	0.36%	70	1.22%	105	0.23%
36	0.40%	71	1.21%	106	0.23%
37	0.46%	72	1.20%	107	0.22%
38	0.53%	73	1.19%	108	0.21%
39	0.61%	74	1.18%	109	0.20%
40	0.69%	75	1.15%	110	0.19%
41	0.77%	76	1.12%	111	0.19%
42	0.83%	77	1.11%	112	0.18%
43	0.88%	78	1.11%	113	0.17%
44	0.93%	79	1.11%	114	0.16%
45	0.96%	80	1.10%	115	0.15%
46	1.00%	81	1.08%	116	0.15%
47	1.03%	82	1.04%	117	0.15%
48	1.05%	83	0.99%	118	0.15%
49	1.07%	84	0.92%	119	0.15%

Recommended Demographic Assumptions *(continued)*

Retirement Assumptions

Retirement from Active Status (Tier One/Tier Two)

	Police & Fire			General Service / School Districts						Judges
				General Service			School Districts			
Age	**<13 Years**	**13-24 Years**	**25+ Years**	**<15 years**	**15-29 Years**	**30+ Years**	**<15 years**	**15-29 Years**	**30+ Years**	
< 50						15.0%			25.0%	
50	1.5%	3.5%	38.0%			15.0%			25.0%	
51	1.5%	3.5%	28.0%			15.0%			25.0%	
52	1.5%	3.5%	28.0%			15.0%			25.0%	
53	1.5%	3.5%	28.0%			15.0%			32.0%	
54	1.5%	3.5%	28.0%			15.0%			25.0%	
55	3.0%	20.0%	28.0%	1.5%	2.5%	15.0%	1.5%	3.5%	25.0%	
56	3.0%	12.0%	28.0%	1.5%	2.5%	15.0%	1.5%	3.5%	25.0%	
57	3.0%	12.0%	28.0%	1.5%	2.5%	15.0%	1.5%	3.5%	25.0%	
58	6.0%	12.0%	28.0%	1.5%	7.5%	20.0%	1.5%	11.0%	27.5%	
59	6.0%	12.0%	28.0%	3.5%	7.5%	20.0%	4.5%	11.0%	27.5%	
60	6.0%	13.0%	32.0%	6.0%	12.0%	20.0%	6.5%	14.5%	27.5%	15.0%
61	6.0%	14.0%	28.0%	6.0%	11.0%	20.0%	6.5%	14.5%	27.5%	15.0%
62	15.0%	25.0%	38.0%	13.0%	17.5%	26.0%	15.0%	21.0%	34.0%	15.0%
63	15.0%	15.0%	31.0%	11.5%	16.0%	22.0%	13.0%	19.5%	29.0%	15.0%
64	15.0%	15.0%	31.0%	12.5%	16.0%	22.0%	13.0%	19.5%	29.0%	15.0%
65	40.0%	40.0%	45.0%	19.5%	28.0%	36.0%	25.5%	34.5%	45.0%	15.0%
66	40.0%	40.0%	45.0%	27.5%	35.0%	38.0%	23.0%	36.5%	45.0%	15.0%
67	40.0%	40.0%	45.0%	22.5%	28.0%	35.0%	21.0%	34.5%	38.0%	20.0%
68	40.0%	40.0%	45.0%	19.5%	26.5%	26.0%	21.0%	30.0%	28.5%	20.0%
69	40.0%	40.0%	45.0%	19.5%	26.5%	26.0%	21.0%	30.0%	28.5%	20.0%
70	100.0%	100.0%	100.0%	25.0%	28.0%	26.0%	21.0%	30.0%	28.5%	30.0%
71	100.0%	100.0%	100.0%	25.0%	28.0%	26.0%	21.0%	30.0%	28.5%	30.0%
72	100.0%	100.0%	100.0%	25.0%	28.0%	26.0%	21.0%	30.0%	28.5%	30.0%
73	100.0%	100.0%	100.0%	25.0%	28.0%	26.0%	21.0%	30.0%	28.5%	30.0%
74	100.0%	100.0%	100.0%	25.0%	28.0%	26.0%	21.0%	30.0%	28.5%	30.0%
75+	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Lump Sum Option at Retirement

Partial Lump Sum	0%
Total Lump Sum	0%

Purchase of Credited Service at Retirement

Money Match Retirements	0%
Non-Money Match Retirements	75%

Oregon Residency Status

For purposes of determining eligibility for SB 656/HB 3349 “tax remedy” benefit adjustments, 85% of potentially eligible retirees are assumed to remain Oregon residents after retirement.

Recommended Demographic Assumptions *(continued)*

Retirement from Active Status (OPSRP)

	Police & Fire			General Service / School Districts					
				General Service			School Districts		
Age	<13 Years	13-24 Years	25+ Years	<15 years	15-29 Years	30+ Years	<15 years	15-29 Years	30+ Years
50	1.50%	3.00%	5.50%						
51	1.50%	3.00%	5.50%						
52	1.50%	3.00%	5.50%						
53	1.50%	3.00%	28.00%						
54	1.50%	3.50%	28.00%						
55	3.00%	15.50%	28.00%	1.00%	2.50%	5.00%	0.50%	2.50%	5.00%
56	3.00%	10.00%	28.00%	1.00%	2.50%	5.00%	0.50%	2.50%	5.00%
57	3.00%	10.00%	28.00%	1.00%	2.50%	7.50%	1.00%	2.50%	7.50%
58	6.00%	10.00%	28.00%	1.50%	3.00%	30.00%	1.50%	3.00%	30.00%
59	6.00%	10.00%	28.00%	2.00%	3.00%	25.00%	1.50%	3.00%	25.00%
60	5.00%	12.00%	32.00%	2.50%	3.75%	20.00%	2.50%	3.75%	20.00%
61	5.00%	8.50%	28.00%	2.50%	5.00%	20.00%	2.50%	5.00%	20.00%
62	10.00%	25.00%	38.00%	6.00%	12.00%	26.00%	6.00%	12.00%	30.00%
63	10.00%	15.00%	31.00%	6.00%	10.00%	20.00%	6.00%	10.00%	20.00%
64	10.00%	15.00%	31.00%	7.00%	10.00%	20.00%	6.00%	10.00%	20.00%
65	20.00%	35.00%	40.00%	15.50%	35.00%	20.00%	12.50%	35.00%	20.00%
66	20.00%	35.00%	40.00%	18.50%	33.00%	20.00%	12.50%	33.00%	20.00%
67	20.00%	35.00%	40.00%	17.00%	22.00%	30.00%	11.00%	26.00%	30.00%
68	20.00%	35.00%	40.00%	14.00%	20.00%	25.00%	9.00%	22.00%	25.00%
69	20.00%	35.00%	40.00%	14.00%	20.00%	25.00%	9.00%	22.00%	25.00%
70	100.00%	100.00%	100.00%	14.00%	20.00%	25.00%	9.00%	22.00%	25.00%
71	100.00%	100.00%	100.00%	14.00%	20.00%	25.00%	9.00%	22.00%	25.00%
72	100.00%	100.00%	100.00%	14.00%	20.00%	25.00%	9.00%	22.00%	25.00%
73	100.00%	100.00%	100.00%	14.00%	20.00%	25.00%	9.00%	22.00%	25.00%
74	100.00%	100.00%	100.00%	14.00%	20.00%	25.00%	9.00%	22.00%	25.00%
75+	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Disability Assumptions

	Duty Disability		
Age	Police & Fire	General Service	Ordinary Disability
20	0.0075%	0.0002%	0.0060%
25	0.0108%	0.0003%	0.0086%
30	0.0160%	0.0004%	0.0128%
35	0.0245%	0.0006%	0.0196%
40	0.0395%	0.0009%	0.0316%
45	0.0648%	0.0016%	0.0518%
50	0.1120%	0.0027%	0.0896%
55	0.2113%	0.0051%	0.1200%
60	-	0.0072%	0.1200%
65	-	-	-

Recommended Demographic Assumptions *(continued)*

Termination Assumptions

Duration	School District Male	School District Female	General Service Male	General Service Female	Police & Fire
0	16.63%	13.50%	15.00%	15.00%	10.00%
1	14.25%	13.00%	12.50%	14.00%	7.00%
2	11.50%	11.50%	10.46%	11.50%	6.00%
3	9.50%	10.00%	9.23%	8.74%	5.38%
4	7.93%	8.89%	8.15%	7.95%	4.69%
5	6.86%	7.91%	7.19%	7.23%	4.32%
6	5.93%	7.03%	6.35%	6.57%	3.98%
7	5.12%	6.25%	5.60%	5.98%	3.67%
8	4.43%	5.56%	4.94%	5.44%	3.38%
9	3.82%	4.94%	4.42%	5.09%	3.11%
10	3.31%	4.43%	4.13%	4.77%	2.87%
11	3.04%	3.92%	3.85%	4.47%	2.64%
12	2.84%	3.72%	3.60%	4.18%	2.43%
13	2.65%	3.53%	3.36%	3.92%	2.24%
14	2.47%	3.34%	3.13%	3.67%	2.07%
15	2.30%	3.17%	2.93%	3.43%	1.90%
16	2.15%	3.00%	2.73%	3.22%	1.75%
17	2.00%	2.85%	2.55%	3.01%	1.62%
18	1.87%	2.70%	2.38%	2.82%	1.49%
19	1.74%	2.56%	2.22%	2.64%	1.37%
20	1.62%	2.43%	2.08%	2.47%	1.26%
21	1.52%	2.30%	1.94%	2.32%	1.16%
22	1.41%	2.18%	1.81%	2.17%	1.07%
23	1.32%	2.07%	1.69%	2.03%	0.90%
24	1.23%	1.96%	1.58%	1.90%	0.90%
25	1.20%	1.75%	1.47%	1.78%	0.90%
26	1.20%	1.75%	1.40%	1.67%	0.90%
27	1.20%	1.75%	1.40%	1.56%	0.90%
28	1.20%	1.75%	1.40%	1.46%	0.90%
29	1.20%	1.75%	1.40%	1.40%	0.90%
30+	1.20%	1.75%	1.40%	1.40%	0.90%

Recommended Demographic Assumptions *(continued)*

Merit Salary Increase Assumptions

Duration	School District	Other General Service	Police & Fire
0	5.28%	4.77%	6.12%
1	4.99%	4.39%	5.46%
2	4.70%	4.03%	4.85%
3	4.41%	3.70%	4.31%
4	4.12%	3.39%	3.82%
5	3.84%	3.10%	3.38%
6	3.57%	2.82%	3.00%
7	3.30%	2.57%	2.66%
8	3.03%	2.34%	2.37%
9	2.78%	2.13%	2.12%
10	2.53%	1.93%	1.91%
11	2.29%	1.75%	1.73%
12	2.05%	1.58%	1.58%
13	1.83%	1.43%	1.47%
14	1.61%	1.30%	1.37%
15	1.41%	1.17%	1.30%
16	1.21%	1.06%	1.25%
17	1.03%	0.96%	1.22%
18	0.86%	0.87%	1.20%
19	0.71%	0.80%	1.19%
20	0.56%	0.73%	1.18%
21	0.43%	0.67%	1.18%
22	0.32%	0.61%	1.18%
23	0.22%	0.57%	1.18%
24	0.13%	0.53%	1.17%
25	0.06%	0.50%	1.15%
26	0.01%	0.47%	1.11%
27	0.00%	0.44%	1.07%
28	0.00%	0.42%	1.00%
29	0.00%	0.40%	0.91%
30+	0.00%	0.38%	0.80%

An across-the-board select assumption of an additional 2.0% of pay will be added to the merit salary increases shown in the table for pay increases from 2024 to 2025.

Recommended Demographic Assumptions *(continued)*

Unused Sick Leave Adjustment

Actives	
• State General Service Male	8.75%
• State General Service Female	5.25%
• School District Male	9.75%
• School District Female	6.50%
• Local General Service Male	6.50%
• Local General Service Female	5.00%
• State Police & Fire	4.75%
• Local Police & Fire	7.25%
Dormants	5.00%

Unused Vacation Cash Out Adjustment

Tier One	
• State General Service	2.50%
• School District	0.25%
• Local General Service	3.50%
• State Police & Fire	3.00%
• Local Police & Fire	4.25%
Tier Two	0.00%

Recommended Retiree Healthcare Assumptions

Retiree Healthcare Participation

RHIPA	
• 8 – 9 years of service	10.0%
• 10 – 14 years of service	10.0%
• 15 – 19 years of service	10.0%
• 20 – 24 years of service	10.0%
• 25 – 29 years of service	18.0%
• 30+ years of service	23.0%
RHIA	
• Non-Disabled Retired	23.5%
• Disabled Retired	13.5%

RHIPA Subsidy Cost Trend Rates

Year	Rate
2025	6.20%
2026	5.70%
2027	5.20%
2028	5.10%
2029	4.90%
2030	4.80%
2031	4.70%
2032	4.50%
2033	4.40%
2034-2054	4.20%
2055-2064	4.30%
2065-2066	4.20%
2067-2068	4.10%
2069-2070	4.00%
2071-2072	3.90%
2073+	3.80%