August 21, 2007

# 2006 Experience Study

# Oregon Public Employees Retirement System

# MERCER
Human Resource Consulting

August 21, 2007


Retirement Board
Oregon Public Employees Retirement System


Subject:
**2006 Experience Study – Oregon Public Employees Retirement System**

Dear Members of the Board:

The results of the actuarial valuation are based on actuarial methods, procedures and assumptions adopted by the Board. These 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.

The purpose of this report is to present the results of our review of the actuarial methods and procedures, economic assumptions, and demographic assumptions to be used in the December 31, 2006 actuarial valuation. Our recommendations represent our best-estimate based on recent experience, future expectations and professional judgment.

The analysis in this study was based on data for the experience period from January 1, 2003, to December 31, 2006, as provided by the System. The System's actuary would not customarily verify this data. We have reviewed the information for internal consistency and reasonableness and have no reason to doubt its substantial accuracy.

This report has been prepared exclusively for the Oregon Public Employees Retirement System. Mercer Human Resource Consulting is not responsible for consequences arising from the use of this report for any other purposes.

The information contained in this document (including any attachments) is not intended by Mercer to be used, and it cannot be used, for the purpose of avoiding penalties under the Internal Revenue Code that be imposed on the taxpayer.

We are available to answer any questions on the material contained in the report, or to provide explanations or further details as may be appropriate. The undersigned credentialed actuaries meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report.

Sincerely,
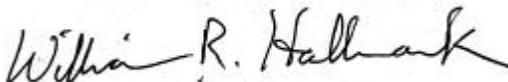

William R. Hallmark, ASA, EA, MAAA          Matthew R. Larrabee, FSA, EA, MAAA
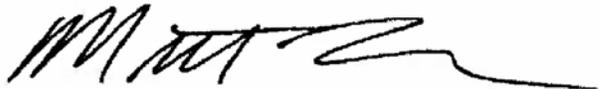
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# Executive Summary

This report has been prepared by Mercer Human Resource Consulting for the Oregon Public Employees Retirement System (PERS) in order to analyze the system's experience from January 1, 2003, through December 31, 2006, and to develop recommendations for changes in valuation methods, allocation procedures, economic assumptions, and demographic assumptions.

The results of our analysis were presented to and adopted by the Board on July 20, 2007.

A brief summary of our recommendations are as follows:

| | |
|---|---|
| **Actuarial Methods** | Eliminate the 18-month delay adjustment |
| | Exclude RHIA and RHIPA from the rate collar |
| **Allocation Procedures** | Change prior service segment allocation procedure |
| **Economic Assumptions** | Increase the OPSRP administrative expense assumption |
| **Demographic Assumptions** | Adjusted rates of retirement |
| | Reduction in total lump sum election at retirement |
| | Reduction in duty disability rates |
| | Smoothing of termination rates |
| | Decrease in percentage electing a lump sum before retirement |

## Overview of Recommended Assumption Changes

### Actuarial Methods and Allocation Procedures

18-Month Delay

Employer contribution rates are set biennially based on the actuarial valuation as of December 31st of odd numbered years. The rates become effective 18-months after the valuation date. In the past

## Executive Summary *(continued)*

there has been an adjustment to the rate calculated as of the valuation date to take into account the 18-month delay. This adjustment has been the source of a fair amount of confusion over the calculation of employer rates. As we show in this report, the additional actuarial accuracy gained with the current 18-month delay adjustment is very minor and, in our judgment, not worth the confusion it creates for stakeholders. Consequently, we recommend eliminating this adjustment.

### Rate Collar

We established a methodology to control the volatility of employer contribution rates that relies on a rate collar calculation. In prior valuations, the rate collar has applied to the total pension and retiree medical rate paid by the employer. Because the retiree medical rate is relatively small and the retiree medical assets must be kept separate from the pension assets, we recommend that the retiree medical rates be excluded from the rate collar calculation.

### Allocation of Liability for Service Segments

Over the course of a member's working career, a member may work for more than one employer covered under the Tier 1/ Tier 2 plan. Since employer contribution rates are developed on an individual employer basis, the member's liability must be allocated between such a member's various Tier 1/Tier 2 employers. In recent history, the vast majority of retirement benefits have been calculated under Money Match, so the member's liability in the valuation has been allocated in proportion to the member's account balance attributable to each employer. With no new member contributions to Tier 1/Tier 2, however, no liability is allocated to employers for service segments after December 31, 2003 in the valuation. As Money Match benefits become less prevalent and more members retire with service-based Full Formula benefits, a change in the allocation procedure is warranted.

We recommend that a member's actuarial accrued liability be allocated among employers based on a weighted average of the Money Match methodology and the Full Formula methodology used by PERS when the member retires.

### Economic Assumptions

### OPSRP Administrative Expense

Based on our analysis of actual and expected OPSRP program administrative expenses, we recommend that the annual OPSRP administrative expense assumption be increased from $6.8 million to $8.5 million.

### Demographic Assumptions

### Retirement from Active Status

Retirement rates are used to predict when active members will elect to begin receiving retirement benefits. We recommend some adjustments to the retirement rates established in the prior study.

# Executive Summary *(continued)*

## Lump Sum at Retirement

We recommend projecting that the percentage of active members electing a total lump sum at retirement declines over time due to the cessation of contributions to Tier 1 / Tier 2 member accounts.

## Duty Disability

We recommend some minor reductions in duty disability rates for General Service and Police & Fire members.

## Termination Rates

We recommend some minor smoothing to the termination rates established in the prior study.

## No Lump Sum Before Retirement

This assumption represents the probability that a terminated member will leave his/her account balance in the plan until retirement. We recommend increasing the probability that the terminated member will leave his/her account balance in the plan until retirement.
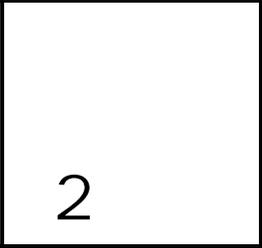
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# Actuarial Methods and Allocation Procedures

## 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. We used the following objectives to recommend actuarial methods and allocation procedures:

- Transparency of costs and funded status

- Predictable and stable employer contribution rates

- Protection of the plan's funded status

- Equity across generations

- Actuarial soundness

- Compliance with GASB requirements

Significant changes to the actuarial methods were made as part of the December 31, 2004 actuarial valuation. As part of the December 31, 2005 actuarial valuation, the Board adopted a minor change to the allocation of liabilities for prior service segments with a different employer.

We recommend no changes to the fundamental actuarial methods, but we do recommend the elimination of the 18-month delay adjustment to employer rates, a minor change to the collar calculation and another change to the allocation of liabilities for prior service segments.

The actuarial methods used for the December 31, 2005 actuarial valuation and the recommended changes for the December 31, 2006 actuarial valuation are shown in the table below.

## Actuarial Methods and Allocation Procedures *(continued)*

| Method | December 31, 2005 Assumption | Recommended December 31, 2006 Assumption |
|---|---|---|
| Cost method | Projected Unit Credit | No change |
| UAL Amortization method | UAL amortized as a level percent of combined Tier 1/Tier 2 and OPSRP payroll | No change |
| UAL Amortization period | <ul><li>Closed period for amortization of existing regular UAL (21 years as of 12/31/2006)</li><li>UAL due to the PUC method change – rolling three year period</li><li>UAL due to future gains and losses – Closed 20 year period for Tier 1/Tier 2 (16 years for OPSRP) from the first rate setting valuation in which experience is recognized</li></ul> | No change |
| Asset valuation method | Market value | No change |
| Excluded reserves | Contingency, capital preservation, and rate guarantee | No change |
| Rate collar | Change in contribution rates limited to greater of 20% of current rate or 300 basis points. Size of collar doubles if funded percentage falls below 80% or increases above 120%. | Exclude RHIA and RHIPA (retiree medical) rates from the rate collar calculation. |
| 18-Month Delay | Equate the present value of the calculated rate to the rate currently being paid plus the deferred rate expected to be paid for the remaining amortization period. | Eliminate the 18-month delay adjustment |
| Allocation of Liability for Service Segments | <ul><li>Allocate Actuarial Accrued Liability based on portion of account balance with each employer</li></ul> | Allocate Actuarial Accrued Liability 65% (25% for police & fire) based on account balance with each employer and 35% (75% for police & fire) based on service with each employer |
| | <ul><li>Allocate Normal Cost to current employer</li></ul> | No Change |

Each of the above methods or procedures is described in greater detail on the following pages.

# Actuarial Methods and Allocation Procedures *(continued)*

## Actuarial Cost Method

The total cost of the Tier 1/Tier 2 program, over time, will be equal to the benefits paid less investment earnings and is not affected directly by the actuarial cost method. The actuarial cost method is simply a tool to assign costs to past, current or future years and, thus, primarily affects the timing of contributions.

After significant analysis, the Board adopted the Projected Unit Credit (PUC) cost method for the December 31, 2004 actuarial valuation. Under the PUC cost method, the normal cost reflects the value of benefits earned in the next year, while recognizing that additional accruals under the Money Match formula have ceased. The actuarial accrued liability represents the value of benefits earned based on service to date and projected compensation. The actuarial accrued liability under this method is always equal to or greater than the value of the benefits earned to date.

We recommend no change to the actuarial cost method.

## Amortization Method

The unfunded actuarial liability (UAL) is amortized as a level percentage of combined payroll (Tier 1/Tier 2 plus OPSRP) in order to maintain level contribution rates as payroll for the closed group of Tier 1/Tier 2 members declines and payroll of OPSRP members increases. We recommend this methodology continue.

We also recommend no changes to the amortization periods. The current amortization periods are:

- A closed period for the existing regular UAL (21 years for the 12/31/206 valuation)

- A rolling 3-year period for the change in UAL due to the adoption of the PUC cost method.

- UAL from future gains and losses will be amortized over a closed 20-year period for Tier 1/Tier 2 and a closed 16-year period for OPSRP beginning with the first odd-year valuation in which they are recognized.

## 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. Although asset smoothing is a common method for smoothing contribution rates in public sector plans, the smoothed asset value does not provide a transparent measure of the plan's funded status. Market value provides more transparency to stakeholders regarding the funded status of the plan.

We recommend no change to the asset valuation method.

# Actuarial Methods and Allocation Procedures *(continued)*

## 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 reserve to fund earnings crediting to Tier 1 member regular accounts when actual earnings are below expectations. The Contingency, Capital Preservation and Rate Guarantee reserves are excluded from the actuarial asset value.

We recommend no change to the reserve accounts excluded from the valuation assets.

## Rate Collar Method

Effective December 31, 2004, a rate collaring method was adopted that limits changes in contribution rates to be within a specified "collar". The rate collar restricts the change in an employer's contribution rate to the greater of 20 percent of the current rate or 300 basis points. If the funded status is less than 80 percent or greater than 120 percent, the size of the rate collar is doubled. The rate collar is applied for each employer (or pool) prior to any adjustments to the employer contribution rate for side accounts, transition liabilities, or pre-SLGRP pooled liabilities.

In prior valuations, the rate collar encompassed RHIA and RHIPA (retiree medical) rates. Because retiree medical rates and assets must be maintained separately from the pension rates and assets and because retiree medical rates are now reported under GASB Statement No. 43, we recommend that the rate collar only apply to employer contribution rates for pension benefits. Because the RHIA and RHIPA rates are relatively small, we don't believe it is necessary to apply a separate collar to them at this time.

## 18-Month Delay

This procedure is used to adjust employer rates from the valuation date to the actual date the employer contribution rates will become effective. Currently, employer contribution rates take effect 18 months after the valuation date, so rates developed in the December 31, 2007 valuation will be effective beginning July 1, 2009. The current procedure is to equate the present value of the calculated rate at the valuation date to the present value of the rate currently being paid (for 18 months) plus the deferred rate expected to be paid for the remainder of the regular amortization period.

Because the system has changed such that the normal cost rate is paid over one payroll (Tier 1/Tier 2) and the UAL rate is paid over a different combined payroll (Tier 1/Tier 2 and OPSRP), there are some technical issues with how this adjustment is currently calculated. While slightly improving the actuarial accuracy of the employer rates implemented, this adjustment also adds a layer of complexity to the calculation of the employer contribution rates and has a tendency to confuse employers and other stakeholders who attempt to use the results of the actuarial valuation. We do

# Actuarial Methods and Allocation Procedures *(continued)*

not believe the additional accuracy is worth the price paid in terms of confusion and transparency to stakeholders.

The following graph shows how rates would differ with and without the 18-month delay adjustment assuming the current rate is 8.0 percent and the rate calculated as of the valuation at December 31, 2005 is 3.25 percent, 475 basis points lower than the current rate. The graph assumes that all assumptions are met after the valuation.
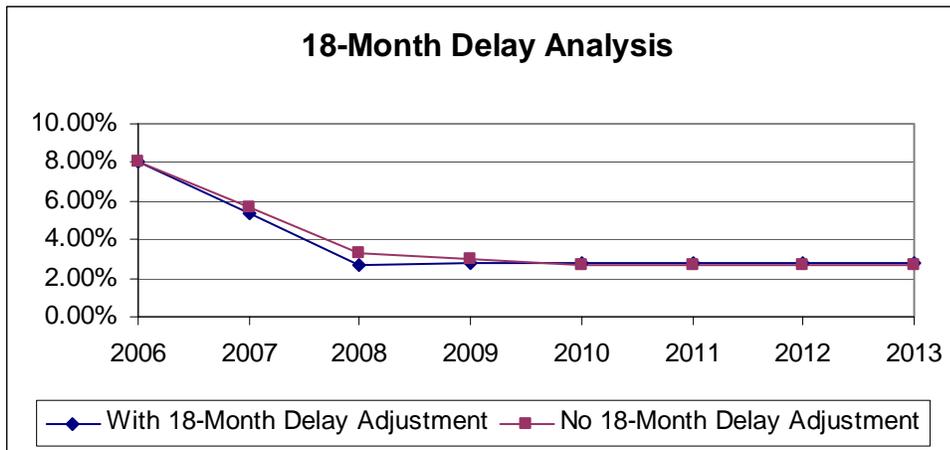


The graph shows that even with a significant change in employer rates, there is only a slight difference between including and excluding the 18-month delay adjustment. The effects of other factors, such as investment experience, are likely to overwhelm any adjustment due to the 18-month delay making any improvement in actuarial accuracy due to the 18-month delay adjustment immaterial. Consequently, we recommend this adjustment be eliminated for future actuarial valuations.

## Allocation of Liability for Service Segments

Over the course of a member's working career, a member may work for more than one employer covered under the Tier 1/ Tier 2 program. Since employer contribution rates are developed on an individual employer basis, the member's liability must be allocated between such a member's various Tier 1/Tier 2 employers. If all of the member's employers participate in the same rate pool, the allocation has no effect on rates, but if the employers participate in different pools or are independent, the allocation can have an impact on the different employer rates.

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

## Actuarial Methods and Allocation Procedures *(continued)*

In recent history, the vast majority of retirement benefits have been calculated under Money Match, so the member's liability in the valuation has been allocated in proportion to the member's account balance attributable to each employer. With no new member contributions to Tier 1/Tier 2, however, no liability is allocated to employers for service after December 31, 2003 in the valuation. As Money Match benefits become less dominant and retirements with Full Formula benefits become more prevalent, a change in the allocation procedure is warranted.

We recommend that a member's actuarial accrued liability be allocated among employers based on a weighted average of the Money Match methodology, which utilizes account balance, and the Full Formula methodology, which utilizes service,. We recommend that the methodologies be weighted according to the percentage of the system-wide actuarial accrued liability projected to be attributable to Money Match and Full Formula, respectively, as of the next rate-setting valuation.

A summary of the portion of the actuarial accrued liability projected to be attributable to Money Match benefits over the next several years is shown in the table below:

| December 31, | General Service | Police and Fire |
|---|---|---|
| 2005 | 69% | 31% |
| 2006 | 67% | 27% |
| 2007 | 64% | 23% |
| 2008 | 61% | 19% |
| 2009 | 58% | 15% |

Since the next rate-setting valuation is the December 31, 2007 valuation, we recommend the Money Match method be weighted 65 percent for General Service members and 25 percent for Police & Fire members. This weighting will be reviewed with each experience study and updated as necessary.

As in prior valuations, the member's normal cost will continue to be assigned to his or her current employer.

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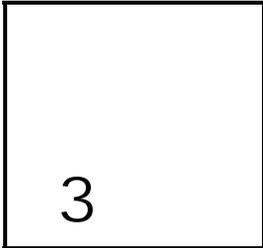
# Economic Assumptions

## Overview

Actuarial Standard of Practice (ASOP) No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations,* provides guidance on selecting economic assumptions used in measuring obligations under defined benefit pension plans. ASOP No. 27 suggests that economic 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 economic assumptions involves:

- Identifying components of each assumption and evaluating relevant data;

- Developing a best-estimate range for each economic assumption; and

- Evaluating measurement specific factors and selecting a point within the best-estimate range.

A summary of the economic assumptions used for the December 31, 2005 actuarial valuation and those recommended for the December 31, 2006 actuarial valuation are shown below:

| Assumption | December 31, 2005 Assumption | Recommended December 31, 2006 Assumption |
|---|---|---|
| Inflation | 2.75% | No Change |
| Real wage growth | 1.00% | No Change |
| Payroll growth | 3.75% | No Change |
| Regular investment return | 8.00% | No Change |
| Variable account investment return | 8.50% | No Change |

## Economic Assumptions *(continued)*

| Assumption | December 31, 2005 Assumption | Recommended December 31, 2006 Assumption |
|---|---|---|
| Health cost trend rates | | |
| ▪  2008 trend rate | 8.00% | No Change |
| ▪  Ultimate trend rate | 5.00% | |
| ▪  Year reaching ultimate trend | 2013 | |

The recommended assumptions shown above, in our opinion, were selected in a manner consistent with the requirements 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 the basis for all of the other economic assumptions. It affects other assumptions including payroll growth, investment return, and healthcare inflation.
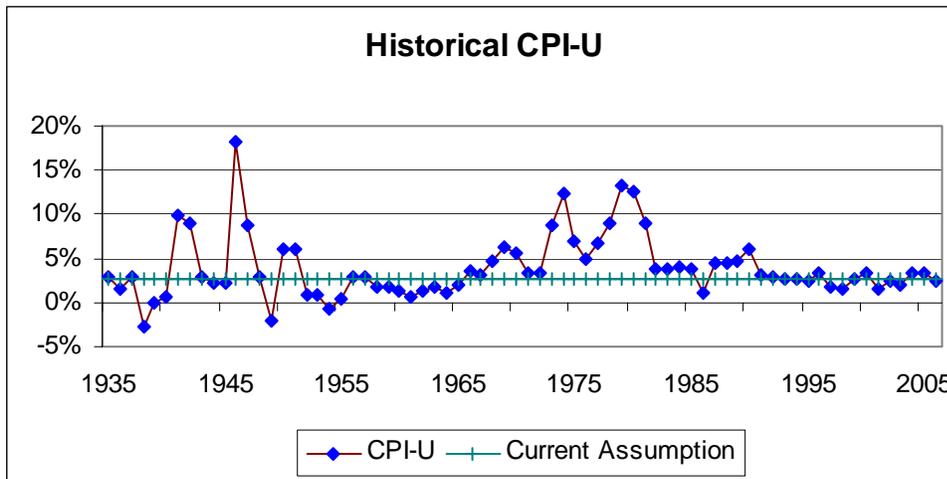


In selecting an appropriate inflation assumption, we consider both historical data and the breakeven inflation rates inherent in current long-term Treasury Inflation Protection Securities (TIPS). The chart above shows the annual inflation rate for the years ending December 31 from 1935 through 2006 as reported by the Bureau of Labor Statistics. The mean and median annual rates over this period are 3.90 percent and 2.99 percent respectively.

Historical inflation rates vary significantly from period to period and may not be an indication of future inflation rates. Until recently, it has been difficult to extract an assumed inflation rate from any empirical market data. However, with the development of a TIPS market, we can now calculate a breakeven inflation rate by comparing yields on regular Treasury securities to the yields on TIPS. The table below shows yields as of December 31, 2006 for 10-year and 30-year Treasury bonds and TIPS.

# Economic Assumptions *(continued)*

| As of 12/31/2006 | 10-Year | 30-Year |
| --- | --- | --- |
| Treasury Yield | 4.71% | 4.81% |
| TIPS Yield | 2.35% | 2.37% |
| **Breakeven Inflation** | **2.36%** | **2.44%** |

Expected inflation should be lower than the breakeven inflation shown above due to inflation risk premiums included in bond yields. Mercer Investment Consulting suggests an inflation risk premium for 30-year bonds of approximately 30 to 50 basis points. This adjustment produces an expected long-term inflation rate just above 2.00 percent.

We also considered two other inflation measures in our analysis: Social Security's current intermediate inflation assumption of 2.8 percent, and the Congressional Budget Office's projection of CPI of 1.9 percent for 2007, 2.3 percent for 2008, and 2.2 percent for 2009-2017.

Based on the historical rates and the current break-even inflation rates shown above, our best-estimate range for the inflation assumption is from 1.75 percent to 3.25 percent. We therefore recommend no change to the assumed annual inflation rate of 2.75 percent.

## Real Wage Growth

The expected salary growth assumption is the sum of three factors:

- Inflation,

- Real wage growth, and

- Merit and longevity wage growth.

Real wage growth represents the increase in wages above inflation for the entire group 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.

Real wage growth combined with inflation represents the expected growth in total payroll for a stable population. Changes in payroll due to an increase or decline in the covered population are not captured by this assumption. The payroll growth assumption is used to develop the annual amount necessary to amortize the unfunded actuarial liability as a level percentage of expected payroll.

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.

## Economic Assumptions *(continued)*

**Historical Real Growth in National Average Wages**
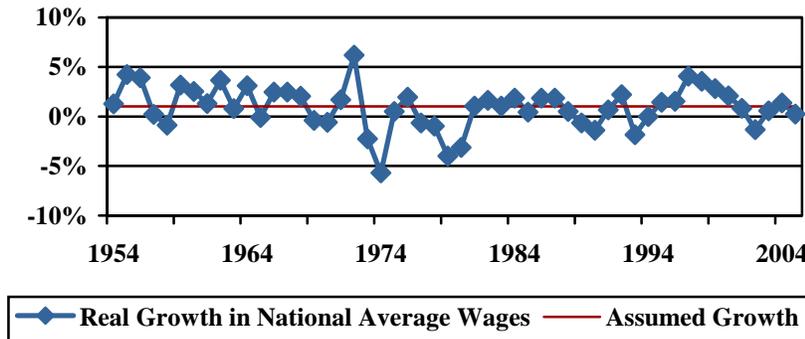


While the change in any one year has been volatile, the change over longer periods of time is more stable as shown in the table below.

| Length of Period Ending December 31, 2005 | Average Real Growth in National Average Wages |
|---|---|
| 10 years | 1.55% |
| 20 years | 1.00% |
| 30 years | 0.63% |
| 40 years | 0.62% |
| 50 years | 0.85% |

Based on this data, a reasonable best-estimate range is from 0.75 percent to 1.50 percent. We recommend no change to the current assumption of 1.00 percent.

## Payroll Growth

Payroll growth is the sum of inflation and real wage growth. Since we are recommending no changes to the inflation or the real wage growth assumptions, the payroll growth assumption will remain at 3.75 percent.

## Investment Return

The assumed rate of investment return is used to discount the future expected benefit payments from the retirement plan to the valuation date, to project interest credits on member accounts to retirement, to convert member accounts to a monthly retirement allowance under the Money Match formula, and to convert the retirement allowance to optional joint & survivor benefits. As such, it is one of the most important assumptions used in valuing the plan's liabilities and developing contribution rates. The assumption is intended to reflect the long-term expected return on the portfolio of assets that fund the benefits.

## Economic Assumptions *(continued)*

Based on the Oregon Investment Council's Statement of Investment Objectives and Policy Framework for the Oregon Public Employees Retirement Fund Revised as of January 31, 2007 that includes the target asset allocation and capital market forecasts developed by OIC's investment consultant, Strategic Investment Solutions, Inc., for each asset class in which plan assets are invested, and the OIC's expectation of annual active management returns, the OIC expects to earn a total annual policy return of 8.7 percent for the regular account and 9.1 percent for the variable account. These expectations assume 60 and 50 basis points in active management return net of fees for the regular and variable accounts respectively.

To develop our recommended investment return assumption, we use Mercer Investment Consulting's long-term return assumptions for each of the asset classes in which the plan is invested. Each asset class assumption is based on a consistent set of underlying assumptions, including the inflation assumption. These assumptions are not based on historical returns, but instead are based on a forward-looking economic model.

### Regular Accounts

We understand the plan's target asset allocation is as follows:

**Target Asset Allocation**

- U.S. Equity — 33%
- Non-U.S. Equity — 20%
- Real Estate — 8%
- Fixed Income — 27%
- Private Equity — 12%
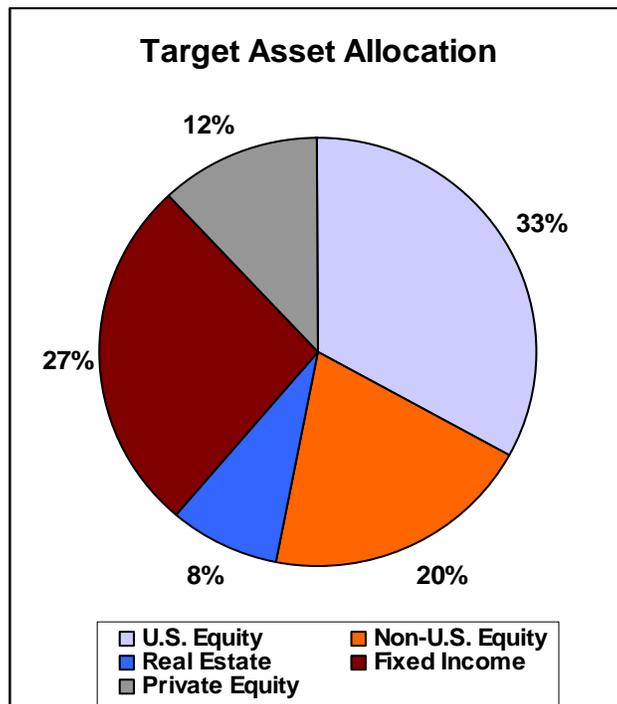
## Economic Assumptions *(continued)*

Based on the target allocation and investment return assumptions for each of the asset classes, our best estimate assumption is developed as follows:

| Asset Class | Target Allocation | Compound Annual Return | Annual Arithmetic Return | Standard Deviation |
|---|---|---|---|---|
| US Equity – Large Cap | 29% | 8.05% | 9.50% | 18.0% |
| US Equity – Small Cap | 4% | 8.39% | 10.90% | 24.0% |
| Private Equity | 12% | 9.44% | 12.46% | 26.6% |
| Non-US Equity | 20% | 8.36% | 10.00% | 19.2% |
| US Fixed Income | 24% | 5.13% | 5.30% | 6.0% |
| Non-US Hedged Bonds | 3% | 5.13% | 5.30% | 6.0% |
| Real Estate | 8% | 7.18% | 8.04% | 13.7% |
| Portfolio – Gross | 100% | 8.07% | 8.76% | 12.3% |
| Portfolio – Net of Expenses | 100% | 7.82% | 8.51% | 12.3% |

*Based on capital market expectations developed by Mercer Investment Consulting.*

We have rounded the best-estimate assumption to 8.0 percent.

Once the actuary develops the expected return assumption in accordance with the requirements of ASOP No. 27, an independent verification is performed by comparing the expected return to the range of returns developed using Mercer's Portfolio Return Calculator and the asset class returns developed by Mercer Investment Consulting as of January 1, 2007. The best-estimate range under these assumptions is from 6.76 percent to 8.88 percent with a median expected return of 7.82 percent. We assumed 5 basis points in administrative expenses and 20 basis points in passive investment expenses. We assume that expenses incurred for active management are offset by additional returns gained from active management.

| Percentile | Investment Return |
|---|---|
| 35th | 6.76% |
| 40th | 7.12% |
| 45th | 7.47% |
| 50th | 7.82% |
| 55th | 8.17% |
| 60th | 8.52% |
| 65th | 8.88% |

The current assumption of 8.0 percent represents approximately the 53rd percentile of expected returns for the portfolio.

We recommend no change to the 8.0 percent investment return assumption for regular accounts.

# Economic Assumptions *(continued)*

## Variable Account

The expected investment return on the variable account is developed in the same manner as the assumption for regular accounts.

Based on the target allocation and investment return assumptions for each of the asset classes in the variable account, the best estimate assumption is developed as follows:

| Asset Class | Target Allocation | Compound Annual Return | Annual Arithmetic Return | Standard Deviation |
|---|---|---|---|---|
| US Equity – Large Cap | 89% | 8.05% | 9.50% | 18.0% |
| US Equity – Small Cap | 11% | 8.39% | 10.90% | 24.0% |
| Portfolio – Gross | 100% | 8.16% | 9.65% | 18.3% |
| Portfolio – Net of Expenses | 100% | 7.90% | 9.40% | 18.3% |

The variable account is invested entirely in US Equities. The annual arithmetic return is significantly higher than for the regular account, but so is the standard deviation. The result is a long-term compounded annual return very similar to the regular account. However, because this return is more volatile than the regular account return and because it is used to project benefits (instead of discounting liabilities), we add OIC's expected annual active management return of 50 basis points to develop our rounded best estimate assumption of 8.5 percent.

The best-estimate range under these assumptions is from 6.32 percent to 9.48 percent with a median expected return of 7.90 percent.

| Percentile | Investment Return |
|---|---|
| 35th | 6.32% |
| 40th | 6.86% |
| 45th | 7.39% |
| 50th | 7.90% |
| 55th | 8.42% |
| 60th | 8.94% |
| 65th | 9.48% |

The current assumption of 8.5 percent and OIC's expected annual policy return of 9.1 percent are between the 55th and 65th percentiles of expected returns for the portfolio (excluding active management return). Since a higher return assumption for the variable account is more conservative than a lower assumption (i.e., produces higher plan liabilities), we recommend no change to the 8.5 percent variable account investment return assumption.

# Economic Assumptions *(continued)*

## OPSRP Administrative Expenses

In the mature Tier 1/Tier 2 program, administrative expenses are modest compared to program asset levels. As such, administrative expenses for Tier 1/Tier 2 are estimated by a 5 basis point adjustment to the expected plan investment return, as noted previously in this report.

In contrast, administrative expenses for the new OPSRP program are significant in comparison to OPSRP assets. As such, the December 31, 2005 valuation included an explicit administrative expense assumption for the OPSRP program of $6.2 million. The assumption is a fixed-dollar amount with two components:

- Start-up Information Technology (IT) expenses

- Regular OPSRP administrative expenses

Start-up IT expenses were funded through a Certificate of Participation with scheduled payments of $1.9 million annually through 2009.

An analysis of regular administrative expenses for the period from July 2005 to June 2007 indicates that regular administrative expenses are increasing, which is to be expected due to the increasing number of participants in the OPSRP program. The annualized regular OPRSP administrative expenses over the past two years are shown below.

| Time Period | Annualized OPSRP Administrative Expenses |
|---|---|
| Jul 05 – Dec 05 | $4,390,000 |
| Jan 06 – Jun 06 | $5,310,000 |
| Jul 06 – Dec 06 | $5,280,000 |
| Jan 07 – Jun 07 | $5,630,000 |

To better anticipate the expected regular expenses for the valuations covered by this experience study, we are recommending an increase in our assumption for regular OPSRP administrative expenses. The recommended assumption is intended to reflect anticipated annual expenses for the period from January 2007 to December 2008. A summary of our recommendation is below.

| Expense Category | December 31, 2005 Assumption | Recommended December 31, 2006 Assumption |
|---|---|---|
| Start-up Information Technology | $1,900,000 | $1,900,000 |
| Regular Administrative | $4,800,000 | $6,600,000 |
| Total | $6,700,000 | $8,500,000 |

## **Economic Assumptions** *(continued)*

## Health Cost Trend Rates

Health cost trend rates are used to predict increases in the RHIPA Maximum Subsidy. Recent experience has varied significantly, with the Maximum Subsidy decreasing 3.1 percent and increasing 7.5 percent for 2007 and 2006, respectively, with an average increase of 6.9 percent over the last 4 years. Mercer's healthcare actuaries expect medical costs to increase 7-13 percent in 2007. We recommend no change to the trend assumption.

| Year[1] | December 31, 2005 Assumption | Recommended December 31, 2006 Assumption |
|---|---|---|
| 2007 | 9.0% | |
| 2008 | 8.0% | 8.0% |
| 2009 | 7.0% | 7.0% |
| 2010 | 6.5% | 6.5% |
| 2011 | 6.0% | 6.0% |
| 2012 | 5.5% | 5.5% |
| 2013 and later | 5.0% | 5.0% |

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[1]   For valuation purposes, the health cost trend rates are assumed to be applied at the beginning of the plan year.

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**4**

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# Demographic Assumptions

## Overview

Actuarial Standard of Practice (ASOP) No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations,* provides guidance on selecting demographic assumptions used in measuring obligations under defined benefit pension plans. The general process for recommending demographic assumptions as defined in ASOP No. 35 is as follows:

- Identify the types of assumptions;

- Consider the relevant assumption universe;

- Consider the assumption format;

- Select the specific assumptions; and

- Evaluate the reasonableness of the selected assumption.

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 used in this study is January 1, 2003 through December 31, 2006, and the current assumptions are those adopted by the Board for the December 31, 2005 actuarial valuation. If the actual experience differs significantly from the overall expected experience, or if the pattern of actual decrements by age, sex, or duration does not follow the expected pattern, new assumptions are considered.

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 contains the true rate during the period of study with 90 percent probability. The size of the confidence interval depends on the number of

# Demographic Assumptions *(continued)*

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 sample graph with confidence intervals is shown below:
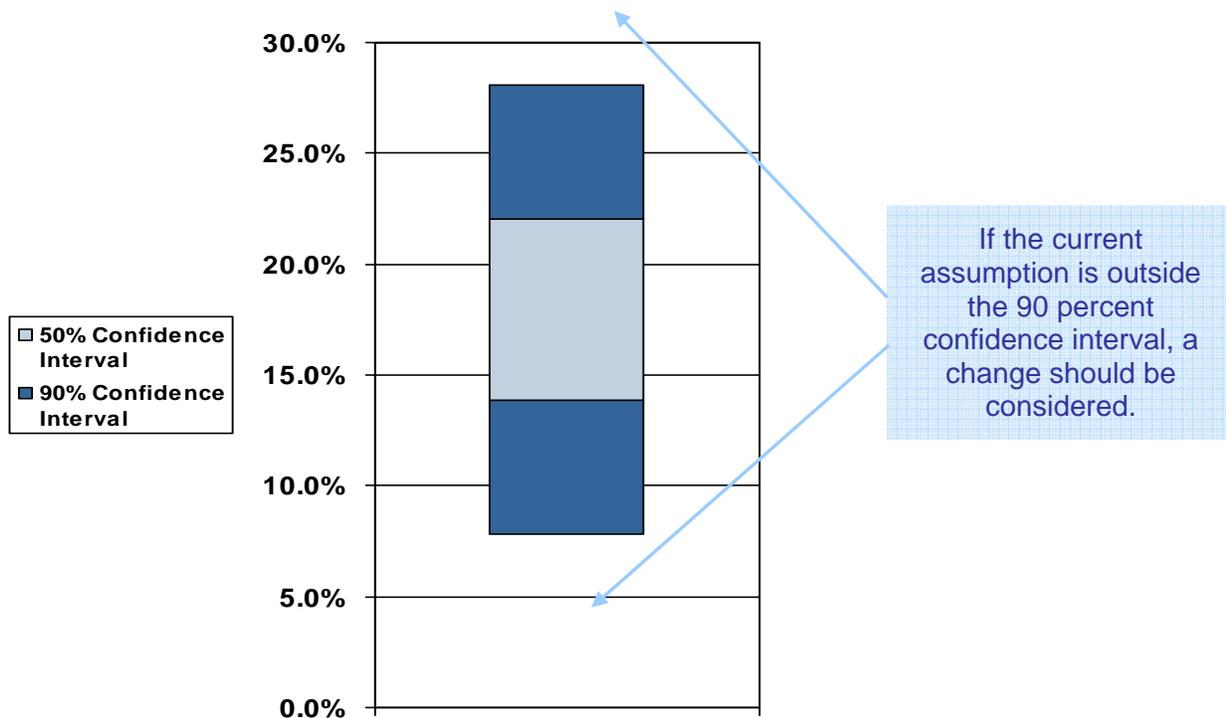


The demographic assumptions used for the December 31, 2005, actuarial valuation and the recommended assumptions for the December 31, 2006, actuarial valuation are shown in detail in the following sections.

In the 2005 Experience Study, many of the categories used for distinguishing demographic assumptions were revised. In most cases assumptions were changed to separately identify the experience of SLGRP, school district, and independent employers. When these groups showed significantly different experience, separate assumptions were developed for each group. For the most part, our current analysis retains the groupings that were established in the 2005 Experience Study.

A summary of the recommended changes are as follows:

- Adjustments to retirement assumptions

- Reduction in total lump sum at retirement assumption

- Reduction of duty disability incidence assumptions

# Demographic Assumptions *(continued)*

- Minor smoothing adjustments to termination assumptions

- Decrease in percentage taking a lump sum before retirement

The recommended assumptions, in our opinion, were selected in a manner consistent with the requirements of ASOP No. 35.

## 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 value of retiree benefits depends on how long the benefit payments are expected to continue. There are clear differences in the mortality rates among healthy retired members, disabled retired members and non-retired members. As a result, each of these groups is reviewed independently.

A summary of the current assumed mortality rates is shown below: No changes are recommended.

| Assumption | Current Assumption | Recommended Assumption |
|---|---|---|
| **Healthy Retired Mortality** | **RP 2000, Combined Active/Healthy Retired, No Collar, Sex distinct** | **No change** |
| ▪ School District male | Set back 36 months | No change |
| ▪ Other General Service male (and male beneficiary) | Set back 24 months | No change |
| ▪ Police & Fire male | Set back 12 months | No change |
| ▪ School District female | Set back 36 months | No change |
| ▪ Other female (and female beneficiary) | Set back 18 months | No change |
| **Disabled Retired Mortality** | **RP 2000, Combined Active/Healthy Retired, No Collar, Sex distinct** | **No change** |
| ▪ Male | Set forward 36 months, minimum of 2.50% | No change |
| ▪ Female | Set forward 36 months, minimum of 2.75% | No change |
| **Non-Retired Mortality** | **Fixed percentage of Healthy Retired Mortality** | **No change** |
| ▪ School District Male | 65% | No change |
| ▪ School District Female | 50% | No change |
| ▪ Other General Service Male | 65% | No change |
| ▪ Police & Fire Male | 70% | No change |
| ▪ Other Female | 55% | No change |

# Demographic Assumptions *(continued)*

## Healthy Retired Mortality

Mortality assumptions for healthy retired members are separated into five groups based on employment category and gender (school district males, school district females, police & fire males, other general service males, all other females). Experience for female police & fire members was not sufficient for them to be rated on their own, so they were combined with general service females.

Life expectancies are expected to improve in the future, and this increased longevity should be reflected in the actuarial valuation through lower mortality rates than indicated by current experience. To determine whether the current mortality assumption remains reasonable, we calculated the ratio of actual to expected (A/E) deaths during the experience study period for each of the five groups described above. A/E ratios were targeted at or near 110 percent, in order to provide a margin for future mortality improvement. If the group's A/E ratio was significantly below 110 percent, we would recommend a change to bring that A/E ratio close to or above 110 percent.

|  | Exposures | Actual Deaths | Current (December 31, 2005) Assumption | |
|---|---|---|---|---|
|  |  |  | Expected Deaths | A/E Ratio |
| School District male | 57,508 | 1,597 | 1,449 | **110%** |
| School District female | 108,622 | 2,626 | 2,420 | **109%** |
| Other General Service male | 83,679 | 2,629 | 2,477 | **106%** |
| Other Female | 102,882 | 3,119 | 2,740 | **114%** |
| Police & Fire male | 18,662 | 311 | 295 | **105%** |

Current healthy retired mortality assumptions for all groups already provide for a margin of mortality improvement, so no change is recommended.

## Demographic Assumptions *(continued)*

A summary of the current and recommended healthy retired mortality assumptions is shown below:

|  | Current (December 31, 2005) Assumption | Recommended December 31, 2006 Assumption |
|---|---|---|
| **Basic Table** | **RP 2000, Combined Active/Healthy Retired, No Collar, Sex Distinct** | **No change** |
| School District male | Set back 36 months | No change |
| Other General Service male | Set back 24 months | No change |
| Police & Fire male | Set back 12 months | No change |
| School District female | Set back 36 months | No change |
| Other female | Set back 18 months | No change |
| Beneficiary male | Set back 24 months | No change |
| Beneficiary female | Set back 18 months | No change |

### Disabled Retired Mortality

Disabled members are expected to have a shorter life expectancy than healthy retired members. In addition, future life expectancies for disabled members are not expected to increase as significantly as the future life expectancies for healthy retirees. As a result, A/E ratios for disabled retirees have been targeted at or near 100 percent.

|  | Exposures | Actual Deaths | Current Assumption | |
|---|---|---|---|---|
|  |  |  | Expected Deaths | A/E Ratio |
| Male | 8,276 | 344 | 321 | **107%** |
| Female | 8,589 | 329 | 323 | **102%** |

The A/E ratio for the current assumption is in excess of 100 percent, so no change is recommended.

# Demographic Assumptions *(continued)*

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

|  | **Current Assumption** | **Recommended Assumption** |
|---|---|---|
| **Basic Table** | **RP 2000, Combined Active/Healthy Retired, No Collar, Sex Distinct** | **No change** |
| Male | Set forward 36 months, minimum of 2.5% | No change |
| Female | Set forward 36 months, minimum of 2.75% | No change |

## Non-Retired Mortality

The non-retired mortality assumption applies to active members and dormant members (those members who have terminated employment but are vested and entitled to a future benefit). The non-retired mortality assumption is based on a fixed percentage of the healthy retired mortality rates. Non–retired mortality rates are thus separated into the five groups (School District males, School District females, Police & Fire males, other General Service males, all other females) on which the healthy retired mortality rates are based. A/E ratios for non-retired members have been targeted around 100 percent.

|  |  |  | **Current Assumption** | |
|---|---|---|---|---|
|  | **Exposures** | **Actual Deaths** | **Expected Deaths** | **A/E Ratio** |
| School District male | 95,965 | 109 | 110 | **99%** |
| School District female | 267,814 | 142 | 168 | **85%** |
| Other General Service male | 207,181 | 254 | 279 | **91%** |
| Police & Fire male | 48,362 | 38 | 50 | **76%** |
| Other female | 300,716 | 245 | 246 | **100%** |

With the very limited number of deaths in the experience period, the A/E ratio tends to fluctuate, particularly for Police & Fire males. We recommend no changes at this time.

## Demographic Assumptions *(continued)*

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

|  | Current Assumption | Recommended Assumption |
|---|---|---|
| Basic Assumption | Fixed percentage of Healthy Retired Mortality | No change |
| School District male | 65% | No change |
| Other General Service male | 65% | No change |
| Police & Fire male | 70% | No change |
| School District female | 50% | No change |
| Other female | 55% | No change |

## Retirement Assumptions

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

- Retirement from active status

- Probability a member will elect a lump sum option at retirement

- Percentage of members who elect to purchase credited service at retirement.

### Retirement from Active Status

Members are eligible to retire as early as age 55 (50 for Police & Fire members) or earlier if the member has 30 years of service (25 years for Police & Fire members). In our analysis, we have found significant differences in the retirement patterns based on Tier, employment category (General Service and Police & Fire), and eligibility for unreduced benefits.

## Demographic Assumptions *(continued)*

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 and 2 | 55 | 50 | Age 50 with 25 years of service, or 30 years of service |
| Police & Fire | OPSRP | 60 | 50 | Age 53 with 25 years |

In the 2005 Experience Study, we observed that members exhibited different retirement patterns based on Tier, employment category and eligibility for unreduced benefits. As a result, our analysis focused on these groups. In addition, we have continued to disregard retirement experience prior to 2004 due to the anomalous number of retirements during the period when reform and other changes were taking place. Furthermore, most retiring members are Tier 1, so our analysis focuses on Tier 1 experience and makes adjustments as warranted for Tier 2 and OPSRP.

Tier 1 School District and General Service Retirement Rates

**Members With Less Than 30 Years of Service**

For Tier 1 School District members, actual retirement rates continue to follow the current assumption, so no changes are recommended. However, for SLGRP and Independent Employers, there are some minor changes in retirement rates at ages 62 and above.

The following charts show the current assumed rates of retirement, the confidence interval around observed experience and the recommended retirement rates (if different than the current rates) for School District and General Service members retiring with less than 30 years of service.

## Demographic Assumptions *(continued)*

### School Districts
**Tier 1 Members with less than 30 Years of Service**



### SLGRP/Independent Employers
**Tier 1 General Service Members with less than 30 Years of Service**
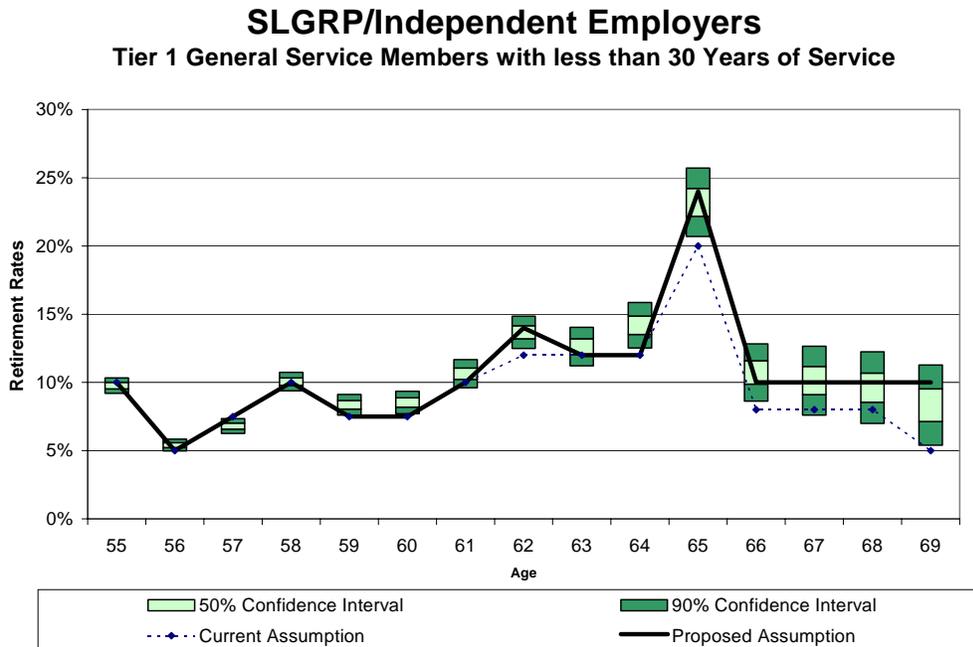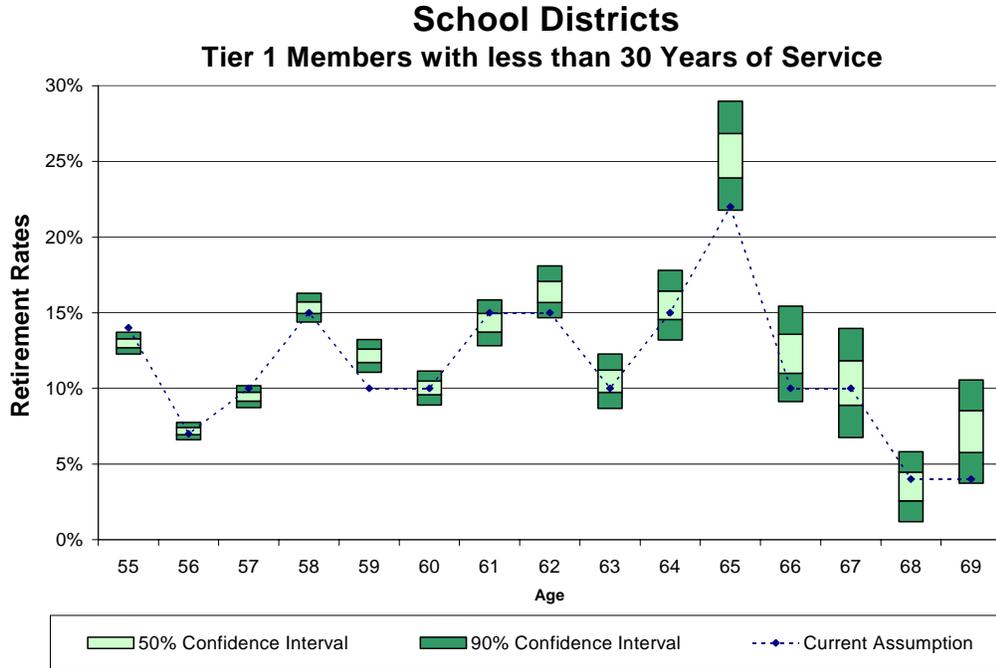


### Members with 30 or More Years of Service

The retirement rate assumption for Tier 1 members with 30 or more years of service at retirement is not differentiated for School Districts and all other General Service members. Instead, one set of

# Demographic Assumptions *(continued)*

rates is developed for all Tier 1 members with 30 or more years of service. Our analysis indicated that actual retirement rates for members with 30 or more years of service were somewhat lower than the current assumption for ages less than 55 and between 62 and 67. Our recommended assumption reflects this experience.

The following graph shows the current assumed rates of retirement, the confidence interval around observed experience and the recommended retirement rate assumption for Tier 1 members retiring with more than 30 years of service.

## School Districts/SLGRP/Independent Employers
### Tier 1 General Service Members with 30+ Years of Service
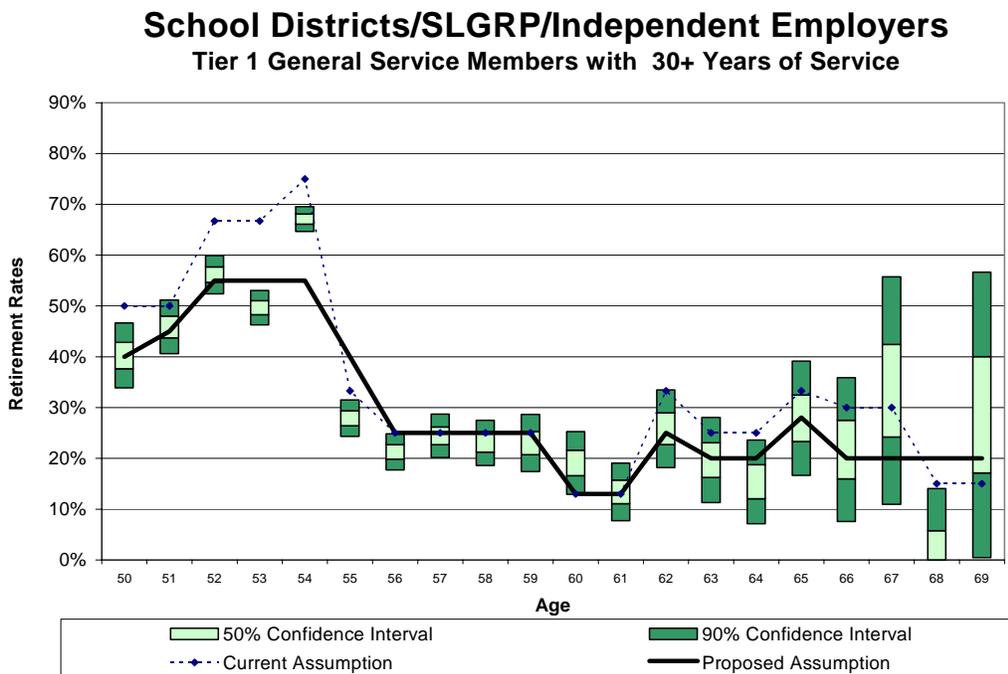


## Tier 2 School District and General Service Retirement Rates

Observed retirement rates for Tier 2 members are substantially lower than rates for Tier 1 members, but have increased slightly since the last study. All Tier 2 members have 11 years of service or less, so current retirement rates probably are not indicative of future retirement rates. Because normal retirement age for Tier 2 members with less than 30 years of service is age 60 (as opposed to age 58 for Tier 1 members), lower retirement rates for Tier 2 members with less than 30 years of service would be expected prior to normal or unreduced retirement age, but similar levels of retirement might be expected after normal (or unreduced) retirement age. Consequently, for members with less than 30 years of service we recommend retirement rates for Tier 2 equal to the rates for Tier 1 with an adjustment to 50 percent of the Tier 1 rate for ages prior to Tier 2 normal retirement age. There is an additional adjustment at age 58 due to the higher Tier 1 retirement rates experienced at Tier 1 normal retirement age. Since both Tier 1 and Tier 2 members are eligible for immediate unreduced

# Demographic Assumptions *(continued)*

retirement upon reaching 30 years of service, the retirement assumption developed based on Tier 1 experience is used to model anticipated Tier 2 experience without additional adjustment.

## Police & Fire

The retirement assumption for Police & Fire members differs for members retiring with less than 25 years of service (retiring with a reduced benefit), and those retiring with more than 25 years of service (retiring with an unreduced benefit).

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 25 years of service. We recommend reducing the assumption for ages less than 55.
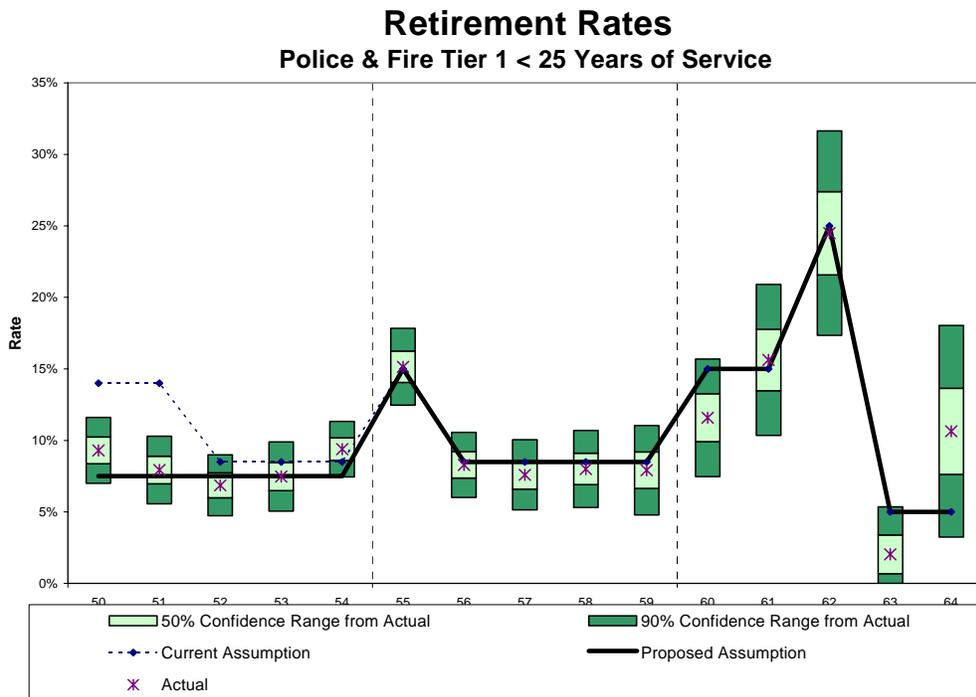


The following graph shows the current assumed rates of retirement, the confidence interval around observed experience and the recommended retirement rate assumption for Police & Fire members retiring with more than 25 years of service. We recommend reducing the assumption for ages 50 through 53.

# Demographic Assumptions *(continued)*



**SLGRP/Independent Employers**
**Police & Fire Tier 1  with 25+ Years of Service**
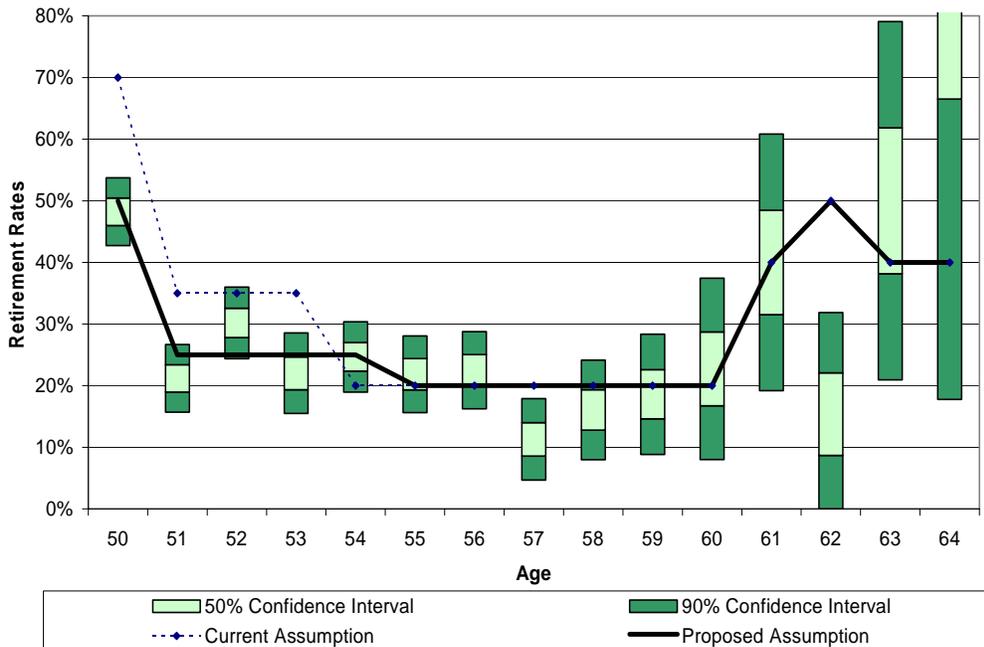
## OPSRP Retirement Rates

There is no experience of retirement under OPSRP on which to base expected retirement rates. Consequently, for OPSRP members with fewer than 30 years of service, we recommend rates equal to 50 percent of the Tier 1 rates for ages 55 to 64 (removing the spike at age 58) for General Service members and for ages 50 to 59 (removing the spike at age 55) for Police & Fire members. Rates at other ages are assumed to be identical to the Tier 1 rates, except that higher rates have been assumed for the year in which an OPSRP member reaches normal retirement age. Thus, Police & Fire members have an assumed rate of 30 percent at age 60, while General Service members have an assumed rate of 50 percent at age 65.

Retirement rates for OPSRP members with 30 or more years of service are set as follows: for ages 55 to 57, the rate is the same as Tier 2 members with fewer than 30 years; the retirement rate at age 58 (earliest unreduced eligibility) is 40 percent; and for ages 59 and greater the rate is the same as for Tier 1/Tier 2 members with 30 or more years of service.

Retirement rates for OPSRP Police & Fire members with 25 or more years of service are set as follows: for ages 50 to 52, the rate is 7.5 percent which is the rate for Tier 1/Tier 2 members of similar age who are not eligible for unreduced retirement; the retirement rate at age 53 (earliest unreduced eligibility) is 50 percent; and for ages 54 and greater the rate is the same as for Tier 1/Tier 2 Police & Fire members with 25 or more years of service.

# Demographic Assumptions *(continued)*

## Summary of Recommended Retirement Rates

The following table summarizes our recommended Tier 1/Tier 2 retirement rates:

| | Recommended Assumption | | | | | |
|---|---|---|---|---|---|---|
| | | Tier 1 < 30 Years | | Tier 2 < 30 Years | | School District/ |
| | Police & Fire | School District | SLGRP/ Independent Employers General Service | School District | SLGRP/ Independent Employers General Service | SLGRP/ Independent Employers General Service 30+ yrs |
| Age | < 25 yrs | 25+ yrs | | | | |
| Less than 50 | | | | | | 40.00% |
| 50 | 7.50% | 50.00% | | | | 40.00% |
| 51 | 7.50% | 25.00% | | | | 45.00% |
| 52 | 7.50% | 25.00% | | | | 55.00% |
| 53 | 7.50% | 25.00% | | | | 55.00% |
| 54 | 7.50% | 25.00% | | | | 55.00% |
| 55 | 15.00% | 20.00% | 14.00% | 10.00% | 7.00% | 5.00% | 40.00% |
| 56 | 8.50% | 20.00% | 7.00% | 5.00% | 3.50% | 2.50% | 25.00% |
| 57 | 8.50% | 20.00% | 10.00% | 7.50% | 5.00% | 3.75% | 25.00% |
| 58 | 8.50% | 20.00% | 15.00% | 10.00% | 5.00% | 3.75% | 25.00% |
| 59 | 8.50% | 20.00% | 10.00% | 7.50% | 5.00% | 3.75% | 25.00% |
| 60 | 15.00% | 20.00% | 10.00% | 7.50% | 10.00% | 7.50% | 13.00% |
| 61 | 15.00% | 40.00% | 15.00% | 10.00% | 15.00% | 10.00% | 13.00% |
| 62 | 25.00% | 50.00% | 15.00% | 14.00% | 15.00% | 14.00% | 25.00% |
| 63 | 5.00% | 40.00% | 10.00% | 12.00% | 10.00% | 12.00% | 20.00% |
| 64 | 5.00% | 40.00% | 15.00% | 12.00% | 15.00% | 12.00% | 20.00% |
| 65 | 100.00% | 100.00% | 22.00% | 24.00% | 22.00% | 24.00% | 28.00% |
| 66 | | | 10.00% | 10.00% | 10.00% | 10.00% | 20.00% |
| 67 | | | 10.00% | 10.00% | 10.00% | 10.00% | 20.00% |
| 68 | | | 4.00% | 10.00% | 4.00% | 10.00% | 20.00% |
| 69 | | | 4.00% | 10.00% | 4.00% | 10.00% | 20.00% |
| 70 | | | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

## Demographic Assumptions *(continued)*

The following table summarizes our recommended OPSRP retirement rates:

| Age | Police & Fire | | General Service | |
|:---:|:---:|:---:|:---:|:---:|
| | **< 25 years** | **25+ years** | **<30 years** | **30+ years** |
| 50 | 3.75% | 7.50% | | |
| 51 | 3.75% | 7.50% | | |
| 52 | 3.75% | 7.50% | | |
| 53 | 3.75% | 50.00% | | |
| 54 | 3.75% | 25.00% | | |
| 55 | 4.25% | 20.00% | 5.00% | 5.00% |
| 56 | 4.25% | 20.00% | 2.50% | 2.50% |
| 57 | 4.25% | 20.00% | 3.75% | 3.75% |
| 58 | 4.25% | 20.00% | 3.75% | 40.00% |
| 59 | 4.25% | 20.00% | 3.75% | 25.00% |
| 60 | 30.00% | 20.00% | 3.75% | 13.00% |
| 61 | 15.00% | 40.00% | 5.00% | 13.00% |
| 62 | 25.00% | 50.00% | 7.00% | 25.00% |
| 63 | 5.00% | 40.00% | 6.00% | 20.00% |
| 64 | 5.00% | 40.00% | 6.00% | 20.00% |
| 65 | 100.00% | 100.00% | 50.00% | 28.00% |
| 66 | | | 10.00% | 20.00% |
| 67 | | | 10.00% | 20.00% |
| 68 | | | 10.00% | 20.00% |
| 69 | | | 10.00% | 20.00% |
| 70 | | | 100.00% | 100.00% |

# Demographic Assumptions *(continued)*

Lump Sum Option at Retirement

At retirement, a 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 and no lump sum distribution. The percentage of active members electing a lump sum distribution at retirement has declined slightly from the prior experience study. The results of our analysis are as follows:

| Election at Retirement | Number of Retired Members | Percentage of Retirements | Current Assumption |
|---|---|---|---|
| Partial Lump Sum | 1,280 | 7% | 8% |
| Total Lump Sum | 1,386 | 7% | 8% |
| No Lump Sum | 16,996 | 86% | 84% |
| Total Retirements | 19,662 | 100% | 100% |

When a member elects a total or partial lump sum under Money Match, he or she gives up the value of the COLA on the lump sum amount. A lump sum election under Full Formula may cause the member to give up even 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. Consequently, we recommend the following assumptions:

| Election at Retirement | Percentage of Retirements | Recommended Assumption |
|---|---|---|
| Partial Lump Sum | 7% | 7% for all years |
| Total Lump Sum | 7% | 7% for 2007, declining by 0.5% per year until reaching 0.0% |
| No Lump Sum | 86% | 86% in 2007, increasing by 0.5% per year until reaching 93.0% |
| Total Retirements | 100% | 100% |

Purchase of Credited Service

A member has the option of purchasing service at retirement to enhance his or her 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

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## Demographic Assumptions *(continued)*

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 1/Tier 2 employer costs. The most common, and predictable, non-full cost service purchase made by members is purchasing credit for the six-month waiting period. Thus, for valuation purposes, we have included an adjustment to account for those members who are expected to make the waiting period service purchase.

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 separated Money Match retirements and non-Money Match retirements. A slight difference was observed, but no difference was observed among groups within those two categories. 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 Service | Percentage of Retirements | Current Assumption | Recommended Assumption |
|---|---|---|---|---|---|
| Money Match Retirements | 10,375 | 3,656 | 35% | 0% | 0% |
| Non-Money Match Retirements | 5,698 | 2,405 | 42% | 45% | 45% |
| Total Annuity Retirements from Active Status | 16,073 | | | | |

We recommend no change to the assumption that 45 percent of all non-Money Match retirements purchase credited service for the six month waiting period.

## Disability 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 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 disability rates are developed for the system as a whole.

### Duty Disability

We recommend that rates be developed for 5-year age bands, due to the limited amount of experience data available at some ages. Confidence intervals have been used below to develop the rates for each age band. Our recommendation is to reduce the duty disability incidence assumption for both categories to better match actual experience.

# Demographic Assumptions *(continued)*

## Duty Disability Rates
### General Service



**Legend:**
- 50% Confidence Interval
- 90% Confidence Interval
- Current Assumption
- Proposed Assumption
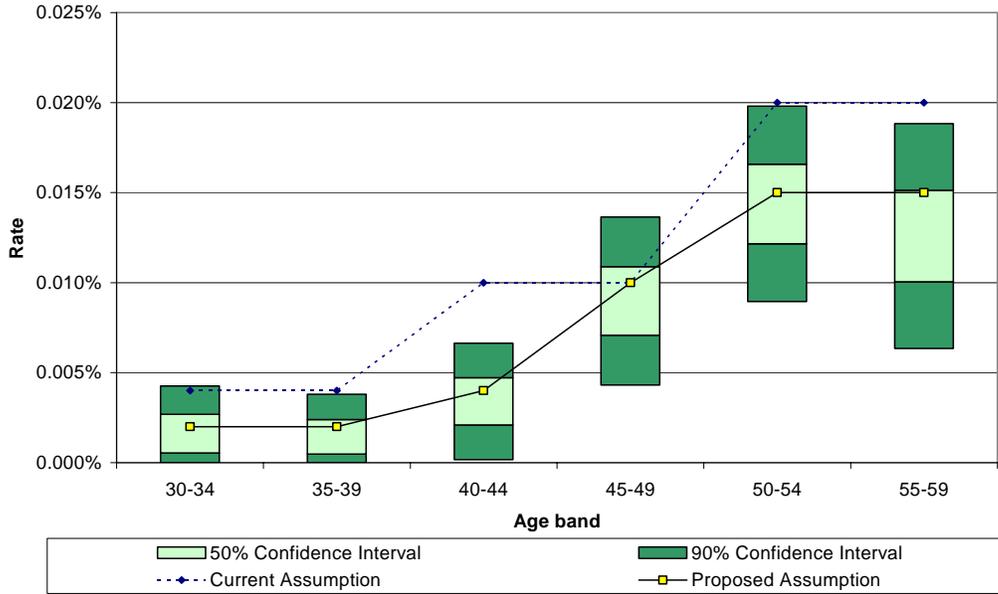
## Duty Disability Rates
### Police & Fire



**Legend:**
- 50% Confidence Range from Actual
- 90% Confidence Range from Actual
- Current Assumption
- Proposed Assumption
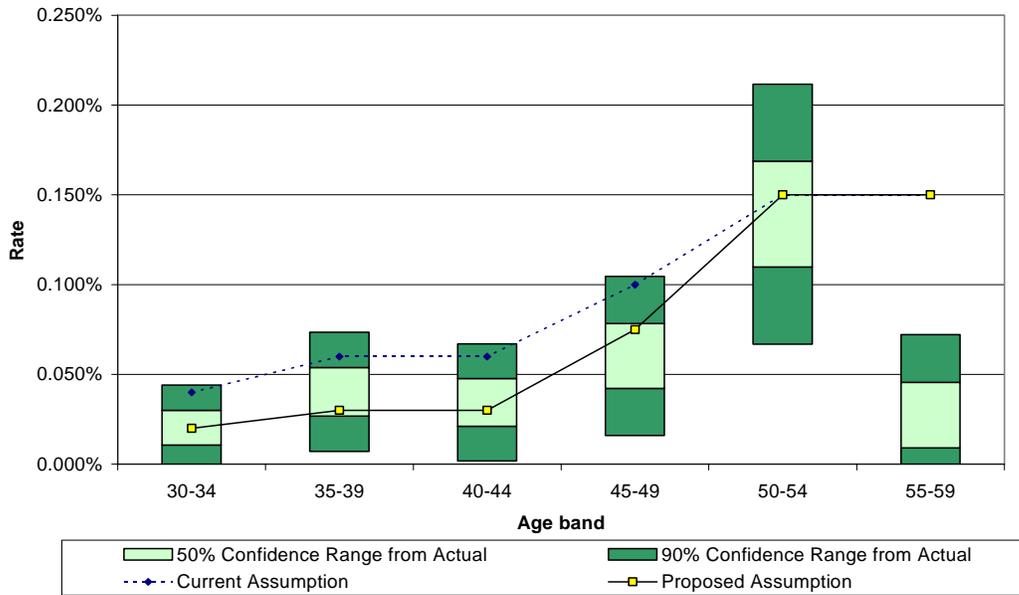
# Demographic Assumptions *(continued)*

## Ordinary Disability

As with duty disability, the experience data for ordinary disability was very limited. Therefore, we analyzed ordinary disability incidence rates as a single group covering all members, with rates developed for 5-year age bands. We do not recommend any changes to the ordinary disability assumption at this time.

**Ordinary Disability Rates**
**All combined**



The following table summarizes our recommended disability incidence rates:

|  | Recommended Assumption | | |
|---|---|---|---|
|  | Duty Disability | |  |
| Age | Police & Fire | General Service | Ordinary Disability |
| 20-24 | 0.020% | 0.002% | 0.050% |
| 25-29 | 0.020% | 0.002% | 0.050% |
| 30-34 | 0.020% | 0.002% | 0.050% |
| 35-39 | 0.030% | 0.002% | 0.100% |
| 40-44 | 0.030% | 0.004% | 0.150% |
| 45-49 | 0.075% | 0.010% | 0.200% |
| 50-54 | 0.150% | 0.015% | 0.300% |
| 55-59 | 0.150% | 0.015% | 0.300% |

# Demographic Assumptions *(continued)*

## Termination Assumptions

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

- Termination from active status prior to retirement eligibility

- Probability that a member will leave his or her account balance in the plan until retirement.

### Termination Rates

Not all active members are expected to continue working for Tier 1/Tier 2 employers until retirement. Termination rates represent the probabilities that a member at any given age will leave Tier 1/Tier 2 employment. Current termination rates for Tier 1/Tier 2 members are developed on an ultimate basis only (i.e. there is no select period).

Termination rates are developed for the following groups:

- School Districts

- SLGRP General Service Males

- SLGRP General Service Females

- Independent General Service Males

- Independent General Service Females

- OHSU

- Police & Fire

## School Districts

Actual experience for school districts follows the current assumption closely. The only recommended changes to these termination rates are small refinements to smooth the curve and round values. These rates are based on observed experience for members with three or more years of service.

# Demographic Assumptions *(continued)*

## School Districts
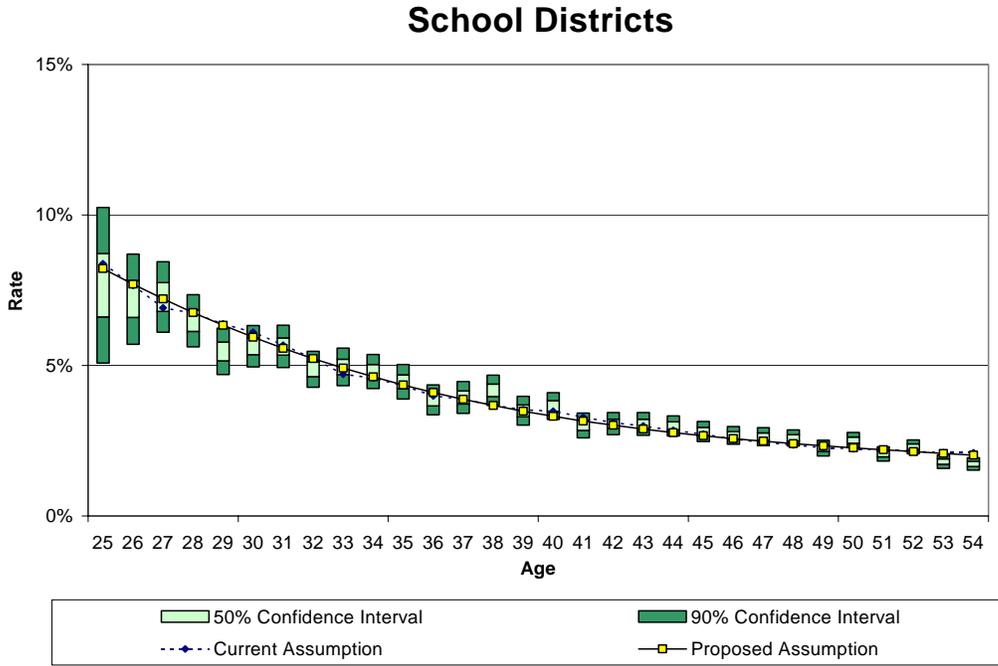
# Demographic Assumptions *(continued)*

## OHSU

Current assumed termination rates for OHSU members follow actual experience fairly closely. The only recommended changes to these termination rates are small refinements to smooth the curve and round values. These rates are based on observed experience for members with three or more years of service.

**OHSU**
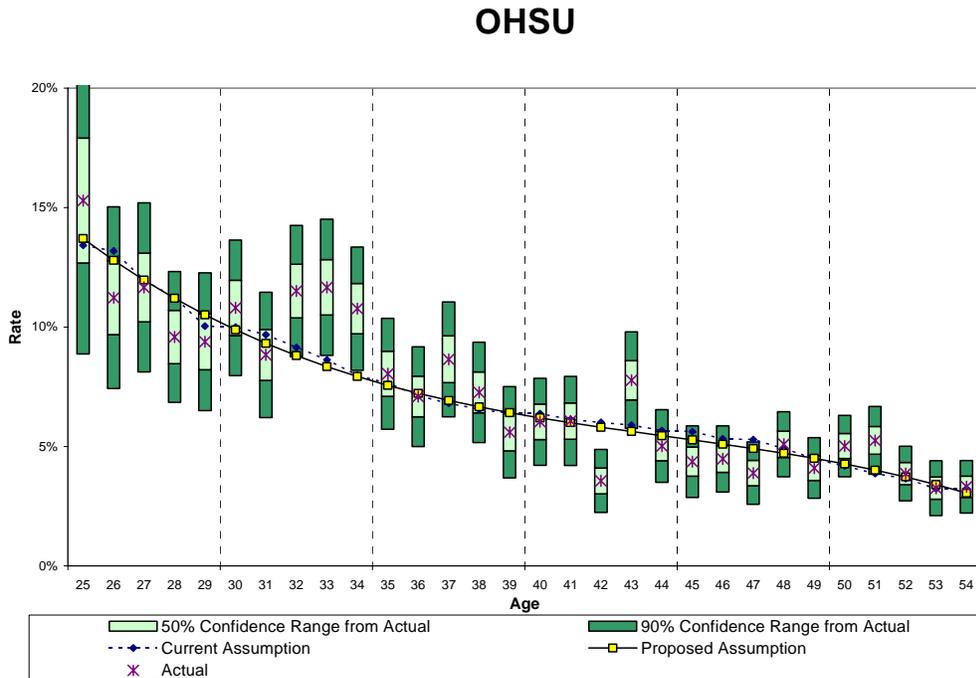


## SLGRP – General Service

For SLGRP members, termination rates vary by gender. The recommended termination rates are based on observed rates by gender for members with three or more years of service. The only recommended changes to these termination rates are small refinements to smooth the curve and round values.

# Demographic Assumptions *(continued)*

## SLGRP General Service Male
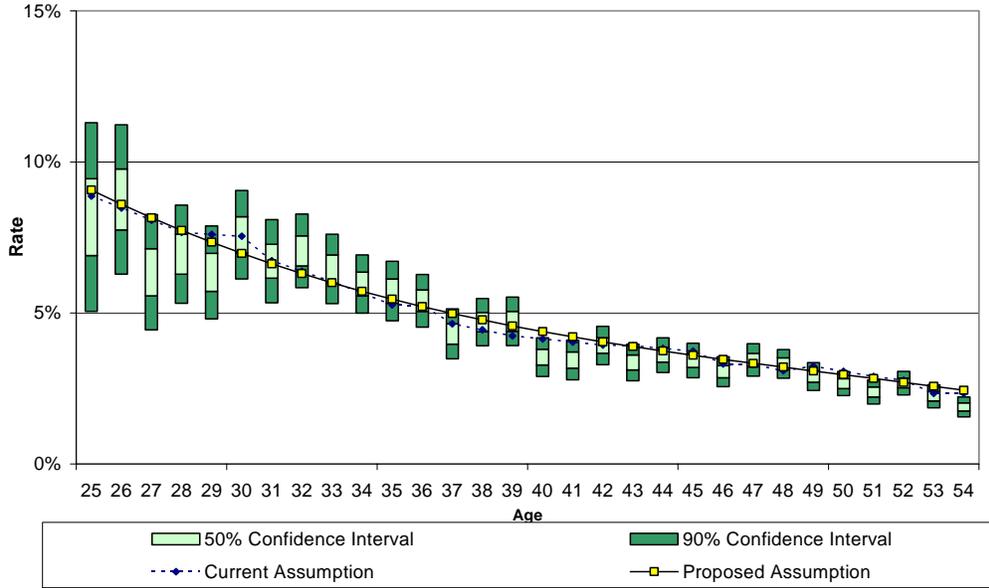


## SLGRP General Service Female
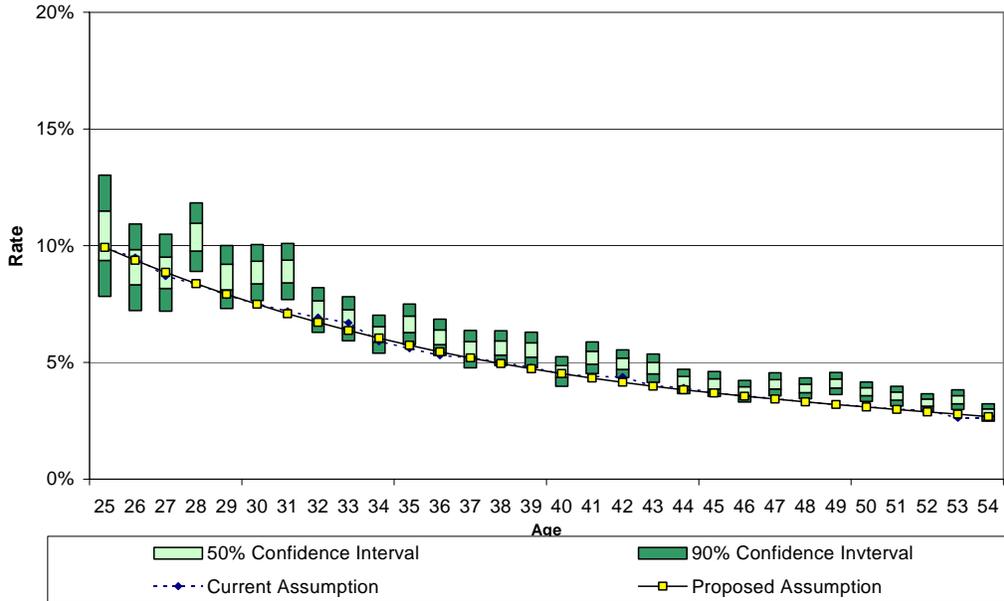
# Demographic Assumptions *(continued)*

Independent Employers – General Service

Experience for Independent Employers is separated by gender. The current assumed termination rates for males follow actual experience fairly closely. We recommend reducing the rates for females to more closely match actual experience.

## Independent General Service Male
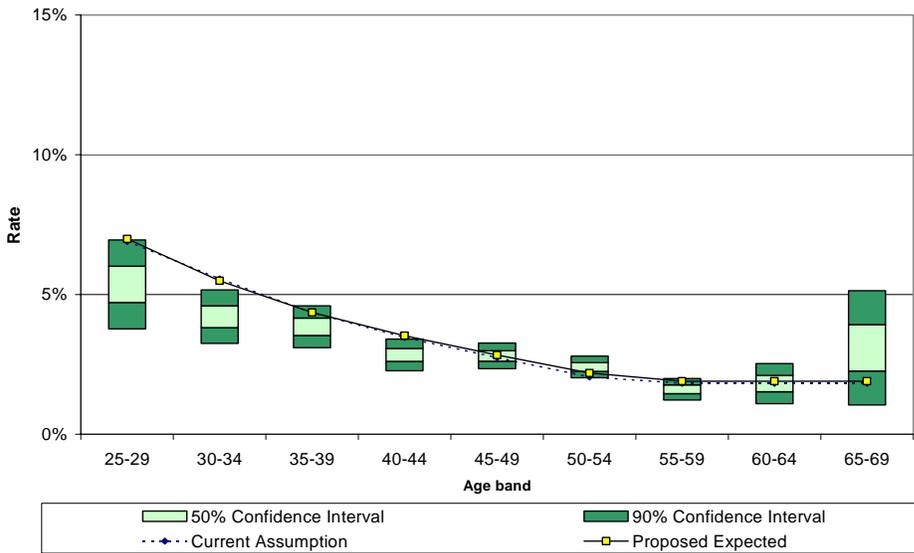


## Independent Employers - GS - Female
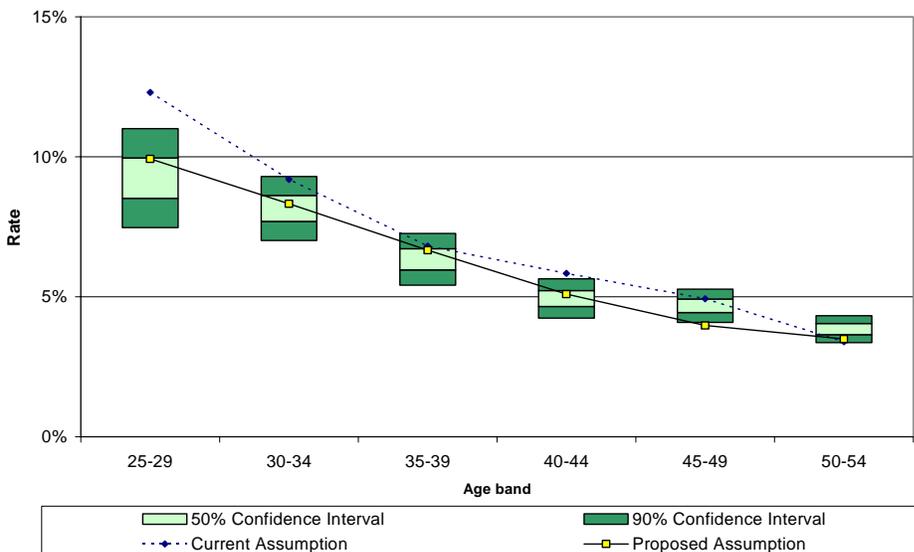
# Demographic Assumptions *(continued)*

Police & Fire

All police & fire members were rated together, with no variation by group or gender. The current assumed termination rates follow actual experience fairly closely. The only recommended changes to these termination rates are small refinements to smooth the curve and round values.

**Police & Fire**
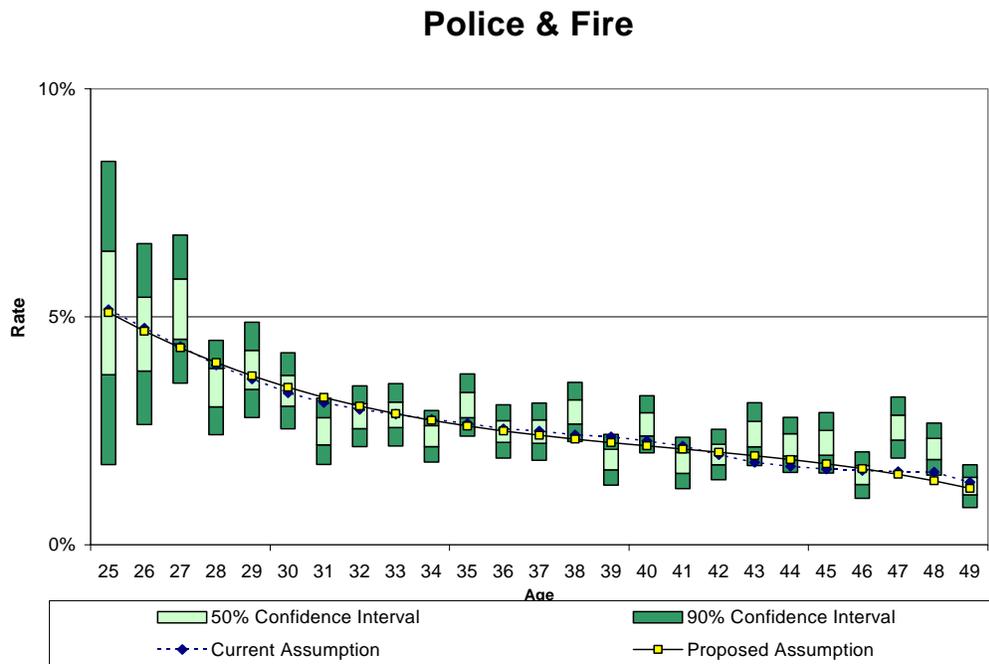
# Demographic Assumptions *(continued)*

## OPSRP

Ultimate termination rates from OPSRP are assumed to be identical to the rates for Tier 1 and Tier 2 members. However, rates for the first three years of employment are assumed to be higher. The following table summarizes the termination rates for each of the groupings. We are not recommending any changes to the rates for the first three years of employment.

**Termination Assumptions (OPSRP)**

| Age | School District | | | | OHSU | | | |
|-----|------------|------------|------------|----------|------------|------------|------------|----------|
| | 1st Select Period | 2nd Select Period | 3rd Select Period | Ultimate | 1st Select Period | 2nd Select Period | 3rd Select Period | Ultimate |
| 30 | 13.35% | 10.34% | 7.56% | 5.94% | 15.23% | 13.43% | 11.43% | 9.89% |
| 40 | 10.76% | 7.42% | 5.50% | 3.31% | 11.15% | 8.82% | 6.91% | 6.20% |
| 50 | 9.87% | 6.31% | 4.38% | 2.26% | 9.44% | 6.16% | 4.02% | 4.27% |

| Age | Independent Employers General Service Male | | | | Independent Employers General Service Female | | | |
|-----|------------|------------|------------|----------|------------|------------|------------|----------|
| | 1st Select Period | 2nd Select Period | 3rd Select Period | Ultimate | 1st Select Period | 2nd Select Period | 3rd Select Period | Ultimate |
| 30 | 18.74% | 14.74% | 8.74% | 6.11% | 18.20% | 15.88% | 12.16% | 9.10% |
| 40 | 16.22% | 12.22% | 6.22% | 3.84% | 13.68% | 11.80% | 8.64% | 5.70% |
| 50 | 13.84% | 9.84% | 3.84% | 2.47% | 11.79% | 9.93% | 6.76% | 3.58% |

| Age | SLGRP General Service Male | | | | SLGRP General Service Female | | | |
|-----|------------|------------|------------|----------|------------|------------|------------|----------|
| | 1st Select Period | 2nd Select Period | 3rd Select Period | Ultimate | 1st Select Period | 2nd Select Period | 3rd Select Period | Ultimate |
| 30 | 16.65% | 13.36% | 10.12% | 6.97% | 18.15% | 15.87% | 12.13% | 7.49% |
| 40 | 12.08% | 9.22% | 6.77% | 4.38% | 13.58% | 11.77% | 8.58% | 4.52% |
| 50 | 10.17% | 7.34% | 4.82% | 2.96% | 11.67% | 9.97% | 6.73% | 3.09% |

| Age | Police & Fire | | | |
|-----|------------|------------|------------|----------|
| | 1st Select Period | 2nd Select Period | 3rd Select Period | Ultimate |
| 30 | 8.29% | 6.04% | 4.73% | 3.45% |
| 40 | 6.68% | 4.43% | 3.30% | 2.17% |
| 50 | 4.66% | 2.41% | 1.89% | 1.24% |

## No Lump Sum Before Retirement

Members who are vested and terminate employment prior to retirement eligibility may elect to withdraw their account balance prior to retirement. By doing so, the members forfeit the employer-provided portion of their retirement benefit. This assumption represents the probability that a terminated member will leave his/her account balance in the plan until retirement and receive a retirement benefit.

We recommend an increase in the assumption for both General Service members and Police & Fire members to more closely match actual experience.

## Demographic Assumptions *(continued)*

### General Service



### Police and Fire
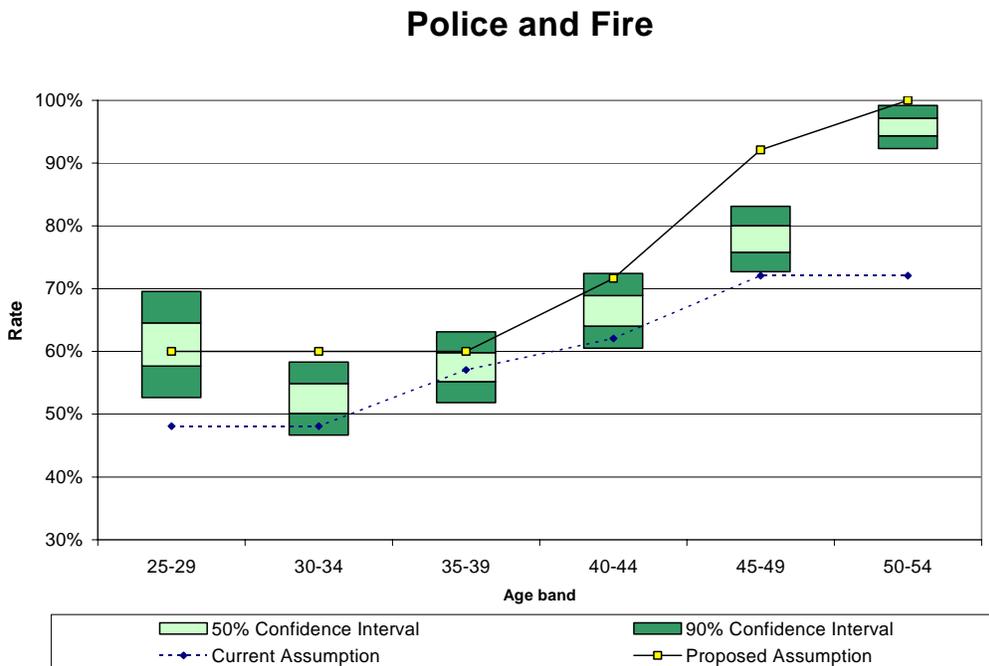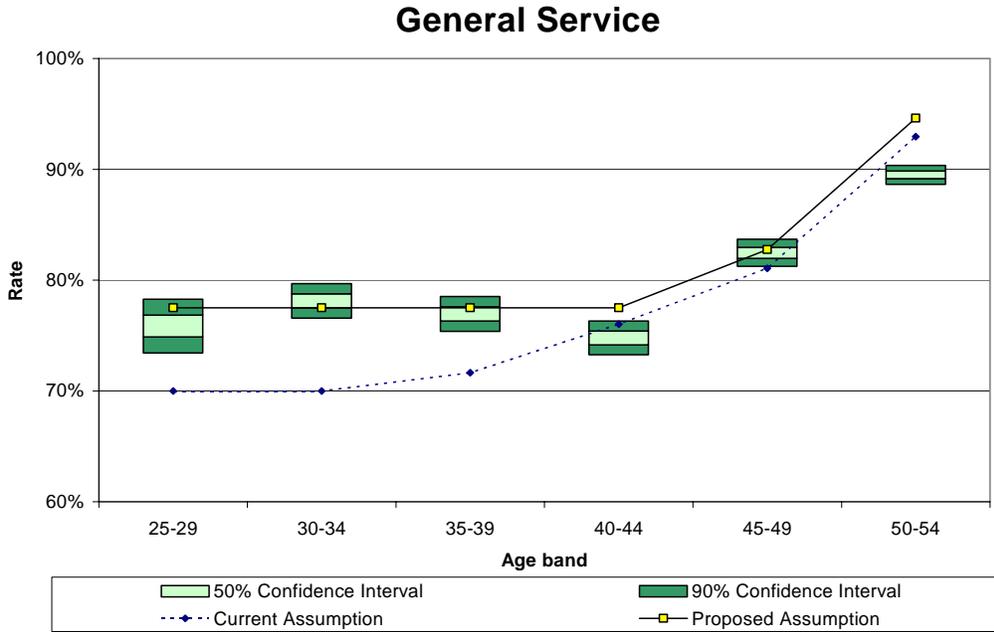


## Salary Increase Assumptions

The salary increase assumptions analyzed with demographic experience were:

## Demographic Assumptions *(continued)*

- Merit scale increases

- Unused Sick Leave adjustments.

### Merit Scale

The merit scale assumption is used in conjunction with the inflation and real wage growth assumptions to project individual member salaries to retirement. To focus on the merit and longevity component of salary increases, actual inflation and actual real wage growth were subtracted from observed salary increases. As shown in the table below, actual inflation was measured using CPI-U and the actual real growth in wages is measured by the real increase in national average wages reported by the Social Security Administration.

| Year | Actual Inflation (CPI-U) | Actual Real Wage Growth |
|---|---|---|
| 2001 | 1.55% | 0.83% |
| 2002 | 2.38% | -1.34% |
| 2003 | 1.88% | 0.55% |
| 2004 | 3.26% | 1.35% |
| 2005 | 3.42% | 0.24% |
| 2006 | 2.54% | 1.00%* |
| * Assumed. Actual data is not available. | | |

Our analysis of the merit scale assumptions focuses on the following groups:

- School Districts

- OHSU

- SLGRP General Service

- SLGRP Police & Fire

- Independent Employers General Service

- Independent Employers Police & Fire

Our review indicates that for all groups actual experience follows the current merit assumption fairly closely. Much of the variation that does exist between current and actual experience is due to large year-by-year variations in the rate of merit increases, as shown in select graphs below. In addition, for OHSU there are relatively few members with more than 10 years of experience, so we are not recommending a change at this time.

We do not recommend any changes to the merit scale assumption at this time.

# Demographic Assumptions *(continued)*
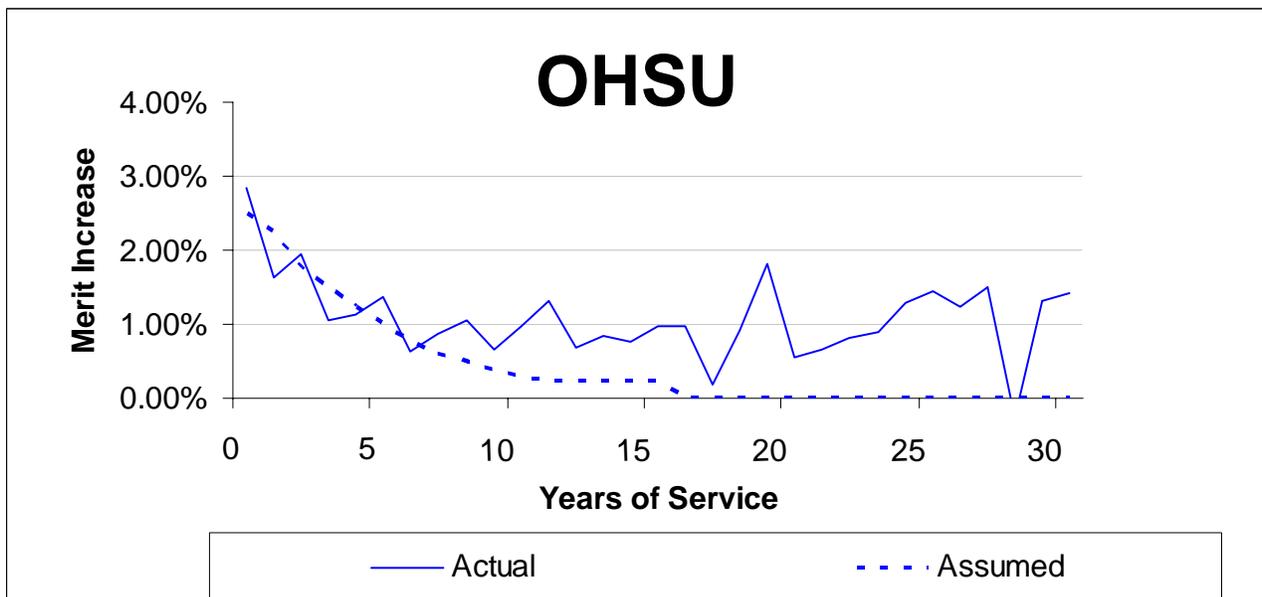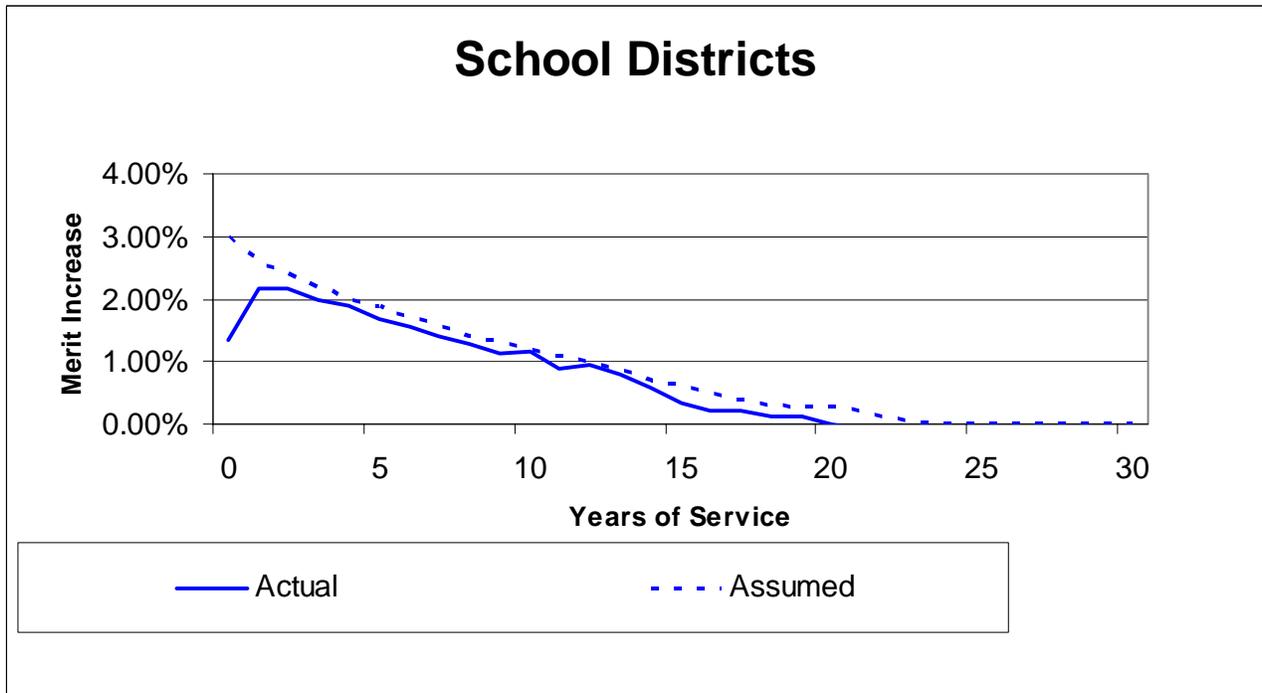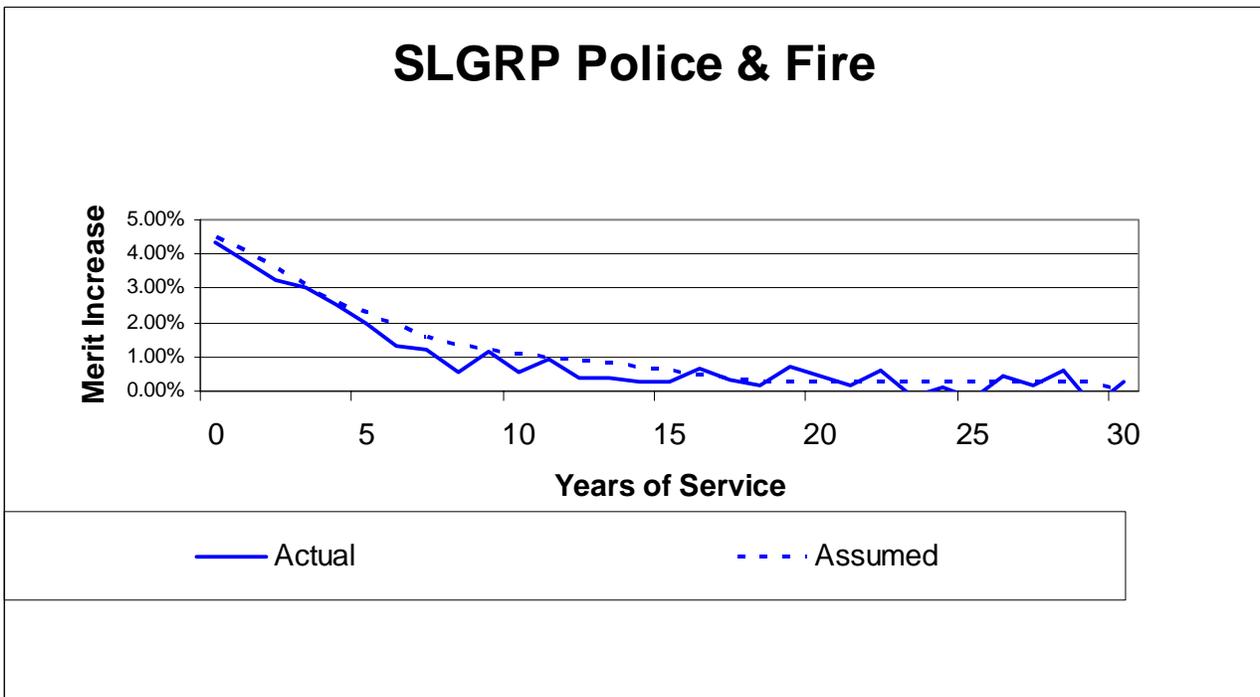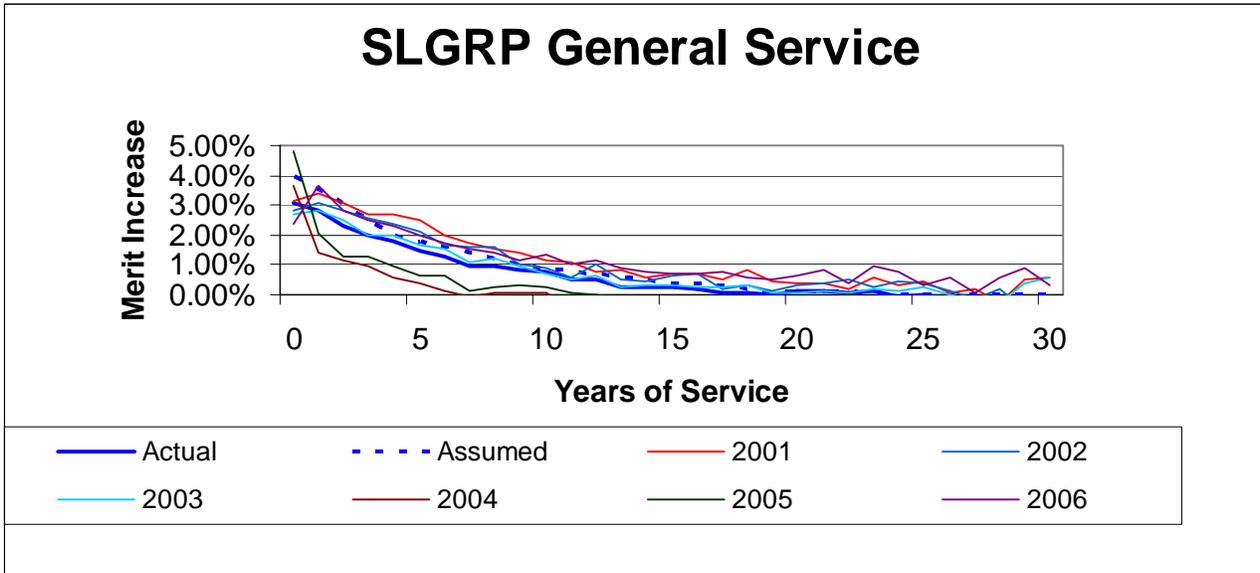
## School Districts



## OHSU

## Demographic Assumptions *(continued)*

## Demographic Assumptions *(continued)*



**Independent General Service**



**Independent Police & Fire**
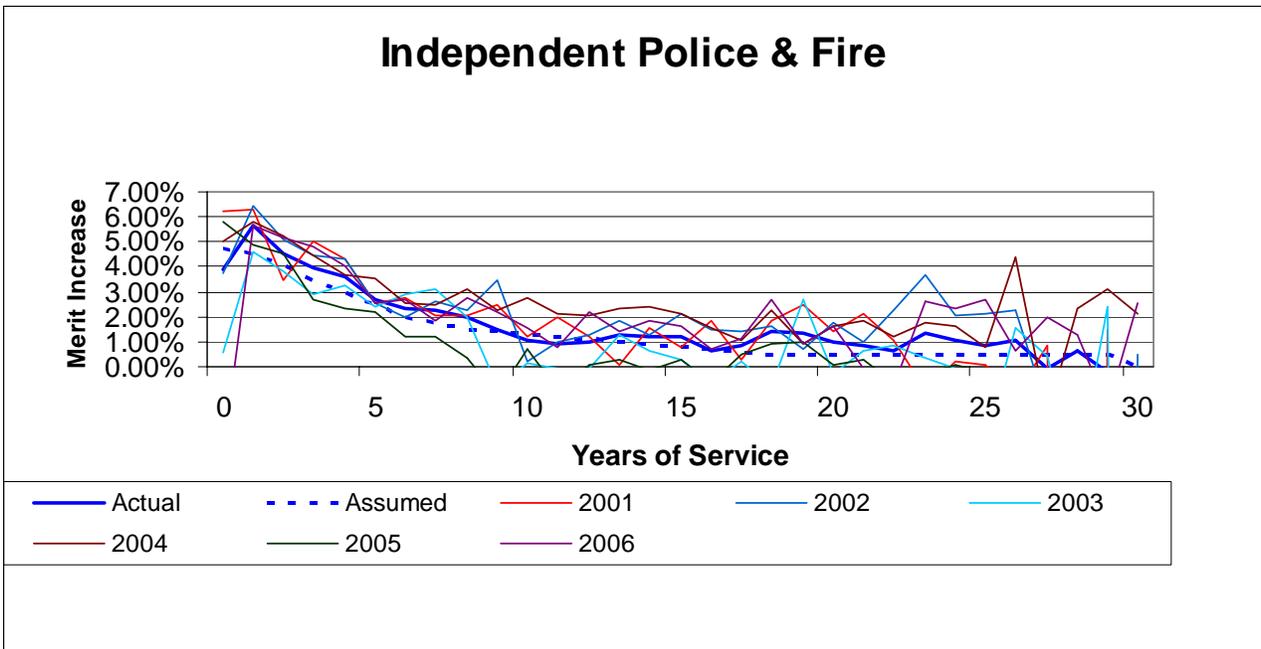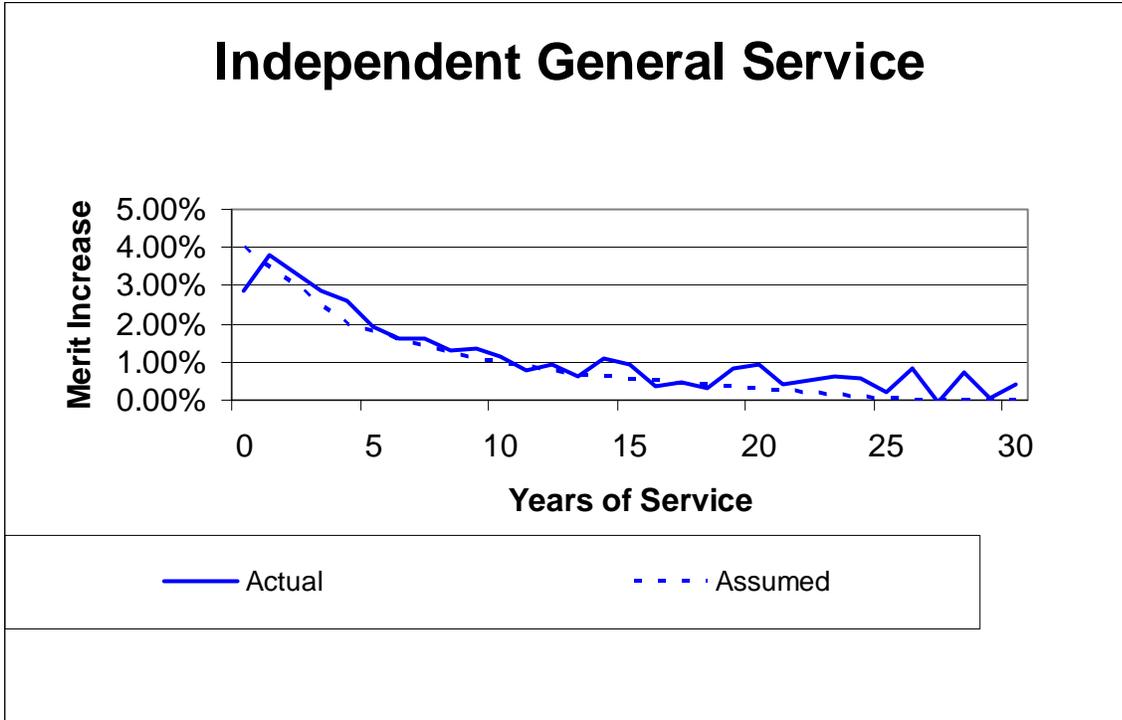
# Demographic Assumptions *(continued)*

**Unused Sick Leave**

Employers may elect to participate in the Unused Sick Leave Program. This program allows members to convert the value of one-half of their accumulated sick leave into additional retirement benefits. The assumption represents the percentage increase in a member's final average pay due to the inclusion of the value of 50 percent of the member's accumulated sick leave, and is only applied to employers who participate in the program.

For active members, there are currently eight sets of rates developed by employer group, employment category (general service or police and fire) and gender. Our review of actual experience indicates that the assumptions for these eight rate groups continue to be appropriate. Therefore, we recommend no changes to the assumed rates. A summary of the current rates and actual observed rates are shown below:

|  | Current Assumption | Actual Observed | Recommended Assumption |
|---|---|---|---|
| State General Service Male | 5.75% | 5.91% | No Change |
| State General Service Female | 4.75% | 4.77% | No Change |
| School District Male | 7.25% | 7.28% | No Change |
| School District Female | 6.75% | 6.32% | No Change |
| Local General Service Male | 3.50% | 3.47% | No Change |
| Local General Service Female | 3.00% | 2.98% | No Change |
| State Police & Fire | 8.75% | 9.29% | No Change |
| Local Police & Fire | 8.75% | 8.13% | No Change |

Dormant members (those who have terminated and are entitled to a deferred benefit at retirement) are also eligible for the unused sick leave adjustment, but are expected to have smaller increases in final average salary (less unused sick leave applied to their final payroll) than actives.

The actual observed rate for dormants over the experience study period was 3.08 percent. We recommend the assumption for the increase in final average salary due to the inclusion of unused sick leave for all dormant members remain at 3.50 percent.

## Retiree Healthcare Assumptions

There are two retiree healthcare programs offered to eligible members, the Retiree Health Insurance Premium Account (RHIPA) and the Retiree Health Insurance Account (RHIA).

RHIPA is a program for eligible retirees from State employment that provides a subsidized pre-Medicare insurance plan. Currently, 11 percent of eligible members are assumed to elect participation in the RHIPA program. Election of RHIPA coverage was slightly lower than this assumption in the most recent experience study data. However, because this assumption was significantly reduced in the prior study, and there appears to be substantial year-to-year volatility in this rate, our recommendation is that the assumption remains at 11 percent.

## Demographic Assumptions *(continued)*

**RHIPA
Participation Rates**
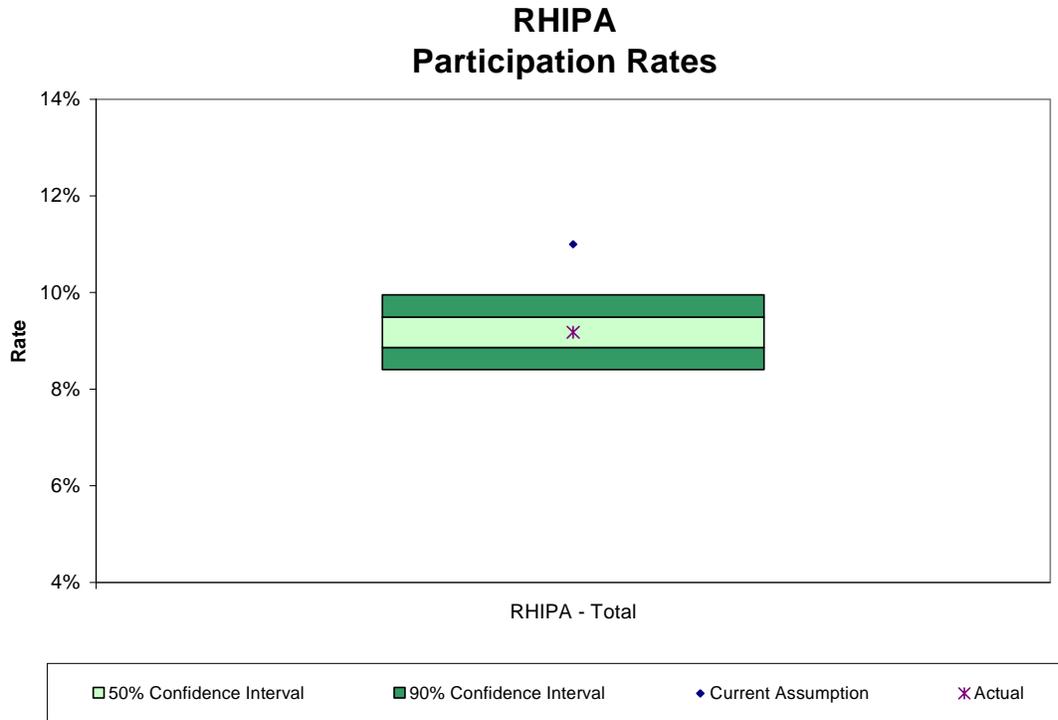


RHIA is a subsidized Medicare supplemental insurance program offered to all eligible retirees. Currently, 50 percent of eligible healthy retirees are assumed to participate in the RHIA program and 25 percent of eligible disabled retirees. Our analysis of the experience data indicates that these assumptions continue to be appropriate. Election of RHIA coverage among healthy retirees was slightly lower than the assumption in the most recent experience study data. However, because this assumption was significantly reduced in the prior study, and there appears to be substantial year-to-year volatility in this rate, our recommendation is that the assumption remain at 50 percent. The assumption for RHIA participation by disabled retirees matched actual experience very closely. We recommend no change to this assumption.

# Demographic Assumptions *(continued)*

**RHIA
Healthy Participation Rates**



RHIA - Healthy

| ☐ 50% Confidence Range from Actual | ■ 90% Confidence Range from Actual |
| ◆ Current Assumption | ✳ Actual |
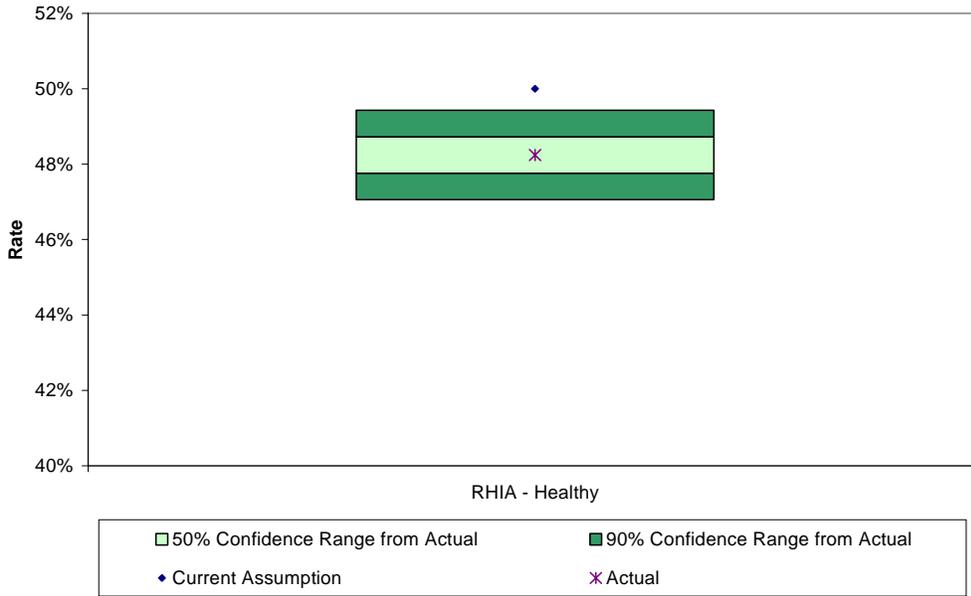
**RHIA
Disabled Participation Rates**



RHIA - Disabled

| ☐ 50% Confidence Range from Actual | ■ 90% Confidence Range from Actual |
| ◆ Current Assumption | ✳ Actual |

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# 5

</div>
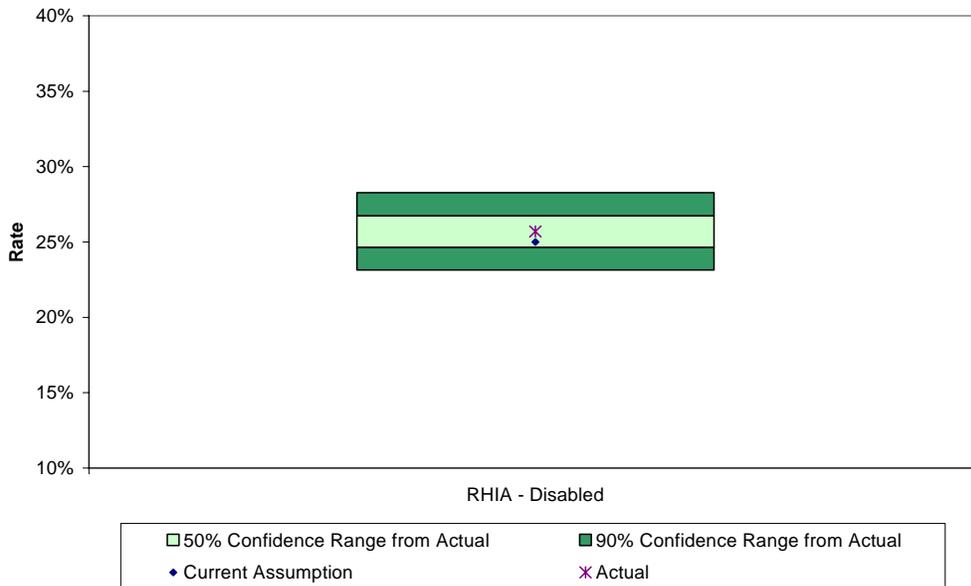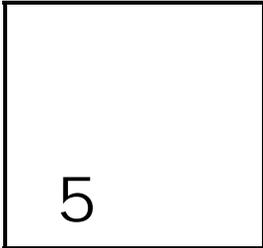
# Appendix

## Data

The experience analysis uses member data from January 1, 2003, through December 31, 2006, which was supplied by PERS. We have not verified the data, but have reviewed the information for internal consistency and have no reason to doubt its substantial accuracy.

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.

# **Appendix** *(continued)*

## Assumption Tables

A complete listing of all the recommended assumptions, methods and procedures used in the actuarial valuation are summarized on the following pages.

## Methods and Procedures

| | |
|---|---|
| Actuarial Cost method | Projected Unit Credit |
| Amortization method | Level percent of combined payroll |
| Amortization period | ▪ 12/31/2006 UAL – 21 years<br>▪ PUC method change – 3-year rolling<br>▪ Future experience – 20 years (from first valuation used to set contribution rates in which experience is recognized) |
| Asset valuation method | Market value |
| Excluded reserves | Contingency, capital preservation, and rate guarantee |
| Contribution Rate Stabilization Method | Rate collar equal to the greater of 20% of current rate or 300 basis points. Rate collar doubles if funded percentage falls below 80% or increases above 120%. Retiree medical rates are excluded from the rate collar. |
| 18-Month Delay | The 18-month delay calculation will be removed from the valuation process beginning with the December 31, 2006 actuarial valuation. |
| Allocation of Liability for Service Segments | Allocate Actuarial Accrued Liability 65% (25% for police & fire) based on account balance with each employer and 35% (75% for police & fire) based on service with each employer<br><br>Allocate Normal Cost to current employer |
| Allocation of Benefits-In-Force (BIF) Reserve | BIF is allocated based on proportion of retiree liability. |

# **Appendix** *(continued)*

## Economic Assumptions

| | |
|---|---|
| Inflation | 2.75% |
| Real wage growth | 1.00% |
| Payroll growth | 3.75% |
| Investment Return | 8.00% |
| Interest Crediting | |
| ▪ Regular account | 8.00% |
| ▪ Variable account | 8.50% |
| Health cost trend rates | |
| ▪ 2008 trend rate | 8.00% |
| ▪ Ultimate trend rate | 5.00% |
| ▪ Year reaching ultimate trend | 2013 |

# Appendix *(continued)*

## Demographic Assumptions

### Mortality

| | Healthy Retired Mortality | | | | | Beneficiary Mortality | |
| | School District | Other General | Police & Fire | School District | | | |
| Age | Male | Service Male | Male | Female | Other Female | Male | Female |
|---|---|---|---|---|---|---|---|
| 45 | 0.001215 | 0.001299 | 0.001397 | 0.000852 | 0.000983 | 0.001299 | 0.000983 |
| 46 | 0.001299 | 0.001397 | 0.001508 | 0.000937 | 0.001076 | 0.001397 | 0.001076 |
| 47 | 0.001397 | 0.001508 | 0.001616 | 0.001029 | 0.001174 | 0.001508 | 0.001174 |
| 48 | 0.001508 | 0.001616 | 0.001734 | 0.001124 | 0.001275 | 0.001616 | 0.001275 |
| 49 | 0.001616 | 0.001734 | 0.001860 | 0.001223 | 0.001380 | 0.001734 | 0.001380 |
| 50 | 0.001734 | 0.001860 | 0.001995 | 0.001326 | 0.001492 | 0.001860 | 0.001492 |
| 51 | 0.001860 | 0.001995 | 0.002138 | 0.001434 | 0.001613 | 0.001995 | 0.001613 |
| 52 | 0.001995 | 0.002138 | 0.002449 | 0.001550 | 0.001764 | 0.002138 | 0.001764 |
| 53 | 0.002138 | 0.002449 | 0.002667 | 0.001676 | 0.001935 | 0.002449 | 0.001935 |
| 54 | 0.002449 | 0.002667 | 0.002916 | 0.001852 | 0.002112 | 0.002667 | 0.002112 |
| 55 | 0.002667 | 0.002916 | 0.003196 | 0.002018 | 0.002316 | 0.002916 | 0.002316 |
| 56 | 0.002916 | 0.003196 | 0.003624 | 0.002207 | 0.002571 | 0.003196 | 0.002571 |
| 57 | 0.003196 | 0.003624 | 0.004200 | 0.002424 | 0.002904 | 0.003624 | 0.002904 |
| 58 | 0.003624 | 0.004200 | 0.004693 | 0.002717 | 0.003284 | 0.004200 | 0.003284 |
| 59 | 0.004200 | 0.004693 | 0.005273 | 0.003090 | 0.003700 | 0.004693 | 0.003700 |
| 60 | 0.004693 | 0.005273 | 0.005945 | 0.003478 | 0.004182 | 0.005273 | 0.004182 |
| 61 | 0.005273 | 0.005945 | 0.006747 | 0.003923 | 0.004748 | 0.005945 | 0.004748 |
| 62 | 0.005945 | 0.006747 | 0.007676 | 0.004441 | 0.005435 | 0.006747 | 0.005435 |
| 63 | 0.006747 | 0.007676 | 0.008757 | 0.005055 | 0.006236 | 0.007676 | 0.006236 |
| 64 | 0.007676 | 0.008757 | 0.010012 | 0.005814 | 0.007152 | 0.008757 | 0.007152 |
| 65 | 0.008757 | 0.010012 | 0.011280 | 0.006657 | 0.008134 | 0.010012 | 0.008134 |
| 66 | 0.010012 | 0.011280 | 0.012737 | 0.007648 | 0.009162 | 0.011280 | 0.009162 |
| 67 | 0.011280 | 0.012737 | 0.014409 | 0.008619 | 0.010330 | 0.012737 | 0.010330 |
| 68 | 0.012737 | 0.014409 | 0.016075 | 0.009706 | 0.011559 | 0.014409 | 0.011559 |
| 69 | 0.014409 | 0.016075 | 0.017871 | 0.010954 | 0.012804 | 0.016075 | 0.012804 |
| 70 | 0.016075 | 0.017871 | 0.019802 | 0.012163 | 0.014153 | 0.017871 | 0.014153 |
| 71 | 0.017871 | 0.019802 | 0.022206 | 0.013445 | 0.015801 | 0.019802 | 0.015801 |
| 72 | 0.019802 | 0.022206 | 0.024570 | 0.014860 | 0.017661 | 0.022206 | 0.017661 |
| 73 | 0.022206 | 0.024570 | 0.027281 | 0.016742 | 0.019622 | 0.024570 | 0.019622 |
| 74 | 0.024570 | 0.027281 | 0.030387 | 0.018579 | 0.021817 | 0.027281 | 0.021817 |
| 75 | 0.027281 | 0.030387 | 0.033900 | 0.020665 | 0.024214 | 0.030387 | 0.024214 |
| 76 | 0.030387 | 0.033900 | 0.037834 | 0.022970 | 0.026782 | 0.033900 | 0.026782 |
| 77 | 0.033900 | 0.037834 | 0.042169 | 0.025458 | 0.029536 | 0.037834 | 0.029536 |
| 78 | 0.037834 | 0.042169 | 0.046906 | 0.028106 | 0.032536 | 0.042169 | 0.032536 |
| 79 | 0.042169 | 0.046906 | 0.052123 | 0.030966 | 0.035850 | 0.046906 | 0.035850 |
| 80 | 0.046906 | 0.052123 | 0.057927 | 0.034105 | 0.039550 | 0.052123 | 0.039550 |
| 81 | 0.052123 | 0.057927 | 0.064368 | 0.037595 | 0.043692 | 0.057927 | 0.043692 |
| 82 | 0.057927 | 0.064368 | 0.072041 | 0.041506 | 0.048330 | 0.064368 | 0.048330 |
| 83 | 0.064368 | 0.072041 | 0.080486 | 0.045879 | 0.053537 | 0.072041 | 0.053537 |
| 84 | 0.072041 | 0.080486 | 0.089718 | 0.050780 | 0.059400 | 0.080486 | 0.059400 |
| 85 | 0.080486 | 0.089718 | 0.099779 | 0.056294 | 0.066011 | 0.089718 | 0.066011 |
| 86 | 0.089718 | 0.099779 | 0.110757 | 0.062506 | 0.073482 | 0.099779 | 0.073482 |
| 87 | 0.099779 | 0.110757 | 0.122797 | 0.069517 | 0.081911 | 0.110757 | 0.081911 |
| 88 | 0.110757 | 0.122797 | 0.136043 | 0.077446 | 0.091356 | 0.122797 | 0.091356 |
| 89 | 0.122797 | 0.136043 | 0.150590 | 0.086376 | 0.101820 | 0.136043 | 0.101820 |
| 90 | 0.136043 | 0.150590 | 0.166420 | 0.096337 | 0.113229 | 0.150590 | 0.113229 |
| 91 | 0.150590 | 0.166420 | 0.183408 | 0.107303 | 0.125418 | 0.166420 | 0.125418 |
| 92 | 0.166420 | 0.183408 | 0.199769 | 0.119154 | 0.138143 | 0.183408 | 0.138143 |
| 93 | 0.183408 | 0.199769 | 0.216605 | 0.131682 | 0.151111 | 0.199769 | 0.151111 |
| 94 | 0.199769 | 0.216605 | 0.233662 | 0.144604 | 0.164025 | 0.216605 | 0.164025 |
| 95 | 0.216605 | 0.233662 | 0.250693 | 0.157618 | 0.176616 | 0.233662 | 0.176616 |
| 96 | 0.233662 | 0.250693 | 0.267491 | 0.170433 | 0.188654 | 0.250693 | 0.188654 |
| 97 | 0.250693 | 0.267491 | 0.283905 | 0.182799 | 0.199944 | 0.267491 | 0.199944 |
| 98 | 0.267491 | 0.283905 | 0.299852 | 0.194509 | 0.210310 | 0.283905 | 0.210310 |
| 99 | 0.283905 | 0.299852 | 0.315296 | 0.205379 | 0.219593 | 0.299852 | 0.219593 |
| 100 | 0.299852 | 0.315296 | 0.330207 | 0.215240 | 0.227667 | 0.315296 | 0.227667 |
| 101 | 0.315296 | 0.330207 | 0.344556 | 0.223947 | 0.234427 | 0.330207 | 0.234427 |
| 102 | 0.330207 | 0.344556 | 0.358628 | 0.231387 | 0.241150 | 0.344556 | 0.241150 |
| 103 | 0.344556 | 0.358628 | 0.371685 | 0.237467 | 0.249666 | 0.358628 | 0.249666 |
| 104 | 0.358628 | 0.371685 | 0.383040 | 0.244834 | 0.260271 | 0.371685 | 0.260271 |
| 105 | 0.371685 | 0.383040 | 0.392003 | 0.254498 | 0.272550 | 0.383040 | 0.272550 |
| 106 | 0.383040 | 0.392003 | 0.397886 | 0.266044 | 0.286085 | 0.392003 | 0.286085 |
| 107 | 0.392003 | 0.397886 | 0.400000 | 0.279055 | 0.300464 | 0.397886 | 0.300464 |
| 108 | 0.397886 | 0.400000 | 0.400000 | 0.293116 | 0.315268 | 0.400000 | 0.315268 |
| 109 | 0.400000 | 0.400000 | 0.400000 | 0.307811 | 0.330083 | 0.400000 | 0.330083 |
| 110 | 0.400000 | 0.400000 | 0.400000 | 0.322725 | 0.344492 | 0.400000 | 0.344492 |

# Appendix *(continued)*

## Demographic Assumptions *(continued)*

### Mortality *(continued)*

| | Disabled Retired Mortality | | | Non-Retired Mortality | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | School District | Other General | Police & Fire | School District | |
| Age | Male | Female | Age | Male | Service Male | Male | Female | Other Female |
| 45 | 0.025000 | 0.027500 | 20 | 0.000196 | 0.000205 | 0.000232 | 0.000092 | 0.000104 |
| 46 | 0.025000 | 0.027500 | 21 | 0.000205 | 0.000215 | 0.000242 | 0.000094 | 0.000105 |
| 47 | 0.025000 | 0.027500 | 22 | 0.000215 | 0.000224 | 0.000250 | 0.000095 | 0.000105 |
| 48 | 0.025000 | 0.027500 | 23 | 0.000224 | 0.000232 | 0.000256 | 0.000096 | 0.000106 |
| 49 | 0.025000 | 0.027500 | 24 | 0.000232 | 0.000238 | 0.000261 | 0.000096 | 0.000108 |
| 50 | 0.025000 | 0.027500 | 25 | 0.000238 | 0.000242 | 0.000263 | 0.000097 | 0.000109 |
| 51 | 0.025000 | 0.027500 | 26 | 0.000242 | 0.000244 | 0.000263 | 0.000099 | 0.000112 |
| 52 | 0.025000 | 0.027500 | 27 | 0.000244 | 0.000244 | 0.000265 | 0.000101 | 0.000116 |
| 53 | 0.025000 | 0.027500 | 28 | 0.000244 | 0.000246 | 0.000267 | 0.000103 | 0.000120 |
| 54 | 0.025000 | 0.027500 | 29 | 0.000246 | 0.000248 | 0.000275 | 0.000107 | 0.000126 |
| 55 | 0.025000 | 0.027500 | 30 | 0.000248 | 0.000255 | 0.000288 | 0.000112 | 0.000133 |
| 56 | 0.025000 | 0.027500 | 31 | 0.000255 | 0.000268 | 0.000311 | 0.000117 | 0.000141 |
| 57 | 0.025000 | 0.027500 | 32 | 0.000268 | 0.000289 | 0.000349 | 0.000124 | 0.000157 |
| 58 | 0.025000 | 0.027500 | 33 | 0.000289 | 0.000324 | 0.000393 | 0.000132 | 0.000181 |
| 59 | 0.025000 | 0.027500 | 34 | 0.000324 | 0.000365 | 0.000442 | 0.000153 | 0.000205 |
| 60 | 0.025000 | 0.027500 | 35 | 0.000365 | 0.000410 | 0.000491 | 0.000175 | 0.000228 |
| 61 | 0.025000 | 0.027500 | 36 | 0.000410 | 0.000456 | 0.000541 | 0.000197 | 0.000250 |
| 62 | 0.025000 | 0.027500 | 37 | 0.000456 | 0.000502 | 0.000589 | 0.000218 | 0.000272 |
| 63 | 0.025000 | 0.027500 | 38 | 0.000502 | 0.000547 | 0.000633 | 0.000237 | 0.000294 |
| 64 | 0.025000 | 0.027500 | 39 | 0.000547 | 0.000588 | 0.000675 | 0.000257 | 0.000317 |
| 65 | 0.025000 | 0.027500 | 40 | 0.000588 | 0.000627 | 0.000715 | 0.000277 | 0.000343 |
| 66 | 0.025000 | 0.027500 | 41 | 0.000627 | 0.000664 | 0.000755 | 0.000299 | 0.000372 |
| 67 | 0.025000 | 0.027500 | 42 | 0.000664 | 0.000701 | 0.000799 | 0.000324 | 0.000407 |
| 68 | 0.025000 | 0.027500 | 43 | 0.000701 | 0.000742 | 0.000851 | 0.000353 | 0.000447 |
| 69 | 0.027281 | 0.027500 | 44 | 0.000742 | 0.000790 | 0.000909 | 0.000387 | 0.000492 |
| 70 | 0.030387 | 0.027500 | 45 | 0.000790 | 0.000844 | 0.000978 | 0.000426 | 0.000541 |
| 71 | 0.033900 | 0.027500 | 46 | 0.000844 | 0.000908 | 0.001056 | 0.000469 | 0.000592 |
| 72 | 0.037834 | 0.028106 | 47 | 0.000908 | 0.000980 | 0.001131 | 0.000515 | 0.000645 |
| 73 | 0.042169 | 0.030966 | 48 | 0.000980 | 0.001050 | 0.001214 | 0.000562 | 0.000701 |
| 74 | 0.046906 | 0.034105 | 49 | 0.001050 | 0.001127 | 0.001302 | 0.000612 | 0.000759 |
| 75 | 0.052123 | 0.037595 | 50 | 0.001127 | 0.001209 | 0.001397 | 0.000663 | 0.000821 |
| 76 | 0.057927 | 0.041506 | 51 | 0.001209 | 0.001297 | 0.001497 | 0.000717 | 0.000887 |
| 77 | 0.064368 | 0.045879 | 52 | 0.001297 | 0.001390 | 0.001714 | 0.000775 | 0.000970 |
| 78 | 0.072041 | 0.050780 | 53 | 0.001390 | 0.001592 | 0.001867 | 0.000838 | 0.001064 |
| 79 | 0.080486 | 0.056294 | 54 | 0.001592 | 0.001734 | 0.002041 | 0.000926 | 0.001162 |
| 80 | 0.089718 | 0.062506 | 55 | 0.001734 | 0.001895 | 0.002237 | 0.001009 | 0.001274 |
| 81 | 0.099779 | 0.069517 | 56 | 0.001895 | 0.002077 | 0.002537 | 0.001104 | 0.001414 |
| 82 | 0.110757 | 0.077446 | 57 | 0.002077 | 0.002356 | 0.002940 | 0.001212 | 0.001597 |
| 83 | 0.122797 | 0.086376 | 58 | 0.002356 | 0.002730 | 0.003285 | 0.001358 | 0.001806 |
| 84 | 0.136043 | 0.096337 | 59 | 0.002730 | 0.003050 | 0.003691 | 0.001545 | 0.002035 |
| 85 | 0.150590 | 0.107303 | 60 | 0.003050 | 0.003427 | 0.004162 | 0.001739 | 0.002300 |
| 86 | 0.166420 | 0.119154 | 61 | 0.003427 | 0.003864 | 0.004723 | 0.001962 | 0.002611 |
| 87 | 0.183408 | 0.131682 | 62 | 0.003864 | 0.004386 | 0.005373 | 0.002221 | 0.002989 |
| 88 | 0.199769 | 0.144604 | 63 | 0.004386 | 0.004989 | 0.006130 | 0.002527 | 0.003430 |
| 89 | 0.216605 | 0.157618 | 64 | 0.004989 | 0.005692 | 0.007008 | 0.002907 | 0.003934 |
| 90 | 0.233662 | 0.170433 | 65 | 0.005692 | 0.006508 | 0.007896 | 0.003329 | 0.004473 |
| 91 | 0.250693 | 0.182799 | 66 | 0.006508 | 0.007332 | 0.008916 | 0.003824 | 0.005039 |
| 92 | 0.267491 | 0.194509 | 67 | 0.007332 | 0.008279 | 0.010086 | 0.004310 | 0.005681 |
| 93 | 0.283905 | 0.205379 | 68 | 0.008279 | 0.009366 | 0.011253 | 0.004853 | 0.006357 |
| 94 | 0.299852 | 0.215240 | 69 | 0.009366 | 0.010449 | 0.012510 | 0.005477 | 0.007042 |
| 95 | 0.315296 | 0.223947 | 70 | 0.010449 | 0.011616 | 0.013861 | 0.006081 | 0.007784 |
| 96 | 0.330207 | 0.231387 | 71 | 0.011616 | 0.012871 | 0.015544 | 0.006722 | 0.008691 |
| 97 | 0.344556 | 0.237467 | 72 | 0.012871 | 0.014434 | 0.017199 | 0.007430 | 0.009713 |
| 98 | 0.358628 | 0.244834 | 73 | 0.014434 | 0.015971 | 0.019097 | 0.008371 | 0.010792 |
| 99 | 0.371685 | 0.254498 | 74 | 0.015971 | 0.017733 | 0.021271 | 0.009289 | 0.012000 |
| 100 | 0.383040 | 0.266044 | 75 | 0.017733 | 0.019752 | 0.023730 | 0.010333 | 0.013318 |
| 101 | 0.392003 | 0.279055 | 76 | 0.019752 | 0.022035 | 0.026484 | 0.011485 | 0.014730 |
| 102 | 0.397886 | 0.293116 | 77 | 0.022035 | 0.024592 | 0.029518 | 0.012729 | 0.016245 |
| 103 | 0.400000 | 0.307811 | 78 | 0.024592 | 0.027410 | 0.032834 | 0.014053 | 0.017895 |
| 104 | 0.400000 | 0.322725 | 79 | 0.027410 | 0.030489 | 0.036486 | 0.015483 | 0.019717 |
| 105 | 0.400000 | 0.337441 | 80 | 0.030489 | 0.033880 | 0.040549 | 0.017052 | 0.021753 |
| 106 | 0.400000 | 0.351544 | 81 | 0.033880 | 0.037653 | 0.045058 | 0.018798 | 0.024031 |
| 107 | 0.400000 | 0.364617 | 82 | 0.037653 | 0.041839 | 0.050429 | 0.020753 | 0.026581 |
| 108 | 0.400000 | 0.376246 | 83 | 0.041839 | 0.046827 | 0.056340 | 0.022939 | 0.029445 |
| 109 | 0.400000 | 0.386015 | 84 | 0.046827 | 0.052316 | 0.062803 | 0.025390 | 0.032670 |
| 110 | 0.400000 | 0.393507 | 85 | 0.052316 | 0.058317 | 0.069845 | 0.028147 | 0.036306 |

# Appendix *(continued)*

## Demographic Assumptions *(continued)*

### Retirement Assumptions (Tier 1/Tier 2)

Retirement from Active Status (Tier 1/Tier 2)

| | Police & Fire | | Tier 1 | | Tier 2 | | School District/SLGRP/ Independent Employers General Service 30+ Years |
|---|---|---|---|---|---|---|---|
| **Age** | **< 25 Years** | **25+ Years** | **School District < 30 Years** | **SLGRP/ Independent Employers General Service < 30 Years** | **School District < 30 Years** | **SLGRP/ Independent Employers General Service < 30 Years** | |
| 50 | 7.50% | 50.00% | | | | | 40.00% |
| 51 | 7.50% | 25.00% | | | | | 45.00% |
| 52 | 7.50% | 25.00% | | | | | 55.00% |
| 53 | 7.50% | 25.00% | | | | | 55.00% |
| 54 | 7.50% | 25.00% | | | | | 55.00% |
| 55 | 15.00% | 20.00% | 14.00% | 10.00% | 7.00% | 5.00% | 40.00% |
| 56 | 8.50% | 20.00% | 7.00% | 5.00% | 3.50% | 2.50% | 25.00% |
| 57 | 8.50% | 20.00% | 10.00% | 7.50% | 5.00% | 3.75% | 25.00% |
| 58 | 8.50% | 20.00% | 15.00% | 10.00% | 5.00% | 3.75% | 25.00% |
| 59 | 8.50% | 20.00% | 10.00% | 7.50% | 5.00% | 3.75% | 25.00% |
| 60 | 15.00% | 20.00% | 10.00% | 7.50% | 10.00% | 7.50% | 13.00% |
| 61 | 15.00% | 40.00% | 15.00% | 10.00% | 15.00% | 10.00% | 13.00% |
| 62 | 25.00% | 50.00% | 15.00% | 14.00% | 15.00% | 14.00% | 25.00% |
| 63 | 5.00% | 40.00% | 10.00% | 12.00% | 10.00% | 12.00% | 20.00% |
| 64 | 5.00% | 40.00% | 15.00% | 12.00% | 15.00% | 12.00% | 20.00% |
| 65 | 100.00% | 100.00% | 22.00% | 24.00% | 22.00% | 24.00% | 28.00% |
| 66 | | | 10.00% | 10.00% | 10.00% | 10.00% | 20.00% |
| 67 | | | 10.00% | 10.00% | 10.00% | 10.00% | 20.00% |
| 68 | | | 4.00% | 10.00% | 4.00% | 10.00% | 20.00% |
| 69 | | | 4.00% | 10.00% | 4.00% | 10.00% | 20.00% |
| 70 | | | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

# Appendix *(continued)*

## Demographic Assumptions *(continued)*

### Retirement Assumptions (OPSRP)

### Retirement from Active Status (OPSRP)

| Age | Police & Fire | | General Service | |
|-----|---------------|-----------|-----------|-----------|
|     | < 25 years | 25+ years | <30 years | 30+ years |
| 50 | 3.75% | 7.50% | | |
| 51 | 3.75% | 7.50% | | |
| 52 | 3.75% | 7.50% | | |
| 53 | 3.75% | 50.00% | | |
| 54 | 3.75% | 25.00% | | |
| 55 | 4.25% | 20.00% | 5.00% | 5.00% |
| 56 | 4.25% | 20.00% | 2.50% | 2.50% |
| 57 | 4.25% | 20.00% | 3.75% | 3.75% |
| 58 | 4.25% | 20.00% | 3.75% | 40.00% |
| 59 | 4.25% | 20.00% | 3.75% | 25.00% |
| 60 | 15.00% | 20.00% | 3.75% | 13.00% |
| 61 | 15.00% | 40.00% | 5.00% | 13.00% |
| 62 | 25.00% | 50.00% | 7.00% | 25.00% |
| 63 | 5.00% | 40.00% | 6.00% | 20.00% |
| 64 | 5.00% | 40.00% | 6.00% | 20.00% |
| 65 | 100.00% | 100.00% | 24.00% | 28.00% |
| 66 | | | 10.00% | 20.00% |
| 67 | | | 10.00% | 20.00% |
| 68 | | | 10.00% | 20.00% |
| 69 | | | 10.00% | 20.00% |
| 70 | | | 100.00% | 100.00% |

### Lump Sum Option at Retirement

| | |
|---|---|
| Partial Lump Sum | 7% for all years |
| Total Lump Sum | 7% for 2007, declining by 0.5% per year until reaching 0.0% |
| No Lump Sum | 86% in 2007, increasing by 0.5% per year until reaching 93.0% |

# **Appendix** *(continued)*

## Demographic Assumptions *(continued)*

### **Purchase of Credited Service at Retirement**

| | |
|---|---|
| Money Match Retirements | 0% |
| Non-Money Match Retirements | 45% |

### **Disability Assumptions**

| Age | Duty Disability | | Ordinary Disability |
|---|---|---|---|
| | **Police & Fire** | **General Service** | |
| Less than age 20 | 0.020% | 0.002% | 0.050% |
| 20-24 | 0.020% | 0.002% | 0.050% |
| 25-29 | 0.020% | 0.002% | 0.050% |
| 30-34 | 0.020% | 0.002% | 0.050% |
| 35-39 | 0.030% | 0.002% | 0.100% |
| 40-44 | 0.030% | 0.004% | 0.150% |
| 45-49 | 0.075% | 0.010% | 0.200% |
| 50-54 | 0.150% | 0.015% | 0.300% |
| 55-59 | 0.150% | 0.015% | 0.300% |
| 60 + | 0.150% | 0.015% | 0.300% |

# **Appendix** *(continued)*

## Demographic Assumptions *(continued)*

### **Termination Assumptions (Tier 1/Tier 2)**

**Termination Assumptions (Tier 1/Tier 2)**

| Age | School District | OHSU | SLGRP General Service Male | SLGRP General Service Female | Independent Employers General Service Male | Independent Employers General Service Female | Police & Fire |
|---|---|---|---|---|---|---|---|
| Less than Age 25 | 8.22% | 13.70% | 9.08% | 9.93% | 7.96% | 10.71% | 5.09% |
| 25 | 8.22% | 13.70% | 9.08% | 9.93% | 7.96% | 10.71% | 5.09% |
| 26 | 7.70% | 12.79% | 8.60% | 9.38% | 7.54% | 10.41% | 4.69% |
| 27 | 7.21% | 11.96% | 8.15% | 8.86% | 7.15% | 10.10% | 4.32% |
| 28 | 6.76% | 11.20% | 7.73% | 8.37% | 6.78% | 9.77% | 3.99% |
| 29 | 6.33% | 10.51% | 7.34% | 7.92% | 6.44% | 9.44% | 3.71% |
| 30 | 5.94% | 9.89% | 6.97% | 7.49% | 6.11% | 9.10% | 3.45% |
| 31 | 5.57% | 9.32% | 6.63% | 7.09% | 5.81% | 8.75% | 3.23% |
| 32 | 5.23% | 8.81% | 6.30% | 6.71% | 5.53% | 8.40% | 3.04% |
| 33 | 4.91% | 8.34% | 6.00% | 6.37% | 5.27% | 8.05% | 2.87% |
| 34 | 4.62% | 7.93% | 5.72% | 6.04% | 5.02% | 7.70% | 2.73% |
| 35 | 4.35% | 7.56% | 5.46% | 5.74% | 4.79% | 7.35% | 2.61% |
| 36 | 4.10% | 7.23% | 5.21% | 5.46% | 4.57% | 7.01% | 2.50% |
| 37 | 3.88% | 6.93% | 4.98% | 5.19% | 4.37% | 6.67% | 2.40% |
| 38 | 3.67% | 6.66% | 4.77% | 4.95% | 4.18% | 6.34% | 2.32% |
| 39 | 3.48% | 6.42% | 4.57% | 4.73% | 4.01% | 6.01% | 2.24% |
| 40 | 3.31% | 6.20% | 4.38% | 4.52% | 3.84% | 5.70% | 2.17% |
| 41 | 3.15% | 5.99% | 4.21% | 4.33% | 3.68% | 5.40% | 2.10% |
| 42 | 3.01% | 5.81% | 4.04% | 4.15% | 3.53% | 5.12% | 2.03% |
| 43 | 2.89% | 5.63% | 3.89% | 3.98% | 3.39% | 4.85% | 1.95% |
| 44 | 2.77% | 5.45% | 3.74% | 3.83% | 3.25% | 4.60% | 1.87% |
| 45 | 2.67% | 5.28% | 3.60% | 3.69% | 3.12% | 4.37% | 1.78% |
| 46 | 2.57% | 5.10% | 3.46% | 3.55% | 2.98% | 4.16% | 1.67% |
| 47 | 2.48% | 4.91% | 3.33% | 3.43% | 2.86% | 3.98% | 1.55% |
| 48 | 2.41% | 4.72% | 3.21% | 3.31% | 2.73% | 3.82% | 1.40% |
| 49 | 2.33% | 4.50% | 3.08% | 3.20% | 2.60% | 3.69% | 1.24% |
| 50 | 2.26% | 4.27% | 2.96% | 3.09% | 2.47% | 3.58% | 1.24% |
| 51 | 2.20% | 4.01% | 2.83% | 2.99% | 2.33% | 3.51% | 1.24% |
| 52 | 2.14% | 3.73% | 2.70% | 2.88% | 2.19% | 3.47% | 1.24% |
| 53 | 2.08% | 3.41% | 2.57% | 2.78% | 2.05% | 3.47% | 1.24% |
| 54 + | 2.02% | 3.05% | 2.44% | 2.68% | 1.90% | 3.43% | 1.24% |

# Appendix *(continued)*

## Demographic Assumptions *(continued)*

### Termination Assumptions (OPSRP)

**Termination Assumptions (OPSRP)**

| Age | School District | | | | OHSU | | | |
|---|---|---|---|---|---|---|---|---|
| | 1st Select | 2nd Select | 3rd Select | | 1st Select | 2nd Select | 3rd Select | |
| | Period | Period | Period | Ultimate | Period | Period | Period | Ultimate |
| 30 | 13.35% | 10.34% | 7.56% | 5.94% | 15.23% | 13.43% | 11.43% | 9.89% |
| 40 | 10.76% | 7.42% | 5.50% | 3.31% | 11.15% | 8.82% | 6.91% | 6.20% |
| 50 | 9.87% | 6.31% | 4.38% | 2.26% | 9.44% | 6.16% | 4.02% | 4.27% |

| Age | Independent Employers General Service Male | | | | Independent Employers General Service Female | | | |
|---|---|---|---|---|---|---|---|---|
| | 1st Select | 2nd Select | 3rd Select | | 1st Select | 2nd Select | 3rd Select | |
| | Period | Period | Period | Ultimate | Period | Period | Period | Ultimate |
| 30 | 18.74% | 14.74% | 8.74% | 6.11% | 18.20% | 15.88% | 12.16% | 9.10% |
| 40 | 16.22% | 12.22% | 6.22% | 3.84% | 13.68% | 11.80% | 8.64% | 5.70% |
| 50 | 13.84% | 9.84% | 3.84% | 2.47% | 11.79% | 9.93% | 6.76% | 3.58% |

| Age | SLGRP General Service Male | | | | SLGRP General Service Female | | | |
|---|---|---|---|---|---|---|---|---|
| | 1st Select | 2nd Select | 3rd Select | | 1st Select | 2nd Select | 3rd Select | |
| | Period | Period | Period | Ultimate | Period | Period | Period | Ultimate |
| 30 | 16.65% | 13.36% | 10.12% | 6.97% | 18.15% | 15.87% | 12.13% | 7.49% |
| 40 | 12.08% | 9.22% | 6.77% | 4.38% | 13.58% | 11.77% | 8.58% | 4.52% |
| 50 | 10.17% | 7.34% | 4.82% | 2.96% | 11.67% | 9.97% | 6.73% | 3.09% |

| Age | Police & Fire | | | |
|---|---|---|---|---|
| | 1st Select | 2nd Select | 3rd Select | |
| | Period | Period | Period | Ultimate |
| 30 | 8.29% | 6.04% | 4.73% | 3.45% |
| 40 | 6.68% | 4.43% | 3.30% | 2.17% |
| 50 | 4.66% | 2.41% | 1.89% | 1.24% |

# Appendix *(continued)*

## Demographic Assumptions *(continued)*

### No Lump Sum Before Retirement

| Age | General Service | Police & Fire |
|---|---|---|
| Less than Age 30 | 77.50% | 60.00% |
| 30 | 77.50% | 60.00% |
| 31 | 77.50% | 60.00% |
| 32 | 77.50% | 60.00% |
| 33 | 77.50% | 60.00% |
| 34 | 77.50% | 60.00% |
| 35 | 77.50% | 60.00% |
| 36 | 77.50% | 60.00% |
| 37 | 77.50% | 60.00% |
| 38 | 77.50% | 60.00% |
| 39 | 77.50% | 60.00% |
| 40 | 77.50% | 64.00% |
| 41 | 77.50% | 68.00% |
| 42 | 77.50% | 72.00% |
| 43 | 77.50% | 76.00% |
| 44 | 77.50% | 80.00% |
| 45 | 77.50% | 84.00% |
| 46 | 80.00% | 88.00% |
| 47 | 82.50% | 92.00% |
| 48 | 85.00% | 96.00% |
| 49 | 87.50% | 100.00% |
| 50 | 90.00% | 100.00% |
| 51 | 92.50% | 100.00% |
| 52 | 95.00% | 100.00% |
| 53 | 97.50% | 100.00% |
| 54 + | 100.00% | 100.00% |

# **Appendix** *(continued)*

## Demographic Assumptions *(continued)*

### **Salary Increase Assumptions**

### **Merit Increases**

| Duration | School District | OHSU | SLGRP General Service | SLGRP Police & Fire | Independent Employers General Service | Independent Employers Police & Fire |
|---|---|---|---|---|---|---|
| 0 | 3.00% | 2.50% | 4.00% | 4.50% | 4.00% | 4.75% |
| 1 | 2.60% | 2.25% | 3.50% | 4.10% | 3.50% | 4.50% |
| 2 | 2.40% | 1.75% | 3.00% | 3.60% | 3.00% | 4.00% |
| 3 | 2.20% | 1.50% | 2.50% | 3.10% | 2.50% | 3.50% |
| 4 | 2.00% | 1.25% | 2.00% | 2.60% | 2.00% | 3.00% |
| 5 | 1.90% | 1.00% | 1.80% | 2.30% | 1.80% | 2.50% |
| 6 | 1.70% | 0.75% | 1.60% | 1.90% | 1.60% | 2.00% |
| 7 | 1.60% | 0.60% | 1.40% | 1.60% | 1.40% | 1.75% |
| 8 | 1.40% | 0.50% | 1.20% | 1.40% | 1.25% | 1.50% |
| 9 | 1.30% | 0.40% | 1.00% | 1.20% | 1.10% | 1.40% |
| 10 | 1.20% | 0.30% | 0.90% | 1.10% | 1.00% | 1.30% |
| 11 | 1.10% | 0.25% | 0.80% | 1.00% | 0.90% | 1.20% |
| 12 | 1.00% | 0.25% | 0.70% | 0.90% | 0.80% | 1.10% |
| 13 | 0.90% | 0.25% | 0.60% | 0.80% | 0.70% | 1.00% |
| 14 | 0.70% | 0.25% | 0.50% | 0.70% | 0.60% | 0.90% |
| 15 | 0.60% | 0.25% | 0.40% | 0.60% | 0.55% | 0.80% |
| 16 | 0.50% | 0.00% | 0.40% | 0.50% | 0.50% | 0.70% |
| 17 | 0.40% | 0.00% | 0.30% | 0.40% | 0.45% | 0.60% |
| 18 | 0.30% | 0.00% | 0.20% | 0.30% | 0.40% | 0.50% |
| 19 | 0.28% | 0.00% | 0.10% | 0.30% | 0.35% | 0.50% |
| 20 | 0.26% | 0.00% | 0.10% | 0.30% | 0.30% | 0.50% |
| 21 | 0.20% | 0.00% | 0.10% | 0.30% | 0.25% | 0.50% |
| 22 | 0.10% | 0.00% | 0.10% | 0.30% | 0.20% | 0.50% |
| 23 | 0.02% | 0.00% | 0.00% | 0.30% | 0.15% | 0.50% |
| 24 | 0.00% | 0.00% | 0.00% | 0.30% | 0.10% | 0.50% |
| 25 | 0.00% | 0.00% | 0.00% | 0.30% | 0.05% | 0.50% |
| 26 | 0.00% | 0.00% | 0.00% | 0.30% | 0.00% | 0.50% |
| 27 | 0.00% | 0.00% | 0.00% | 0.30% | 0.00% | 0.50% |
| 28 | 0.00% | 0.00% | 0.00% | 0.30% | 0.00% | 0.50% |
| 29 | 0.00% | 0.00% | 0.00% | 0.30% | 0.00% | 0.50% |
| 30 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |

# **Appendix** *(continued)*

## Demographic Assumptions *(continued)*

### **Unused Sick Leave**

| **Actives** | |
| --- | --- |
| State GS Male | 5.75% |
| State GS Female | 4.75% |
| School District Male | 7.25% |
| School District Female | 6.75% |
| Local GS Male | 3.50% |
| Local GS Female | 3.00% |
| State P&F | 8.75% |
| Local P&F | 8.75% |
| **Dormants** | 3.50% |

### **Retiree Healthcare Assumptions**

Retiree Healthcare Participation

| RHIPA | 11% |
| --- | --- |
| RHIA | |
| ▪   Healthy Retired | 50% |
| ▪   Disabled Retired | 25% |

# MERCER

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