MERCER

2010 EXPERIENCE STUDY
OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

SEPTEMBER 21, 2011

September 21, 2011

Board of Trustees
Oregon Public Employees Retirement System

Subject: 2010 Experience Study – Oregon Public Employees Retirement System
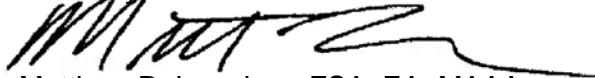
Dear Members of the Board:

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

This experience study report has been prepared exclusively for the Oregon Public Employees Retirement System (PERS) and the PERS Board of Trustees (Board). **The study specifies the actuarial methods and assumptions approved by the Board that will be used in the December 31, 2010 and 2011 actuarial valuations of PERS.** This study may not be used or relied upon by any other party or for any other purpose; Mercer is not responsible for the consequences of any such unauthorized use.
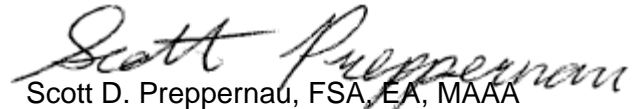
Except where otherwise noted, the analysis in this study was based on data for the experience period from January 1, 2007, to December 31, 2010, as provided by PERS. PERS is solely responsible for the validity, accuracy and comprehensiveness of this information; the results of our analysis can be expected to differ and may need to be revised if the underlying data supplied is incomplete or inaccurate.

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 collectively meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this experience study report.

Sincerely,
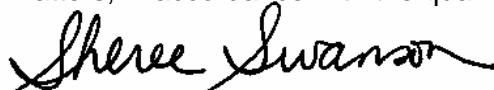
Matthew R. Larrabee, FSA, EA, MAAA   Scott D. Preppernau, FSA, EA, MAAA

The undersigned actuary has reviewed the assumptions related to the health care cost trend rates for the RHIPA program, and hereby affirms her qualification to render opinions in such matters, in accordance with the qualification standards of the American Academy of Actuaries.

Sheree L. Swanson, ASA, MAAA

AYY/MRL/SDP/SLS/cj/sls/sdp/mrl/gjw

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 may be imposed on the taxpayer.

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Executive Summary

This experience study report has been prepared exclusively for the Oregon Public Employees Retirement System (PERS) and the PERS Board of Trustees (Board) in order to analyze the system's experience from January 1, 2007, through December 31, 2010, and to specify actuarial methods and assumptions to be used in the December 31, 2010 and 2011 actuarial valuations of PERS.

The results of our analysis were presented to the Board on May 26, 2011 and July 29, 2011. The Board adopted the following method and assumption changes on July 29, 2011:

Actuarial Methods	• Align the amortization period for any newly established side accounts or transition liability/surplus amounts with the amortization period for the most recently established Tier 1/Tier 2 amortization base. • Do not exclude the Tier 1 Rate Guarantee Reserve (RGR) from valuation assets when the RGR is negative (i.e., when the RGR is a deficit reserve).
Allocation Procedures	• When allocating accrued liability for active members who have earned service with multiple PERS employers, base 60% of the allocation on service with each employer (90% for police & fire members) and base the rest on member account balance with each employer
Economic Assumptions	• Set the variable account rate of return assumption at 8.25%, so it is 25 basis points greater than assumed rate of return on regular accounts.
Demographic Assumptions	• Adjust the healthy mortality assumption for most groups to reflect statistically significant recent experience • Adjust retirement rates for most groups modestly to more closely align with recent and expected future experience • Lower the merit salary increase assumption for non-police & fire members • Establish separate long-term pre-retirement termination of employment assumptions for the Tier 1/Tier 2 and OPSRP member groups • Eliminate the assumption that a portion of Tier 1/Tier 2 members withdraw their account balances at pre-retirement termination of employment • Slightly lower assumed rates of non-duty disability • Increase percentage of Tier 1/Tier 2 members assumed to purchase credited service • Decrease the Tier 1 unused vacation cash out assumption for all groups • Adjust the Tier 1/Tier 2 unused sick leave assumption for most groups • Increase the participation assumption for the RHIA and RHIPA retiree healthcare programs

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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. The following Board objectives were considered in developing the 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

The actuarial methods used for the December 31, 2009 actuarial valuation and the changes adopted for the December 31, 2010 and 2011 actuarial valuations are shown in the table below.

Method	December 31, 2009 Valuation	December 31, 2010 and 2011 Valuations
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	• Regular UAL – Closed amortization from the first rate setting valuation in which experience is recognized
	  – Tier 1/Tier 2 – 20 years
	  – OPSRP – 16 Years
	  – RHIA/RHIPA – 10 years
	• Newly established side accounts – Period ending 12/31/2027
	• Newly established transition liabilities or surpluses – Period ending 12/31/2027
		• Regular UAL – No change
		• Newly established side accounts – Aligned with the new Tier 1/Tier 2 base from the most recent rate-setting valuation
		• Newly established transition liabilities or surpluses – 18 years from the date joining the SLGRP (State & Local Government Rate Pool)

Asset valuation method	Market value	No change

Actuarial Methods and Allocation Procedures *(continued)*

Method	December 31, 2009 Valuation	December 31, 2010 and 2011 Valuations
Exclusion of reserves from valuation assets	Contingency Reserve, Capital Preservation Reserve, and Tier 1 Rate Guarantee Reserve (RGR) excluded from valuation assets	No change, except RGR will not be excluded from valuation assets when RGR is negative (i.e., when the RGR is a deficit reserve)
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 excluding side accounts falls below 70% or increases above 130%. If the funded percentage excluding side accounts is between 70% and 80% or between 120% and 130%, the size of the rate collar is increased on a graded scale. Exclude RHIA and RHIPA (retiree medical) rates from the rate collar calculation.	No change
Liability allocation for actives with several employers	• Allocate Actuarial Accrued Liability 50% (15% for police & fire) based on account balance with each employer and 50% (85% for police & fire) based on service with each employer	Change allocation to 40% (10% for police & fire) based on account balance and 60% (90% for police & fire) based on service with each employer.
	• Allocate Normal Cost to current employer	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 allocate costs to past, current or future years and, thus, primarily affects the timing of cost recognition.

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 estimated economic value of benefits earned in the next year based on the adopted investment return assumption, while recognizing that additional accruals under the Money Match formula have ceased. The actuarial accrued liability represents the estimated economic present value of benefits earned based on service to date and projected future compensation and projected interest credits on member accounts. 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 more 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.

The UAL is currently amortized over the following closed periods from the first rate-setting valuation in which the experience is recognized:

- Tier 1/Tier 2 – 20 years

- OPSRP – 16 years

- RHIA/RHIPA – 10 years

We recommend no change to the UAL amortization method or periods.

Historically, side accounts and transition liabilities/surpluses have been amortized over the period ending December 31, 2027. In valuations through December 31, 2007, this amortization period has exactly matched the amortization period for the Tier 1/Tier 2 regular UAL; however, this is no longer the case, since the Tier 1/Tier 2 regular UAL is now amortized in multiple pieces over a 20-year period from the time the gain/loss is first recognized.

Furthermore, by amortizing new side accounts and transition liabilities established in the future to the same fixed date, the amortization period under the current procedures will become progressively shorter. All else equal, a shorter amortization period will mean that the investment horizon for employers who create a side account backed by a pension obligation bond will be reduced, and the rate adjustment for a given level of transition liability or surplus will be more significant, leading to a larger change in the net employer rates when the amortization period expires.

To better match the amortization periods for new side accounts and new transition liabilities with the amortization of the Tier 1/Tier 2 regular UAL and to avoid issues related to a shortening amortization period, we recommend establishing amortization procedures not tied to a fixed date:

Actuarial Methods and Allocation Procedures *(continued)*

- Newly established side accounts would be amortized over the same period as the new Tier 1/Tier 2 UAL base from the most recent rate-setting valuation. For example, a side account created in July 2011 would be amortized to 12/31/2029, aligned with the Tier 1/Tier 2 UAL base created in the 12/31/2009 valuation.

- New transition liabilities/surpluses would be amortized over the 18 year period beginning when the employer joins the SLGRP. This amortization period would be aligned with the last Tier 1/Tier 2 amortization base established as an independent employer.

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 and UAL. Market value provides more transparency to members and other interested parties regarding the funded status of the plan. Instead of smoothing assets, a rate collar method (described below) is used to smooth contribution rates.

We recommend no change to the asset valuation method.

Excluded Reserves

Statute provides that the Board may establish Contingency and Capital Preservation reserve accounts to mitigate gains and losses of invested capital and other contingencies, including certain legal expenses or judgments. In addition, statute requires the establishment and maintenance of a Rate Guarantee or Deficit reserve to fund earnings crediting to Tier 1 member regular accounts when actual earnings are below the investment return assumption selected by the Board. The Contingency, Capital Preservation and Rate Guarantee or Deficit reserves were excluded from the valuation assets used for employer rate-setting calculations in the December 31, 2009 valuation.

We recommend no change to the treatment of the Contingency and Capital Preservation reserves.

The Rate Guarantee Reserve (RGR) has been negative (in deficit status) since the 12/31/2008 valuation. All else being equal, excluding a negative reserve increases the level of valuation assets used in employer rate-setting calculations. In essence, this occurs because subtracting a negative amount is mathematically equivalent to adding a positive amount of the same magnitude. If the negative reserve was larger in absolute value than the sum of the other reserves, this approach would lead to the valuation assets being larger than the market value of assets.

If the RGR remains in deficit for five years, action is required to restore the reserve. The rationale for continuing to exclude the reserve when it is in deficit is that continued exclusion could avoid the potential for double charging for reserve restoration if a separate collection method is established. However, given the current lack of clarity regarding the nature of such a collection method, we recommended that the Board re-assess the treatment of the RGR for upcoming valuations. After discussion, the Board decided to only exclude the RGR from assets when it is in positive surplus position, and to not treat a negative RGR as an asset when it is in deficit status.

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 "base" Tier 1/Tier 2 contribution rate (i.e, the rate before contemplation of side account rate offsets or rate adjustments for any pre-pooled obligations) to the greater of 20 percent of the current rate or 300 basis

Actuarial Methods and Allocation Procedures *(continued)*

points. If the funded status excluding side accounts is less than 70 percent or greater than 130 percent, the size of the rate collar is doubled. If the funded percentage excluding side accounts is between 70% and 80% or between 120% and 130%, the size of the rate collar is increased on a graded scale. The rate collar is applied for each employer (or rate pool) prior to any adjustments to the employer contribution rate for side accounts, transition liabilities, or pre-SLGRP pooled liabilities. The rate collar only applies to employer contribution rates for pension benefits. The effect of any significant benefit changes adopted by the Legislature is applied to the base contribution rate before determining the collar. Rates attributable to RHIA and RHIPA (retiree medical) are not subject to the collar.

Liability Allocation for Actives with Several Employers

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 should 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 the percent of final average pay Full Formula approach, the cost is allocated in proportion to the service attributable to each employer.

In the period prior to and shortly after system reform, the vast majority of retirement benefits were calculated under Money Match, so the member liability in valuations prior to December 31, 2006 had been allocated in proportion to the member's account balance attributable to each employer. With no new member contributions to Tier 1/Tier 2, however, this procedure means 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 was warranted.

Effective with the December 31, 2006 valuation, a change was made to allocate a member's actuarial accrued liability among employers based on a weighted average of the Money Match methodology, which utilizes account balance, and the Full Formula methodology, which utilizes service. The methodologies were weighted according to the percentage of the system-wide actuarial accrued liability for new retirements projected to be attributable to Money Match and Full Formula, respectively, as of the next rate-setting valuation. For the December 31, 2008 and December 31, 2009 valuations, the Money Match method was weighted 50 percent for general service members and 15 percent for police & fire members.

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

December 31,	General Service	Police & Fire
2009	46%	13%
2010	43%	11%
2011	40%	9%
2012	37%	8%
2013	34%	6%

Actuarial Methods and Allocation Procedures *(continued)*

Since the next rate-setting valuation is the December 31, 2011 valuation, we recommend the Money Match method be weighted 40 percent for general service members and 10 percent for police & fire members. This weighting will continue to 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, 2009 actuarial valuation and those adopted for the December 31, 2010 and 2011 actuarial valuations are shown below:

Assumption	December 31, 2009 Valuation	December 31, 2010 and 2011 Valuations
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%	8.25%
OPSRP administrative expenses	$6.6 million/year	No change
Health cost trend rates		
• 2011 trend rate	7.00%	No change
• Ultimate trend rate	4.50%	No change
• Year reaching ultimate trend	2029	No change

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.

Economic Assumptions *(continued)*

Historical CPI-U
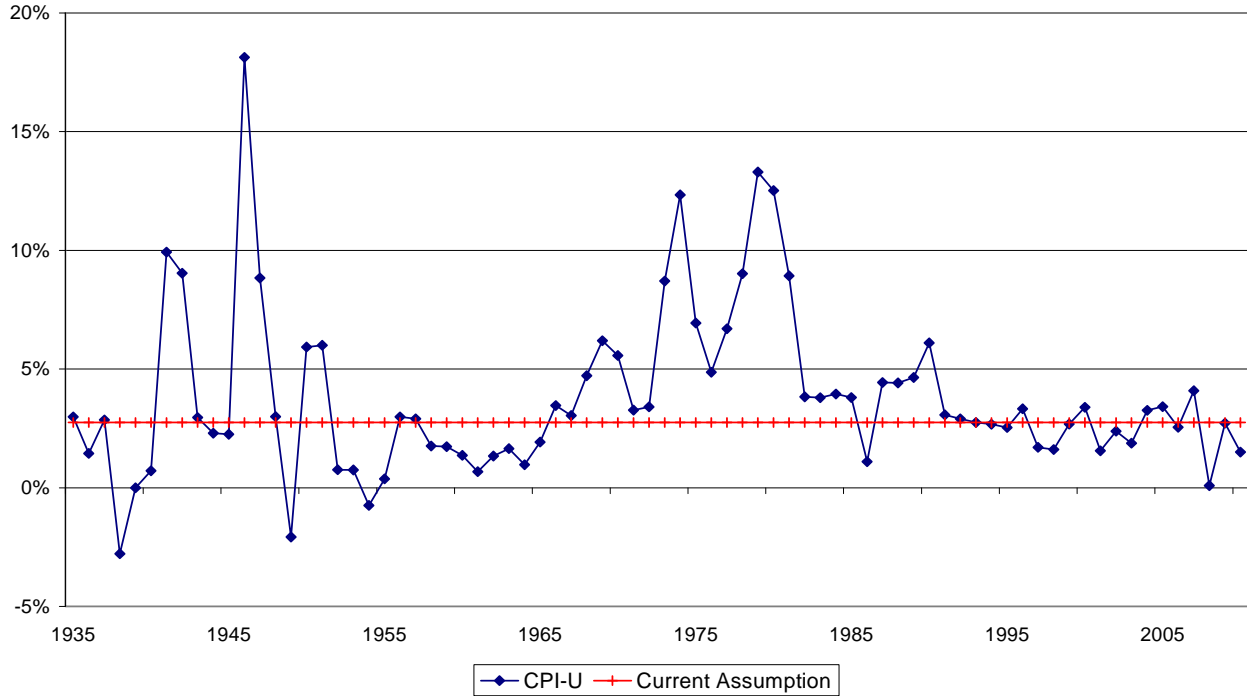
In selecting an appropriate inflation assumption, we consider both historical data and the breakeven inflation rates inherent in current long-term Treasury Inflation Protection Securities (TIPS). The chart above shows the annual inflation rate for the years ending December 31 from 1935 through 2010 as reported by the Bureau of Labor Statistics. The mean and median annual rates over this period are 3.80 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. With the development of a TIPS market, we can calculate an estimated breakeven inflation rate by comparing yields on regular Treasury securities to the yields on TIPS. The table below shows yields as of December 31, 2010, for 10-year and 30-year Treasury bonds and TIPS.

As of 12/31/2010	10-Year	30-Year
Treasury Yield	3.30%	4.34%
TIPS Yield	1.00%	1.86%
Breakeven Inflation	**2.30%**	**2.48%**

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.

Economic Assumptions *(continued)*

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 an average of 2.0 percent inflation over the period 2011-2021.

Based on the information shown above, our best-estimate range for the inflation assumption is from 1.50 percent to 3.50 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
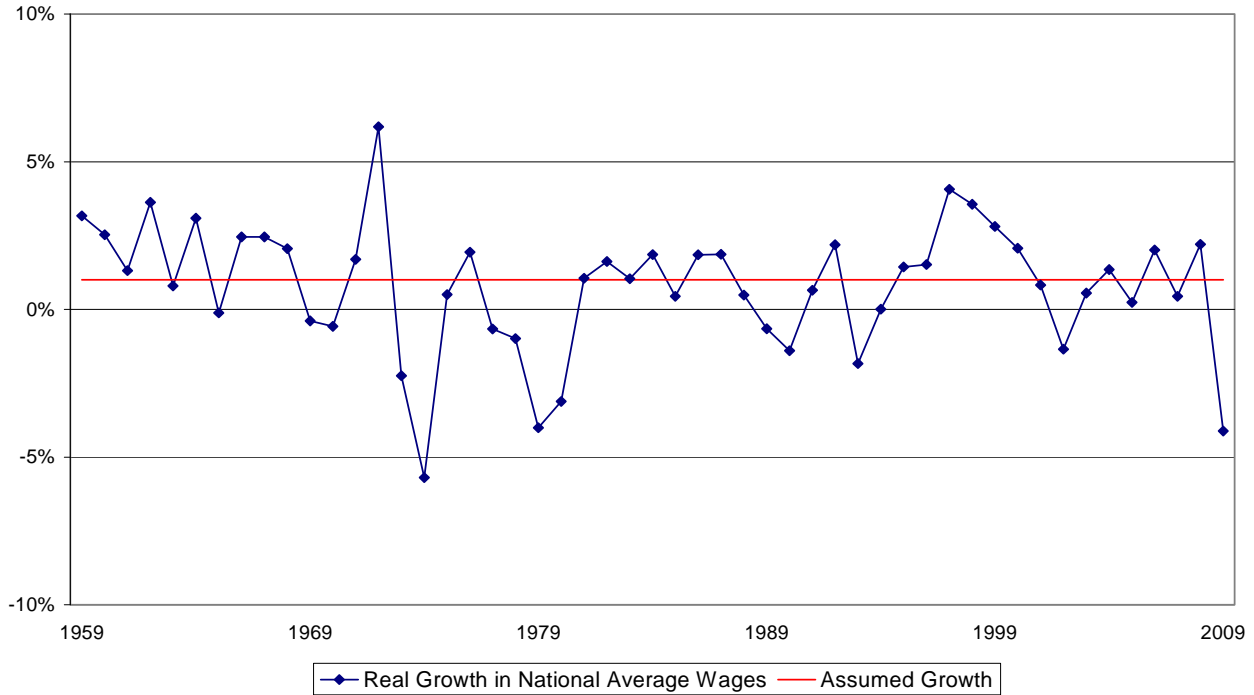
While the change in any one year has been volatile, the change over longer periods of time is more stable as shown in the table below. However, the significant outlier result of a 4.9% productivity decrease in the most recent year available (measuring change in national average wages from 2008 to 2009) has a strong downward impact on the trailing averages shown in the table below. For example, the 10 year trailing average ending one year earlier, on December 31, 2008, is 1.11 percent.

Length of Period Ending December 31, 2009	Average Real Growth in National Average Wages
10 years	0.41%
20 years	0.84%
30 years	0.77%
40 years	0.47%
50 years	0.73%

We also considered the Social Security Administration's current intermediate wage growth assumption of 1.2 percent in our analysis.

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.

Economic Assumptions *(continued)*

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 projected 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.

To provide some perspective on this assumption, the chart below shows the assumptions used by the 120 large public sector systems in NASRA's survey. The current Oregon PERS assumption of 8.0% is also the median and most common assumption in the survey.

**Distribution of Investment
Return Assumptions**
2010 NASRA Survey Data
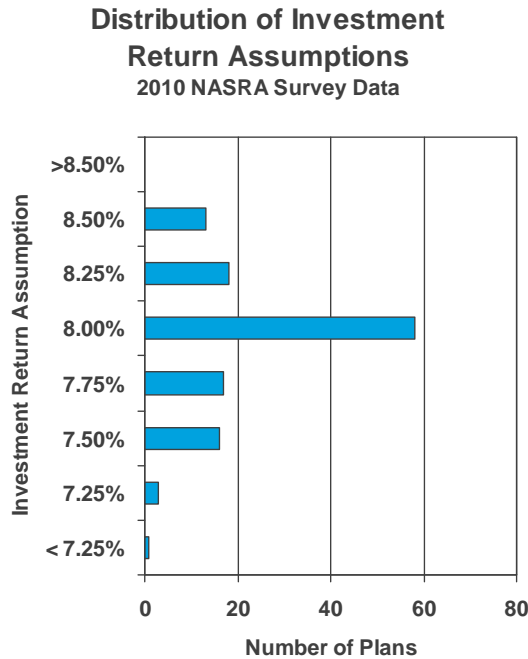
Economic Assumptions *(continued)*

Regular Accounts

Based on the Oregon Investment Council's Statement of Investment Objectives and Policy Framework for the Oregon Public Employees Retirement Fund revised as of April 27, 2011, we understand the target asset allocation adopted by the OIC is as follows:

Target Asset Allocation
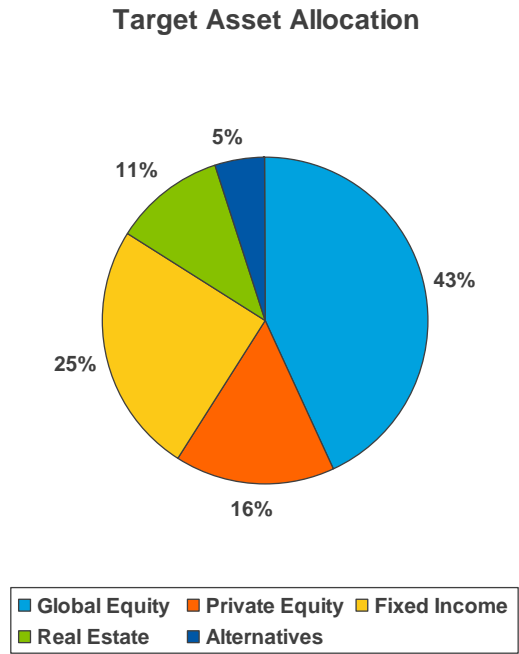
To develop an analytical basis for Board's selection of the investment return assumption, we use Mercer Investment Consulting's long-term return assumptions for each of the asset classes in which the plan is invested. Each asset class assumption is based on a consistent set of underlying assumptions, including the inflation assumption. These assumptions are not based on historical returns, but instead are based on a forward-looking economic model. 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
Global Equity	43%	8.33%	10.00%	19.4%
Private Equity	16%	9.17%	13.40%	31.9%
Fixed Income	25%	5.06%	5.22%	5.8%
Real Estate	11%	7.11%	8.20%	15.5%
Alternatives	5%	7.42%	8.00%	11.2%
Portfolio – Gross of Expenses	100%	8.13%	8.70%	14.4%
Portfolio – Net of Expenses		**7.88%**	**8.80%**	**14.4%**

Based on capital market expectations developed by Mercer Investment Consulting.

Economic Assumptions *(continued)*

In addition, we compared the expected return to the range of returns developed using Mercer's Portfolio Return Calculator and the capital market assumptions of both Mercer Investment Consulting and Strategic Investment Solutions (SIS), the OIC's investment consultant. Returns shown below are net of administrative and passive investment expenses. We assume that expenses incurred for active management are offset by additional returns gained from active management. The table below compares the distribution of expected annualized returns over 20 years for the Regular Account based on Mercer's and SIS' capital market assumptions.

Percentile	Mercer	SIS
25th	5.74%	6.29%
45th	7.48%	7.81%
50th	7.88%	8.16%
55th	8.28%	8.51%
75th	10.03%	10.03%

The expected annualized return percentiles shown above do not include any upward adjustment for the potential value of active fund management. SIS expects the fund to earn additional long-term return due to the value of active management. Thus, after adjusting for any additional expected returns due to active management, SIS would anticipate median returns in excess of those shown in the 50th percentile of the table above.

Based on Mercer's capital market outlook, any selected assumptions between 7.5% and 8.25% would fall in the reasonable range. Before any potential active management adjustments, the reasonable range based on the SIS capital market outlook would be slightly higher. After discussion, the Board elected to maintain the current 8.0 percent return assumption.

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
Global Equity	100%	8.33%	10.00%	19.4%
Portfolio – Gross of Expenses	100%	8.33%	10.00%	19.4%
Portfolio – Net of Expenses	**100%**	**8.07%**	**9.75%**	**19.4%**

The variable account is invested entirely in Global 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 slightly higher than 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 recommend setting this assumption 25 basis points higher than the regular account return assumption. With the Board's decision to assume 8.0 percent return on the regular account, this produces an 8.25 percent return assumption for the variable account.

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 relatively new OPSRP program are significant in comparison to OPSRP assets. As such, the December 31, 2009 valuation included an explicit administrative expense assumption for the OPSRP program of $6.6 million.

An analysis of regular administrative expenses for the period from July 2009 to June 2011 indicates that $6.6 million is still reasonable for assumed regular administrative expenses. A summary of our recommendation is below.

Valuation Year	Current		Recommended	
	Dollar Amount	Percentage of Projected Payroll	Dollar Amount	Percentage of Projected Payroll
2008	$6.6	0.35%	N/A	N/A
2009	$6.6	0.28%	N/A	N/A
2010	$6.6	0.23%	$6.6	0.23%
2011	$6.6	0.20%	$6.6	0.20%

Economic Assumptions *(continued)*

Health Cost Trend Rates

Health cost trend rates are used to predict increases in the RHIPA subsidy. The subsidy increased 10.3 percent in each of 2010 and 2011, with an average increase of 6.2 percent over the last five years. Mercer's healthcare actuaries expect medical costs to increase 7.0 – 9.0 percent in 2011. We recommend no change to the trend assumption.

Year[1]	December 31, 2009 Valuation	December 31, 2010 and 2011 Valuations
2011	7.0%	7.0%
2012	6.9%	6.9%
2013	6.9%	6.9%
2014	6.9%	6.9%
2015	6.9%	6.9%
2016	6.8%	6.8%
2017	6.8%	6.8%
2018	6.6%	6.6%
2019	6.4%	6.4%
2020	6.2%	6.2%
2021	6.0%	6.0%
2022	5.8%	5.8%
2023	5.6%	5.6%
2024	5.4%	5.4%
2025	5.2%	5.2%
2026	5.0%	5.0%
2027	4.9%	4.9%
2028	4.7%	4.7%
2029+	4.5%	4.5%

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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.*

4

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, 2007 through December 31, 2010, and the current assumptions are those adopted by the Board for the December 31, 2009 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 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:

Demographic Assumptions *(continued)*

Overview *(continued)*
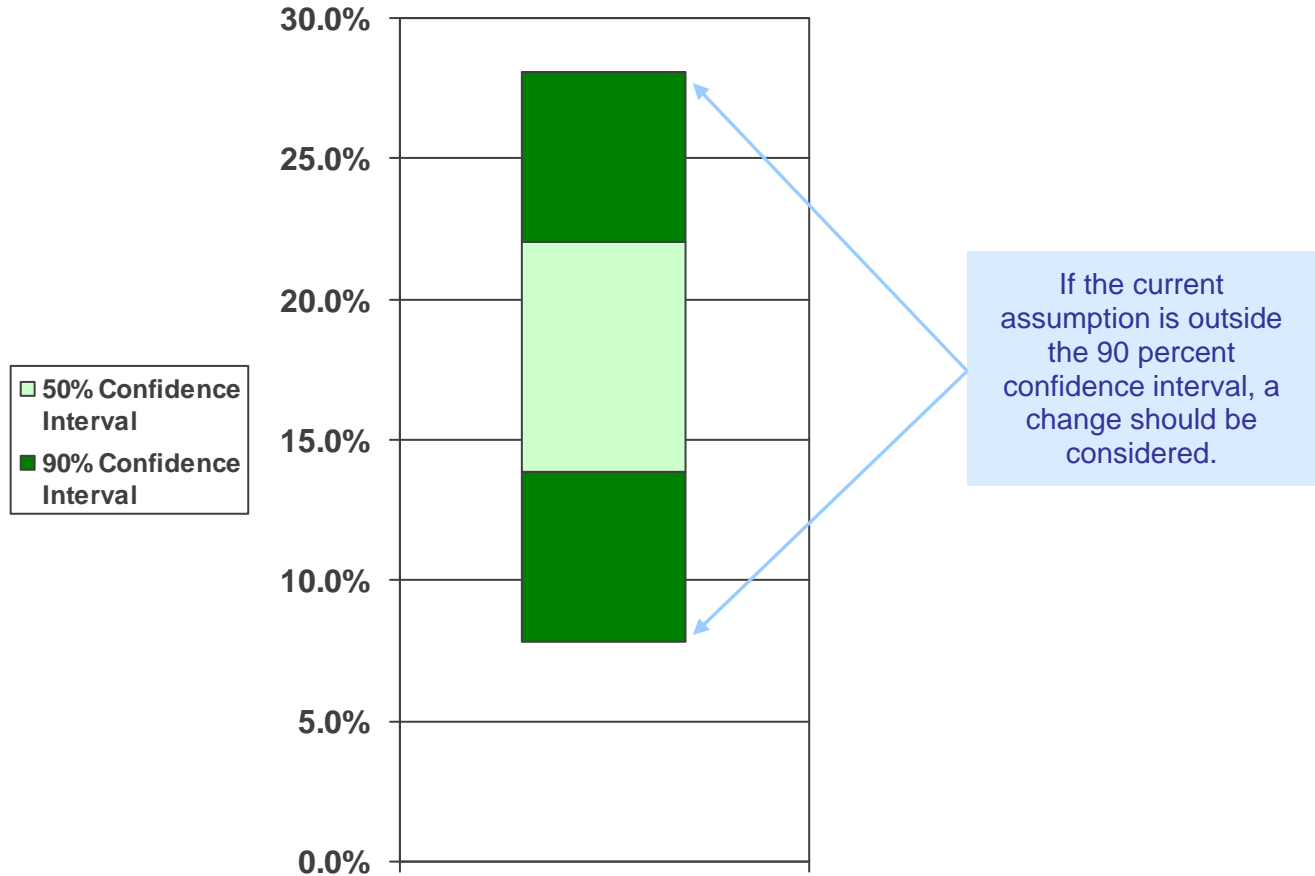
The demographic assumptions used for the December 31, 2009, actuarial valuation and the recommended assumptions for the December 31, 2010, actuarial valuation are shown in detail in the following sections.

A summary of the changes adopted by the Board are as follows:

- Adjust the healthy mortality assumption for most groups to reflect statistically significant recent experience

- Adjust retirement rates for most groups modestly to more closely align with recent and expected future experience

- Lower the merit salary increase assumption for non-police & fire members

- Establish separate long-term pre-retirement termination of employment assumptions for the Tier 1/Tier 2 and OPSRP member groups

- Eliminate the assumption that a portion of Tier 1/Tier 2 members withdraw their account balances at pre-retirement termination of employment

- Slightly lower assumed rates of non-duty disability

Demographic Assumptions *(continued)*

Overview *(continued)*

- Increase percentage of Tier 1/Tier 2 members assumed to purchase credited service

- Decrease the Tier 1 unused vacation cash out assumption for all groups

- Adjust the Tier 1/Tier 2 unused sick leave assumption for most groups

- Increase the participation assumption for the RHIA and RHIPA retiree healthcare programs.

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

Demographic Assumptions *(continued)*

Mortality

Mortality rates are used to project the length of time benefits will be paid to current and future retirees and beneficiaries. The selection of a mortality assumption affects plan liabilities because the estimated 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 and recommended changes are shown below:

Assumption	December 31, 2009 Valuation	Recommended December 31, 2010 and 2011 Valuations
Healthy Annuitant Mortality	**RP2000 <u>Generational</u>, Combined Active/Healthy Annuitant, Sex Distinct**	**No change**
• School District male	White collar, set back 12 months	White collar, set back 18 months
• Other General Service male (and male beneficiary)	White collar, no setback	Blended 25% blue collar, set back 12 months
• Police & Fire male	Blended 33% blue collar, no setback	No change
• School District female	White collar, set back 18 months	White collar, set back 24 months
• Other female (and female beneficiary)	Blended 33% blue collar, no setback	White collar, no setback
Disabled Retiree Mortality	**RP 2000 Static, Combined Active/Healthy Annuitant, No Collar, Sex distinct**	**No change**
• Male	Set forward 60 months, minimum of 2.25%	No change
• Female	Set forward 48 months, minimum of 2.25%	No change
Non-Annuitant Mortality	**Fixed Percentage of Healthy Annuitant Mortality**	**No change**
• School District Male	75%	No change
• School District Female	50%	60%
• Other General Service Male	75%	85%
• Police & Fire Male	70%	No change
• Other Female	50%	No change

Healthy Annuitant 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.

Mortality is expected to continue to decrease in the future, and the resulting increased longevity should be anticipated in the actuarial valuation. For Oregon PERS, this is done through the use of a generational mortality table. A generational mortality table anticipates future improvements in mortality by using a different static mortality table for each year of birth, with the tables for later years of birth assuming lower mortality than the tables for earlier years of birth.

Demographic Assumptions *(continued)*

Mortality *(continued)*

To determine whether the current mortality assumption remains reasonable, we calculated the ratio of actual deaths to expected deaths (A/E ratio) during the experience study period for each of the five groups described above. With a generational mortality table, we target A/E ratios of 100 percent.

	Exposures	Actual Deaths	Current Assumption		Recommended Assumption	
			Expected Deaths	A/E Ratio	Expected Deaths	A/E Ratio
School District male	59,024	1,649	1,718	96%	1,634	101%
Other General Service male	88,837	2,778	2,936	95%	2,776	100%
Police & Fire male	20,685	357	379	94%	379	94%
School District Female	117,027	2,668	2,815	95%	2,677	100%
Other female	113,771	3,356	3,475	97%	3,340	100%

The A/E ratios of each of the five groups is below 100 percent. For four of the five groups (all but the police & fire males), the difference was determined to be statistically significant at the 90 percent confidence level given the number of exposures in the study. For those four groups, changes to the mortality assumption are recommended to bring the A/E ratio closer to 100 percent. We would recommend continued monitoring of the police & fire male mortality assumption in future studies.

Healthy Retiree Mortality
Aggregate Confidence Intervals and Rates
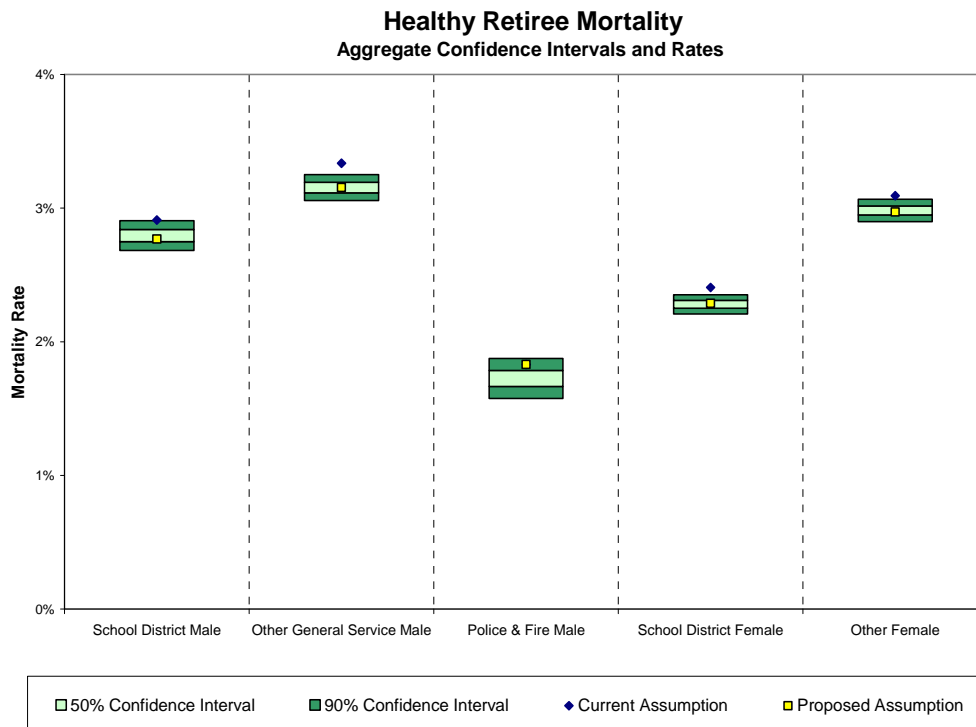
Demographic Assumptions *(continued)*

Mortality *(continued)*

The RP 2000 generational mortality table has a number of adjustments that can be applied to match the mortality rates of Oregon PERS. In the past, we have used a "set back" to adjust the mortality rates. A "set back" of 12 months, for example, treats all members as if they were 12 months younger than they really are when applying the mortality table. In addition to a "set back," we have also applied a collar adjustment as defined in the RP 2000 table. Essentially, a "white collar" adjustment further reduces the rates of mortality while a "blue collar" adjustment increases the rates of mortality. The basic table reflects a blend of approximately 55 percent "white collar" and 45 percent "blue collar." Please note that "white collar" and "blue collar" are used in this context only to describe the adjustments made to the RP 2000 generational mortality table and are not intended to classify any employees as either "blue collar" or "white collar."

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

	December 31, 2009 Valuation	Recommended December 31, 20010 and 2011 Valuations
Basic Table	**RP2000 Generational, Combined Active/Healthy Annuitant, Sex distinct**	**No change**
School District male	White collar, set back 12 months	White collar, set back 18 months
Other General Service male (and male beneficiary)	White collar, no setback	Blended 25% blue collar, set back 12 months
Police & Fire male	Blended 33% blue collar, no setback	No change
School District female	White collar, set back 18 months	White collar, set back 24 months
Other female (and female beneficiary)	Blended 33% blue collar, no setback	White collar, no setback

Disabled Retiree 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. The A/E ratio for the current assumption is in below 100 percent for both male and female mortality. However, the results from each of these groups did not fall outside the 90 percent confidence interval for aggregate mortality rates, given the number of exposures in the study. Because of this, we do not recommend a change in assumption at this time.

	Exposures	Actual Deaths	December 31, 2009 Valuation		Recommended December 31, 2010 and 2009 Valuations	
			Expected Deaths	A/E Ratio	Expected Deaths	A/E Ratio
Male	8,373	334	347	96%	347	96%
Female	9,124	290	308	94%	308	94%

Demographic Assumptions *(continued)*

Mortality *(continued)*

Disabled Retired Mortality
Aggregate Confidence Intervals and Rates

☐ 50% Confidence Interval   ■ 90% Confidence Interval   ◆ Current Assumption   ☐ Proposed Assumption
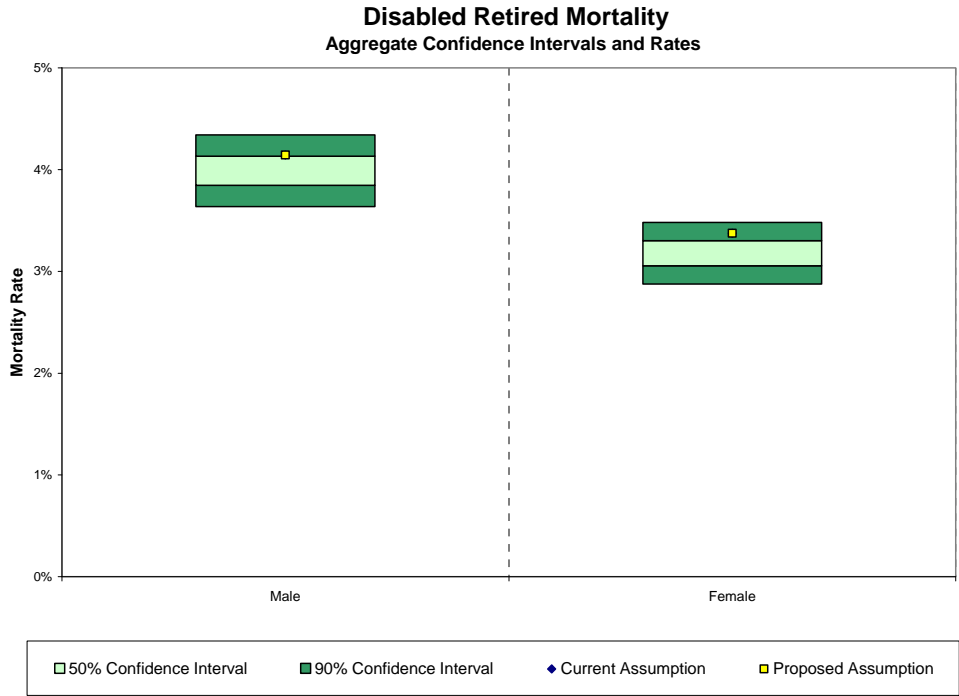
A summary of current and recommended disabled retiree mortality assumptions is shown below:

	December 31, 2009 Valuation	Recommended December 31, 2010 and 2011 Valuations
Basic Table	RP 2000, Combined Active/Healthy Retired, No Collar, Sex Distinct	**No change**
Male	Set forward 60 months, minimum of 2.25%	No change
Female	Set forward 48 months, minimum of 2.25%	No change

Non-Annuitant Mortality

The non-annuitant mortality assumption applies to active members and dormant members (those members who have terminated employment but are vested and entitled to a future benefit), and is a fixed percentage of the healthy annuitant mortality rates. Because the healthy annuitant mortality assumptions have changed, all of the non-annuitant mortality assumptions have also changed. The analysis below compares the current fixed percentages as applied to the new healthy annuitant mortality assumptions to determine if a change also needs to be made in the fixed percentages for each of the groups. A/E ratios for non-annuitants have been targeted around 100 percent.

Demographic Assumptions *(continued)*

Mortality *(continued)*

	Exposures	Actual Deaths	December 31, 2009 Valuation		Recommended December 31, 2010 and 2011 Valuations	
			Expected Deaths	A/E Ratio	Expected Deaths	A/E Ratio
School District male	94,506	133	129	103%	129	103%
School District female	270,852	218	187	117%	224	97%
Other General Service male	201,964	392	346	113%	392	100%
Police & Fire male	49,294	59	53	111%	53	111%
Other female	300,557	295	267	110%	267	110%

With the very limited number of deaths in the experience period, the A/E ratio tends to fluctuate, particularly for police & fire males. For school district female and general service male, observed experience falls outside of the 90 confidence interval and the current assumptions are outside of a 10 percent corridor from the target. As such, we recommend assumption changes for those groups. Although police & fire males are above 110%, the current rates fall within the 90 percent aggregate confidence interval and thus no changes are recommended at this time.

Pre-Retirement Mortality
Aggregate Confidence Intervals and Rates
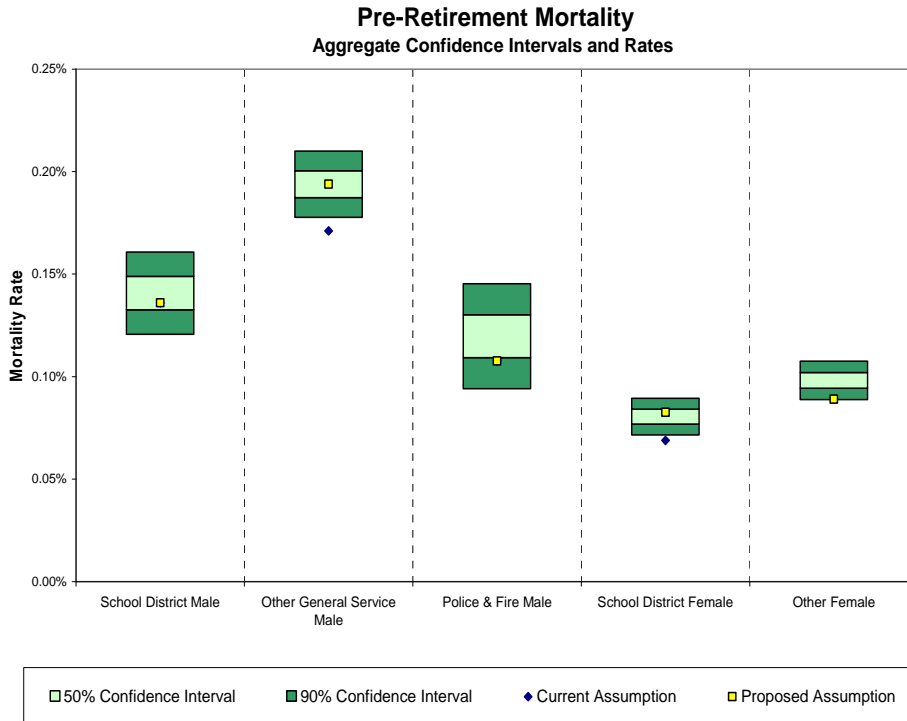
Demographic Assumptions *(continued)*

Mortality *(continued)*

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

	December 31, 2009 Valuation	**Recommended December 31, 2010 and 2011 Valuations**
Basic Assumption	Fixed Percentage of Healthy Annuitant Mortality	No change
School District male	75%	No change
Other General Service male	75%	85%
Police & Fire male	70%	No change
School District female	50%	60%
Other female	50%	No change

Demographic Assumptions *(continued)*

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 length of service, employment category (general service and police & fire), and eligibility for unreduced benefits.

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

Employment Category	Tier	Normal Retirement Age	Early Retirement Age	Unreduced Retirement
General Service	1	58	55	30 years of service
General Service	2	60	55	30 years of service
General Service	OPSRP	65	55	Age 58 with 30 years
Police & Fire	1 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

Structure for Retirement Rates

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

The service band structure anticipates that member retirement decisions will contemplate the amount of the retirement benefit and the affordability of retirement.

School District and General Service Retirement Rates

Members with Less Than 15 Years of Service

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

The following charts show the current assumed rates of retirement, the confidence interval around observed experience and the recommended retirement rates (if different than the current rates) for school district and general service members retiring with less than 15 years of service.

Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

Tier 1/Tier 2 - School Districts
Members with less than 15 Years of Service
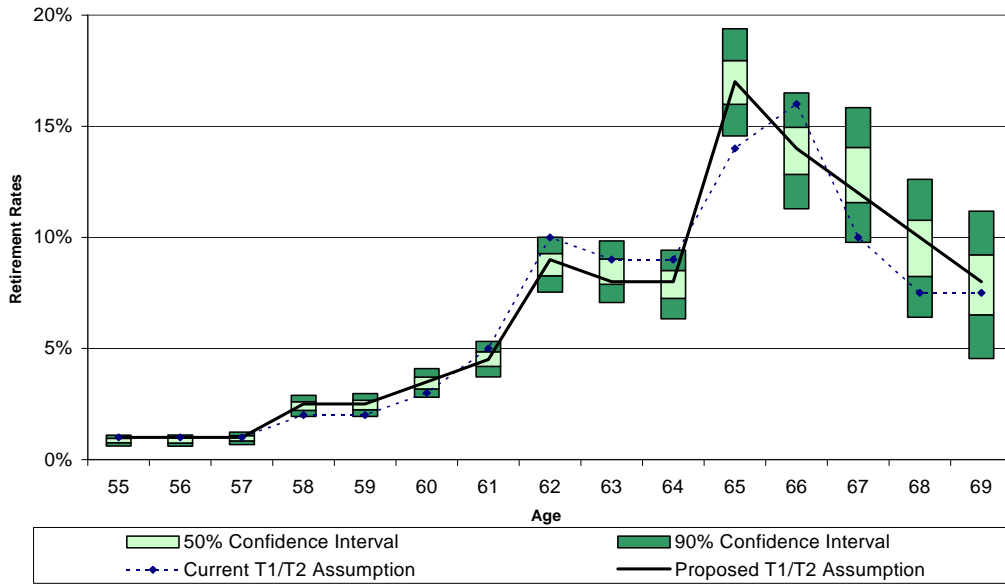
Tier 1/Tier 2 - Other General Service
Members with less than 15 Years of Service
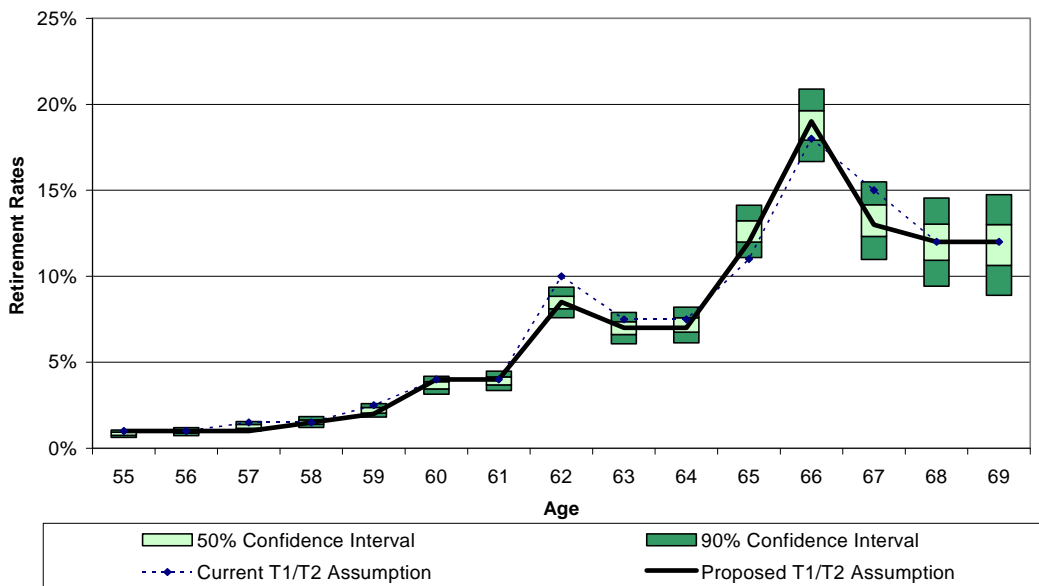
Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*
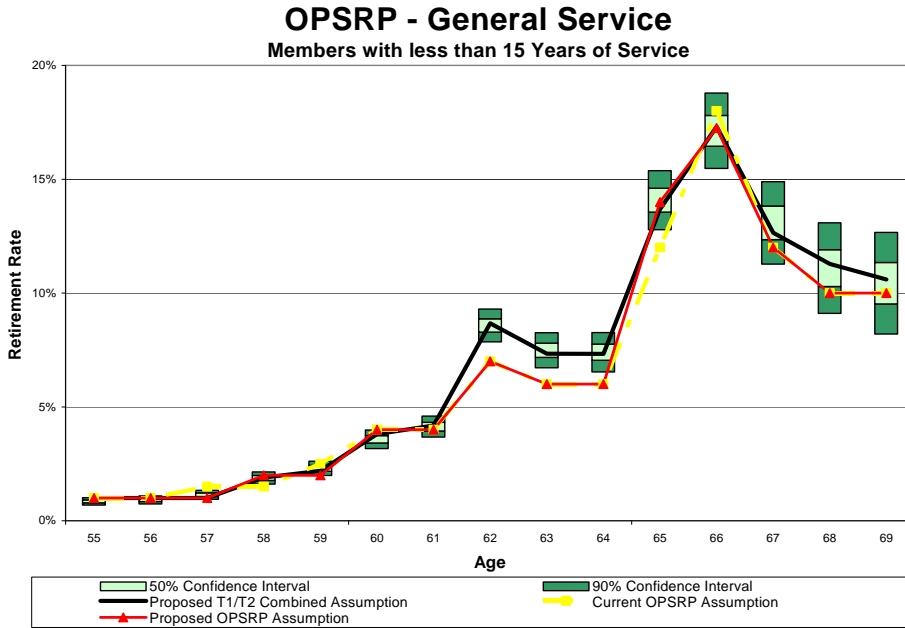
Members with 15 to 30 Years of Service

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

The following charts show the current assumed rates of retirement, the confidence interval around observed experience and the recommended retirement rates (if different than the current rates) for school district and general service members retiring with more than 15 years of service and less than 30 years of service.
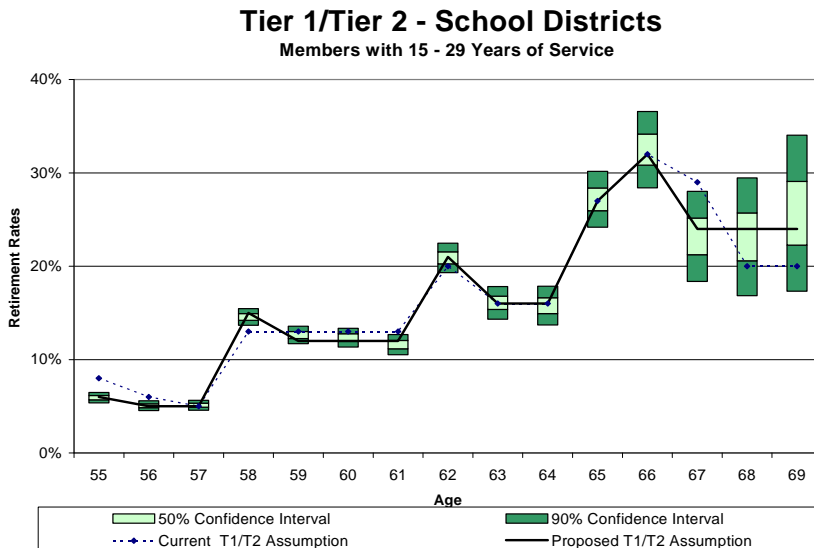
Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

Tier 1/Tier 2 - Other General Service
Members with 15 - 29 Years of Service
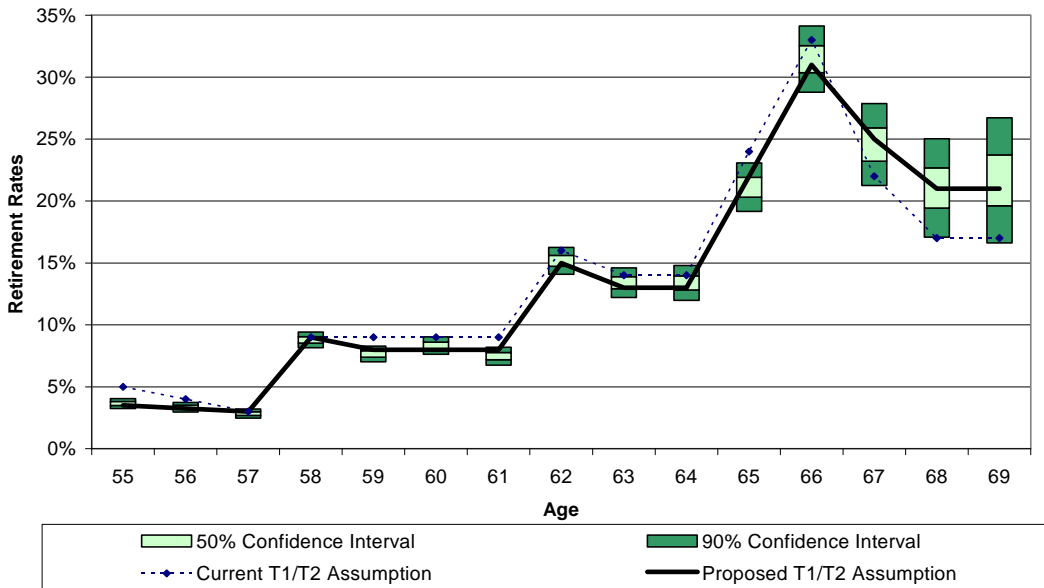
OPSRP - General Service
Members with 15 - 29 Years of Service

2010 EXPERIENCE STUDY

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM
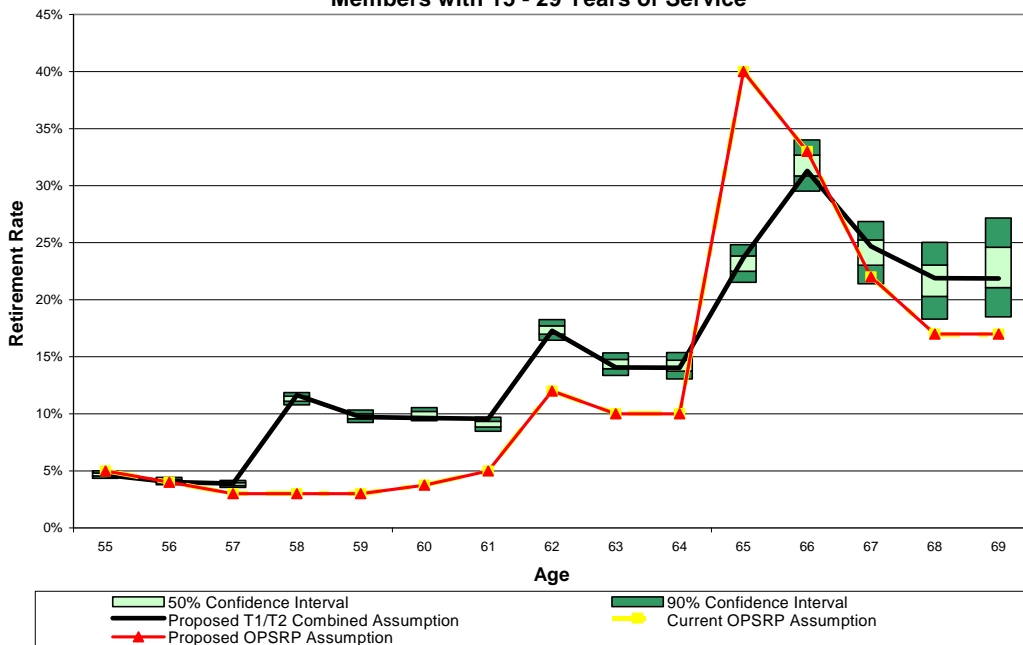
Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

Members with 30 or More Years of Service

The retirement rate assumption for 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 rates is developed for all general service 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 56. 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 members retiring with more than 30 years of service.

Tier 1/Tier 2 - General Service/School District
Members with 30+ Years of Service
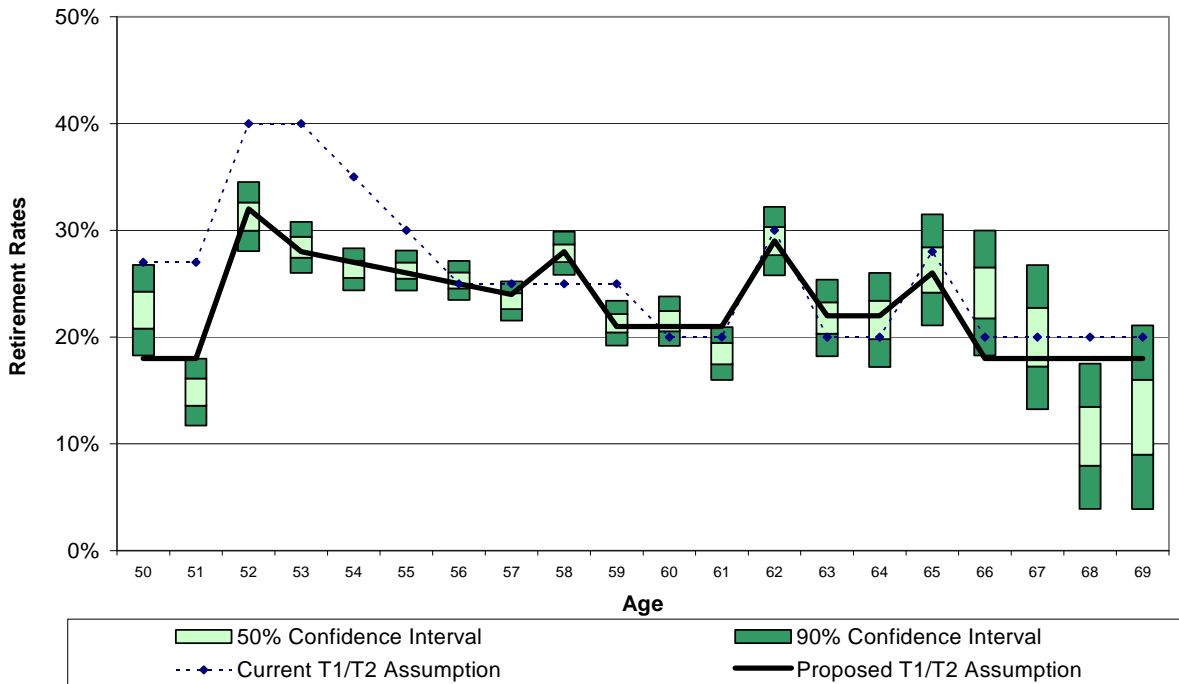
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Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

OPSRP - General Service
Members with 30+ Years of Service
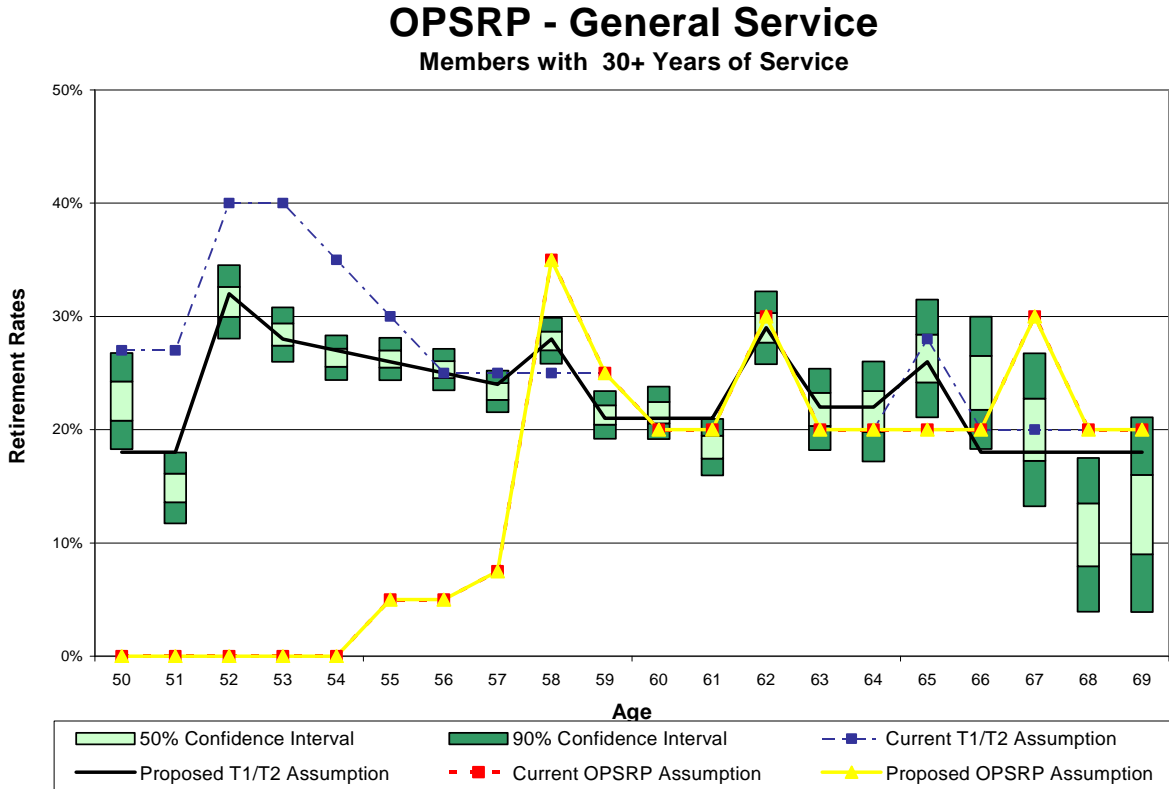
Police & Fire

Members with Less Than 13 Years of Service

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

The following graph shows the current assumed rates of retirement, the confidence interval around observed experience and the recommended retirement rate assumption for police & fire members retiring with less than 13 years of service. We recommend moderate changes to the assumption at several ages.

Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

Police & Fire Members
Members with less than 13 Years of Service
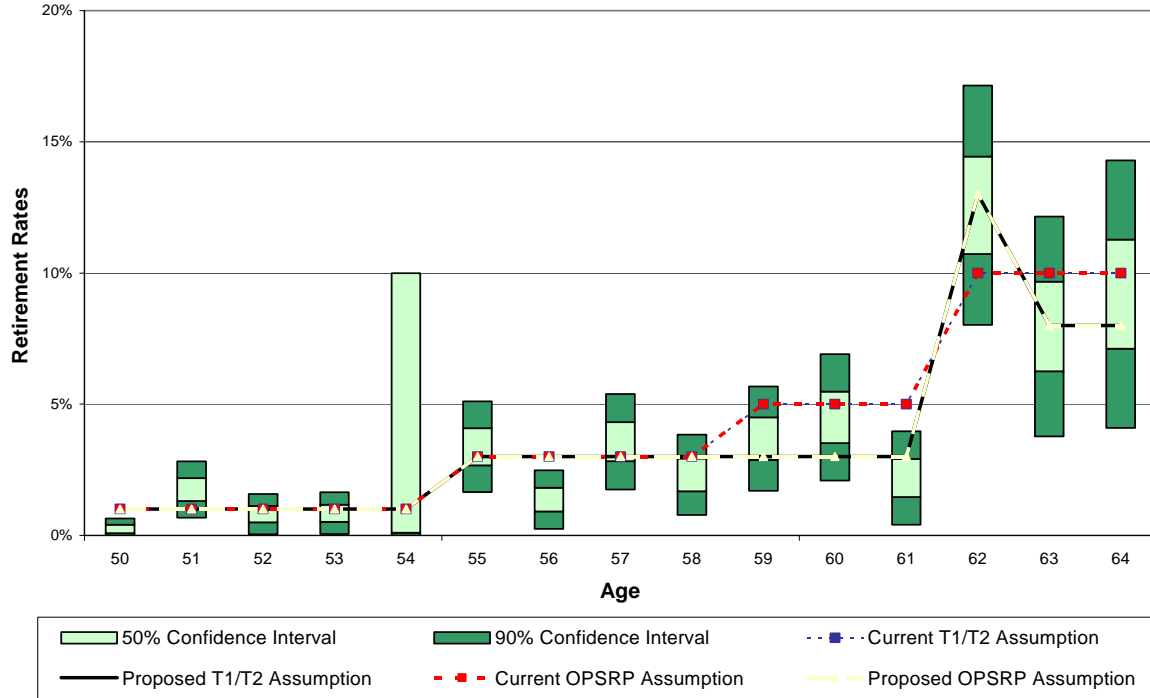
Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

Members with 13 to 24 Years of Service

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

The following 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 between 13 and 24 years of service. At many ages, we recommend reducing the assumption to more closely align with experience.

Police & Fire Members
Members with 13 to 24 Years of Service
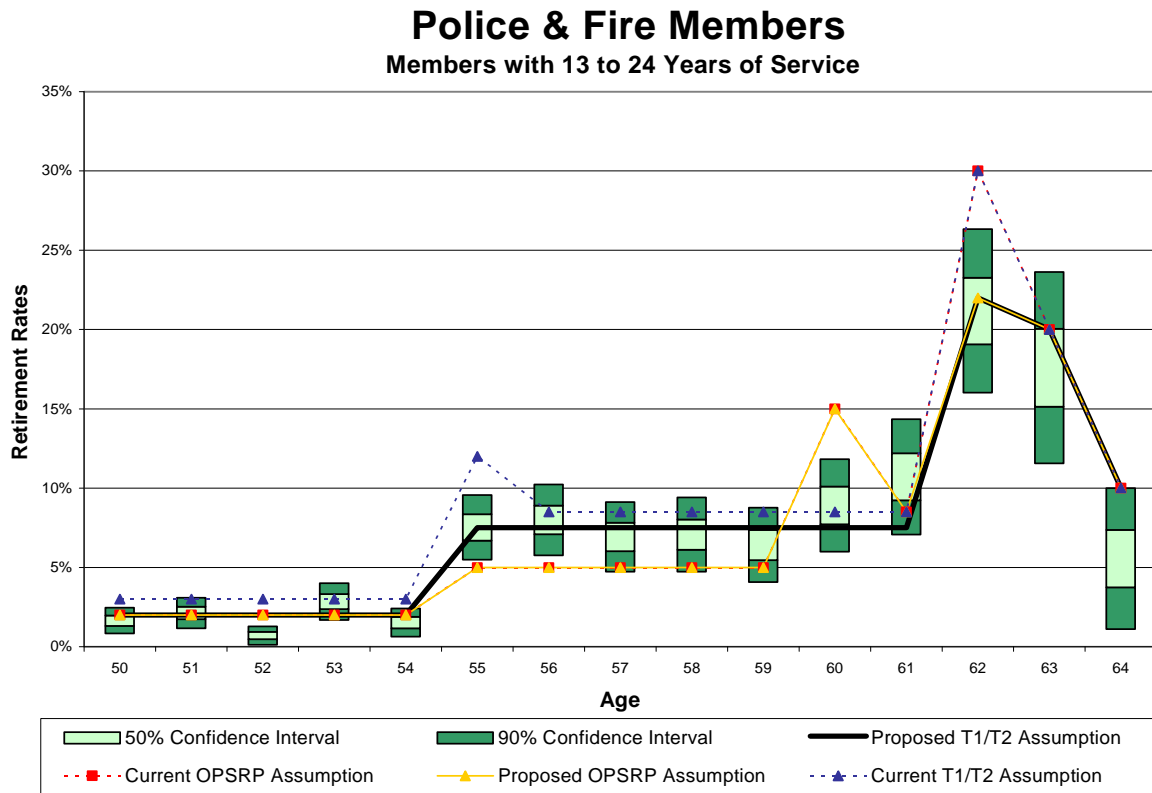
Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

Members with 25 or More Years of Service

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

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 to more closely align with experience.

Police & Fire Members
Members with 25+ Years of Service
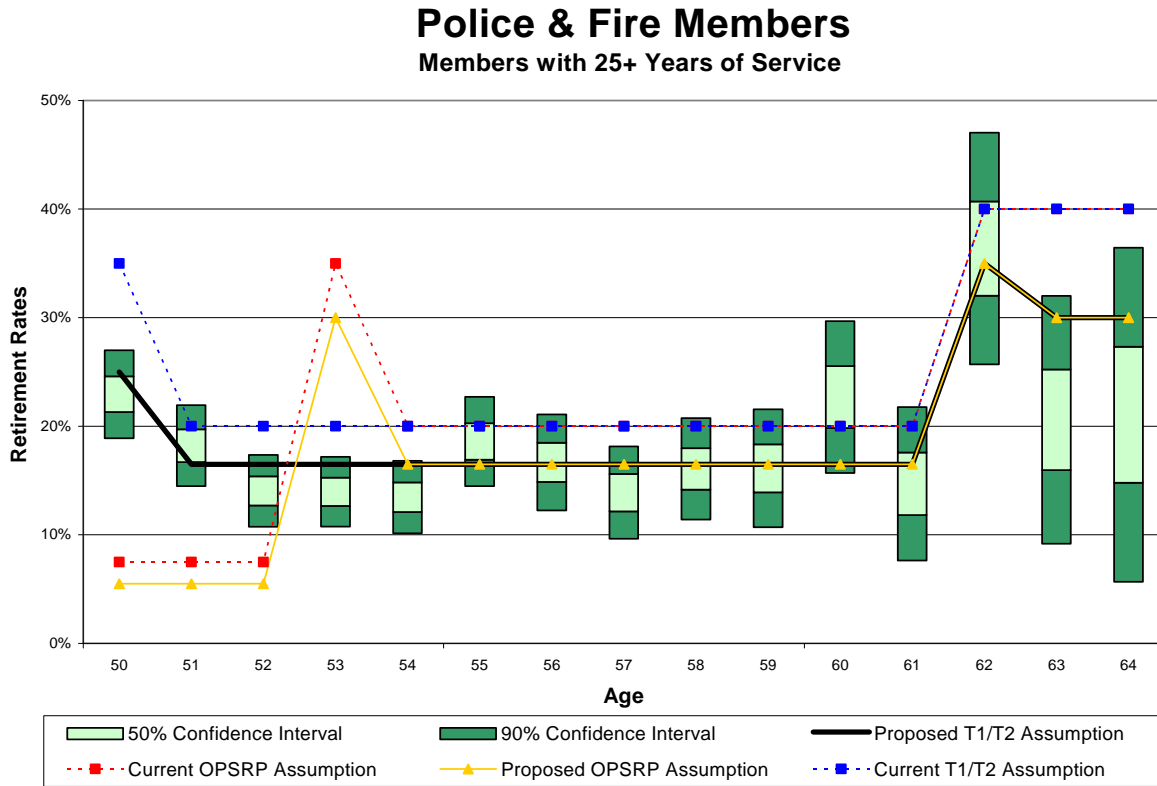
Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

Summary of Recommended Retirement Rates

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

	Tier 1/Tier 2 Recommended December 31, 2010 and 2011 Valuations							
	Police & Fire			**General Service**		**School Districts**		**General Service (Including School Districts)**
Age	**< 13 yrs**	**13-24 yrs**	**25+ yrs**	**<15 yrs**	**15-29 yrs**	**<15 yrs**	**15-29 yrs**	**30+ yrs**
Less than 50								18.0%
50	1.00%	2.00%	25.00%					18.0%
51	1.00%	2.00%	16.50%					18.0%
52	1.00%	2.00%	16.50%					32.0%
53	1.00%	2.00%	16.50%					28.0%
54	1.00%	2.00%	16.50%					27.0%
55	3.00%	7.50%	16.50%	1.00%	3.50%	1.00%	6.00%	26.0%
56	3.00%	7.50%	16.50%	1.00%	3.25%	1.00%	5.00%	25.0%
57	3.00%	7.50%	16.50%	1.00%	3.00%	1.00%	5.00%	24.0%
58	3.00%	7.50%	16.50%	1.50%	9.00%	2.50%	15.00%	28.0%
59	3.00%	7.50%	16.50%	2.00%	8.00%	2.50%	12.00%	21.0%
60	3.00%	7.50%	16.50%	4.00%	8.00%	3.50%	12.00%	21.0%
61	3.00%	7.50%	16.50%	4.00%	8.00%	4.50%	12.00%	21.0%
62	13.00%	22.00%	35.00%	8.50%	15.00%	9.00%	21.00%	29.0%
63	8.00%	20.00%	30.00%	7.00%	13.00%	8.00%	16.00%	22.0%
64	8.00%	10.00%	30.00%	7.00%	13.00%	8.00%	16.00%	22.0%
65	100.00%	100.00%	100.00%	12.00%	22.00%	17.00%	27.00%	26.0%
66				19.00%	31.00%	14.00%	32.00%	18.0%
67				13.00%	25.00%	12.00%	24.00%	18.0%
68				12.00%	21.00%	10.00%	24.00%	18.0%
69				12.00%	21.00%	8.00%	24.00%	18.0%
70				100.00%	100.00%	100.00%	100.00%	100.0%

Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

The following table summarizes our recommended OPSRP retirement rates:

	OPSRP Recommended December 31, 2010 and 2011 Valuations					
	Police & Fire			General Service		
Age	**< 13 yrs**	**13-24 yrs**	**25+ yrs**	**<15 yrs**	**15-29 yrs**	**30+ years**
50	1.00%	2.00%	5.50%			
51	1.00%	2.00%	5.50%			
52	1.00%	2.00%	5.50%			
53	1.00%	2.00%	30.00%			
54	1.00%	2.00%	16.50%			
55	3.00%	5.00%	16.50%	1.00%	5.00%	5.00%
56	3.00%	5.00%	16.50%	1.00%	4.00%	5.00%
57	3.00%	5.00%	16.50%	1.00%	3.00%	7.50%
58	3.00%	5.00%	16.50%	2.00%	3.00%	35.00%
59	3.00%	5.00%	16.50%	2.00%	3.00%	25.00%
60	3.00%	15.00%	16.50%	4.00%	3.75%	20.00%
61	3.00%	8.50%	16.50%	4.00%	5.00%	20.00%
62	13.00%	22.00%	35.00%	7.00%	12.00%	30.00%
63	8.00%	20.00%	30.00%	6.00%	10.00%	20.00%
64	8.00%	10.00%	30.00%	6.00%	10.00%	20.00%
65	100.00%	100.00%	100.00%	14.00%	40.00%	20.00%
66				17.25%	33.00%	20.00%
67				12.00%	22.00%	30.00%
68				10.00%	17.00%	20.00%
69				10.00%	17.00%	20.00%
70				100.00%	100.00%	100.00%

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:

Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

Election at Retirement	Number of Retired Members	Percentage of Retirements	December 31, 2009 Valuation	Recommended December 31, 2010 and 2011 Valuations
Partial Lump Sum	843	5.8%	6.0%	No change
Total Lump Sum				
• 2007	378	9.6%	7.0%	N/A
• 2008	234	6.9%	6.5%	N/A
• 2009	141	3.7%	6.0%	N/A
• 2010	159	6.9%	5.5%	N/A
• 2011	TBD	TBD	5.0%	No change
• 2012	TBD	TBD	4.5%	No change

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

Based on the data shown above, we recommend no change to the partial lump sum assumption of 6.0 percent. We also recommend no change to the total lump sum assumption of 5.0 percent in 2011 decreasing by 0.5 percent per year until reaching 0.0 percent.

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

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.

Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

For Money Match retirements, the purchase of credited service is generally cost-neutral to the system, because the member is depositing both the member and employer contributions. Therefore, in reviewing actual experience, we separated Money Match retirements and non-Money Match retirements. 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	December 31, 2009 Valuation	Recommended December 31, 2010 and 2011 Valuations
Money Match Retirements	3,174	1,149	36%	0%	0%
Non-Money Match Retirements	2,403	1,413	59%	55%	60%

We recommend modestly increasing the assumption of non-Money Match retirements purchasing credited service for the six month waiting period to 60 percent.

Demographic Assumptions *(continued)*

Disability Incidence Assumptions

The Plan provides duty and non-duty disability benefits to members. Members are eligible to receive duty disability benefits if they become disabled as a direct result of a job-related injury or illness, regardless of length of service. Members are eligible for non-duty disability benefits 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

Due to the limited amount of experience data available at some ages, this assumption employs a standard table adjusted to fit within the aggregate confidence interval. Because the current assumed aggregate rates are within the 90 percent confidence interval of the disability rates experienced, we recommend no change to the duty disability incidence assumption for either general service or police & fire members at this time.

Duty Disability Incidence
Aggregate Confidence Intervals and Rates
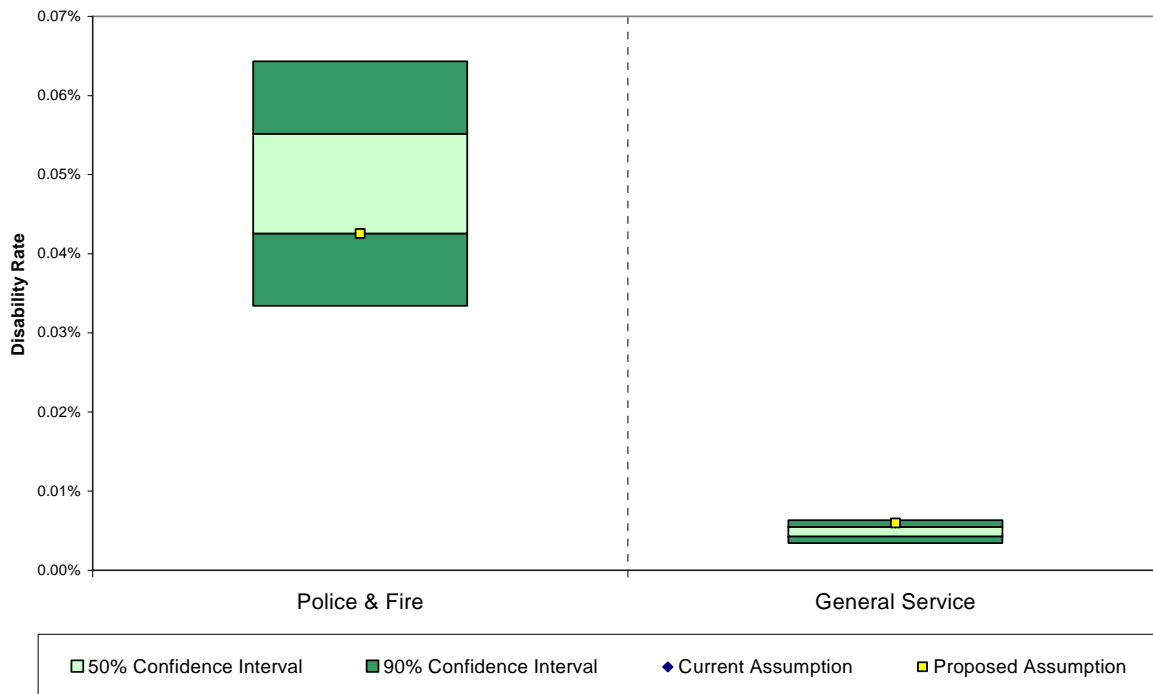
Ordinary (Non-Duty) Disability

As with duty disability, the experience data for ordinary disability was very limited at specific ages. Therefore, this assumption also uses a standard table adjusted to fit within the aggregate confidence interval. Based on the continued decline in disability rates experienced, we recommend reducing the ordinary disability incidence assumption to better match actual experience.

Demographic Assumptions *(continued)*

Disability Incidence Assumptions *(continued)*

Ordinary Disability Incidence
Aggregate Confidence Intervals and Rates
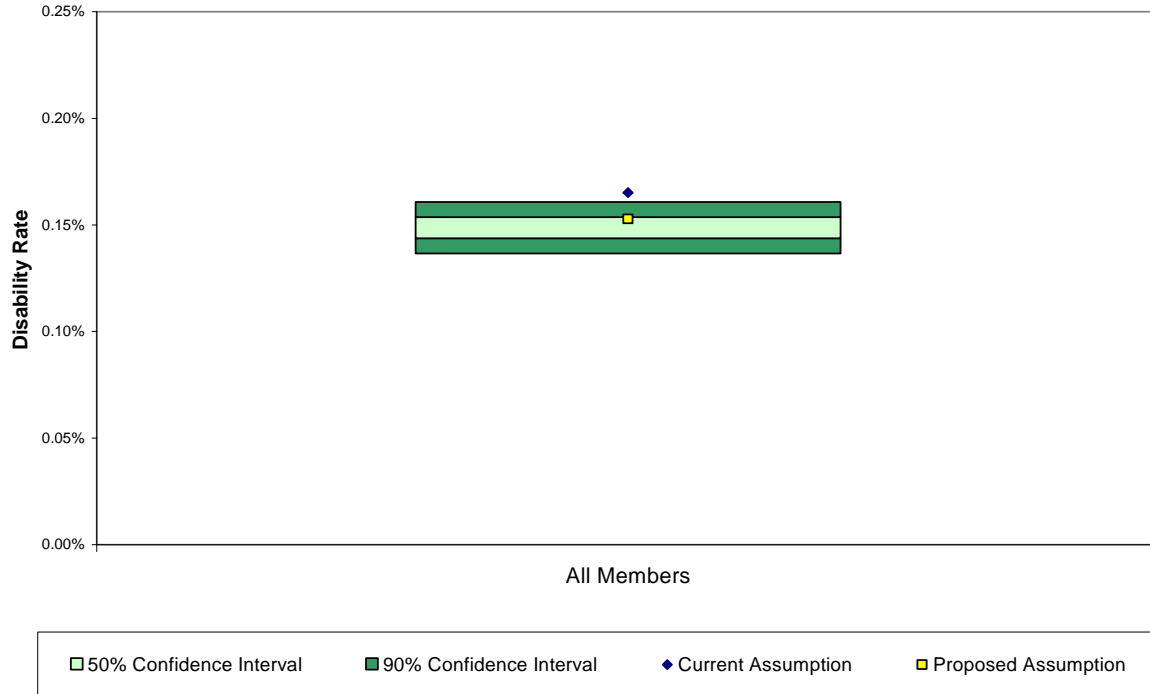
The following table summarizes our recommended disability incidence rates:

	Percentage of the 1985 Disability Class 1 Rates	
	December 31, 2009 Valuation	**Recommended December 31, 2010 and 2011 Valuations**
Duty Disability		
• Police & Fire	15% (0.005% – 0.127%)	No change
• General Service	1.5% (0.0005% – 0.013%)	No change
Ordinary Disability	50% with 0.2% cap (0.015% – 0.200%)	50% with 0.18% cap (0.015% – 0.180%)

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 elect a refund of his or her account balance before retirement.

Termination Rates

Not all active members are expected to continue working for covered employers until retirement. Termination rates represent the probabilities that a member at any given age will leave covered employment. Termination rates are established by age with select rates for the first three years of employment. Since Tier 1 and Tier 2 have been closed for more than three years, the select rates only apply to OPSRP members.

Current termination rate assumptions differ for the following groups:

- School Districts
- SLGRP General Service Males
- SLGRP General Service Females
- Independent General Service Males
- Independent General Service Females
- Police & Fire

We propose removing the distinction based on SLGRP and Independent employers for general service members. We also recommend establishing different ultimate termination rates for Tier 1/Tier 2 members compared to OPSRP. The assumption for Tier 1/Tier 2 is set based on the experience for that closed group only. Because this group is closed, it will continue to show a higher average service level over time than system membership as a whole. This could cause Tier 1/Tier 2 termination experience to diverge from system-wide experience. The OPSRP assumption is set based on termination experience of the entire system (both Tier 1/Tier 2 and OPSRP), as over time the OPSRP membership will be expected to have a demographic termination of employment profile similar to the system as a whole.

Ultimate Termination Rates

The following charts show the current ultimate assumed rates of termination, the confidence interval around observed experience, and the recommended ultimate rates of termination. These charts are based on the observed experience of members with more than three years of service.

School Districts

Actual experience for school districts indicates no changes in termination rates are necessary for Tier 1/Tier 2, but that it would be appropriate to increase OPSRP rates. The OPSRP assumption is increased only a portion of the amount the data might suggest, reflecting the fact that the experience study period contained some challenging economic conditions that may not be fully reflective of expected long-term trends.

Demographic Assumptions *(continued)*

Termination Assumptions *(continued)*

School Districts - Tier 1/Tier 2
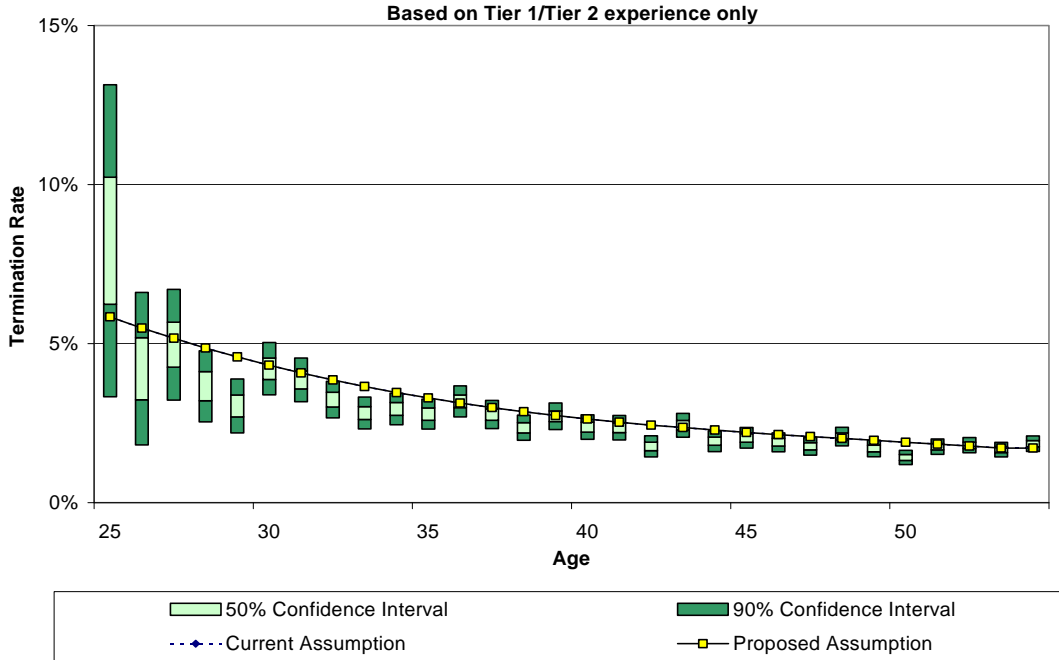
School Districts - OPSRP
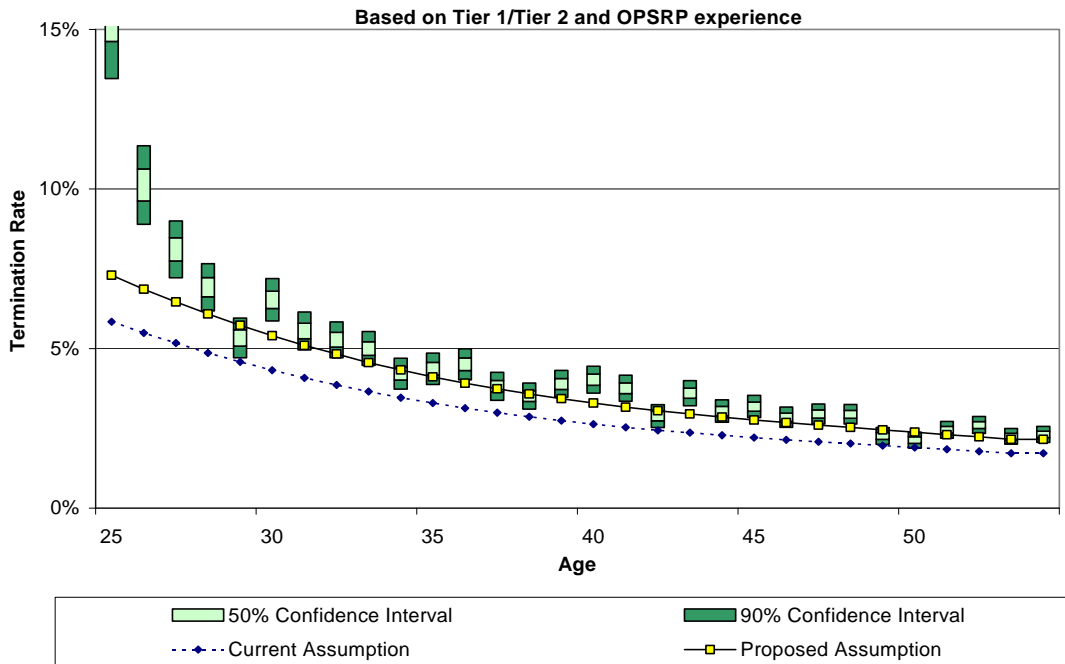
Demographic Assumptions *(continued)*

Termination Assumptions *(continued)*

General Service

For general service members, termination rates vary by gender. Actual experience indicates that a decrease in Tier 1/Tier 2 termination rates is appropriate, while a modest increase in male OPSRP rates is appropriate.

Other General Service Female - Tier 1/Tier 2
Based on Tier 1/Tier 2 experience only
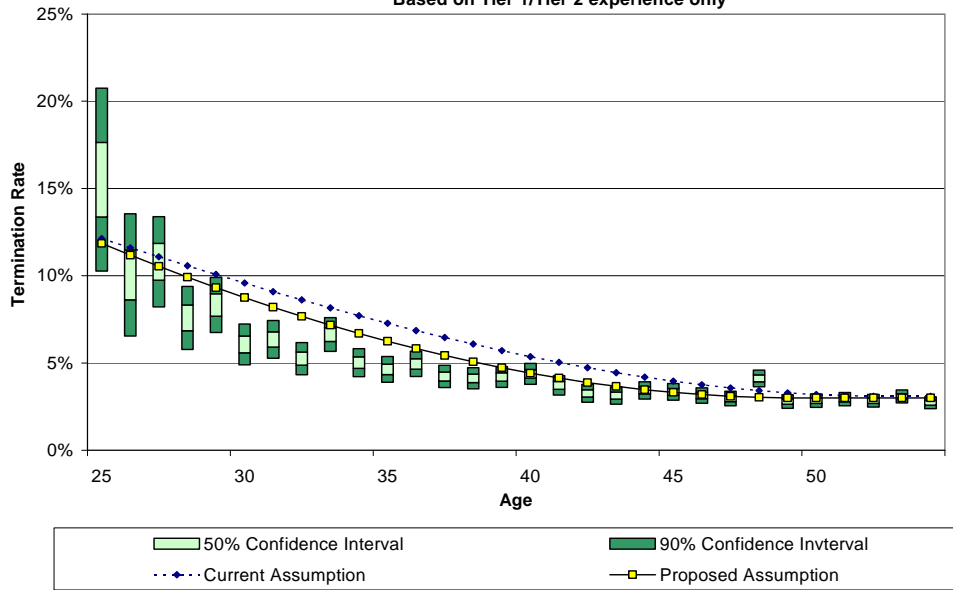
Other General Service Male - Tier 1/Tier 2
Based on Tier 1/Tier 2 experience only
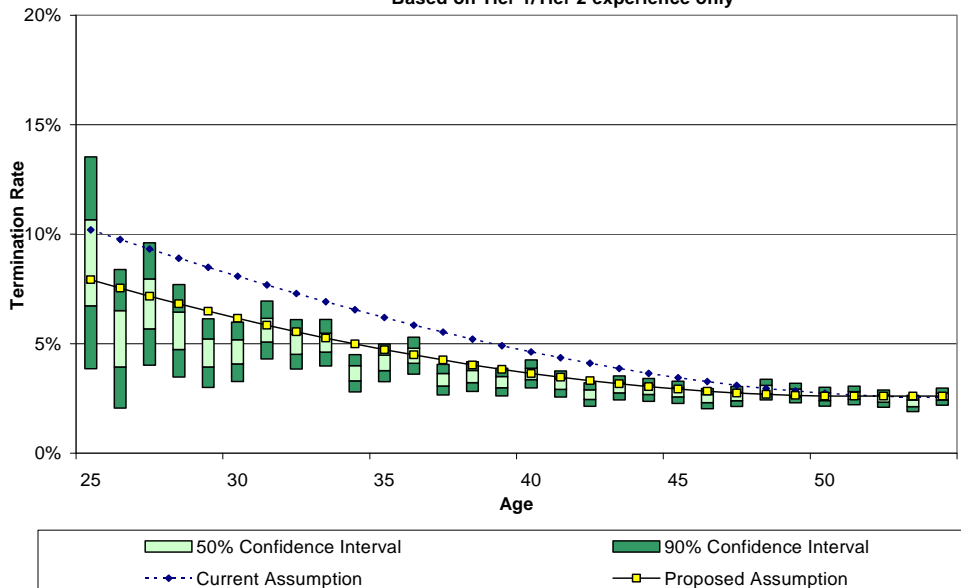
Demographic Assumptions *(continued)*

Termination Assumptions *(continued)*

Other General Service Female - OPSRP
Based on Tier 1/Tier 2 and OPSRP experience

Other General Service Male - OPSRP
Based on Tier 1/Tier 2 and OPSRP experience
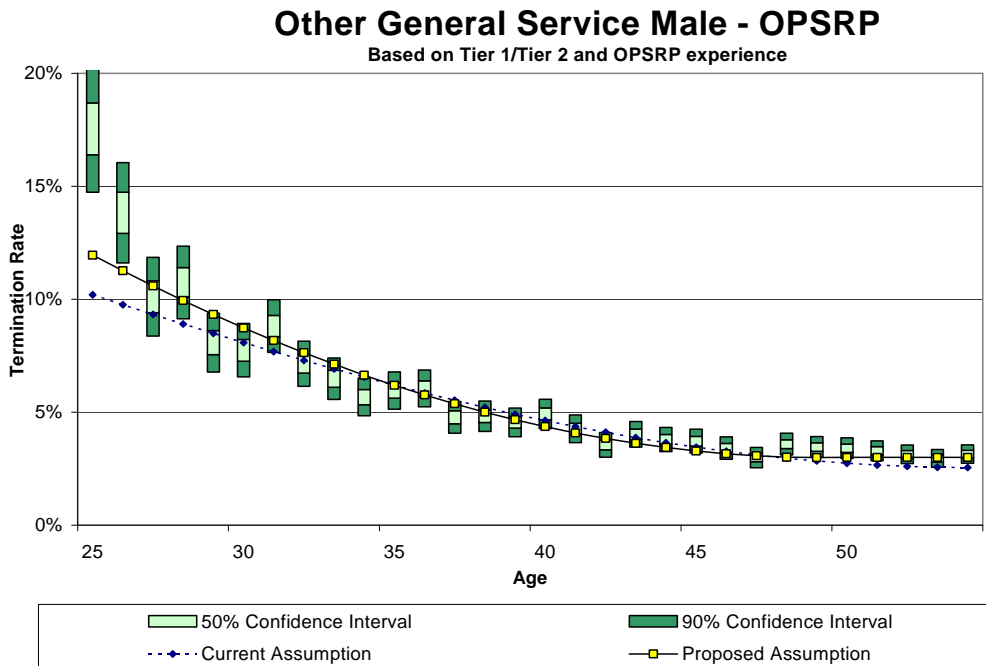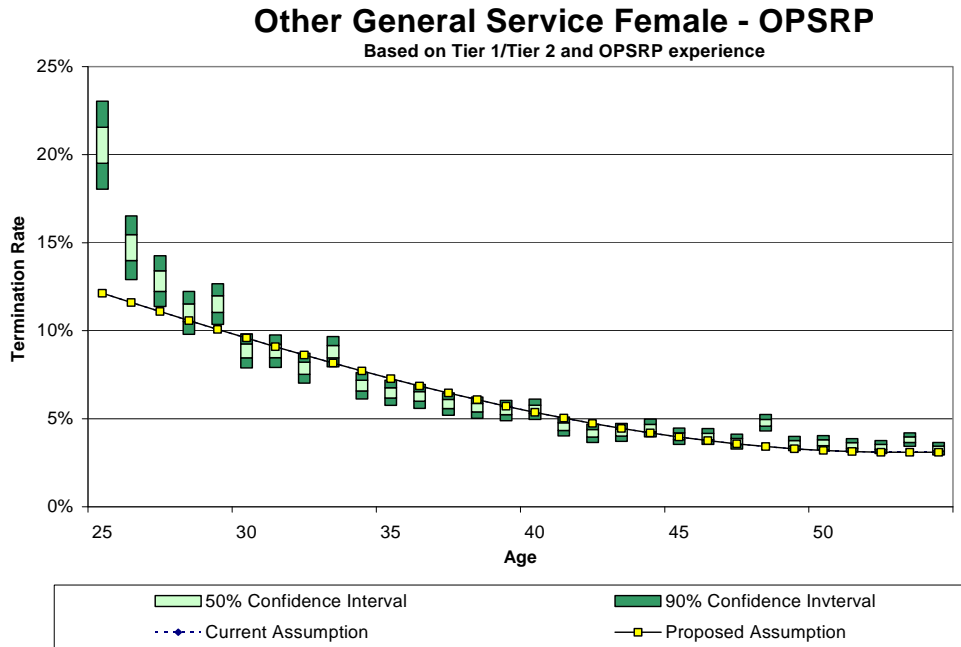
Police & Fire

All police & fire members were rated together, with no variation by group or gender. The only variation is for Tier 1/Tier 2 versus OPSRP. The current assumed termination rates follow actual experience fairly closely, so no changes are recommended.

Demographic Assumptions *(continued)*

Termination Assumptions *(continued)*

Police & Fire - Tier 1/Tier 2
Based on Tier 1/Tier 2 experience only
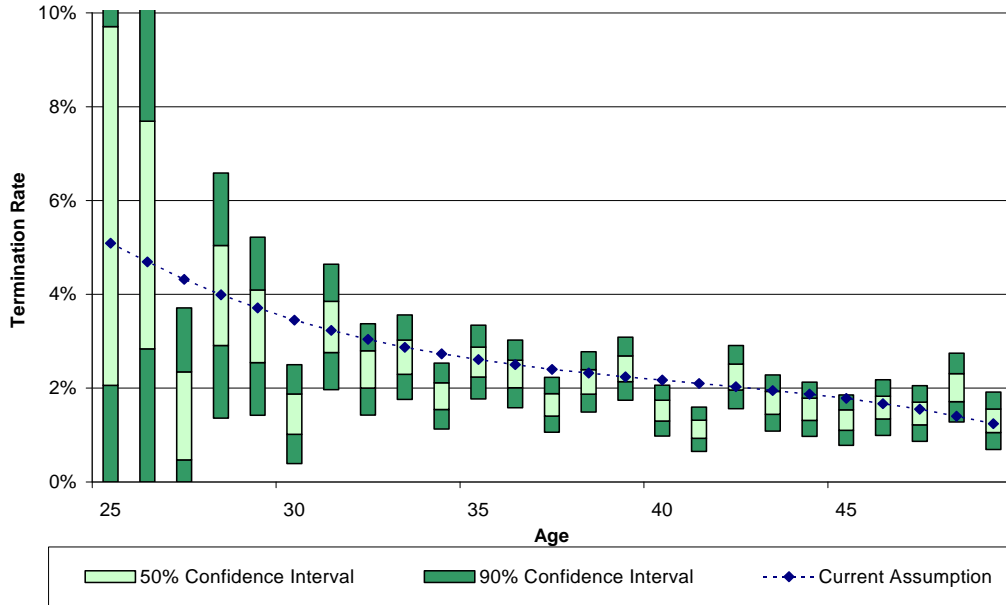
Police & Fire - OPSRP
Based on Tier 1/Tier 2 and OPSRP experience
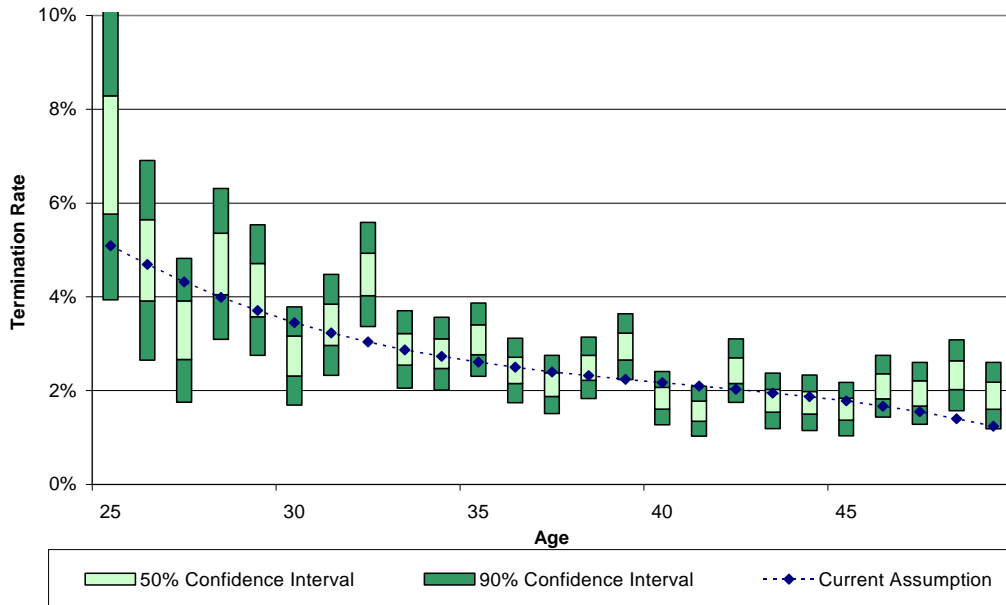
Demographic Assumptions *(continued)*

Termination Assumptions *(continued)*

Select Termination Rates

Termination rates for the first three years of employment (also known as the "select period") are assumed to be higher than the ultimate termination rates described above. Since Tier 1 and Tier 2 have been closed to new members for more than three years, the select termination rates are only applied to OPSRP members. The following tables illustrate sample recommended termination rates for each of the groups. Complete tables are located in the appendix.

Termination Assumptions (T1T2) December 31, 2010 and 2011 Valuations

Age	School District	General Service Male	General Service Female	Police & Fire
30	4.32%	6.16%	8.75%	3.45%
40	2.63%	3.64%	4.42%	2.17%
50	1.90%	2.61%	3.00%	1.24%

Termination Assumptions (OPSRP) December 31, 2010 and 2011 Valuations

Age	School District				Police & Fire			
	1st Select Period	2nd Select Period	3rd Select Period	Ultimate	1st Select Period	2nd Select Period	3rd Select Period	Ultimate
25	11.32%	9.98%	8.64%	7.30%	12.73%	10.18%	7.640%	5.09%
35	6.78%	5.89%	5.00%	4.11%	6.53%	5.22%	3.920%	2.61%
45	4.83%	4.14%	3.45%	2.76%	4.45%	3.56%	2.670%	1.78%

Age	Other General Service Male				Other General Service Female			
	1st Select Period	2nd Select Period	3rd Select Period	Ultimate	1st Select Period	2nd Select Period	3rd Select Period	Ultimate
25	20.91%	17.93%	14.94%	11.95%	21.23%	18.20%	15.160%	12.13%
35	13.36%	9.29%	7.74%	6.19%	13.09%	10.92%	9.740%	7.28%
45	10.73%	6.58%	5.04%	3.28%	12.86%	7.81%	6.590%	3.96%

Probability of Account Withdrawal before Retirement

Tier 1/Tier 2 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 withdraw his/her account balance in the plan before retirement and thus not receive a retirement benefit.

Over time, this decision becomes a progressively less favorable financial choice for a member, because no new employer contributions have been made to member accounts since 2003. In particular, Tier 2 members who are currently active contributed to their member account less than half of their working lifetime, and that percentage will continue to decline as they work additional years. By electing to withdraw their account balance, such a member would be forgoing the accrued benefit calculated based on all service to obtain a benefit based on contributions made for less than half of the service period.

Demographic Assumptions *(continued)*

Termination Assumptions *(continued)*

Because of this dynamic, we recommend assuming no future account withdrawals for either general service members or police & fire members. As shown in the graphs below, data over the last several study periods have shown a significant downward trend in actual experience. Because the valuation employs this assumption over a long projection period, we believe it is appropriate to anticipate the long-term steady-state by changing to assume no account withdrawals beginning with the December 31, 2010 valuation.

General Service
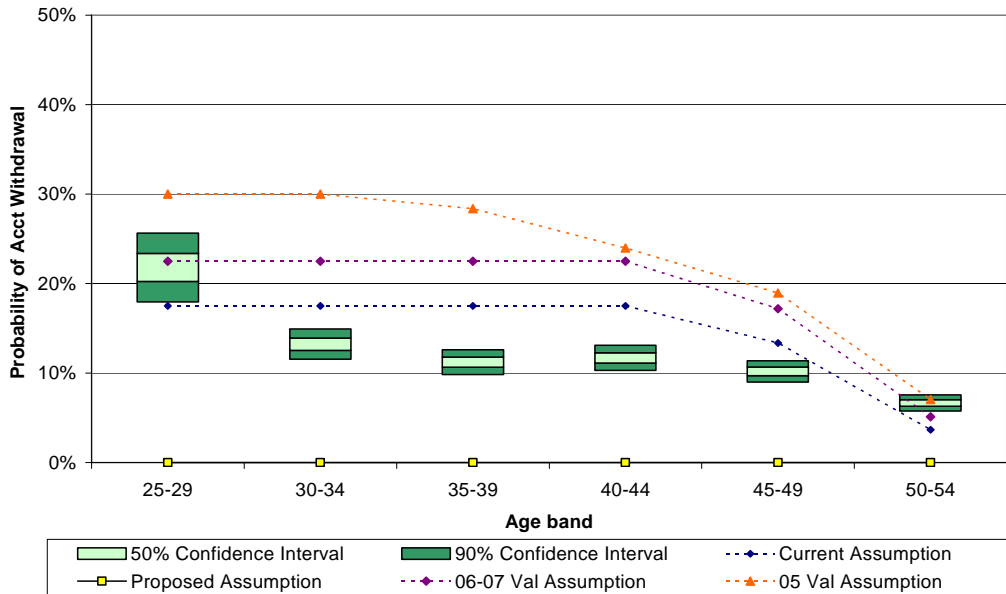
Police and Fire
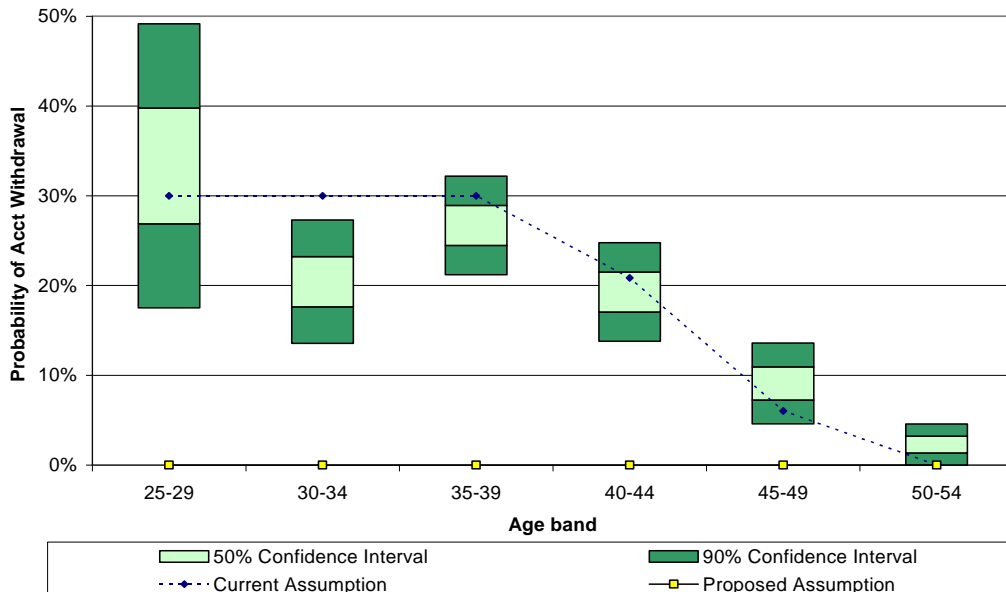
Demographic Assumptions *(continued)*

Salary Increase Assumptions

The salary increase assumptions analyzed with demographic experience were:

- 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 assumed long-term real wage growth were subtracted from observed salary increases. Our analysis assumes a one-year lag in the impact of actual inflation on a member's salary increase. For example, the actual 2009 inflation level is expected to impact the salary increase from 2009 to 2010. In our analysis, our assumed level of annual real wage growth was used instead of the actual annual changes in the Average Wage Index (AWI) published by the Social Security Administration because a stable annual productivity assumption was judged to be a more appropriate measure for the salary increase expectations of members and employers in, for example, a bargaining process to set salary increases.

In order to capture experience across a broader range of budget, collective bargaining and economic cycles, the analysis covered observed salary increase experience from 2003 through 2010. As shown in the table below, actual inflation was measured using CPI-U and the assumed real growth in wages is the 1.00 percent assumption adopted by PERS.

Year	Actual Inflation (CPI-U)	Assumed Real Wage Growth
2002	2.38%	1.00%
2003	1.88%	1.00%
2004	3.26%	1.00%
2005	3.42%	1.00%
2006	2.54%	1.00%
2007	4.08%	1.00%
2008	0.09%	1.00%
2009	2.72%	1.00%

In the past, separate assumptions have been set for:

- School Districts
- Other General Service
- Police & Fire

The following charts show the current assumed rates of merit salary increases, the confidence interval around observed experience, and the recommended rates of merit salary increases. We recommend decreases in the merit salary increase assumptions for school districts and other general service, but no change to the police & fire assumption.

Demographic Assumptions *(continued)*

Salary Increase Assumptions *(continued)*

School Districts
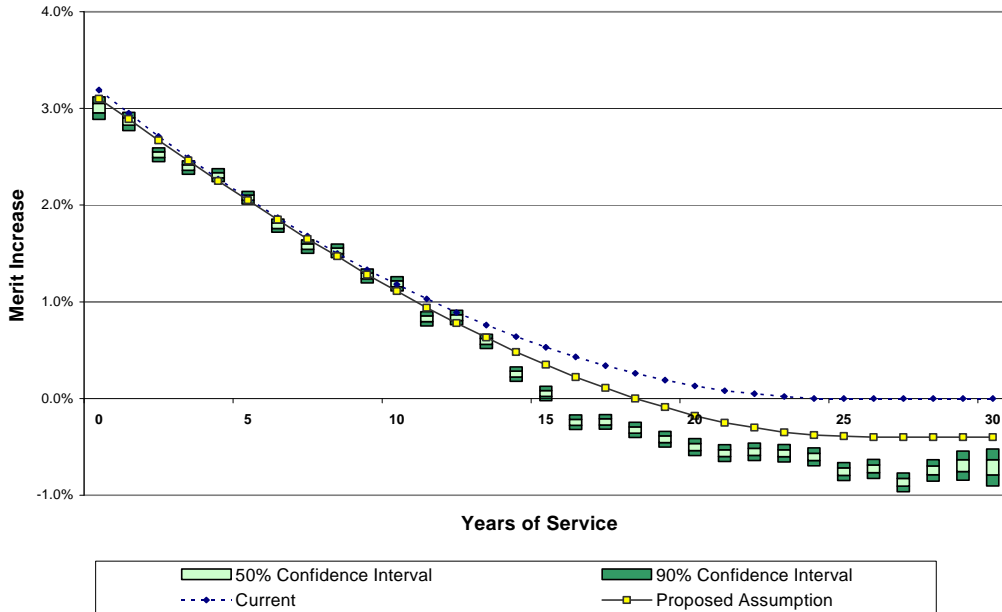
Other General Service
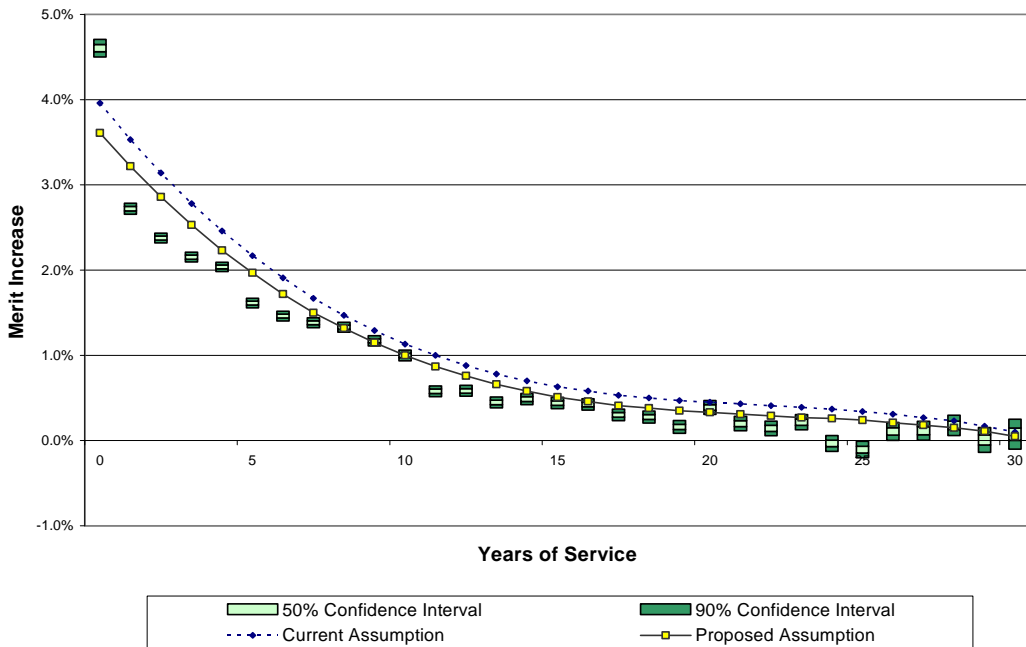
Demographic Assumptions *(continued)*

Salary Increase Assumptions *(continued)*

Police & Fire
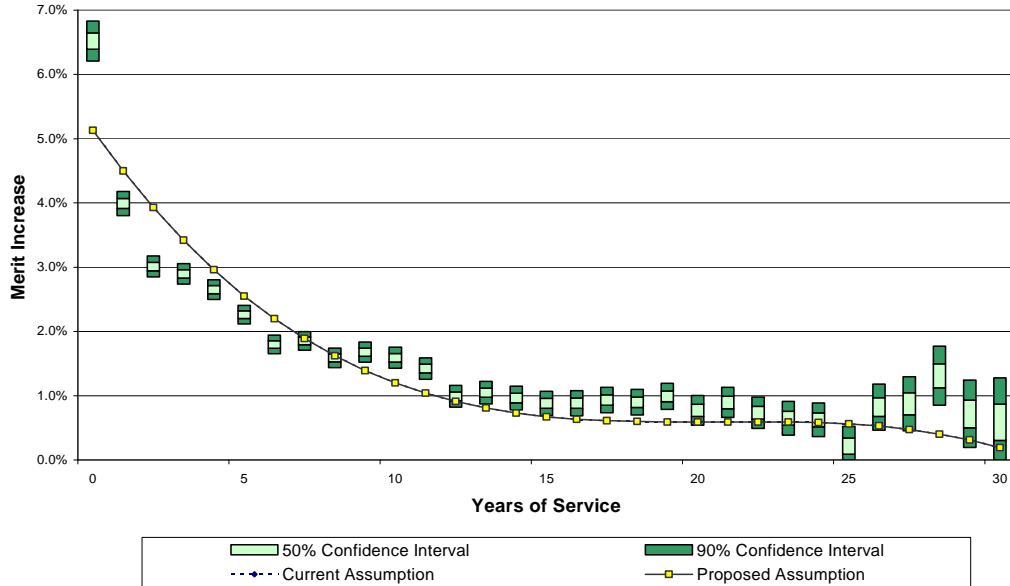
Unused Sick Leave

Employers may elect to participate in the Unused Sick Leave Program. This program allows Tier 1/Tier 2 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 & fire) and gender. The chart below shows the current assumption, the confidence intervals of the observed experience, and the recommended assumption for each of the groups studied.

Demographic Assumptions *(continued)*

Salary Increase Assumptions *(continued)*

Unused Sick Leave
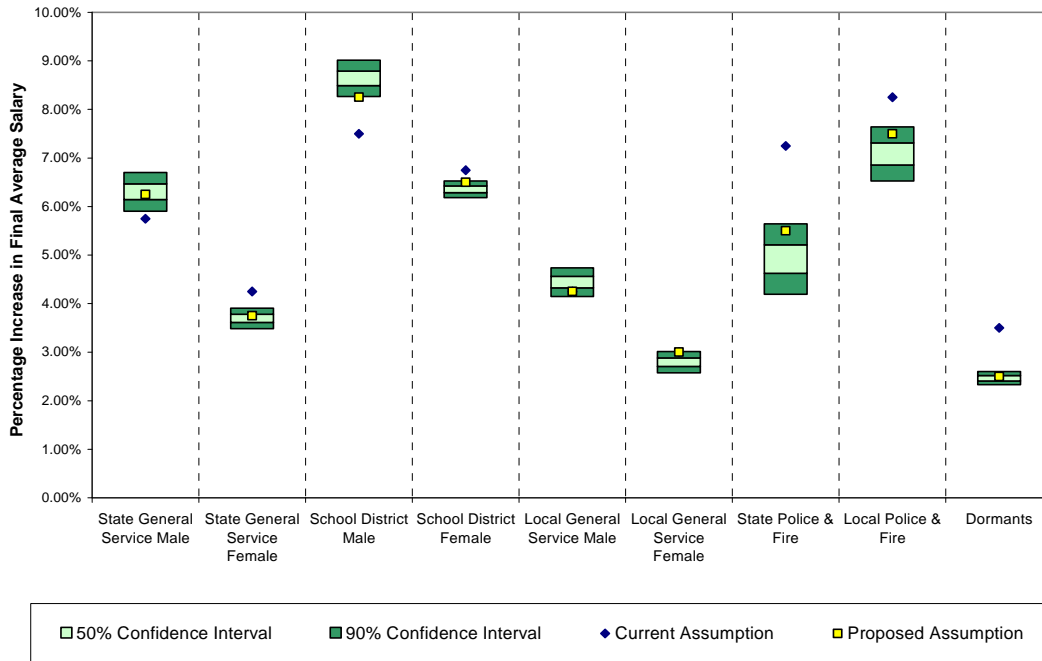
Due to the volatility in experience from one study to the next, for the groups where we recommended changes the recommended change is between the prior assumption and the actual observed experience, but within the confidence interval around current experience.

Demographic Assumptions *(continued)*

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

RHIPA is a program for eligible retirees from State employment that provides a subsidized pre-Medicare insurance plan. Participation rates during the period of study increased to over 12 percent compared to an assumption of 9 percent. This level of participation in RHIPA may be affected, at least in part, by economic conditions, cost of coverage, and competition from alternative programs available to retirees. Since changes in these factors could change participation rates in RHIPA quickly, we recommend a participation assumption of 13 percent, near the actual rate experienced during the study period.

**RHIPA
Participation Rates**

RHIPA - Total

| □ 50% Confidence Interval | ■ 90% Confidence Interval | ◆ Current Assumption |
| ✳ Actual | □ Proposed Assumption | ▲ Actual Prior Study |
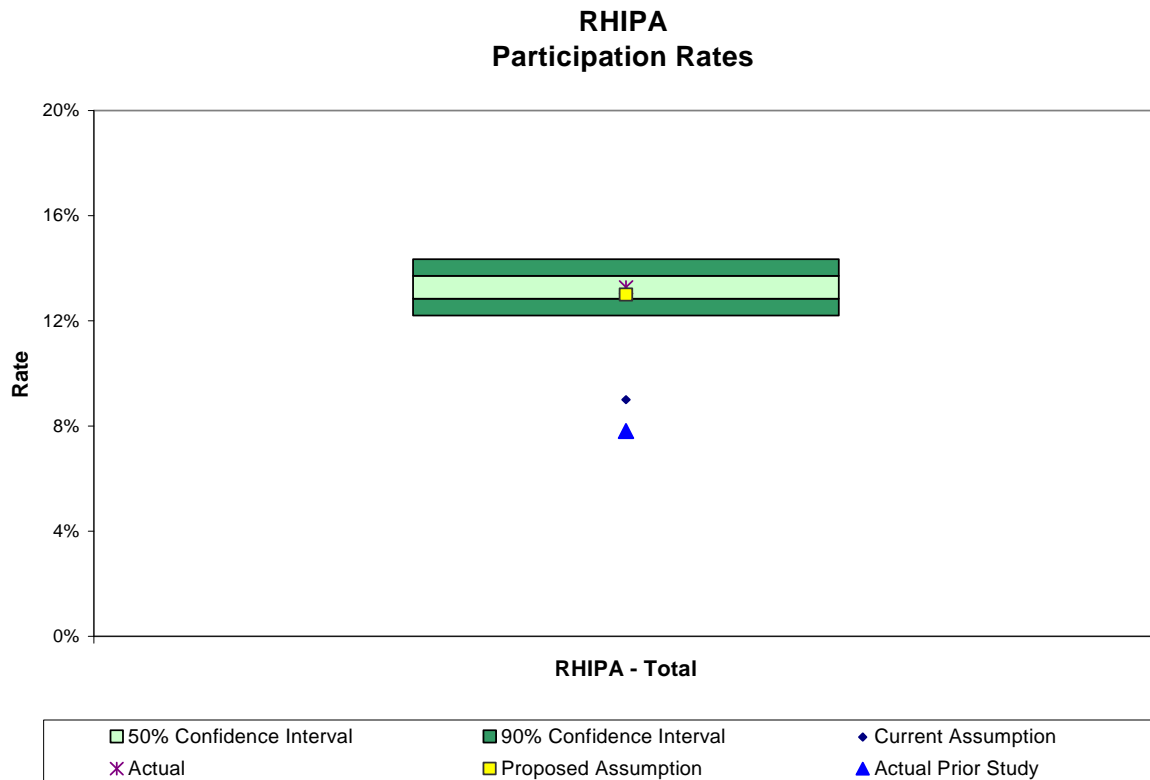
Demographic Assumptions *(continued)*

Retiree Healthcare Assumptions *(continued)*

RHIA

RHIA is a subsidized Medicare supplemental insurance program offered to all eligible retirees. Participation rates during the period of study increased to approximately 48 percent for healthy retirees after dropping to 41 percent in the last study period, and compared to our assumption of 42.5 percent. For disabled retirees, the participation followed our assumption of 20 percent fairly closely.   As shown in the table below, we recommend increasing the healthy assumption to 48 percent and maintaining the disabled assumption of 20 percent.

RHIA
Participation Rates
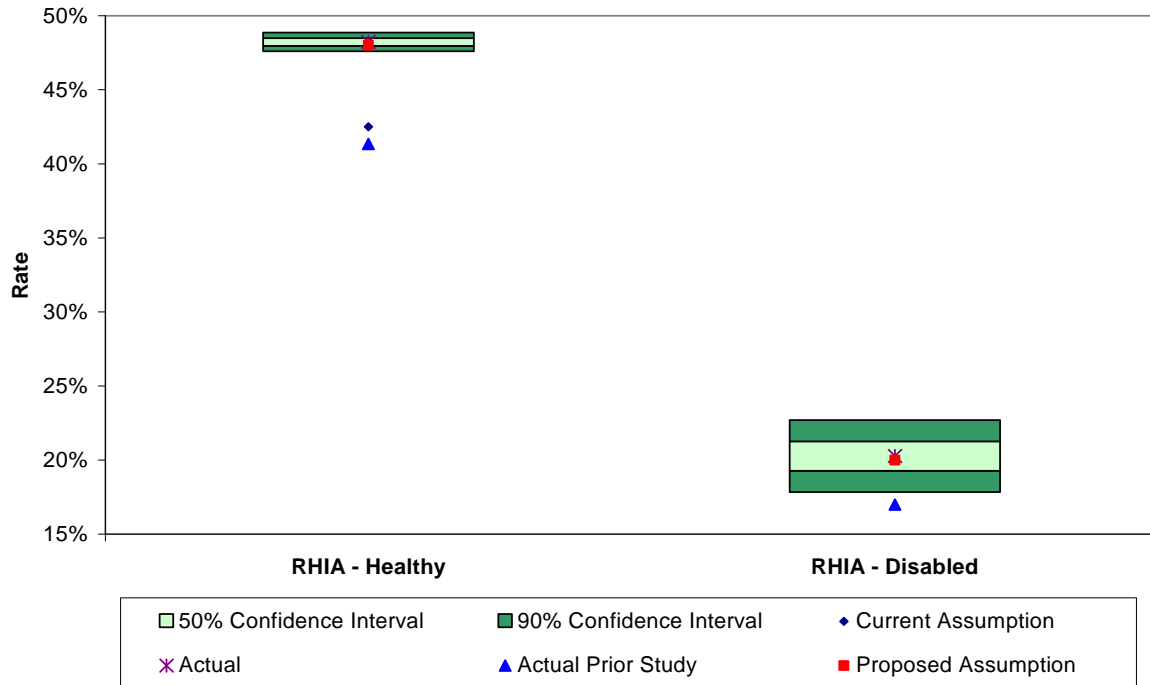
5

Appendix

Data

The analysis in this study was based on data for the experience period from January 1, 2007, to December 31, 2010, as provided by the Oregon Public Employees Retirement System (PERS). PERS is solely responsible for the validity, accuracy and comprehensiveness of this information; the results of our analysis can be expected to differ and may need to be revised if the underlying data supplied is incomplete or inaccurate.

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

Appendix *(continued)*

Assumption Tables

A complete listing of all the assumptions, methods and procedures adopted by the Board on July 29, 2011 that are used in the actuarial valuation are summarized on the following pages.

Methods and Procedures

Actuarial cost method	Projected unit credit
UAL amortization method	Level percent of combined Tier 1, Tier 2, and OPSRP payroll
UAL amortization period	• Closed amortization from the first rate setting valuation in which the experience is recognized – Tier 1/Tier 2 – 20 years – OPSRP – 16 years – RHIA/RHIPA – 10 years • New side accounts are aligned with the new Tier 1/Tier 2 base from the most recent rate-setting valuation. • New transition liabilities are amortized over the period 18-year period beginning when the employer joins the SLGRP.
Asset valuation method	Market value
Excluded reserves	Contingency Reserve, Capital Preservation Reserve. Rate Guarantee Reserve is excluded only when it is positive.
Contribution Rate Stabilization Method	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) are confined to a collar based on the prior contribution rate (prior to application of side accounts, pre-SLGRP liabilities, and 6 percent Independent Employer minimum). The new contribution rate will generally not increase or decrease from the prior contribution rate by more than the greater of 3 percentage points or 20 percent of the prior contribution rate. If the funded percentage excluding side accounts drops below 70% or increases above 130%, the size of the collar doubles. If the funded percentage excluding side accounts is between 70% and 80% or between 120% and 130%, the size of the rate collar is increased on a graded scale. The "sliding scale" implementation of the double rate collar was approved by the Board in January 2010 and is first effective with this valuation.
Liability Allocation for Actives with Several Employers	Allocate Actuarial Accrued Liability 40% (10% for police & fire) based on account balance with each employer and 60% (90% for police & fire) based on service with each employer Allocate Normal Cost to current employer
Allocation of Benefits-In-Force (BIF) Reserve	The BIF is allocated to each rate pool in proportion to the retiree liability attributable to the rate pool.

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	8.25%
Health cost trend rates	
▪ 2011 trend rate	7.00%
▪ Ultimate trend rate	4.50%
▪ Year reaching ultimate trend	2029

Appendix *(continued)*

Demographic Assumptions

Mortality

	Healthy Annuitant Mortality										Beneficiary Mortality			
			Other General Service											
Age	School District Male		Male		Police & Fire Male		School District Female		Other Female		Male		Female	
Year of Birth	1940	1950	1940	1950	1940	1950	1940	1950	1940	1950	1940	1950	1940	1950
50	0.001777	0.001777	0.001948	0.001948	0.002121	0.002121	0.001344	0.001344	0.001589	0.001589	0.001948	0.001948	0.001589	0.001589
51	0.001911	0.001911	0.002087	0.002087	0.002449	0.002402	0.001463	0.001463	0.001767	0.001739	0.002087	0.002087	0.001767	0.001739
52	0.002141	0.002119	0.002413	0.002367	0.002661	0.002556	0.001589	0.001589	0.001924	0.001871	0.002413	0.002367	0.001924	0.001871
53	0.002400	0.002329	0.002622	0.002518	0.002906	0.002735	0.001767	0.001739	0.002099	0.002024	0.002622	0.002518	0.002099	0.002024
54	0.002606	0.002476	0.002859	0.002691	0.003177	0.002931	0.001924	0.001871	0.002303	0.002212	0.002859	0.002691	0.002303	0.002212
55	0.002831	0.002637	0.003121	0.002879	0.003598	0.003269	0.002099	0.002024	0.002586	0.002484	0.003121	0.002879	0.002586	0.002484
56	0.003125	0.002860	0.003527	0.003204	0.004151	0.003722	0.002303	0.002212	0.002951	0.002846	0.003527	0.003204	0.002951	0.002846
57	0.003526	0.003182	0.004054	0.003635	0.004599	0.004078	0.002586	0.002484	0.003316	0.003202	0.004054	0.003635	0.003316	0.003202
58	0.003920	0.003495	0.004476	0.003969	0.005119	0.004500	0.002951	0.002846	0.003719	0.003572	0.004476	0.003969	0.003719	0.003572
59	0.004290	0.003787	0.004967	0.004366	0.005723	0.004950	0.003316	0.003202	0.004166	0.003983	0.004967	0.004366	0.004166	0.003983
60	0.004728	0.004121	0.005540	0.004791	0.006470	0.005506	0.003719	0.003572	0.004677	0.004448	0.005540	0.004791	0.004677	0.004448
61	0.005275	0.004524	0.006255	0.005323	0.007258	0.006240	0.004166	0.003983	0.005273	0.005015	0.006255	0.005323	0.005273	0.005015
62	0.005921	0.005066	0.007016	0.006031	0.008204	0.007053	0.004677	0.004448	0.005929	0.005639	0.007016	0.006031	0.005929	0.005639
63	0.006677	0.005741	0.007935	0.006822	0.009339	0.008111	0.005273	0.005015	0.006712	0.006384	0.007935	0.006822	0.006712	0.006384
64	0.007612	0.006580	0.009046	0.007856	0.010444	0.009070	0.005929	0.005639	0.007518	0.007150	0.009046	0.007856	0.007518	0.007150
65	0.008643	0.007506	0.010133	0.008800	0.011686	0.010149	0.006712	0.006384	0.008437	0.008025	0.010133	0.008800	0.008437	0.008025
66	0.009734	0.008454	0.011353	0.009859	0.013148	0.011536	0.007518	0.007150	0.009501	0.009036	0.011353	0.009859	0.009501	0.009036
67	0.010970	0.009579	0.012781	0.011214	0.014467	0.012692	0.008437	0.008025	0.010568	0.010051	0.012781	0.011214	0.010568	0.010051
68	0.012220	0.010722	0.014065	0.012340	0.015711	0.013646	0.009501	0.009036	0.011686	0.011115	0.014065	0.012340	0.011686	0.011115
69	0.013360	0.011660	0.015275	0.013266	0.017108	0.014858	0.010568	0.010051	0.012912	0.012280	0.015275	0.013266	0.012912	0.012280
70	0.014528	0.012618	0.016632	0.014445	0.018694	0.016072	0.011686	0.011115	0.014443	0.013737	0.016632	0.014445	0.014443	0.013737
71	0.015859	0.013701	0.018180	0.015630	0.020341	0.017487	0.012912	0.012280	0.015789	0.014867	0.018180	0.015630	0.015789	0.014867
72	0.017347	0.014914	0.019803	0.017025	0.022202	0.019087	0.014443	0.013737	0.017476	0.016455	0.019803	0.017025	0.017476	0.016455
73	0.019017	0.016350	0.021646	0.018610	0.024302	0.020893	0.015789	0.014867	0.019078	0.017784	0.021646	0.018610	0.019078	0.017784
74	0.020929	0.017993	0.023731	0.020402	0.026679	0.022937	0.017476	0.016455	0.021043	0.019616	0.023731	0.020402	0.021043	0.019616
75	0.023100	0.019859	0.026091	0.022431	0.029759	0.025846	0.019078	0.017784	0.022798	0.021038	0.026091	0.022431	0.022798	0.021038
76	0.025738	0.022247	0.029145	0.025312	0.032763	0.028454	0.021043	0.019616	0.025053	0.023119	0.029145	0.025312	0.025053	0.023119
77	0.028688	0.024916	0.032130	0.027905	0.036634	0.032141	0.022798	0.021038	0.027996	0.026097	0.032130	0.027905	0.027996	0.026097
78	0.032031	0.027969	0.035974	0.031561	0.041033	0.036367	0.025053	0.023119	0.030811	0.028720	0.035974	0.031561	0.030811	0.028720
79	0.036059	0.031807	0.040349	0.035760	0.046011	0.041193	0.027996	0.026097	0.033923	0.031622	0.040349	0.035760	0.033923	0.031622
80	0.040654	0.036225	0.045305	0.040561	0.051599	0.046665	0.030811	0.028720	0.037434	0.034895	0.045305	0.040561	0.037434	0.034895
81	0.045846	0.041266	0.050870	0.046006	0.058341	0.053297	0.033923	0.031622	0.041362	0.038556	0.050870	0.046006	0.041362	0.038556
82	0.051914	0.047203	0.057588	0.052609	0.065956	0.060866	0.037434	0.034895	0.045725	0.042623	0.057588	0.052609	0.045725	0.042623
83	0.059015	0.054204	0.065190	0.060159	0.072888	0.067262	0.041362	0.038556	0.050628	0.047194	0.065190	0.060159	0.050628	0.047194
84	0.066303	0.061186	0.072142	0.066574	0.082273	0.076692	0.045725	0.042623	0.056089	0.052284	0.072142	0.066574	0.056089	0.052284
85	0.074526	0.069144	0.081538	0.076007	0.090690	0.084539	0.050628	0.047194	0.063830	0.060102	0.081538	0.076007	0.063830	0.060102
86	0.083525	0.077859	0.089992	0.083887	0.099919	0.093141	0.056089	0.052284	0.072713	0.069158	0.089992	0.083887	0.072713	0.069158
87	0.092547	0.086269	0.099281	0.092546	0.113034	0.106432	0.063830	0.060102	0.082998	0.079737	0.099281	0.092546	0.082998	0.079737
88	0.103977	0.097445	0.112460	0.105892	0.127928	0.121673	0.072713	0.069158	0.092076	0.088458	0.112460	0.105892	0.092076	0.088458
89	0.118283	0.111973	0.127436	0.121205	0.140772	0.133889	0.082998	0.079737	0.104734	0.101634	0.127436	0.121205	0.104734	0.101634
90	0.132599	0.126116	0.140415	0.133550	0.159096	0.152845	0.092076	0.088458	0.115278	0.111866	0.140415	0.133550	0.115278	0.111866
91	0.148688	0.142177	0.158849	0.152607	0.172602	0.165820	0.104734	0.101634	0.126211	0.122475	0.158849	0.152607	0.126211	0.122475
92	0.165135	0.158647	0.172503	0.165726	0.192488	0.186791	0.115278	0.111866	0.137156	0.133097	0.172503	0.165726	0.137156	0.133097
93	0.182406	0.176173	0.192520	0.186822	0.207169	0.201037	0.126211	0.122475	0.152996	0.149964	0.192520	0.186822	0.152996	0.149964
94	0.200208	0.194282	0.207321	0.201185	0.221530	0.214973	0.137156	0.133097	0.163939	0.160690	0.207321	0.201185	0.163939	0.160690
95	0.215149	0.208781	0.221765	0.215201	0.244247	0.239406	0.152996	0.149964	0.174274	0.170820	0.221765	0.215201	0.174274	0.170820
96	0.233950	0.228225	0.244526	0.239680	0.264163	0.258927	0.163939	0.160690	0.191098	0.187310	0.244526	0.239680	0.191098	0.187310
97	0.254781	0.249731	0.264163	0.258927	0.278443	0.272924	0.174274	0.170820	0.207418	0.205353	0.264163	0.258927	0.207418	0.205353
98	0.271303	0.265926	0.278443	0.272924	0.303534	0.300512	0.191098	0.187310	0.215593	0.213446	0.278443	0.272924	0.215593	0.213446
99	0.290989	0.286718	0.303534	0.300512	0.317571	0.314409	0.207418	0.205353	0.222532	0.220317	0.303534	0.300512	0.222532	0.220317
100	0.310553	0.307461	0.317571	0.314409	0.331031	0.327744	0.215593	0.213446	0.228151	0.225880	0.317571	0.314409	0.228151	0.225880
101	0.324305	0.321077	0.331039	0.327744	0.358628	0.358628	0.222532	0.220317	0.244834	0.244834	0.331039	0.327744	0.244834	0.244834
102	0.344834	0.343186	0.358628	0.358628	0.371685	0.371685	0.228151	0.225880	0.254498	0.254498	0.358628	0.358628	0.254498	0.254498
103	0.365157	0.365157	0.371685	0.371685	0.383040	0.383040	0.244834	0.244834	0.266044	0.266044	0.371685	0.371685	0.266044	0.266044
104	0.377363	0.377363	0.383040	0.383040	0.392003	0.392003	0.254498	0.254498	0.279055	0.279055	0.383040	0.383040	0.279055	0.279055
105	0.387522	0.387522	0.392003	0.392003	0.397886	0.397886	0.266044	0.266044	0.293116	0.293116	0.392003	0.392003	0.293116	0.293116
106	0.394945	0.394945	0.397886	0.397886	0.400000	0.400000	0.279055	0.279055	0.307811	0.307811	0.397886	0.397886	0.307811	0.307811
107	0.398943	0.398943	0.400000	0.400000	0.400000	0.400000	0.293116	0.293116	0.322725	0.322725	0.400000	0.400000	0.322725	0.322725
108	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.307811	0.307811	0.337441	0.337441	0.400000	0.400000	0.337441	0.337441
109	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.322725	0.322725	0.351544	0.351544	0.400000	0.400000	0.351544	0.351544
110	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.337441	0.337441	0.364617	0.364617	0.400000	0.400000	0.364617	0.364617
111	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.351544	0.351544	0.376246	0.376246	0.400000	0.400000	0.376246	0.376246
112	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.364617	0.364617	0.386015	0.386015	0.400000	0.400000	0.386015	0.386015
113	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.376246	0.376246	0.393507	0.393507	0.400000	0.400000	0.393507	0.393507
114	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.386015	0.386015	0.398308	0.398308	0.400000	0.400000	0.398308	0.398308
115	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.393507	0.393507	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000
116	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.398308	0.398308	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000
117	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000
118	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000
119	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000
120	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

Appendix *(continued)*

Demographic Assumptions (continued)

Mortality (continued)

| Disabled Retired Mortality | | | Non-Annuitant Mortality | | | | | | | | | | |
| | | | | School District Male | | Other General Service Male | | Police & Fire Male | | School District Female | | Other Female | |
Age	Male	Female	Age (Year of Birth)	1950	1960	1950	1960	1950	1960	1950	1960	1950	1960
45	0.022500	0.022500	20	0.000193	0.000193	0.000283	0.000283	0.000259	0.000259	0.000121	0.000121	0.000103	0.000103
46	0.022500	0.022500	21	0.000202	0.000202	0.000295	0.000295	0.000268	0.000268	0.000122	0.000122	0.000103	0.000103
47	0.022500	0.022500	22	0.000209	0.000209	0.000305	0.000305	0.000275	0.000275	0.000123	0.000123	0.000105	0.000105
48	0.022500	0.022500	23	0.000216	0.000216	0.000313	0.000313	0.000280	0.000280	0.000124	0.000124	0.000106	0.000106
49	0.022500	0.022500	24	0.000221	0.000221	0.000319	0.000319	0.000282	0.000282	0.000125	0.000125	0.000108	0.000108
50	0.022500	0.022500	25	0.000224	0.000224	0.000321	0.000321	0.000282	0.000282	0.000127	0.000127	0.000112	0.000112
51	0.022500	0.022500	26	0.000224	0.000224	0.000321	0.000321	0.000284	0.000284	0.000130	0.000130	0.000115	0.000115
52	0.022500	0.022500	27	0.000225	0.000225	0.000323	0.000323	0.000287	0.000287	0.000134	0.000134	0.000120	0.000120
53	0.022500	0.022500	28	0.000227	0.000227	0.000327	0.000327	0.000295	0.000295	0.000138	0.000138	0.000127	0.000127
54	0.022500	0.022500	29	0.000231	0.000231	0.000336	0.000336	0.000310	0.000310	0.000144	0.000144	0.000134	0.000134
55	0.022500	0.022500	30	0.000240	0.000240	0.000352	0.000352	0.000333	0.000333	0.000152	0.000152	0.000142	0.000142
56	0.022500	0.022500	31	0.000256	0.000256	0.000379	0.000379	0.000367	0.000367	0.000160	0.000160	0.000163	0.000163
57	0.022500	0.022500	32	0.000278	0.000278	0.000417	0.000417	0.000404	0.000404	0.000170	0.000170	0.000182	0.000182
58	0.022500	0.022500	33	0.000308	0.000308	0.000461	0.000461	0.000445	0.000445	0.000195	0.000195	0.000201	0.000201
59	0.022500	0.022500	34	0.000342	0.000342	0.000508	0.000508	0.000486	0.000486	0.000218	0.000218	0.000218	0.000218
60	0.022500	0.022500	35	0.000381	0.000381	0.000557	0.000557	0.000528	0.000528	0.000241	0.000241	0.000233	0.000233
61	0.022500	0.022500	36	0.000422	0.000422	0.000608	0.000608	0.000570	0.000570	0.000261	0.000261	0.000249	0.000249
62	0.022500	0.022500	37	0.000465	0.000465	0.000658	0.000658	0.000610	0.000610	0.000280	0.000280	0.000264	0.000264
63	0.022500	0.022500	38	0.000509	0.000509	0.000707	0.000707	0.000651	0.000651	0.000298	0.000298	0.000281	0.000281
64	0.022500	0.022500	39	0.000553	0.000553	0.000757	0.000757	0.000692	0.000692	0.000316	0.000316	0.000300	0.000300
65	0.022500	0.022500	40	0.000598	0.000598	0.000807	0.000807	0.000734	0.000734	0.000337	0.000337	0.000323	0.000323
66	0.024570	0.022500	41	0.000644	0.000644	0.000859	0.000859	0.000781	0.000774	0.000359	0.000359	0.000350	0.000344
67	0.027281	0.022500	42	0.000693	0.000690	0.000915	0.000908	0.000834	0.000817	0.000387	0.000387	0.000382	0.000370
68	0.030387	0.022500	43	0.000748	0.000737	0.000980	0.000961	0.000895	0.000865	0.000419	0.000419	0.000419	0.000400
69	0.033900	0.022970	44	0.000810	0.000788	0.001055	0.001020	0.000964	0.000919	0.000458	0.000444	0.000461	0.000434
70	0.037834	0.025458	45	0.000881	0.000845	0.001139	0.001085	0.001044	0.000977	0.000502	0.000480	0.000508	0.000469
71	0.042169	0.028106	46	0.000963	0.000909	0.001237	0.001158	0.001121	0.001030	0.000553	0.000521	0.000560	0.000505
72	0.046906	0.030966	47	0.001050	0.000974	0.001332	0.001223	0.001206	0.001085	0.000610	0.000562	0.000615	0.000541
73	0.052123	0.034105	48	0.001141	0.001037	0.001435	0.001291	0.001294	0.001137	0.000671	0.000606	0.000672	0.000581
74	0.057927	0.037595	49	0.001235	0.001098	0.001543	0.001356	0.001387	0.001189	0.000737	0.000649	0.000732	0.000622
75	0.064368	0.041506	50	0.001333	0.001157	0.001656	0.001420	0.001485	0.001238	0.000806	0.000697	0.000795	0.000669
76	0.072041	0.045879	51	0.001433	0.001211	0.001774	0.001479	0.001681	0.001388	0.000878	0.000746	0.000870	0.000740
77	0.080486	0.050780	52	0.001589	0.001318	0.002012	0.001661	0.001789	0.001462	0.000953	0.000803	0.000936	0.000813
78	0.089718	0.056294	53	0.001747	0.001435	0.002140	0.001749	0.001914	0.001564	0.001043	0.000888	0.001012	0.000897
79	0.099779	0.062506	54	0.001857	0.001518	0.002287	0.001869	0.002051	0.001676	0.001123	0.000975	0.001106	0.001000
80	0.110757	0.069517	55	0.001978	0.001616	0.002447	0.001999	0.002288	0.001889	0.001214	0.001076	0.001242	0.001147
81	0.122797	0.077446	56	0.002145	0.001762	0.002723	0.002248	0.002606	0.002173	0.001327	0.001200	0.001423	0.001340
82	0.136043	0.086376	57	0.002387	0.001981	0.003090	0.002577	0.002855	0.002405	0.001490	0.001376	0.001601	0.001523
83	0.150590	0.096337	58	0.002621	0.002198	0.003374	0.002842	0.003150	0.002681	0.001708	0.001608	0.001786	0.001699
84	0.166420	0.107303	59	0.002840	0.002405	0.003711	0.003158	0.003465	0.002949	0.001921	0.001827	0.001992	0.001894
85	0.183408	0.119154	60	0.003091	0.002630	0.004073	0.003466	0.003854	0.003280	0.002143	0.002039	0.002224	0.002116
86	0.199769	0.131682	61	0.003393	0.002888	0.004525	0.003851	0.004368	0.003755	0.002390	0.002273	0.002508	0.002385
87	0.216605	0.144604	62	0.003800	0.003251	0.005127	0.004407	0.004937	0.004245	0.002669	0.002539	0.002820	0.002682
88	0.233662	0.157618	63	0.004306	0.003701	0.005799	0.004985	0.005678	0.004931	0.003009	0.002862	0.003192	0.003036
89	0.250693	0.170433	64	0.004935	0.004266	0.006677	0.005799	0.006349	0.005514	0.003383	0.003218	0.003575	0.003401
90	0.267491	0.182799	65	0.005630	0.004889	0.007480	0.006496	0.007104	0.006170	0.003830	0.003643	0.004013	0.003816
91	0.283905	0.194509	66	0.006341	0.005507	0.008380	0.007279	0.008075	0.007085	0.004290	0.004081	0.004518	0.004297
92	0.299852	0.205379	67	0.007184	0.006274	0.009531	0.008362	0.008885	0.007795	0.004815	0.004579	0.005026	0.004780
93	0.315296	0.215240	68	0.008042	0.007055	0.010489	0.009202	0.009552	0.008296	0.005422	0.005156	0.005558	0.005286
94	0.330207	0.223947	69	0.008745	0.007632	0.011276	0.009793	0.010400	0.009033	0.006031	0.005736	0.006140	0.005840
95	0.344556	0.231387	70	0.009464	0.008219	0.012278	0.010663	0.011251	0.009672	0.006669	0.006343	0.006869	0.006533
96	0.358628	0.237467	71	0.010276	0.008877	0.013285	0.011421	0.012241	0.010524	0.007368	0.007008	0.007434	0.007000
97	0.371685	0.244834	72	0.011186	0.009617	0.014471	0.012441	0.013361	0.011487	0.008242	0.007839	0.008228	0.007747
98	0.383040	0.254498	73	0.012263	0.010542	0.015819	0.013600	0.014625	0.012574	0.008920	0.008399	0.008892	0.008289
99	0.392003	0.266044	74	0.013495	0.011602	0.017341	0.014909	0.016056	0.013804	0.009873	0.009296	0.009808	0.009143
100	0.397886	0.279055	75	0.014894	0.012806	0.019067	0.016392	0.018092	0.015713	0.010670	0.009947	0.010519	0.009708
101	0.400000	0.293116	76	0.016685	0.014423	0.021515	0.018686	0.019918	0.017299	0.011770	0.010971	0.011560	0.010668
102	0.400000	0.307811	77	0.018687	0.016229	0.023719	0.020600	0.022499	0.019740	0.012623	0.011649	0.013049	0.012164
103	0.400000	0.322725	78	0.020977	0.018317	0.026827	0.023537	0.025457	0.022562	0.013871	0.012801	0.014360	0.013386
104	0.400000	0.337441	79	0.023855	0.021043	0.030396	0.026939	0.028835	0.025816	0.015658	0.014596	0.015811	0.014739
105	0.400000	0.351544	80	0.027169	0.024209	0.034476	0.030866	0.032666	0.029542	0.017232	0.016063	0.017448	0.016264
106	0.400000	0.364617	81	0.030950	0.027859	0.039105	0.035366	0.037308	0.034084	0.018973	0.017686	0.019278	0.017970
107	0.400000	0.376246	82	0.035402	0.032192	0.044718	0.040853	0.042606	0.039317	0.020937	0.019516	0.021312	0.019866
108	0.400000	0.386015	83	0.040653	0.037340	0.051135	0.047188	0.047083	0.043450	0.023134	0.021564	0.023597	0.021996
109	0.400000	0.393507	84	0.045890	0.042348	0.056588	0.052220	0.053684	0.050043	0.025574	0.023839	0.026142	0.024369
110	0.400000	0.398308	85	0.051858	0.048115	0.064606	0.060223	0.059177	0.055163	0.028316	0.026395	0.030051	0.028296
111	0.400000	0.400000	86	0.058394	0.054433	0.071304	0.066467	0.065198	0.060776	0.031370	0.029242	0.034579	0.032889
112	0.400000	0.400000	87	0.064702	0.060313	0.078664	0.073327	0.074502	0.070151	0.036061	0.033955	0.039869	0.038302
113	0.400000	0.400000	88	0.073084	0.068495	0.090008	0.084751	0.085171	0.081007	0.041495	0.039466	0.044229	0.042492
114	0.400000	0.400000	89	0.083980	0.079502	0.103024	0.097987	0.093722	0.089140	0.047842	0.045962	0.050817	0.049313
115	1.000000	0.400000	90	0.094587	0.089963	0.113517	0.107968	0.106991	0.102788	0.053075	0.050990	0.055933	0.054278
116	1.000000	1.000000	91	0.106633	0.101967	0.129716	0.124620	0.116074	0.111514	0.060980	0.059176	0.061238	0.059425
117	1.000000	1.000000	92	0.118985	0.114311	0.140867	0.135332	0.130754	0.126883	0.067120	0.065133	0.066549	0.064579
118	1.000000	1.000000	93	0.132130	0.127618	0.158798	0.154098	0.140726	0.136560	0.073485	0.071310	0.074982	0.073496
119	1.000000	1.000000	94	0.145712	0.141398	0.171007	0.165945	0.150481	0.146027	0.079858	0.077494	0.080345	0.078753
120	1.000000	1.000000	95	0.156586	0.151951	0.182921	0.177507	0.167584	0.164263	0.089978	0.088195	0.085410	0.083717

Appendix *(continued)*

Demographic Assumptions (continued)

Retirement Assumptions (Tier 1/Tier 2)

Retirement from Active Status (Tier 1/Tier 2)

Age	Police & Fire			General Service		School Districts		General Service (Including School Districts)
	< 13 yrs	13-24 yrs	25+ yrs	<15 yrs	15-29 yrs	<15 yrs	15-29 yrs	30+ yrs
Less than 50								18.00%
50	1.00%	2.00%	25.00%					18.00%
51	1.00%	2.00%	16.50%					18.00%
52	1.00%	2.00%	16.50%					32.00%
53	1.00%	2.00%	16.50%					28.00%
54	1.00%	2.00%	16.50%					27.00%
55	3.00%	7.50%	16.50%	1.00%	3.50%	1.00%	6.00%	26.00%
56	3.00%	7.50%	16.50%	1.00%	3.25%	1.00%	5.00%	25.00%
57	3.00%	7.50%	16.50%	1.00%	3.00%	1.00%	5.00%	24.00%
58	3.00%	7.50%	16.50%	1.50%	9.00%	2.50%	15.00%	28.00%
59	3.00%	7.50%	16.50%	2.00%	8.00%	2.50%	12.00%	21.00%
60	3.00%	7.50%	16.50%	4.00%	8.00%	3.50%	12.00%	21.00%
61	3.00%	7.50%	16.50%	4.00%	8.00%	4.50%	12.00%	21.00%
62	13.00%	22.00%	35.00%	8.50%	15.00%	9.00%	21.00%	29.00%
63	8.00%	20.00%	30.00%	7.00%	13.00%	8.00%	16.00%	22.00%
64	8.00%	10.00%	30.00%	7.00%	13.00%	8.00%	16.00%	22.00%
65	100.00%	100.00%	100.00%	12.00%	22.00%	17.00%	27.00%	26.00%
66				19.00%	31.00%	14.00%	32.00%	18.00%
67				13.00%	25.00%	12.00%	24.00%	18.00%
68				12.00%	21.00%	10.00%	24.00%	18.00%
69				12.00%	21.00%	8.00%	24.00%	18.00%
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		
	< 13 yrs	13-24 yrs	25+ yrs	< 15 yrs	15-29 yrs	30+ yrs
50	1.00%	2.00%	5.50%			
51	1.00%	2.00%	5.50%			
52	1.00%	2.00%	5.50%			
53	1.00%	2.00%	30.00%			
54	1.00%	2.00%	16.50%			
55	3.00%	5.00%	16.50%	1.00%	5.00%	5.00%
56	3.00%	5.00%	16.50%	1.00%	4.00%	5.00%
57	3.00%	5.00%	16.50%	1.00%	3.00%	7.50%
58	3.00%	5.00%	16.50%	2.00%	3.00%	35.00%
59	3.00%	5.00%	16.50%	2.00%	3.00%	25.00%
60	3.00%	15.00%	16.50%	4.00%	3.75%	20.00%
61	3.00%	8.50%	16.50%	4.00%	5.00%	20.00%
62	13.00%	22.00%	35.00%	7.00%	12.00%	30.00%
63	8.00%	20.00%	30.00%	6.00%	10.00%	20.00%
64	8.00%	10.00%	30.00%	6.00%	10.00%	20.00%
65	100.00%	100.00%	100.00%	14.00%	40.00%	20.00%
66				17.25%	33.00%	20.00%
67				12.00%	22.00%	30.00%
68				10.00%	17.00%	20.00%
69				10.00%	17.00%	20.00%
70				100.00%	100.00%	100.00%

Lump Sum Option at Retirement

Partial Lump Sum	6.0% for all years
Total Lump Sum	5.0% for 2011, declining by 0.5% per year until reaching 0.0%

Appendix *(continued)*

Demographic Assumptions (continued)

Purchase of Credited Service at Retirement

Money Match Retirements	0%
Non-Money Match Retirements	60%

Disability Assumptions

Age	Duty Disability		Ordinary Disability
	Police & Fire	General Service	
20	0.005%	0.000%	0.015%
25	0.006%	0.001%	0.022%
30	0.010%	0.001%	0.032%
35	0.015%	0.001%	0.049%
40	0.024%	0.002%	0.079%
45	0.039%	0.004%	0.130%
50	0.067%	0.007%	0.180%
55	0.127%	0.013%	0.180%
60	0.181%	0.018%	0.180%

Appendix *(continued)*

Demographic Assumptions (continued)

Termination Assumptions – Tier 1/Tier 2

Age	School District	General Service Male	General Service Female	Police & Fire
20 or less	7.99%	9.98%	15.49%	5.09%
21	7.50%	9.54%	14.72%	5.09%
22	7.05%	9.12%	13.97%	5.09%
23	6.62%	8.71%	13.24%	5.09%
24	6.22%	8.31%	12.54%	5.09%
25	5.84%	7.92%	11.85%	5.09%
26	5.49%	7.54%	11.18%	4.69%
27	5.17%	7.17%	10.54%	4.32%
28	4.86%	6.83%	9.92%	3.99%
29	4.58%	6.49%	9.32%	3.71%
30	4.32%	6.16%	8.75%	3.45%
31	4.08%	5.85%	8.20%	3.23%
32	3.86%	5.55%	7.67%	3.04%
33	3.65%	5.26%	7.17%	2.87%
34	3.46%	4.99%	6.70%	2.73%
35	3.29%	4.73%	6.25%	2.61%
36	3.13%	4.49%	5.83%	2.50%
37	2.99%	4.26%	5.43%	2.40%
38	2.86%	4.03%	5.07%	2.32%
39	2.74%	3.83%	4.73%	2.24%
40	2.63%	3.64%	4.42%	2.17%
41	2.53%	3.47%	4.14%	2.10%
42	2.44%	3.31%	3.88%	2.03%
43	2.36%	3.17%	3.66%	1.95%
44	2.28%	3.04%	3.47%	1.87%
45	2.21%	2.93%	3.32%	1.78%
46	2.14%	2.83%	3.19%	1.67%
47	2.08%	2.75%	3.09%	1.55%
48	2.02%	2.69%	3.03%	1.40%
49	1.96%	2.64%	3.00%	1.24%
50	1.90%	2.61%	3.00%	1.24%
51	1.84%	2.61%	3.00%	1.24%
52	1.78%	2.61%	3.00%	1.24%
53	1.72%	2.61%	3.00%	1.24%
54 +	1.72%	2.61%	3.00%	1.24%

Appendix *(continued)*

Demographic Assumptions (continued)

Termination Assumptions – OPSRP

Age	School District				Police & Fire			
	1st Select Period	2nd Select Period	3rd Select Period	Ultimate	1st Select Period	2nd Select Period	3rd Select Period	Ultimate
20 or less	14.99%	13.32%	11.66%	9.99%	12.73%	10.18%	7.640%	5.09%
21	14.16%	12.57%	10.97%	9.38%	12.73%	10.18%	7.640%	5.09%
22	13.39%	11.86%	10.34%	8.81%	12.73%	10.18%	7.640%	5.09%
23	12.67%	11.21%	9.74%	8.28%	12.73%	10.18%	7.640%	5.09%
24	11.98%	10.58%	9.18%	7.78%	12.73%	10.18%	7.640%	5.09%
25	11.32%	9.98%	8.64%	7.30%	12.73%	10.18%	7.640%	5.09%
26	10.70%	9.42%	8.14%	6.86%	11.73%	9.38%	7.040%	4.69%
27	10.14%	8.91%	7.69%	6.46%	10.80%	8.64%	6.480%	4.32%
28	9.61%	8.43%	7.26%	6.08%	9.98%	7.98%	5.990%	3.99%
29	9.11%	7.98%	6.86%	5.73%	9.28%	7.42%	5.570%	3.71%
30	8.64%	7.56%	6.48%	5.40%	8.63%	6.90%	5.180%	3.45%
31	8.21%	7.17%	6.14%	5.10%	8.08%	6.46%	4.850%	3.23%
32	7.82%	6.83%	5.83%	4.83%	7.60%	6.08%	4.560%	3.04%
33	7.43%	6.48%	5.52%	4.56%	7.18%	5.74%	4.310%	2.87%
34	7.10%	6.18%	5.25%	4.33%	6.83%	5.46%	4.100%	2.73%
35	6.78%	5.89%	5.00%	4.11%	6.53%	5.22%	3.920%	2.61%
36	6.49%	5.63%	4.77%	3.91%	6.25%	5.00%	3.750%	2.50%
37	6.25%	5.41%	4.58%	3.74%	6.00%	4.80%	3.600%	2.40%
38	6.01%	5.20%	4.39%	3.58%	5.80%	4.64%	3.480%	2.32%
39	5.80%	5.01%	4.22%	3.43%	5.60%	4.48%	3.360%	2.24%
40	5.59%	4.83%	4.06%	3.29%	5.43%	4.34%	3.260%	2.17%
41	5.40%	4.66%	3.91%	3.16%	5.25%	4.20%	3.150%	2.10%
42	5.25%	4.51%	3.78%	3.05%	5.08%	4.06%	3.050%	2.03%
43	5.10%	4.39%	3.67%	2.95%	4.88%	3.90%	2.930%	1.95%
44	4.96%	4.26%	3.55%	2.85%	4.68%	3.74%	2.810%	1.87%
45	4.83%	4.14%	3.45%	2.76%	4.45%	3.56%	2.670%	1.78%
46	4.69%	4.02%	3.35%	2.68%	4.18%	3.34%	2.510%	1.67%
47	4.55%	3.90%	3.25%	2.60%	3.88%	3.10%	2.330%	1.55%
48	4.43%	3.80%	3.16%	2.53%	3.50%	2.80%	2.100%	1.40%
49	4.29%	3.68%	3.06%	2.45%	3.10%	2.48%	1.860%	1.24%
50	4.17%	3.57%	2.98%	2.38%	3.10%	2.48%	1.860%	1.24%
51	4.03%	3.45%	2.88%	2.30%	3.10%	2.48%	1.860%	1.24%
52	3.90%	3.35%	2.79%	2.23%	3.10%	2.48%	1.860%	1.24%
53	3.76%	3.23%	2.69%	2.15%	3.10%	2.48%	1.860%	1.24%
54 +	3.76%	3.23%	2.69%	2.15%	3.10%	2.48%	1.860%	1.24%

Appendix *(continued)*

Demographic Assumptions (continued)

Termination Assumptions – OPSRP (continued)

Age	Other General Service Male				Other General Service Female			
	1st Select Period	2nd Select Period	3rd Select Period	Ultimate	1st Select Period	2nd Select Period	3rd Select Period	Ultimate
20 or less	27.69%	23.73%	19.78%	15.82%	25.92%	22.22%	18.510%	14.81%
21	26.23%	22.49%	18.74%	14.99%	24.97%	21.41%	17.840%	14.27%
22	24.85%	21.30%	17.75%	14.20%	24.03%	20.60%	17.160%	13.73%
23	23.49%	20.13%	16.78%	13.42%	23.08%	19.79%	16.490%	13.19%
24	22.19%	19.02%	15.85%	12.68%	22.16%	18.99%	15.830%	12.66%
25	20.91%	17.93%	14.94%	11.95%	21.23%	18.20%	15.160%	12.13%
26	19.71%	16.89%	14.08%	11.26%	20.30%	17.40%	14.500%	11.60%
27	18.57%	15.89%	13.24%	10.59%	19.41%	16.64%	13.860%	11.09%
28	17.72%	14.91%	12.43%	9.94%	18.50%	15.86%	13.210%	10.57%
29	16.93%	14.00%	11.66%	9.33%	17.62%	15.11%	12.590%	10.07%
30	16.19%	13.10%	10.91%	8.73%	16.77%	14.37%	11.980%	9.58%
31	15.52%	12.26%	10.21%	8.17%	15.91%	13.64%	11.420%	9.09%
32	14.90%	11.45%	9.54%	7.63%	15.09%	12.93%	10.990%	8.62%
33	14.34%	10.70%	8.91%	7.13%	14.28%	12.24%	10.560%	8.16%
34	13.82%	9.96%	8.30%	6.64%	13.49%	11.57%	10.140%	7.71%
35	13.36%	9.29%	7.74%	6.19%	13.09%	10.92%	9.740%	7.28%
36	12.94%	8.69%	7.20%	5.76%	12.97%	10.43%	9.350%	6.86%
37	12.57%	8.33%	6.75%	5.37%	12.89%	10.07%	8.970%	6.46%
38	12.24%	8.00%	6.45%	5.00%	12.86%	9.74%	8.610%	6.08%
39	11.95%	7.71%	6.18%	4.67%	12.86%	9.41%	8.260%	5.71%
40	11.68%	7.45%	5.93%	4.36%	12.86%	9.10%	7.930%	5.36%
41	11.43%	7.22%	5.70%	4.08%	12.86%	8.81%	7.630%	5.04%
42	11.22%	7.02%	5.50%	3.84%	12.86%	8.53%	7.330%	4.73%
43	11.03%	6.84%	5.32%	3.62%	12.86%	8.27%	7.060%	4.45%
44	10.87%	6.70%	5.17%	3.44%	12.86%	8.03%	6.810%	4.19%
45	10.73%	6.58%	5.04%	3.28%	12.86%	7.81%	6.590%	3.96%
46	10.63%	6.48%	4.93%	3.16%	12.86%	7.61%	6.380%	3.75%
47	10.55%	6.41%	4.84%	3.07%	12.86%	7.43%	6.200%	3.57%
48	10.49%	6.36%	4.76%	3.01%	12.86%	7.28%	6.050%	3.42%
49	10.48%	6.33%	4.71%	2.99%	12.86%	7.15%	5.920%	3.29%
50	10.49%	6.33%	4.68%	3.00%	12.86%	7.04%	5.820%	3.19%
51	10.49%	6.31%	4.64%	3.00%	12.86%	6.96%	5.750%	3.13%
52	10.49%	6.28%	4.59%	3.00%	12.86%	6.91%	5.700%	3.09%
53	10.49%	6.25%	4.54%	3.00%	12.53%	6.88%	5.690%	3.09%
54 +	10.49%	6.20%	4.48%	3.00%	12.17%	6.88%	5.690%	3.09%

Appendix *(continued)*

Demographic Assumptions (continued)

Merit Salary Increase Assumptions

Duration	School District	Other General Service	Police & Fire
0	3.10%	3.61%	5.13%
1	2.89%	3.22%	4.50%
2	2.67%	2.86%	3.93%
3	2.46%	2.53%	3.42%
4	2.25%	2.23%	2.96%
5	2.05%	1.97%	2.55%
6	1.85%	1.72%	2.20%
7	1.65%	1.50%	1.89%
8	1.47%	1.32%	1.62%
9	1.28%	1.15%	1.39%
10	1.11%	1.00%	1.20%
11	0.94%	0.87%	1.04%
12	0.78%	0.76%	0.91%
13	0.63%	0.66%	0.81%
14	0.48%	0.58%	0.73%
15	0.35%	0.51%	0.67%
16	0.22%	0.46%	0.63%
17	0.11%	0.41%	0.61%
18	0.00%	0.38%	0.60%
19	-0.09%	0.35%	0.59%
20	-0.18%	0.33%	0.59%
21	-0.25%	0.31%	0.59%
22	-0.30%	0.29%	0.59%
23	-0.35%	0.27%	0.59%
24	-0.38%	0.26%	0.58%
25	-0.39%	0.24%	0.56%
26	-0.40%	0.21%	0.53%
27	-0.40%	0.18%	0.47%
28	-0.40%	0.15%	0.40%
29	-0.40%	0.11%	0.31%
30	-0.40%	0.05%	0.19%

Appendix *(continued)*

Demographic Assumptions (continued)

Unused Sick Leave	
Actives	
• State General Service Male	6.25%
• State General Service Female	3.75%
• School District Male	8.25%
• School District Female	6.50%
• Local General Service Male	4.25%
• Local General Service Female	3.00%
• State Police & Fire	5.50%
• Local Police & Fire	7.50%
Dormants	2.50%

Probability of Account Withdrawal Before Retirement

None.

Retiree Healthcare Assumptions

Retiree Healthcare Participation

RHIPA	13.0%
RHIA	
• Healthy Retired	48.0%
• Disabled Retired	20.0%

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