

Wisconsin Retirement System

Three-Year Experience Study

January 1, 2021 – December 31, 2023



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November 19, 2024

The Employee Trust Funds Board
4822 Madison Yards Way
Madison, Wisconsin 53705

Ladies and Gentlemen:

The results of the **3-year investigation of experience** of the Wisconsin Retirement System are presented in this report. The investigation was made for the purpose of updating the actuarial assumptions used in valuing the actuarial liabilities of the Wisconsin Retirement System in compliance with Section 40.03(5)(b) of the Wisconsin Statutes.

The investigation was based upon the statistical data furnished for annual active member and retired life actuarial valuations, supplemental information furnished by your Secretary and his staff, concerning Participants who died, withdrew, became disabled or retired during the last 3 years and on published historical economic data.

The investigation covered the 3-year period from **January 1, 2021 to December 31, 2023** and was carried out using generally accepted actuarial principles and techniques.

To the best of our knowledge, this report is complete and accurate and was made in accordance with generally recognized actuarial methods. Mark Buis, James D. Anderson, and Richard C. Koch, Jr. are Members of the American Academy of Actuaries (MAAA), and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsor.

We believe that the new actuarial assumptions that are the result of this investigation represent a reasonable estimate of possible future experience of the Wisconsin Retirement System.

Respectfully submitted,
Gabriel, Roeder, Smith & Company

A handwritten signature in black ink that reads "Mark Buis".

Mark Buis, FSA, EA, FCA, MAAA

A handwritten signature in black ink that reads "James D. Anderson".

James D. Anderson, FSA, EA, FCA, MAAA

A handwritten signature in black ink that reads "Richard C. Koch, Jr.".

Richard C. Koch, Jr., FSA, EA, MAAA

MB/JDA/RCK:ah

EXECUTIVE SUMMARY

Executive Summary

The Wisconsin Statutes require reviewing the actuarial assumptions every three years. The last review was prepared for the period from January 1, 2018 to December 31, 2020. In this report, we review the current actuarial assumptions and methods and compare them to the actual experience of the Retirement System for the years 2021-2023.

The table below lists each of the primary assumptions and methods that we analyzed, including our recommendations for each item, and the overall financial impact of any recommended changes.

Assumption	2020 Recommendation	2023 Recommendation	Financial Impact – Plan Liabilities and Contribution Rates
Withdrawal rates	Lower Rates	Varies	Decrease
Disability rates	Higher Rates	Higher Rates	Increase
Pay increases due to seniority	No Change	Higher Rates	Increase
Retirement rates	Higher Rates	Higher Rates	Increase
Pre- and post-retirement mortality rates	Various	No Change	N/A
Investment return	Lower Rates	No Change	N/A
Wage inflation	No Change	No Change	N/A
Price inflation	Lower Rates	No Change	N/A
Total	Various	Various	Various

A common practice among public employee retirement systems is that the actuary recommends a set of demographic assumptions which the Board adopts. The actuary then suggests a range of reasonable alternate economic assumptions. Following discussion involving the actuary, the plan governing body, and other professionals, the plan governing body makes a final choice from the various alternatives.

Page 6 notes that there is no expected impact on the retired lives mortality reserve due to the continued use of the current mortality assumption. The overall impact on the contribution rate of the recommended assumptions is shown on page 17.

New assumptions will be first used in the December 31, 2024 actuarial valuations, at which time experience gains or losses incurred during 2024 will also be recognized. This would first impact rates in 2026. Consequently, no rate changes are recommended for 2025 based upon this study.

SUMMARY OF FINDINGS

Introduction

Each year, as of December 31, the liabilities of the Wisconsin Retirement System are valued. In order to perform the valuation, assumptions must be made regarding the future experience of the System with regard to the following risk areas:

- Rates of **withdrawal** of active participants;
- Rates of **disability** among active participants;
- Patterns of **salary increases** to active participants;
- Rates of **retirement** among active participants;
- Rates of **mortality** among active participants, retirees, and beneficiaries; and
- Long-term rates of **investment return** to be generated by the assets of the Fund.

Assumptions should be carefully chosen and continually monitored. A poor initial choice of assumptions or continued use of outdated assumptions can lead to:

- Understated costs resulting in either an inability to pay benefits when due, or sharp increases in required contributions at some point in the future; or
- Overstated costs resulting in either benefit levels that are kept below the level that could be supported by the computed rate or an unnecessarily large burden on the current generation of participants, employers and taxpayers.

A single set of assumptions will not be suitable indefinitely. Conditions change and our understanding of conditions also changes.

In recognition of this, Wisconsin statutes require that assumptions used to value the liabilities of the Wisconsin Retirement System be studied in-depth every three years. The package of assumptions is then adjusted to reflect basic experience trends -- but not random year-to-year fluctuations. Actuarial assumptions were last revised for the December 31, 2021 valuation which impacted contribution rates in 2023.

Summary of Decrement Experience

Background: With the exception of mortality and disability, the decrements that we study tend to relate to voluntary human behavior. Human behavior in any short period can be influenced by economic and societal factors that change from time to time. Observed data will very often contain anomalies that cannot be assumed to continue into the future. This happens particularly in smaller groups.

In most cases, when adjustments are indicated, the proposed assumptions give partial recognition to present assumptions as well as to results from actual experience. Complete recognition is rarely given to actual experience over a limited period. This would cause contribution rates to be unduly sensitive to short-term experience fluctuations. In general, due to COVID -19 impacts, we moved about 25% of the way to the observed experience for trends that were consistent with prior studies and recommended no changes when the observed experience trends reversed course from the prior studies.

Consistent with the past few experience studies, we have continued the use of the ‘liability-weighted rates’ for certain decrements. This represents the crude rate of decrement on a liability-weighted basis as opposed to strictly a number count basis. The liability-weighted rates were found to be more highly correlated with withdrawal and retirement decrements than with the population related rates. This makes some intuitive sense, since retirement and termination decisions are often made based on how much the members have to gain or lose if they retire or change jobs, whereas death and disability is typically not a decision at all, rather an event that happens. Comments on specific assumptions are provided on the following pages. Tabular results are presented in summary form on page 7.

While mortality is not typically a voluntary human behavior, a study by the Society of Actuaries found that mortality experience was highly correlated with education and income. That is, people with higher incomes and higher levels of education tended to live longer. As such, we also studied mortality rates on a ‘benefit-weighted’ basis in addition to a ‘headcount-weighted’ basis. This is discussed in more detail on page 5.

Summary of Decrement Experience

Withdrawal Rates: In general, there were more withdrawals (terminations) than expected. However, this varied by age, service and group. Additionally, the operation of the withdrawal decrement is impacted by the operation of a 'forfeiture' assumption. The current assumption is that 25% of members at age 35 will forfeit the vested benefit (graded down to zero percent at retirement eligibility). We recommend that the forfeiture assumption remain unchanged and that the withdrawal (termination) rates be modified to move closer to the liability-weighted rates (see discussion on page 3). This change had a small downward effect on liabilities. Detailed information, including proposed rates, is presented beginning on page A-1.

Disability Rates: Overall, there were more disabilities than expected and we recommend increasing the incidence of disability for most groups. The increase in actual disabilities was likely due to the closure of the LTDI program. This change had a small upward effect on liabilities. Detailed information, including proposed rates, begins on page B-1.

Pay Increase Rate (Merit and Longevity Portion): Actual rates varied by group with most being slightly higher than the current assumptions. As a result, we are recommending a slight increase in the merit and longevity pay increase rates for most of the groups. This change had an upward effect on liabilities. Detailed information, including proposed rates, begins on page C-1.

Normal and Reduced Retirement Experience: Overall, there were fewer retirements and fewer reduced retirements than expected in most groups. However, retirement experience was found to be more highly correlated with the liability-weighted method described on page 3 than with the headcount weighted method. As such, we recommend modifying the normal retirement rates slightly for some groups to move closer to the observed liability-weighted rates. As more experience emerges, we will monitor these rates to see if further adjustments are necessary. This change had a small upward effect on liabilities. Detailed information, including proposed rates, begins on page D-1.

Summary of Decrement Experience

Mortality Experience:

Post-retirement mortality is an important component in cost calculations and should be updated from time to time to reflect current and expected future longevity improvements. Pre-retirement mortality is a relatively minor component in cost calculations. The frequency of pre-retirement deaths is so low that mortality assumptions based on actual experience can only be produced for very large retirement systems, if at all.

Actuarial Standards of Practice:

Actuarial Standards of Practice (ASOP) No. 35 Disclosure Section 4.1.1 states, “The disclosure of the mortality assumption should contain sufficient detail to permit another qualified actuary to understand the provision made for future mortality improvement. If the actuary assumes zero mortality improvement after the measurement date, the actuary should state that no provision was made for future mortality improvement.” The current mortality rates used in the valuation include a provision for future mortality improvement.

Public Sector Mortality Tables and Projection Scale:

The Society of Actuaries (SOA) published a mortality study specific to public sector retirement systems. This very comprehensive study includes numerous mortality tables created by classification of employee (General members, Public Safety, Teachers, Survivors, Juvenile, headcount-weighted, benefit-weighted, above median, below median). In addition, the SOA updates mortality projection scales annually – the latest published table is called the MP-2021 Projection Scale – which accounts for future improvements in mortality that are expected to occur. Lastly, the SOA recommends the use of “fully generational” (2-dimensional) projection scales.

Discussion:

Pre-retirement mortality is used to measure the probabilities of members dying before retirement. Post-Retirement mortality is used to measure the probabilities of each benefit payment being made after retirement. The following mortality tables are currently used in the annual valuations of the Retirement System:

Healthy Pre-Retirement:	2020 WRS Experience Table for Active Employees and projected with mortality improvements using 100% of the fully generational MP-2021 projection scale from a base year of 2010.
Healthy Post-Retirement:	2020 WRS Experience Table for Healthy Retirees and projected with mortality improvements using 100% of the fully generational MP-2021 projection scale from a base year of 2010.
Disabled Post-Retirement:	2020 WRS Experience Table for Disabled Retirees and projected with mortality improvements using 100% of the fully generational MP-2021 projection scale from a base year of 2010.

As recommended in a previous actuarial audit, we considered the use of separate mortality tables for different classifications of employees (general, teacher, public safety, etc.). However, when breaking down the data into smaller and smaller subgroups, the data is not as credible to assign specific mortality assumptions to distinct groups. Additionally, we are also concerned that the use of different mortality assumptions for different occupations could have an unintended effect on the dividend process, reserve transfers and optional forms of payment. We also note that the mortality experience for the 3-year study period includes years impacted by COVID. There is still not sufficient data to determine how COVID will impact mortality rates in the long term.

Proposal: Given the uncertainty regarding the long-term impact of COVID on mortality and the fact that much of the experience during the study period is likely still impacted by COVID, we recommend no changes to the mortality tables. Further, we recommend no changes to the mortality improvement scale as the MP-2021 projection scale is the most recent version published by the Society of Actuaries. The recommended following mortality tables and mortality improvement scales for use in future valuations of the Retirement System are restated below. Since there is no change in mortality tables, there will be no cost impact due to mortality. In prior years, we phased into the ultimate table for the retired lives valuation over a 3-year period. Since there are no changes to the mortality assumption, there will be no mortality adjustment over the next 3 years for retirees. Detailed information begins on page E-1.

Healthy Pre-Retirement:	2020 WRS Experience Table for Active Employees and projected with mortality improvements using 100% of the fully generational MP-2021 projection scale from a base year of 2010.
Healthy Post-Retirement:	2020 WRS Experience Table for Healthy Retirees and projected with mortality improvements using 100% of the fully generational MP-2021 projection scale from a base year of 2010.
Disabled Post-Retirement:	2020 WRS Experience Table for Disabled Retirees and projected with mortality improvements using 100% of the fully generational MP-2021 projection scale from a base year of 2010.

Complete listings of all assumptions begin on page F-1.

Summary of Decrement Experience

Decrement Risk Area	Actual	Expected	
		Current Assumption	Proposed Assumption
<u>Withdrawal - Total</u>			
General (Without Schools)	30,890	24,392	24,415
Public Schools and University	14,228	11,169	11,153
Protective			
With Social Security	2,831	2,061	2,134
Without Social Security	145	77	85
Executive and Elected	175	134	141
<u>Withdrawal - Service Greater than 10</u>			
General (Without Schools)	2,782	1,879	1,902
Public Schools and University	2,772	1,955	1,939
Protective			
With Social Security	439	317	317
Without Social Security	46	19	19
Executive and Elected	34	30	28
<u>Disability</u>			
General (Without Schools)	439	414	421
Public Schools and University	177	169	176
Protective			
With Social Security	66	32	40
Without Social Security	18	12	13
Executive and Elected	-	-	-
<u>Reduced Retirement</u>			
General (Without Schools)	6,177	7,309	7,329
Public Schools and University	4,282	4,823	4,823
Executive and Elected	51	35	35
<u>Normal Retirement</u>			
General (Without Schools) **	6,729	8,129	8,175
Public Schools and University **	4,052	4,019	4,044
Protective*			
With Social Security	2,069	1,926	1,926
Without Social Security	328	257	282
Executive and Elected	153	162	163
<u>Mortality - Retired Lives</u>			
Normal Retirement			
Male	8,318	7,375	7,375
Female	9,983	9,586	9,586
Disabled Retirement			
Male	381	394	394
Female	565	598	598

* Includes Reduced Retirements.

** Figures shown are for people below age 75.

Proposed rates for withdrawal and retirement decrements are based on liability weighting and mortality decrements are based on benefit weighting, therefore comparisons based on population counts alone may not be appropriate.



Economic Assumptions

Economic assumptions include long-term rates of investment return and wage inflation (the across-the-board portion of salary increases). Unlike demographic activities, economic activities do not lend themselves to analysis solely on the basis of internal historical patterns because both salary increases and investment return are driven by external forces; and in particular by inflation which defies accurate long-term prediction. Estimates of investment return and pay increases are generally selected on the basis of expectations in an inflation-free environment and then both are increased by some provision for long-term inflation.

If inflation and/or productivity increases are higher than expected, actual rates of salary increase and investment return are likely to exceed the assumed rates. Salaries increasing faster than expected produce unexpected liabilities. Investment return exceeding the assumed rates (whether due to manager performance, change in the mix of assets, or general inflation) results in unanticipated assets. To the extent that inflation, productivity, and other factors have about the same effect on both sides of the balance sheet, these additional assets and liabilities can offset one another over the long-term.

Sources considered in the analysis of the economic assumptions included:

- Actual System experience over the last 3 years (i.e., merit and seniority pay increases);
- Future expectations of the investment consultant for WRS and future expectations of other investment consultants;
- 2024 Social Security Trustees Report; and
- Historical observations of inflation statistics (both price and wage) and investment returns.

Current economic assumptions for WRS are as follows:

Price Inflation	2.4%
Wage Inflation	3.0%
Net Investment Return	6.8%
Real Rate of Return	3.8%

Economic Assumptions

Price Inflation: Price inflation underlies both the wage inflation and investment return assumptions. Therefore, we recommend that a specific price inflation assumption be adopted in conjunction with this Experience Study. The current price inflation assumption is 2.4%. The chart on the following page shows forward-looking inflation expectations from various published sources. One page further, we see that over the past 50 years, price inflation has averaged 3.9%. This result is heavily affected by the high inflationary period of the 1970s and early 1980s. During the past decade, price inflation averaged 2.8%.

Although there has been a recent increase in short-term inflation rates, NEPC – the investment consultant to the State of Wisconsin Investment Board (SWIB) -- estimates long-term inflation at 2.6% per annum. Additional forward-looking forecasts are shown on the following page. **Based upon the reviewed data, we recommend maintaining the 2.4% assumption.** (Remember that the selected wage inflation and investment return assumptions should be consistent with the final selected price inflation assumption.)

Forward-Looking Price Inflation Forecasts^a	
Congressional Budget Office^b	
5-Year Annual Average	2.44%
10-Year Annual Average	2.32%
Federal Reserve Bank of Philadelphia^c	
5-Year Annual Average	2.40%
10-Year Annual Average	2.30%
Federal Reserve Bank of Cleveland^d	
10-Year Expectation	2.12%
20-Year Expectation	2.23%
30-Year Expectation	2.32%
Federal Reserve Bank of St. Louis^e	
10-Year Breakeven Inflation	2.11%
20-Year Breakeven Inflation	2.30%
30-Year Breakeven Inflation	2.11%
U.S. Department of the Treasury^f	
10-Year Breakeven Inflation	2.03%
20-Year Breakeven Inflation	2.32%
30-Year Breakeven Inflation	2.21%
50-Year Breakeven Inflation	2.32%
100-Year Breakeven Inflation	2.40%
Social Security Trustees^g	
Ultimate Intermediate Assumption	2.40%

^a**End of the Third Quarter, 2024.** Version 2024-10-14 by Gabriel, Roeder, Smith & Company.

^b*An Update to the Budget and Economic Outlook: 2024 to 2034*, Release Date: June 2024, Consumer Price Index (CPI-U), Percentage Change from Year to Year, 5-Year Annual Average (2024 - 2028), 10-Year Annual Average (2024 - 2033).

^c*Third Quarter 2024 Survey of Professional Forecasters*, Release Date: August 9, 2024, Headline CPI, Annualized Percentage Points, 5-Year Annual Average (2024 - 2028), 10-Year Annual Average (2024 - 2033).

^dInflation Expectations, Model output date: September 1, 2024.

^eThe breakeven inflation rate represents a measure of expected inflation derived from X-Year Treasury Constant Maturity Securities and X-Year Treasury Inflation-Indexed Constant Maturity Securities. Observation date: September, 2024.

^fThe Treasury Breakeven Inflation (TBI) Curve, Monthly Average Rates, September, 2024.

^g*The 2024 Annual Report of The Board of Trustees of The Federal Old-Age And Survivors Insurance and Federal Disability Insurance Trust Funds*, May 6, 2024, p. 10, Key Assumptions and Summary Measures for Long-Range (75-year) Projections, Intermediate, Consumer Price Index (CPI-W).



Economic Assumptions

Wage Inflation: Wage inflation consists of two components, 1) a portion due to pure price inflation (i.e., increases due to changes in the CPI), and 2) increases in average salary levels in excess of pure price inflation (i.e., increases due to changes in productivity levels, supply and demand in the labor market and other macroeconomic factors). The long-term rate of increase in National Average Earnings over the last 50 years is somewhat higher than the current WRS assumption, and shorter term averages reflect a temporary spike in price inflation. It is expected that, in the long run, salary increases in all parts of the country will be close to the national averages. However, none of the data we have reviewed suggests a repeat of the high inflation rates experienced in the 1970s. The spread between increases in wages and prices has ranged between 50-150 basis points over time. Average salaries in WRS have risen at approximately 2.4% a year since 2004, including 3.4% the last 3 years. **Given that the price inflation assumption of 2.4% and the current wage inflation of 3.0% results in a spread of 60 basis points, we recommend no change in the wage inflation assumption at this time.**

Year	Annual Increase in		
	Prices (CPI-U)	Wages (NAE)	Difference
1964-1973	4.1%	5.6%	1.5%
1974-1983	8.2%	7.2%	-1.0%
1984-1993	3.7%	4.3%	0.6%
1994-2003	2.4%	3.9%	1.5%
2004-2013	2.4%	2.8%	0.4%
2014-2023	2.8%	4.0%	1.2%
3-Year Avg	5.6%	5.9%	0.3%
5-Year Avg	4.1%	4.9%	0.8%
10-Year Avg	2.8%	4.0%	1.2%
20-Year Avg	2.6%	3.4%	0.8%
30-Year Avg	2.5%	3.6%	1.1%
50-Year Avg	3.9%	4.4%	0.5%

WRS Wage Inflation

Period	WRS Wage Inflation
Last 3 Years	3.4%
Last 5 Years	3.3%
Last 10 Years	2.6%
Last 20 Years	2.4%
Last 25 Years	2.5%

Economic Assumptions

The relevant Actuarial Standard of Practice (ASOP) for economic assumptions is ASOP No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*. Under ASOP No. 27, Section 3.6, an economic assumption is reasonable if it has the following characteristics:

- It is appropriate for the purpose of the measurement;
- It reflects the actuary's professional judgment;
- It takes into account current and historical data that is relevant to selecting the assumption for the measurement date, to the extent such relevant data is reasonably available;
- It reflects the actuary's estimate of future experience, the actuary's observation of the estimates inherent in market data (if any), or a combination thereof; and
- It is expected to have no significant bias (i.e., it is not significantly optimistic or pessimistic), except when provisions for adverse deviation or plan provisions that are difficult to measure are included (as discussed in Section 3.5.1) or when alternative assumptions are used for the assessment of risk, in accordance with ASOP No. 51, *Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions*.

For purposes of budgeting contributions and measuring liabilities for public employee retirement systems, the assumed rate of investment return is used as the discount rate to determine the present value of a system's pension obligations. For most valuations, an actuarial investment return assumption based on expected future experience is a single estimate for all years and, therefore, implicitly assumes that returns above and below expectations will average out over time. In other words, the expected risk premium is reflected in the assumed rate of investment return in advance of being earned, while the investment risk (i.e., volatility) is not reflected until actual experience emerges with each valuation.

The analysis of the investment return assumption in this report is based on forward-looking measures of expected investment return outcomes for the asset classes in the System's current investment policy. For purposes of this analysis, we have analyzed the System's investment policy with the capital market assumptions from 12 nationally recognized investment firms.

Our analysis is based on the GRS 2024 Capital Market Assumption Modeler (CMAM¹). The purpose of the CMAM is to assess the reasonability of the assumed rate of return for use in the actuarial valuations for the plan. In our professional judgment, the CMAM has the capability to provide results that are consistent with this purpose. A description of the strengths, limitations and weaknesses of the model are incorporated in this report. In our opinion, the limitations and weaknesses are not material. We performed tests to ensure that the model reasonably represents that which is intended to be modeled. We are relying on the GRS actuaries and Internal Software, Training, and Processes Team who developed and maintain the model.

¹ Issued April 15, 2024.

Because GRS is a benefits consulting firm and does not develop or maintain its own capital market expectations, we request and monitor forward-looking expectations developed by several major investment firms. We update our CMAM on an annual basis. The capital market assumptions in the 2024 CMAM are from the following investment firms (in alphabetical order): Aon Hewitt, Blackrock, BNY Mellon, Callan, Cambridge, JPMorgan, Meketa, Mercer, NEPC, RVK, Verus, and Wilshire. We believe that the benefit of performing this analysis using multiple investment firms is to recognize the uncertain nature of the items affecting the selection of the investment return assumption. While there may be differences in asset classes, investment horizons, inflation assumptions, treatment of investment expenses, excess manager performance (i.e., alpha), etc., we have attempted to align the various assumption sets from the different investment firms to be as consistent as possible. In some cases, we have made minor adjustments or assumptions to align the various assumptions sets with our model.

Each investment firm provided capital market assumptions over an investment horizon of approximately 10 years. Although investment firms often refer to this period as “short term” it is important to remember that 10 years is actually a very long time. Therefore, returns during the next 10 years will affect the plan’s funding materially. A subset of eight investment firms provided capital market expectations over a longer horizon, varying between 20 and 30 years.

In general, our understanding is that the methodology for developing these capital market expectations is forward-looking, not purely backward-looking. Over the years, we have observed a general decreasing trend in capital market expectations, which reversed with information provided for the 2022 CMAM. However, we have also observed that some of the investment firms’ assumption sets are dependent on the market conditions at the time they are developed and consequently may be sensitive to short-term market fluctuations. Some expectations are contrarian – meaning that when the market is high, future expectations are lowered and when the market is low, future expectations are raised. The amount of these fluctuations as they appear in the year-to-year capital market assumptions varies between the various investment firms.

To the best of our ability, we have adapted the System’s investment policy to fit with the investment firms’ assumptions adjusting for these known differences in assumptions and methodology. The asset classes in the system’s investment allocation often do not exactly align with the asset classes of all investment firms in the survey. This may require us to make approximations which can introduce some subjectivity into the process. In the following charts, to the extent possible all returns are net of passive investment expenses and administrative expenses and have no assumption for excess manager performance (alpha) in excess of active management fees.

Presented below is the approximate target asset allocation for the WRS Core fund:

Asset Class	Approximate Asset Allocation
Global Equities	40.0%
Fixed Income	27.0
Inflation Sensitive Assets	19.0
Real Estate	8.0
Private Equity/Debt	18.0
Cash Equivalent	-12.0

Based upon the approximate asset allocation, future expectations of various investment consultants were analyzed. The exhibit on the following page shows the results of this analysis. Final expected nominal investment return results are based upon the recommended 2.4% price inflation assumption. We used the actuarial assumption for price inflation rather than the consultant assumption, in order to be consistent with the calculation of liabilities. Investment results presented are net of investment and administrative expenses.

ASOP No. 27, Section 3.6.2, states that “due to the uncertain nature of the items for which assumptions are selected, the actuary may consider several different assumptions reasonable for a given measurement. Different actuaries will apply different professional judgment and may choose different reasonable assumptions. As a result, a range of reasonable assumptions may develop, both for an individual actuary and across actuarial practice.” This range of different expectations from the CMAs is evident from the summaries we show from our CMAM.

Below we compare the probabilities of achieving returns over a 10-year horizon. We compute the 40th, 50th, and 60th percentiles of returns as well as the probability of achieving the current assumption of 6.8% over a 10-year horizon. These estimates are based on the assumption that the distribution of returns for the next 10 years is the same each year. The average median return of 6.50% from the last three years of CMAMs is shown at the bottom of the table below for reference.

GRS 2024 CMAM				
Capital Market Assumption Set (CMA)	Distribution of 10-Year Average Geometric Net Nominal Return			Probability of exceeding 6.80%
	40th	50th	60th	
(1)	(2)	(3)	(4)	(5)
1	4.95%	5.94%	6.94%	41.36%
2	5.37%	6.38%	7.40%	45.84%
3	5.32%	6.38%	7.46%	46.05%
4	5.90%	6.87%	7.85%	50.74%
5	6.12%	6.99%	7.88%	52.23%
6	6.03%	6.99%	7.96%	52.03%
7	6.17%	7.07%	7.98%	53.06%
8	6.21%	7.18%	8.16%	53.96%
9	6.25%	7.23%	8.22%	54.44%
10	6.46%	7.39%	8.33%	56.34%
11	6.52%	7.53%	8.55%	57.29%
12	6.75%	7.67%	8.60%	59.49%
Average	6.01%	6.97%	7.94%	51.90%
Average from last 3 CMAMs over 10-year horizon		6.50%		

The 50th percentile return is also related to the geometric average return. The geometric average of a sequence of returns over a number of years is the compound average of those returns over the number of years compounded. As the number of years in the geometric average increases and if the distributions of returns each year are independent and identically distributed, then the geometric average will converge to the median return. The median return may be considered a reasonable rate of return for purposes of the valuation. The average of 50th percentile returns is 6.97% per year.

While the chart above is based on a 10-year horizon, a subset of these firms also provided results over a longer horizon, varying from 20 to 30 years. In addition to conducting our own analysis, we also discussed the investment return assumption with SWIB and NEPC. According to NEPC, their 10-year forecast for the Core Fund is 6.35% and their 30-year forecast is 7.54%. A summary of these results is provided in the following chart.

	GRS CMAM				SWIB/NEPC
	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>3-year Average</u>	
10-Years	5.50%	7.04%	6.97%	6.50%	6.35%
20-30 Years	6.56%	7.24%	7.15%	6.98%	7.54%



Please note that it is not uncommon for the actuary and investment managers to develop different forecasted rates of return. The following areas are reasons for some of these differences:

- Number of managers – Actuary typically will use survey information from many investment managers instead of using just one forecast.
- Mapping error – The various asset classes provided by the various investment consultants may be difficult to map exactly to the WRS asset classes.
- Current year expectations – Year to year forecasts for portfolios can change by 50 to 100 basis points a year. Actuaries may decide to apply smoothing to these forecasts so that there will not be large changes each year in the investment return assumption.
- Purpose – The purpose of the return assumption for actuaries is generally to develop a discount rate for determining liabilities, which may be different from the overall purpose of the investment manager forecast (i.e. beating their benchmarks).
- Inflation – Inflation forecasts will tend to vary by investment forecaster.
- Time Horizon – While there is no universally agreed upon time horizon to base the investment return assumption on, longer term forecasts tend to be less reliable than shorter term forecasts.
- Treatment of alpha – In general, actuaries are not allowed to include alpha in their assumption. ASOP No. 27, Section 3.8.3 d. states, "Investment Manager Performance—Anticipating superior (or inferior) investment manager performance may be unduly optimistic (or pessimistic). The actuary should not assume that superior or inferior returns will be achieved, net of investment expenses, from an active investment management strategy compared to a passive investment management strategy unless the actuary believes, based on relevant supporting data, that such superior or inferior returns represent a reasonable expectation over the measurement period." In practice, assuming alpha as part of the total investment assumption is rare.

Summary Recommendation:

Forward-looking investment return expectations have rebounded since the prior experience study (and since 2022), stopping movement among nearly all Public Sector Retirement Systems to reduce this assumption. It is important to remember that this assumption should not drive the asset allocation or investment goals of the investment managers. Rather, it is intended to reflect the expected return of the portfolio based upon the given asset allocation. Based upon this data, and the liability structure of the WRS, in our opinion, the Board’s assumed rate of return of 6.80% remains a reasonable assumption.

Summary of Recommended Economic Assumptions

Measure	Recommended Assumption
Price Inflation	2.4%
Wage Inflation	3.0%
Investment Return	6.8%

Summary of Valuation Results

The table below describes hypothetical valuation results at December 31, 2023 with current and proposed actuarial assumptions.

	12/31/2023	Hypothetical Results as of 12/31/2023*
	Actual Results	Demographic Changes Only
Price Inflation	2.40%	2.40%
Wage Inflation	3.00%	3.00%
Investment Return	6.80%	6.80%
General and Executive & Elected	13.9%	14.1%
Protective With Social Security	21.9%	21.8%
Protective Without Social Security	25.9%	25.8%

* Results above include proposed demographic assumptions (changes to the withdrawal, retirement and disability rates discussed earlier in this report) as well as changes to miscellaneous and technical assumptions (discussed on page 18).

New assumptions will be first used in the December 31, 2024 actuarial valuations, at which time experience gains or losses incurred during 2024 will also be recognized. This would first impact rates in 2026. Consequently, no rate changes are recommended for 2025 based upon this study.

Other Recommendations

Miscellaneous and Technical Assumptions: We reviewed various miscellaneous and technical assumptions and make the following recommendations:

- Marriage Assumption
 - Current and Proposed Assumption: 75% of males and 55% of females are assumed to be married for purposes of death-in-service benefits.
- Age Difference
 - Current and Proposed Assumption: Male spouses are assumed to be two years older than female spouses.
- Liability Adjustments
 - Current Assumption: Final Average Salaries are increased 4.0% for Executive and Elected, 4.5% for Protective and 3.5% for all others to account for additional contingencies in actual benefit amount calculated at time of retirement.
 - Proposed Assumption: Final Average Salaries are increased 5.0% for Executive and Elected, 4.0% for Protective and 4.0% for all others to account for additional contingencies in actual benefit amount calculated at time of retirement.
- Military Service Loads
 - Current Assumption: Liabilities are loaded by 0.4% for Protective with Social Security, 0.5% for Protective without Social Security and 0.2% for all others to account for military service.
 - Proposed Assumption: Liabilities are loaded by 0.2% for Protective with Social Security, 0.2% for Protective without Social Security and 0.1% for all others to account for military service.

Option Factors are calculated using a 5% interest assumption and the assumed rates of mortality with a blended mortality table consisting of 50% male rates and 50% female rates. If a retiring member elects an optional form of benefit, the straight life benefit is multiplied by the appropriate option factor to produce the benefit actually payable.

Other Recommendations

Recommended Implementation Schedule. It is recommended that the results of this experience study be implemented in accordance with the following schedule.

Active and Inactive Lives Valuation:	12/31/2024 Valuation
Retired Lives Valuation:	12/31/2024 Valuation

SECTION A

WITHDRAWAL EXPERIENCE

General Males Non-State Withdrawal Experience

Male Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Withdrawals	
					Present	Proposed	Present	Proposed
1	1,071	4,897	0.2187	0.2126	0.1770	0.1770	867	867
2	1,532	8,782	0.1744	0.1680	0.1250	0.1250	1,098	1,098
3	797	6,832	0.1167	0.1095	0.0900	0.0900	615	615
4	589	6,067	0.0971	0.0886	0.0710	0.0710	431	431
5	417	5,061	0.0824	0.0783	0.0660	0.0660	334	334
6	282	4,039	0.0698	0.0680	0.0530	0.0530	214	214
7	268	3,736	0.0717	0.0647	0.0480	0.0480	179	179
8	179	3,262	0.0549	0.0584	0.0460	0.0460	150	150
9	164	2,883	0.0569	0.0490	0.0410	0.0410	118	118
10	156	2,493	0.0626	0.0561	0.0400	0.0400	100	100
Totals (10 and under)	5,455	48,052	0.1135	0.0730	0.0618	0.0593	4,106	4,106

	<u>Actual Experience</u>		<u>Proposed Assumption</u>	
Current	0.1135	0.0730	0.0593	
Previous Investigation Results				
2018-2020	0.0899	0.0566	0.0593	
2015-2017	0.0978	0.0674	0.0620	
2012-2014	0.0971	0.0596	0.0546	

General Males Non-State Withdrawal Experience

Male Age-Based Withdrawals with 10 or More Years of Service

Age	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates*		Expected Withdrawals	
					Present	Proposed	Present	Proposed
25-29	1	8	0.1250	0.0850	0.0350	0.0350	-	-
30-34	31	579	0.0535	0.0483	0.0300	0.0300	17	17
35-39	97	2,432	0.0399	0.0371	0.0260	0.0260	63	63
40-44	155	4,506	0.0344	0.0312	0.0220	0.0220	99	99
45-49	185	5,636	0.0328	0.0267	0.0180	0.0180	102	102
50-54	200	7,623	0.0262	0.0229	0.0160	0.0160	124	124
Totals	669	20,784	0.0322	0.0268	0.0187	0.0185	405	405

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0322	0.0268	0.0185
Previous Investigation Results (combined)			
2018-2020	0.0242	0.0202	0.0185
2015-2017	0.0256	0.0208	0.0185
2012-2014	0.0239	0.0202	0.0165

* Sample rates are taken from midpoint of age group.

General Males State Withdrawal Experience

Male Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Withdrawals	
					Present	Proposed	Present	Proposed
1	458	2,101	0.2180	0.2038	0.1720	0.1720	361	361
2	714	3,859	0.1850	0.1525	0.1290	0.1290	498	498
3	424	3,145	0.1348	0.1207	0.0950	0.0950	299	299
4	311	2,901	0.1072	0.0984	0.0740	0.0740	215	215
5	203	2,468	0.0823	0.0753	0.0730	0.0730	180	180
6	159	2,099	0.0758	0.0691	0.0610	0.0610	128	128
7	141	1,905	0.0740	0.0709	0.0520	0.0520	99	99
8	118	1,768	0.0667	0.0625	0.0510	0.0510	90	90
9	109	1,635	0.0667	0.0662	0.0450	0.0450	74	74
10	69	1,497	0.0461	0.0458	0.0360	0.0360	54	54
Totals (10 and under)	2,706	23,378	0.1157	0.0749	0.0609	0.0624	1,998	1,998

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.1157	0.0749	0.0624
Previous Investigation Results			
2018-2020	0.1025	0.0652	0.0624
2015-2017	0.0978	0.0674	0.0620
2012-2014	0.0971	0.0596	0.0546

General Males State Withdrawal Experience

Male Age-Based Withdrawals with 10 or More Years of Service

Age	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates*		Expected Withdrawals	
					Present	Proposed	Present	Proposed
25-29	-	4	0.0000	0.0000	0.0350	0.0350	-	-
30-34	8	233	0.0343	0.0343	0.0280	0.0335	6	8
35-39	78	1,551	0.0503	0.0471	0.0270	0.0320	42	49
40-44	90	2,354	0.0382	0.0346	0.0260	0.0280	60	65
45-49	91	2,888	0.0315	0.0259	0.0220	0.0230	63	67
50-54	97	3,812	0.0254	0.0229	0.0170	0.0185	67	72
Totals	364	10,842	0.0336	0.0279	0.0186	0.0207	238	261

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0336	0.0279	0.0207
Previous Investigation Results (combined)			
2018-2020	0.0255	0.0218	0.0207
2015-2017	0.0256	0.0208	0.0185
2012-2014	0.0239	0.0202	0.0165

* Sample rates are taken from midpoint of age group.

General Females Non-State Withdrawal Experience

Female Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Withdrawals	
					Present	Proposed	Present	Proposed
1	3,375	14,109	0.2392	0.2571	0.2000	0.2000	2,822	2,822
2	3,938	21,502	0.1831	0.1825	0.1500	0.1500	3,225	3,225
3	2,194	15,845	0.1385	0.1377	0.1150	0.1150	1,822	1,822
4	1,537	13,138	0.1170	0.1148	0.0960	0.0960	1,261	1,261
5	1,068	10,110	0.1056	0.1055	0.0900	0.0900	910	910
6	720	7,615	0.0946	0.0911	0.0740	0.0740	564	564
7	572	6,281	0.0911	0.0881	0.0630	0.0630	396	396
8	380	5,311	0.0715	0.0692	0.0600	0.0600	319	319
9	295	4,619	0.0639	0.0603	0.0570	0.0570	263	263
10	256	3,907	0.0655	0.0629	0.0500	0.0500	195	195
Totals (10 and under)	14,335	102,437	0.1399	0.0950	0.0827	0.0800	11,777	11,777

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.1399	0.0950	0.0800
Previous Investigation Results			
2018-2020	0.1156	0.0774	0.0800
2015-2017	0.1246	0.0919	0.0810
2012-2014	0.1091	0.0769	0.0697

General Females Non-State Withdrawal Experience

Female Age-Based Withdrawals with 10 or More Years of Service

Age	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates*		Expected Withdrawals	
					Present	Proposed	Present	Proposed
25-29	1	7	0.1429	0.1418	0.0500	0.0500	-	-
30-34	43	542	0.0793	0.0795	0.0480	0.0480	24	24
35-39	166	3,235	0.0513	0.0487	0.0360	0.0360	117	117
40-44	263	5,672	0.0464	0.0402	0.0300	0.0300	173	173
45-49	275	7,740	0.0355	0.0299	0.0290	0.0290	218	218
50-54	407	11,256	0.0362	0.0294	0.0220	0.0220	256	256
Totals	1,155	28,452	0.0406	0.0334	0.0245	0.0267	788	788

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0406	0.0334	0.0267
Previous Investigation Results (combined)			
2018-2020	0.0337	0.0279	0.0267
2015-2017	0.0383	0.0319	0.0244
2012-2014	0.0293	0.0225	0.0203

* Sample rates are taken from midpoint of age group.

General Females State Withdrawal Experience

Female Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Withdrawals	
					Present	Proposed	Present	Proposed
1	1,068	4,339	0.2461	0.2014	0.1950	0.1950	846	846
2	1,529	7,472	0.2046	0.1860	0.1550	0.1550	1,158	1,158
3	849	5,890	0.1441	0.1300	0.1250	0.1250	736	736
4	593	5,230	0.1134	0.1018	0.1000	0.1000	523	523
5	438	4,507	0.0972	0.0919	0.0870	0.0870	392	392
6	374	3,899	0.0959	0.0948	0.0780	0.0780	304	304
7	293	3,404	0.0861	0.0834	0.0690	0.0690	235	235
8	187	2,853	0.0655	0.0616	0.0600	0.0600	171	171
9	156	2,543	0.0613	0.0591	0.0560	0.0560	142	142
10	125	2,265	0.0552	0.0542	0.0550	0.0550	125	125
Totals (10 and under)	5,612	42,402	0.1324	0.0842	0.0806	0.0806	4,632	4,632

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.1324	0.0842	0.0806
Previous Investigation Results			
2018-2020	0.1250	0.0812	0.0806
2015-2017	0.1246	0.0919	0.0810
2012-2014	0.1091	0.0769	0.0697

General Females State Withdrawal Experience

Female Age-Based Withdrawals with 10 or More Years of Service

Age	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates*		Expected Withdrawals	
					Present	Proposed	Present	Proposed
25-29	-	3	0.0000	0.0000	0.0500	0.0500	-	-
30-34	32	440	0.0727	0.0727	0.0470	0.0470	19	19
35-39	133	2,606	0.0510	0.0461	0.0340	0.0340	89	89
40-44	143	4,054	0.0353	0.0315	0.0280	0.0280	115	115
45-49	136	4,729	0.0288	0.0247	0.0260	0.0260	119	119
50-54	150	5,618	0.0267	0.0206	0.0180	0.0180	106	106
Totals	594	17,450	0.0340	0.0271	0.0250	0.0240	448	448

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0340	0.0271	0.0240
Previous Investigation Results (combined)			
2018-2020	0.0292	0.0225	0.0240
2015-2017	0.0383	0.0319	0.0244
2012-2014	0.0293	0.0225	0.0203

* Sample rates are taken from midpoint of age group.

Public School Males Non-State Withdrawal Experience

Male Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Withdrawals	
					Present	Proposed	Present	Proposed
1	190	1,560	0.1218	0.1191	0.1260	0.1260	197	197
2	328	2,984	0.1099	0.1110	0.1160	0.1160	346	346
3	282	2,669	0.1057	0.1081	0.0850	0.0850	227	227
4	207	2,581	0.0802	0.0768	0.0600	0.0600	155	155
5	159	2,283	0.0696	0.0716	0.0560	0.0560	128	128
6	143	2,178	0.0657	0.0661	0.0450	0.0450	98	98
7	109	2,154	0.0506	0.0477	0.0370	0.0370	80	80
8	91	2,127	0.0428	0.0419	0.0290	0.0290	62	62
9	97	2,114	0.0459	0.0424	0.0260	0.0260	55	55
10	73	2,047	0.0357	0.0357	0.0250	0.0250	51	51
Totals (10 and under)	1,679	22,697	0.0740	0.0539	0.0419	0.0410	1,399	1,399

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0740	0.0539	0.0410
Previous Investigation Results			
2018-2020	0.0600	0.0407	0.0410
2015-2017	0.0638	0.0420	0.0431
2012-2014	0.0599	0.0420	0.0371

Public School Males Non-State Withdrawal Experience

Male Age-Based Withdrawals with 10 or More Years of Service

Age	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates*		Expected Withdrawals	
					Present	Proposed	Present	Proposed
25-29	-	-	N\A	N\A	0.0250	0.0250	-	-
30-34	11	552	0.0199	0.0235	0.0170	0.0170	9	9
35-39	90	4,025	0.0224	0.0208	0.0150	0.0150	60	60
40-44	148	6,918	0.0214	0.0194	0.0140	0.0140	97	97
45-49	141	8,027	0.0176	0.0158	0.0135	0.0135	108	108
50-54	148	8,653	0.0171	0.0142	0.0130	0.0130	113	113
Totals	538	28,175	0.0191	0.0161	0.0140	0.0135	387	387

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0191	0.0161	0.0135
Previous Investigation Results (combined)			
2018-2020	0.0159	0.0137	0.0135
2015-2017	0.0182	0.0156	0.0141
2012-2014	0.0184	0.0156	0.0125

* Sample rates are taken from midpoint of age group.

Public School Females Non-State Withdrawal Experience

Female Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Withdrawals	
					Present	Proposed	Present	Proposed
1	528	4,815	0.1097	0.1393	0.1200	0.1200	578	578
2	1,013	9,099	0.1113	0.1137	0.1000	0.1000	910	910
3	812	8,445	0.0962	0.0964	0.0850	0.0850	718	718
4	731	8,182	0.0893	0.0862	0.0620	0.0620	507	507
5	615	7,452	0.0825	0.0793	0.0580	0.0580	432	432
6	503	6,938	0.0725	0.0714	0.0480	0.0480	333	333
7	417	6,846	0.0609	0.0584	0.0410	0.0410	281	281
8	384	6,821	0.0563	0.0544	0.0350	0.0350	239	239
9	346	6,738	0.0514	0.0503	0.0340	0.0340	229	229
10	317	6,400	0.0495	0.0480	0.0300	0.0300	192	192
Totals (10 and under)	5,666	71,736	0.0790	0.0627	0.0452	0.0453	4,419	4,419

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0790	0.0627	0.0453
Previous Investigation Results			
2018-2020	0.0592	0.0457	0.0453
2015-2017	0.0639	0.0496	0.0451
2012-2014	0.0601	0.0429	0.0397



Public School Females Non-State Withdrawal Experience

Female Age-Based Withdrawals with 10 or More Years of Service

Age	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates*		Expected Withdrawals	
					Present	Proposed	Present	Proposed
25-29	-	-	N\A	N\A	0.0250	0.0250	-	-
30-34	48	1,937	0.0248	0.0254	0.0200	0.0200	38	38
35-39	357	12,258	0.0291	0.0275	0.0180	0.0180	217	217
40-44	412	18,620	0.0221	0.0194	0.0145	0.0145	274	274
45-49	413	19,939	0.0207	0.0181	0.0130	0.0130	259	259
50-54	455	22,148	0.0205	0.0168	0.0115	0.0115	259	259
Totals	1,685	74,902	0.0225	0.0187	0.0133	0.0132	1,047	1,047

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0225	0.0187	0.0132
Previous Investigation Results (combined)			
2018-2020	0.0166	0.0133	0.0132
2015-2017	0.0188	0.0152	0.0133
2012-2014	0.0178	0.0147	0.0113

* Sample rates are taken from midpoint of age group.

University Males State Withdrawal Experience

Male Service-Based Withdrawals

Service Index	Withdrawal	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Withdrawals	
					Present	Proposed	Present	Proposed
1	151	933	0.1618	0.1073	0.1400	0.1400	131	131
2	372	2,067	0.1800	0.1476	0.1380	0.1380	285	285
3	345	2,151	0.1604	0.1356	0.1260	0.1260	271	271
4	248	1,933	0.1283	0.1107	0.1100	0.1100	213	213
5	180	1,715	0.1050	0.0973	0.0860	0.0860	147	147
6	141	1,387	0.1017	0.0927	0.0850	0.0850	118	118
7	91	1,223	0.0744	0.0659	0.0700	0.0700	86	86
8	71	1,137	0.0624	0.0602	0.0560	0.0560	64	64
9	66	1,104	0.0598	0.0540	0.0460	0.0460	51	51
10	41	1,040	0.0394	0.0414	0.0430	0.0430	45	45
Totals (10 and under)	1,706	14,690	0.1161	0.0755	0.0766	0.0724	1,411	1,411

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.1161	0.0755	0.0724
Previous Investigation Results			
2018-2020	0.1070	0.0670	0.0724
2015-2017	0.1244	0.0836	0.0777
2012-2014	0.1187	0.0771	0.0720



University Males State Withdrawal Experience

Male Age-Based Withdrawals with 10 or More Years of Service

Age	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates*		Expected Withdrawals	
					Present	Proposed	Present	Proposed
25-29	-	-	N\A	N\A	0.0430	0.0430	-	-
30-34	2	85	0.0235	0.0211	0.0410	0.0360	3	3
35-39	39	671	0.0581	0.0579	0.0385	0.0340	25	22
40-44	43	1,599	0.0269	0.0256	0.0305	0.0290	49	46
45-49	54	2,514	0.0215	0.0213	0.0255	0.0240	64	60
50-54	64	3,052	0.0210	0.0190	0.0220	0.0200	68	62
Totals	202	7,921	0.0255	0.0224	0.0240	0.0251	209	193

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0255	0.0224	0.0251
Previous Investigation Results (combined)			
2018-2020	0.0307	0.0259	0.0251
2015-2017	0.0335	0.0284	0.0240
2012-2014	0.0289	0.0248	0.0206

* Sample rates are taken from midpoint of age group.

University Females State Withdrawal Experience

Female Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Withdrawals	
					Present	Proposed	Present	Proposed
1	251	1,425	0.1761	0.1211	0.1410	0.1410	201	201
2	490	2,839	0.1726	0.1401	0.1400	0.1400	397	397
3	415	2,865	0.1449	0.1163	0.1270	0.1270	364	364
4	355	2,709	0.1310	0.1087	0.1000	0.1000	271	271
5	238	2,443	0.0974	0.0900	0.0930	0.0930	227	227
6	185	2,078	0.0890	0.0787	0.0810	0.0810	168	168
7	178	1,875	0.0949	0.0855	0.0700	0.0700	131	131
8	123	1,652	0.0745	0.0718	0.0560	0.0560	93	93
9	99	1,536	0.0645	0.0613	0.0490	0.0490	75	75
10	71	1,353	0.0525	0.0472	0.0430	0.0430	58	58
Totals (10 and under)	2,405	20,775	0.1158	0.0785	0.0753	0.0735	1,985	1,985

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.1158	0.0785	0.0735
Previous Investigation Results			
2018-2020	0.1065	0.0717	0.0735
2015-2017	0.1156	0.0797	0.0750
2012-2014	0.1140	0.0734	0.0735

University Females State Withdrawal Experience

Female Age-Based Withdrawals with 10 or More Years of Service

Age	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates*		Expected Withdrawals	
					Present	Proposed	Present	Proposed
25-29	-	1	0.0000	0.0000	0.0400	0.0400	-	-
30-34	2	140	0.0143	0.0160	0.0400	0.0400	6	6
35-39	55	1,170	0.0470	0.0451	0.0400	0.0400	46	46
40-44	105	2,441	0.0430	0.0411	0.0350	0.0350	85	85
45-49	94	3,034	0.0310	0.0260	0.0300	0.0300	91	91
50-54	91	3,302	0.0276	0.0218	0.0250	0.0250	84	84
Totals	347	10,088	0.0344	0.0282	0.0295	0.0295	312	312

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0344	0.0282	0.0295
Previous Investigation Results (combined)			
2018-2020	0.0318	0.0274	0.0295
2015-2017	0.0373	0.0333	0.0294
2012-2014	0.0322	0.0256	0.0238

* Sample rates are taken from midpoint of age group.

Protective With Social Security Non-State Withdrawal Experience

Male and Female Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Withdrawals	
					Present	Proposed	Present	Proposed
1	105	831	0.1264	0.1378	0.1560	0.1560	130	130
2	196	2,204	0.0889	0.0876	0.0940	0.0940	207	207
3	158	2,032	0.0778	0.0732	0.0530	0.0530	108	108
4	121	1,938	0.0624	0.0588	0.0440	0.0440	85	85
5	91	1,804	0.0504	0.0492	0.0420	0.0420	76	76
6	73	1,629	0.0448	0.0431	0.0330	0.0330	54	54
7	64	1,515	0.0422	0.0385	0.0320	0.0320	48	48
8	55	1,385	0.0397	0.0387	0.0300	0.0300	42	42
9	40	1,222	0.0327	0.0295	0.0270	0.0270	33	33
10	36	1,175	0.0306	0.0294	0.0230	0.0230	27	27
Totals (10 and under)	939	15,735	0.0597	0.0421	0.0389	0.0345	810	810

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0597	0.0421	0.0345
Previous Investigation Results			
2018-2020	0.0484	0.0298	0.0345
2015-2017	0.0779	0.0445	0.0382
2012-2014	0.0537	0.0366	0.0313

Protective With Social Security Non-State Withdrawal Experience

Male and Female Age-Based Withdrawals with 10 or More Years of Service

Age	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates*		Expected Withdrawals	
					Present	Proposed	Present	Proposed
25-29	-	3	0.0000	0.0000	0.0220	0.0220	-	-
30-34	13	694	0.0187	0.0170	0.0200	0.0200	13	13
35-39	60	3,329	0.0180	0.0163	0.0160	0.0160	54	54
40-44	91	4,093	0.0222	0.0196	0.0150	0.0150	61	61
45-49	89	4,344	0.0205	0.0179	0.0140	0.0140	61	61
50-54	30	596	0.0503	0.0709	0.0130	0.0130	8	8
Totals	283	13,059	0.0217	0.0205	0.0146	0.0147	197	197

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0217	0.0205	0.0147
Previous Investigation Results (combined)			
2018-2020	0.0186	0.0187	0.0147
2015-2017	0.0247	0.0206	0.0146
2012-2014	0.0182	0.0163	0.0121

* Sample rates are taken from midpoint of age group.

Protective With Social Security State Withdrawal Experience

Male and Female Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Withdrawals	
					Present	Proposed	Present	Proposed
1	236	722	0.3269	0.2700	0.1880	0.2100	136	152
2	428	1,699	0.2519	0.2291	0.1550	0.1700	263	289
3	242	1,568	0.1543	0.1368	0.1050	0.1100	165	172
4	154	1,457	0.1057	0.0917	0.0650	0.0700	95	102
5	111	1,323	0.0839	0.0753	0.0550	0.0600	73	79
6	92	1,232	0.0747	0.0701	0.0500	0.0550	62	68
7	76	1,107	0.0687	0.0592	0.0450	0.0490	50	54
8	47	957	0.0491	0.0453	0.0400	0.0410	38	39
9	31	806	0.0385	0.0333	0.0350	0.0350	28	28
10	36	714	0.0504	0.0463	0.0330	0.0340	24	24
Totals (10 and under)	1,453	11,585	0.1254	0.0672	0.0430	0.0574	934	1,007

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.1254	0.0672	0.0574
Previous Investigation Results			
2018-2020	0.1183	0.0624	0.0574
2015-2017	0.0779	0.0445	0.0382
2012-2014	0.0537	0.0366	0.0313

Protective With Social Security State Withdrawal Experience

Male and Female Age-Based Withdrawals with 10 or More Years of Service

Age	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates*		Expected Withdrawals	
					Present	Proposed	Present	Proposed
25-29	-	4	0.0000	0.0000	0.0300	0.0300	-	-
30-34	9	335	0.0269	0.0250	0.0280	0.0280	9	9
35-39	28	1,436	0.0195	0.0167	0.0220	0.0220	31	31
40-44	44	2,353	0.0187	0.0152	0.0160	0.0160	38	38
45-49	47	2,688	0.0175	0.0145	0.0130	0.0130	36	36
50-54	28	534	0.0524	0.0731	0.0120	0.0120	6	6
Totals	156	7,350	0.0212	0.0192	0.0144	0.0155	120	120

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0212	0.0192	0.0155
Previous Investigation Results (combined)			
2018-2020	0.0223	0.0176	0.0155
2015-2017	0.0247	0.0206	0.0146
2012-2014	0.0182	0.0163	0.0121

* Sample rates are taken from midpoint of age group.

Protective Without Social Security Non-State Withdrawal Experience

Male and Female Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Withdrawals	
					Present	Proposed	Present	Proposed
1	8	127	0.0630	0.0914	0.0450	0.0550	6	7
2	22	388	0.0567	0.0493	0.0400	0.0420	16	16
3	11	364	0.0302	0.0341	0.0200	0.0240	7	9
4	11	354	0.0311	0.0327	0.0180	0.0220	6	8
5	6	349	0.0172	0.0137	0.0170	0.0160	6	6
6	10	349	0.0287	0.0292	0.0130	0.0140	5	5
7	5	333	0.0150	0.0166	0.0120	0.0130	4	4
8	8	339	0.0236	0.0199	0.0090	0.0120	3	4
9	10	333	0.0300	0.0286	0.0080	0.0110	3	4
10	8	305	0.0262	0.0272	0.0070	0.0100	2	3
Totals (10 and under)	99	3,241	0.0305	0.0253	0.0100	0.0116	58	66

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0305	0.0253	0.0116
Previous Investigation Results			
2018-2020	0.0189	0.0130	0.0116
2015-2017	0.0146	0.0111	0.0102
2012-2014	0.0161	0.0119	0.0100

Protective Without Social Security Non-State Withdrawal Experience

Male and Female Age-Based Withdrawals with 10 or More Years of Service

Age	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates*		Expected Withdrawals*	
					Present	Proposed	Present	Proposed
25-29	-	2	0.0000	0.0000	0.0070	0.0070	-	-
30-34	-	198	0.0000	0.0000	0.0065	0.0065	1	1
35-39	9	810	0.0111	0.0106	0.0060	0.0060	5	5
40-44	13	1,089	0.0119	0.0099	0.0055	0.0055	6	6
45-49	7	1,209	0.0058	0.0044	0.0050	0.0050	6	6
50-54	17	180	0.0944	0.1542	0.0045	0.0045	1	1
Totals	46	3,488	0.0132	0.0159	0.0058	0.0053	19	19

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0132	0.0159	0.0053
Previous Investigation Results			
2018-2020	0.0093	0.0115	0.0053
2015-2017	0.0113	0.0170	0.0058
2012-2014	0.0107	0.0160	0.0058

* Sample rates are taken from midpoint of age group.

Executive and Elective Non-State Withdrawal Experience

Male and Female Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Withdrawals	
					Present	Proposed	Present	Proposed
1	15	36	0.4167	0.2005	0.2500	0.2900	9	10
2	21	61	0.3443	0.5692	0.2000	0.2500	12	15
3	21	57	0.3684	0.3578	0.1700	0.2200	10	13
4	17	60	0.2833	0.2951	0.1600	0.1900	10	11
5	8	36	0.2222	0.1944	0.1300	0.1500	5	5
6	3	26	0.1154	0.1463	0.0400	0.0700	1	2
7	1	29	0.0345	0.0294	0.0400	0.0400	1	1
8	-	16	0.0000	0.0000	0.0400	0.0400	1	1
9	1	28	0.0357	0.0157	0.0400	0.0400	1	1
10	2	25	0.0800	0.0346	0.0400	0.0400	1	1
Totals(10 and under)	89	374	0.2380	0.1522	0.0793	0.0994	51	60

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.2380	0.1522	0.0994
Previous Investigation Results			
2018-2020	0.1706	0.1126	0.0994
2015-2017	0.0931	0.0689	0.0799
2012-2014	0.1217	0.0801	0.0913

Executive and Elective Non-State Withdrawal Experience

Male and Female Age-Based Withdrawals with 10 or More Years of Service

Age	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates*		Expected Withdrawals*	
					Present	Proposed	Present	Proposed
25-29	-	-	N\A	N\A	0.0450	0.0400	-	-
30-34	-	1	0.0000	0.0000	0.0450	0.0370	-	-
35-39	-	15	0.0000	0.0000	0.0450	0.0330	1	-
40-44	-	53	0.0000	0.0000	0.0400	0.0300	2	2
45-49	1	86	0.0116	0.0075	0.0350	0.0280	3	2
50-54	1	147	0.0068	0.0192	0.0300	0.0270	4	4
Totals	2	302	0.0066	0.0130	0.0430	0.0332	10	8

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0066	0.0130	0.0332
Previous Investigation Results (combined)			
2018-2020	0.0252	0.0237	0.0332
2015-2017	0.0415	0.0506	0.0431
2012-2014	0.0300	0.0273	0.0268

* Sample rates are taken from midpoint of age group.

Executive and Elective State Withdrawal Experience

Male and Female Service-Based Withdrawals

Service Index	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Withdrawals	
					Present	Proposed	Present	Proposed
1	3	23	0.1304	0.1161	0.1900	0.1900	4	4
2	3	54	0.0556	0.0897	0.1600	0.1600	9	9
3	8	87	0.0920	0.1045	0.1300	0.1300	11	11
4	13	75	0.1733	0.1778	0.1250	0.1250	9	9
5	8	62	0.1290	0.1290	0.1200	0.1200	7	7
6	3	41	0.0732	0.0519	0.0600	0.0600	2	2
7	4	58	0.0690	0.0396	0.0600	0.0600	3	3
8	4	49	0.0816	0.0434	0.0600	0.0600	3	3
9	3	46	0.0652	0.0375	0.0600	0.0600	3	3
10	3	40	0.0750	0.0585	0.0600	0.0600	2	2
Totals(10 and under)	52	535	0.0972	0.0770	0.0687	0.0826	53	53

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0972	0.0770	0.0826
Previous Investigation Results			
2018-2020	0.1179	0.1047	0.0826
2015-2017	0.0931	0.0689	0.0799
2012-2014	0.1217	0.0801	0.0913

Executive and Elective State Withdrawal Experience

Male and Female Age-Based Withdrawals with 10 or More Years of Service

Age	Withdrawals	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates*		Expected Withdrawals*	
					Present	Proposed	Present	Proposed
25-29	-	-	N\A	N\A	0.0450	0.0450	-	-
30-34	-	-	N\A	N\A	0.0450	0.0450	-	-
35-39	2	53	0.0377	0.0260	0.0450	0.0450	2	2
40-44	7	119	0.0588	0.0528	0.0450	0.0450	5	5
45-49	13	156	0.0833	0.0702	0.0400	0.0400	6	6
50-54	10	208	0.0481	0.0497	0.0350	0.0350	7	7
Totals	32	536	0.0597	0.0552	0.0429	0.0379	20	20

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0597	0.0552	0.0379
Previous Investigation Results (combined)			
2018-2020	0.0443	0.0421	0.0379
2015-2017	0.0415	0.0506	0.0431
2012-2014	0.0300	0.0273	0.0268

* Sample rates are taken from midpoint of age group.

SECTION B

DISABILITY EXPERIENCE

General Males Non-State Disability Experience

Male Disability Experience

Age	Disabilities	Exposure	Population Weighted Rates	Sample Rates*		Expected Disabilities	
				Present	Proposed	Present	Proposed
Under 20	-	99	0.0000	0.0001	0.0001	-	-
20-24	-	2,681	0.0000	0.0001	0.0001	-	-
25-29	-	6,467	0.0000	0.0001	0.0001	-	-
30-34	-	8,997	0.0000	0.0001	0.0001	-	-
35-39	2	10,595	0.0002	0.0002	0.0002	2	2
40-44	3	11,758	0.0003	0.0005	0.0005	5	5
45-49	15	11,311	0.0013	0.0006	0.0006	8	8
50-54	26	12,809	0.0020	0.0017	0.0017	22	22
55-59	34	12,654	0.0027	0.0030	0.0030	37	37
60-64	40	9,376	0.0043	0.0059	0.0059	47	47
65-69	2	-	N\A	0.0023	0.0023	-	-
70-74	-	-	N\A	0.0020	0.0020	-	-
75 and over	-	-	N\A	0.0020	0.0020	-	-
Totals	122	86,747	0.0014	0.0014	0.0014	121	121

	<u>Actual Experience</u>	<u>Proposed Assumption</u>
Current	0.0014	0.0014
Previous Investigation Results		
2018-2020	0.0015	0.0013
2015-2017	0.0007	0.0011
2012-2014	0.0011	0.0016

* Sample rates are taken from midpoint of age group.



General Males State Disability Experience

Male Disability Experience

Age	Disabilities	Exposure	Population Weighted Rates	Sample Rates*		Expected Disabilities	
				Present	Proposed	Present	Proposed
Under 20	-	11	0.0000	0.0001	0.0001	-	-
20-24	-	865	0.0000	0.0001	0.0001	-	-
25-29	-	3,455	0.0000	0.0001	0.0001	-	-
30-34	1	5,118	0.0002	0.0001	0.0001	-	-
35-39	1	5,755	0.0002	0.0002	0.0002	1	1
40-44	2	5,825	0.0003	0.0005	0.0005	3	3
45-49	5	5,313	0.0009	0.0006	0.0006	4	4
50-54	15	6,248	0.0024	0.0017	0.0017	11	11
55-59	26	5,659	0.0046	0.0030	0.0031	17	18
60-64	12	4,101	0.0029	0.0059	0.0062	21	22
65-69	1	-	N\A	0.0023	0.0024	-	-
70-74	-	-	N\A	0.0020	0.0021	-	-
75 and over	-	-	N\A	0.0020	0.0021	-	-
Totals	63	42,350	0.0015	0.0013	0.0014	57	59

	<u>Actual Experience</u>	<u>Proposed Assumption</u>
Current	0.0015	0.0014
Previous Investigation Results		
2018-2020	0.0014	0.0012
2015-2017	0.0007	0.0011
2012-2014	0.0011	0.0016

* Sample rates are taken from midpoint of age group.



General Females Non-State Disability Experience

Female Disability Experience

Age	Disabilities	Exposure	Population Weighted Rates	Sample Rates*		Expected Disabilities	
				Present	Proposed	Present	Proposed
Under 20	-	177	0.0000	0.0000	0.0000	-	-
20-24	-	5,067	0.0000	0.0000	0.0000	-	-
25-29	-	11,839	0.0000	0.0000	0.0000	1	1
30-34	1	15,730	0.0001	0.0002	0.0002	3	3
35-39	5	19,259	0.0003	0.0002	0.0002	5	5
40-44	3	21,608	0.0001	0.0004	0.0004	8	8
45-49	9	22,189	0.0004	0.0005	0.0005	12	12
50-54	21	25,288	0.0008	0.0009	0.0009	23	23
55-59	43	26,025	0.0017	0.0016	0.0016	41	41
60-64	34	20,039	0.0017	0.0020	0.0020	38	38
65-69	1	-	N\A	0.0016	0.0016	-	-
70-74	-	-	N\A	0.0014	0.0014	-	-
75 and over	-	-	N\A	0.0014	0.0014	-	-
Totals	117	167,221	0.0007	0.0008	0.0008	131	131

	<u>Actual Experience</u>	<u>Proposed Assumption</u>
Current	0.0007	0.0008
Previous Investigation Results		
2018-2020	0.0008	0.0008
2015-2017	0.0005	0.0007
2012-2014	0.0007	0.0010

* Sample rates are taken from midpoint of age group.



General Females State Disability Experience

Female Disability Experience

Age	Disabilities	Exposure	Population Weighted Rates	Sample Rates*		Expected Disabilities	
				Present	Proposed	Present	Proposed
Under 20	-	33	0.0000	0.0001	0.0001	-	-
20-24	-	2,297	0.0000	0.0001	0.0001	-	-
25-29	-	7,608	0.0000	0.0001	0.0001	1	2
30-34	3	9,691	0.0003	0.0004	0.0004	4	4
35-39	4	9,850	0.0004	0.0005	0.0005	6	6
40-44	9	9,473	0.0010	0.0008	0.0008	8	8
45-49	11	8,835	0.0012	0.0011	0.0012	10	11
50-54	21	9,518	0.0022	0.0019	0.0020	19	20
55-59	43	8,704	0.0049	0.0036	0.0038	30	31
60-64	43	6,319	0.0068	0.0045	0.0047	27	28
65-69	3	-	N\A	0.0036	0.0038	-	-
70-74	-	-	N\A	0.0030	0.0032	-	-
75 and over	-	-	N\A	0.0030	0.0032	-	-
Totals	137	72,328	0.0019	0.0015	0.0015	105	110

	<u>Actual Experience</u>	<u>Proposed Assumption</u>
Current	0.0019	0.0015
Previous Investigation Results		
2018-2020	0.0016	0.0013
2015-2017	0.0005	0.0007
2012-2014	0.0007	0.0010

* Sample rates are taken from midpoint of age group.

Public School Males Non-State Disability Experience

Male Disability Experience

Age	Disabilities	Exposure	Population Weighted Rates	Sample Rates*		Expected Disabilities	
				Present	Proposed	Present	Proposed
Under 20	-	-	N\A	0.0001	0.0001	-	-
20-24	-	644	0.0000	0.0001	0.0001	-	-
25-29	-	5,047	0.0000	0.0001	0.0001	-	-
30-34	-	6,825	0.0000	0.0001	0.0001	-	-
35-39	-	8,056	0.0000	0.0001	0.0001	1	1
40-44	1	9,640	0.0001	0.0002	0.0002	2	2
45-49	5	9,864	0.0005	0.0003	0.0003	4	4
50-54	9	10,065	0.0009	0.0012	0.0012	11	11
55-59	15	5,970	0.0025	0.0016	0.0016	10	10
60-64	3	2,148	0.0014	0.0028	0.0028	6	6
65-69	-	-	N\A	0.0040	0.0040	-	-
70-74	-	-	N\A	0.0041	0.0041	-	-
75 and over	-	-	N\A	0.0041	0.0041	-	-
Totals	33	58,259	0.0006	0.0006	0.0006	34	34

	<u>Actual Experience</u>	<u>Proposed Assumption</u>
Current	0.0006	0.0006
Previous Investigation Results		
2018-2020	0.0006	0.0005
2015-2017	0.0003	0.0005
2012-2014	0.0005	0.0006

* Sample rates are taken from midpoint of age group.



Public School Females Non-State Disability Experience

Female Disability Experience

Age	Disabilities	Exposure	Population Weighted Rates	Sample Rates*		Expected Disabilities	
				Present	Proposed	Present	Proposed
Under 20	-	-	N\A	0.0001	0.0001	-	-
20-24	-	3,337	0.0000	0.0001	0.0001	-	-
25-29	-	18,389	0.0000	0.0001	0.0001	1	1
30-34	-	21,538	0.0000	0.0001	0.0001	2	2
35-39	2	23,223	0.0001	0.0001	0.0001	2	2
40-44	11	26,418	0.0004	0.0002	0.0002	8	8
45-49	14	25,734	0.0005	0.0008	0.0009	19	21
50-54	26	26,394	0.0010	0.0011	0.0012	30	32
55-59	42	16,488	0.0025	0.0017	0.0018	27	29
60-64	23	6,261	0.0037	0.0024	0.0026	14	15
65-69	-	-	N\A	0.0014	0.0014	-	-
70-74	-	-	N\A	0.0011	0.0012	-	-
75 and over	-	-	N\A	0.0011	0.0012	-	-
Totals	118	167,782	0.0007	0.0006	0.0007	103	110

	<u>Actual Experience</u>	<u>Proposed Assumption</u>
Current	0.0007	0.0007
Previous Investigation Results		
2018-2020	0.0006	0.0006
2015-2017	0.0003	0.0005
2102-2014	0.0005	0.0006

* Sample rates are taken from midpoint of age group.



University Males State Disability Experience

Male Disability Experience

Age	Disabilities	Exposure	Population Weighted Rates	Sample Rates*		Expected Disabilities	
				Present	Proposed	Present	Proposed
Under 20	-	-	N\A	0.0000	0.0000	-	-
20-24	-	219	0.0000	0.0000	0.0000	-	-
25-29	-	1,454	0.0000	0.0000	0.0000	-	-
30-34	-	2,819	0.0000	0.0000	0.0000	-	-
35-39	-	4,379	0.0000	0.0000	0.0000	-	-
40-44	-	4,619	0.0000	0.0001	0.0001	-	-
45-49	1	4,231	0.0002	0.0002	0.0002	1	1
50-54	2	4,187	0.0005	0.0004	0.0004	2	2
55-59	3	3,518	0.0009	0.0012	0.0012	4	4
60-64	4	2,515	0.0016	0.0011	0.0011	3	3
65-69	-	-	N\A	0.0014	0.0014	-	-
70-74	-	-	N\A	0.0012	0.0012	-	-
75 and over	-	-	N\A	0.0012	0.0012	-	-
Totals	10	27,941	0.0004	0.0004	0.0004	10	10

	<u>Actual Experience</u>	<u>Proposed Assumption</u>
Current	0.0004	0.0004
Previous Investigation Results		
2018-2020	0.0004	0.0003
2015-2017	0.0001	0.0002
2012-2014	0.0000	0.0003

* Sample rates are taken from midpoint of age group.

University Females State Disability Experience

Female Disability Experience

Age	Disabilities	Exposure	Population Weighted Rates	Sample Rates*		Expected Disabilities	
				Present	Proposed	Present	Proposed
Under 20	-	-	N\A	0.0001	0.0001	-	-
20-24	-	502	0.0000	0.0001	0.0001	-	-
25-29	-	2,765	0.0000	0.0001	0.0001	-	-
30-34	-	4,649	0.0000	0.0001	0.0001	1	1
35-39	1	5,878	0.0002	0.0004	0.0004	2	2
40-44	1	6,076	0.0002	0.0005	0.0005	3	3
45-49	4	5,250	0.0008	0.0004	0.0004	2	2
50-54	5	4,973	0.0010	0.0009	0.0009	4	4
55-59	2	4,147	0.0005	0.0013	0.0013	5	5
60-64	3	2,717	0.0011	0.0020	0.0020	5	5
65-69	-	-	N\A	0.0013	0.0013	-	-
70-74	-	-	N\A	0.0011	0.0011	-	-
75 and over	-	-	N\A	0.0011	0.0011	-	-
Totals	16	36,957	0.0004	0.0006	0.0006	22	22

	<u>Actual Experience</u>	<u>Proposed Assumption</u>
Current	0.0004	0.0006
Previous Investigation Results		
2018-2020	0.0007	0.0006
2015-2017	0.0001	0.0004
2012-2014	0.0004	0.0005

* Sample rates are taken from midpoint of age group.



Protective With Social Security Non-State Disability Experience

Male and Female Disability Experience

Age	Disabilities	Exposure	Population Weighted Rates	Sample Rates*		Expected Disabilities	
				Present	Proposed	Present	Proposed
Under 20	-	-	N\A	0.0002	0.0002	-	-
20-24	-	1,466	0.0000	0.0002	0.0002	-	-
25-29	-	5,171	0.0000	0.0002	0.0002	1	1
30-34	1	5,666	0.0002	0.0002	0.0002	1	1
35-39	4	5,595	0.0007	0.0003	0.0004	2	2
40-44	9	5,031	0.0018	0.0004	0.0005	2	3
45-49	16	4,802	0.0033	0.0006	0.0008	3	4
50-54	13	3,439	0.0038	0.0010	0.0013	5	6
55-59	-	76	0.0000	0.0224	0.0280	1	2
60-64	-	43	0.0000	0.0240	0.0300	1	1
65-69	-	18	0.0000	0.0016	0.0020	-	-
70-74	-	9	0.0000	0.0016	0.0020	-	-
75 and over	-	5	0.0000	0.0016	0.0020	-	-
Totals	43	31,321	0.0014	0.0005	0.0006	16	20

	<u>Actual Experience</u>	<u>Proposed Assumption</u>
Current	0.0014	0.0006
Previous Investigation Results		
2018-2020	0.0006	0.0005
2015-2017	0.0005	0.0007
2012-2014	0.0005	0.0010

* Sample rates are taken from midpoint of age group.

Protective With Social Security State Disability Experience

Male and Female Disability Experience

Age	Disabilities	Exposure	Population Weighted Rates	Sample Rates*		Expected Disabilities	
				Present	Proposed	Present	Proposed
Under 20	-	-	N\A	0.0002	0.0002	-	-
20-24	-	1,466	0.0000	0.0002	0.0002	-	-
25-29	-	5,171	0.0000	0.0002	0.0002	1	1
30-34	-	5,666	0.0000	0.0002	0.0002	1	1
35-39	2	5,595	0.0004	0.0004	0.0004	2	2
40-44	3	5,031	0.0006	0.0005	0.0005	2	3
45-49	7	4,802	0.0015	0.0008	0.0008	3	4
50-54	11	3,439	0.0032	0.0013	0.0013	5	6
55-59	-	76	0.0000	0.0280	0.0280	1	2
60-64	-	43	0.0000	0.0300	0.0300	1	1
65-69	-	18	0.0000	0.0020	0.0020	-	-
70-74	-	9	0.0000	0.0020	0.0020	-	-
75 and over	-	5	0.0000	0.0020	0.0020	-	-
Totals	23	31,321	0.0007	0.0005	0.0006	16	20

	<u>Actual Experience</u>	<u>Proposed Assumption</u>
Current	0.0007	0.0006
Previous Investigation Results		
2018-2020	0.0009	0.0006
2015-2017	0.0005	0.0007
2012-2014	0.0005	0.0010

* Sample rates are taken from midpoint of age group.



Protective Without Social Security Non-State Disability Experience

Male and Female Disability Experience

Age	Disabilities	Exposure	Population Weighted Rates	Sample Rates*		Expected Disabilities	
				Present	Proposed	Present	Proposed
Under 20	-	-	N\A	0.0003	0.0004	-	-
20-24	-	253	0.0000	0.0003	0.0004	-	-
25-29	-	797	0.0000	0.0003	0.0004	-	-
30-34	-	1,339	0.0000	0.0003	0.0004	-	-
35-39	1	1,442	0.0007	0.0004	0.0004	1	1
40-44	1	1,379	0.0007	0.0006	0.0007	1	1
45-49	1	1,291	0.0008	0.0012	0.0014	3	3
50-54	15	981	0.0153	0.0084	0.0098	7	8
55-59	-	13	0.0000	0.0012	0.0014	-	-
60-64	-	-	N\A	0.0012	0.0014	-	-
65-69	-	3	0.0000	0.0012	0.0014	-	-
70-74	-	-	N\A	0.0012	0.0014	-	-
75 and over	-	-	N\A	0.0012	0.0014	-	-
Totals	18	7,498	0.0024	0.0016	0.0017	12	13

	<u>Actual Experience</u>	<u>Proposed Assumption</u>
Current	0.0024	0.0017
Previous Investigation Results		
2018-2020	0.0014	0.0014
2015-2017	0.0005	0.0011
2012-2014	0.0012	0.0018

* Sample rates are taken from midpoint of age group.



Executive and Elected Non-State Disability Experience

Male and Female Disability Experience

Age	Disabilities	Exposure	Population Weighted Rates	Sample Rates*		Expected Disabilities	
				Present	Proposed	Present	Proposed
Under 20	-	-	N\A	0.0000	0.0000	-	-
20-24	-	-	N\A	0.0000	0.0000	-	-
25-29	-	3	0.0000	0.0000	0.0000	-	-
30-34	-	29	0.0000	0.0000	0.0000	-	-
35-39	-	57	0.0000	0.0001	0.0001	-	-
40-44	-	124	0.0000	0.0001	0.0001	-	-
45-49	-	140	0.0000	0.0002	0.0002	-	-
50-54	-	235	0.0000	0.0003	0.0003	-	-
55-59	-	304	0.0000	0.0012	0.0012	-	-
60-64	-	134	0.0000	0.0011	0.0011	-	-
65-69	-	-	N\A	0.0009	0.0009	-	-
70-74	-	-	N\A	0.0009	0.0009	-	-
75 and over	-	-	N\A	0.0009	0.0009	-	-
Totals	-	1,026	0.0000	0.0000	0.0000	-	-

	<u>Actual Experience</u>	<u>Proposed Assumption</u>
Current	0.0000	0.0000
Previous Investigation Results		
2018-2020	0.0010	0.0000
2015-2017	0.0000	0.0003
2012-2014	0.0000	0.0006

* Sample rates are taken from midpoint of age group.



Executive and Elected State Disability Experience

Male and Female Disability Experience

Age	Disabilities	Exposure	Population Weighted Rates	Sample Rates*		Expected Disabilities	
				Present	Proposed	Present	Proposed
Under 20	-	-	N\A	0.0000	0.0000	-	-
20-24	-	5	0.0000	0.0000	0.0000	-	-
25-29	-	8	0.0000	0.0000	0.0000	-	-
30-34	-	37	0.0000	0.0000	0.0000	-	-
35-39	-	168	0.0000	0.0001	0.0001	-	-
40-44	-	222	0.0000	0.0001	0.0001	-	-
45-49	-	255	0.0000	0.0002	0.0002	-	-
50-54	-	332	0.0000	0.0003	0.0003	-	-
55-59	-	352	0.0000	0.0012	0.0012	-	-
60-64	-	117	0.0000	0.0011	0.0011	-	-
65-69	-	-	N\A	0.0009	0.0009	-	-
70-74	-	-	N\A	0.0009	0.0009	-	-
75 and over	-	-	N\A	0.0009	0.0009	-	-
Totals	-	1,496	0.0000	0.0000	0.0000	-	-

	<u>Actual Experience</u>	<u>Proposed Assumption</u>
Current	0.0000	0.0000
Previous Investigation Results		
2018-2020	0.0000	0.0000
2015-2017	0.0000	0.0003
2012-2014	0.0000	0.0006

* Sample rates are taken from midpoint of age group.



SECTION C

PAY INCREASES

MERIT & LONGEVITY PORTION

General Non-State Merit & Longevity Pay Increase Assumption

Service-Based Pay Increase Experience

Service Group		Merit/Seniority % Increase		
Beginning of Year	Number	Actual	Expected*	
			Present	Proposed
1-5	92,139	4.79 %	3.45 %	3.55 %
6-10	54,246	2.73 %	1.90 %	2.00 %
11-15	30,474	1.95 %	1.25 %	1.35 %
16-20	23,139	1.39 %	1.00 %	1.10 %
21-25	19,498	0.94 %	0.75 %	0.85 %
26-30	10,141	0.77 %	0.50 %	0.60 %
31-35	5,426	0.57 %	0.30 %	0.40 %
36-40	1,695	0.42 %	0.20 %	0.30 %
Over 40	595	0.00 %	0.10 %	0.20 %
Total	237,353			

* Sample values are selected from mid-point of service group.

General State Merit & Longevity Pay Increase Assumption

Service-Based Pay Increase Experience

Service Group		Merit/Seniority % Increase		
Beginning of Year	Number	Actual	Expected*	
			Present	Proposed
1-5	35,399	5.43 %	3.45 %	3.55 %
6-10	26,966	3.83 %	1.90 %	2.00 %
11-15	15,004	3.17 %	1.25 %	1.35 %
16-20	10,873	2.50 %	1.00 %	1.10 %
21-25	9,688	1.55 %	0.75 %	0.85 %
26-30	5,170	0.94 %	0.50 %	0.60 %
31-35	3,212	0.50 %	0.30 %	0.40 %
36-40	936	0.23 %	0.20 %	0.30 %
Over 40	310	0.00 %	0.10 %	0.20 %
Total	107,558			

* Sample values are selected from mid-point of service group.

Public Schools Non-State Merit & Longevity Pay Increase Assumption

Service-Based Pay Increase Experience

Service Group		Merit/Seniority % Increase		
Beginning of Year	Number	Actual	Expected*	
			Present	Proposed
1-5	45,691	4.75 %	5.60 %	5.70 %
6-10	44,869	3.43 %	3.40 %	3.50 %
11-15	34,610	2.79 %	2.10 %	2.20 %
16-20	32,827	1.82 %	1.00 %	1.10 %
21-25	31,490	1.14 %	0.35 %	0.45 %
26-30	19,728	0.59 %	0.20 %	0.30 %
31-35	7,547	0.39 %	0.15 %	0.25 %
36-40	1,156	0.28 %	0.10 %	0.20 %
Over 40	141	0.00 %	0.05 %	0.15 %
Total	218,059			

* Sample values are selected from mid-point of service group.

University State Merit & Longevity Pay Increase Assumption

Service-Based Pay Increase Experience

Service Group		Merit/Seniority % Increase		
Beginning of Year	Number	Actual	Expected*	
			Present	Proposed
1-5	18,305	4.78 %	3.00 %	3.10 %
6-10	15,270	4.02 %	2.50 %	2.60 %
11-15	10,562	3.23 %	2.00 %	2.10 %
16-20	7,785	2.66 %	1.50 %	1.60 %
21-25	6,105	1.86 %	0.95 %	1.05 %
26-30	2,843	1.63 %	0.80 %	0.90 %
31-35	1,522	1.28 %	0.60 %	0.70 %
36-40	585	0.00 %	0.20 %	0.30 %
Over 40	219	0.52 %	0.10 %	0.20 %
Total	63,196			

* Sample values are selected from mid-point of service group.

Protective With Social Security Non-State Merit & Longevity Pay Increase Assumption

Service-Based Pay Increase Experience

Service Group		Merit/Seniority % Increase		
Beginning of Year	Number	Actual	Expected*	
			Present	Proposed
1-5	7,966	7.00 %	4.75 %	4.85 %
6-10	6,728	2.69 %	1.50 %	1.60 %
11-15	4,928	1.14 %	0.90 %	1.00 %
16-20	4,458	1.16 %	0.80 %	0.90 %
21-25	4,437	1.15 %	0.70 %	0.80 %
26-30	2,208	1.68 %	0.60 %	0.70 %
31-35	368	0.52 %	0.50 %	0.60 %
36-40	59	1.64 %	0.40 %	0.50 %
Over 40	28	0.00 %	0.20 %	0.30 %
Total	31,180			

* Sample values are selected from mid-point of service group.

Protective With Social Security State Merit & Longevity Pay Increase Assumption

Service-Based Pay Increase Experience

Service Group		Merit/Seniority % Increase		
Beginning of Year	Number	Actual	Expected*	
			Present	Proposed
1-5	5,375	9.22 %	4.75 %	4.85 %
6-10	4,673	8.32 %	1.50 %	1.60 %
11-15	2,462	6.36 %	0.90 %	1.00 %
16-20	2,967	7.08 %	0.80 %	0.90 %
21-25	3,243	5.84 %	0.70 %	0.80 %
26-30	1,630	5.12 %	0.60 %	0.70 %
31-35	237	0.00 %	0.50 %	0.60 %
36-40	17	0.00 %	0.40 %	0.50 %
Over 40	9	0.00 %	0.20 %	0.30 %
Total	20,613			

* Sample values are selected from mid-point of service group.

Protective Without Social Security Non-State Merit & Longevity Pay Increase Assumption

Service-Based Pay Increase Experience

Service Group		Merit/Seniority % Increase		
Beginning of Year	Number	Actual	Expected*	
			Present	Proposed
1-5	1,505	6.69 %	5.50 %	5.50 %
6-10	1,624	1.23 %	1.30 %	1.30 %
11-15	1,378	0.33 %	0.60 %	0.60 %
16-20	1,162	1.02 %	0.50 %	0.50 %
21-25	1,341	0.64 %	0.40 %	0.40 %
26-30	627	1.22 %	0.30 %	0.30 %
31-35	138	1.31 %	0.20 %	0.20 %
36-40	2	0.00 %	0.10 %	0.10 %
Over 40	4	0.00 %	0.05 %	0.05 %
Total	7,781			

* Sample values are selected from mid-point of service group.

Executive and Elected Non-State Merit & Longevity Pay Increase Assumption

Service-Based Pay Increase Experience

Service Group		Merit/Seniority % Increase		
Beginning of Year	Number	Actual	Expected*	
			Present	Proposed
1-5	342	1.43 %	2.50 %	2.60 %
6-10	272	1.67 %	0.20 %	0.30 %
11-15	185	0.66 %	0.20 %	0.30 %
16-20	154	1.37 %	0.20 %	0.30 %
21-25	174	0.76 %	0.20 %	0.30 %
26-30	121	0.80 %	0.20 %	0.30 %
31-35	79	0.83 %	0.20 %	0.30 %
36-40	29	0.78 %	0.20 %	0.30 %
Over 40	23	0.41 %	0.20 %	0.30 %
Total	1,379			

* Sample values are selected from mid-point of service group.

Executive and Elected State Merit & Longevity Pay Increase Assumption

Service-Based Pay Increase Experience

Service Group		Merit/Seniority % Increase		
Beginning of Year	Number	Actual	Expected*	
			Present	Proposed
1-5	345	5.22 %	2.50 %	2.60 %
6-10	381	1.24 %	0.20 %	0.30 %
11-15	366	0.62 %	0.20 %	0.30 %
16-20	239	0.81 %	0.20 %	0.30 %
21-25	236	0.16 %	0.20 %	0.30 %
26-30	142	0.49 %	0.20 %	0.30 %
31-35	124	0.00 %	0.20 %	0.30 %
36-40	46	0.40 %	0.20 %	0.30 %
Over 40	12	(0.36)%	0.20 %	0.30 %
Total	1,891			

* Sample values are selected from mid-point of service group.

SECTION D

NORMAL & REDUCED RETIREMENT EXPERIENCE

General Males Non-State Normal Retirement Experience

Male Age-Based Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
57	107	390	0.2744	0.2182	0.2000	0.2000	78	78
58	84	396	0.2121	0.2150	0.2000	0.2000	79	79
59	62	390	0.1590	0.1725	0.2000	0.2000	78	78
60	104	468	0.2222	0.2054	0.2000	0.2000	94	94
61	101	467	0.2163	0.2078	0.2000	0.2000	93	93
62	123	427	0.2881	0.2975	0.3000	0.3000	128	128
63	94	332	0.2831	0.2940	0.3000	0.3000	100	100
64	76	274	0.2774	0.2929	0.3000	0.3000	82	82
65	374	1,352	0.2766	0.3784	0.3000	0.3000	406	406
66	246	958	0.2568	0.3496	0.4000	0.4000	383	383
67	170	675	0.2519	0.3841	0.3200	0.3200	216	216
68	80	463	0.1728	0.3316	0.3200	0.3200	148	148
69	59	361	0.1634	0.3357	0.2800	0.2800	101	101
70	40	301	0.1329	0.3779	0.2800	0.2800	84	84
71	37	252	0.1468	0.2865	0.2800	0.2800	71	71
72	19	198	0.0960	0.2009	0.2800	0.2800	55	55
73	9	150	0.0600	0.0942	0.1800	0.1800	27	27
74	11	116	0.0948	0.3353	0.1800	0.1800	21	21
Sub Totals	1,796	7,970	0.2253	0.2741	0.2380	0.2604	2,244	2,244
75 & Over	44	414	0.1063	0.2701			414	414
Total	1,840	8,384	0.2195	0.2741			2,658	2,658

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.2253	0.2741	0.2604
Previous Investigation Results			
2018-2020	0.2233	0.2454	0.2447
2015-2017	0.2218	0.2560	0.2367
2012-2014	0.1900	0.2166	0.2163

General Males State Normal Retirement Experience

Male Age-Based Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
57	71	210	0.3381	0.2444	0.1900	0.1900	40	40
58	44	207	0.2126	0.2040	0.1900	0.1900	39	39
59	32	184	0.1739	0.1764	0.1900	0.1900	35	35
60	37	201	0.1841	0.1795	0.1900	0.1900	38	38
61	41	207	0.1981	0.1946	0.1900	0.1900	39	39
62	52	198	0.2626	0.2584	0.2800	0.2800	55	55
63	49	169	0.2899	0.3178	0.3000	0.3000	51	51
64	37	135	0.2741	0.2634	0.2500	0.2500	34	34
65	153	714	0.2143	0.2974	0.2700	0.2700	193	193
66	120	504	0.2381	0.2901	0.3500	0.3500	176	176
67	88	369	0.2385	0.2949	0.3200	0.3200	118	118
68	46	250	0.1840	0.2220	0.2100	0.2100	53	53
69	40	209	0.1914	0.1884	0.2100	0.2100	44	44
70	32	149	0.2148	0.2421	0.2100	0.2100	31	31
71	19	125	0.1520	0.1891	0.2100	0.2100	26	26
72	14	96	0.1458	0.2393	0.2100	0.2100	20	20
73	12	71	0.1690	0.2606	0.3000	0.3000	21	21
74	9	60	0.1500	0.2340	0.3000	0.3000	18	18
Sub Totals	896	4,058	0.2208	0.2431	0.2413	0.2447	1,031	1,031
75 & Over	30	142	0.2113	0.3144			142	142
Total	926	4,200	0.2205	0.2444			1,173	1,173

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.2208	0.2431	0.2447
Previous Investigation Results			
2018-2020	0.2233	0.2454	0.2447
2015-2017	0.2218	0.2560	0.2367
2012-2014	0.1900	0.2166	0.2163



General Males Non-State Reduced Retirement Experience

Male Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
55	136	2,287	0.0595	0.0874	0.0730	0.0730	167	167
56	123	2,241	0.0549	0.0783	0.0600	0.0600	134	134
57	93	1,918	0.0485	0.0667	0.0520	0.0520	100	100
58	113	1,879	0.0601	0.0865	0.0560	0.0560	105	105
59	111	1,928	0.0576	0.0787	0.0590	0.0590	114	114
60	148	1,859	0.0796	0.1052	0.0930	0.0930	173	173
61	135	1,775	0.0761	0.1008	0.0800	0.0800	142	142
62	234	1,616	0.1448	0.1783	0.1900	0.1900	307	307
63	205	1,338	0.1532	0.1828	0.2000	0.2000	268	268
64	170	1,070	0.1589	0.1803	0.1800	0.1800	193	193
Totals	1,468	17,911	0.0820	0.1048	0.0912	0.0895	1,703	1,703

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0820	0.1048	0.0895
Previous Investigation Results			
2018-2020	0.0723	0.0886	0.0895
2015-2017	0.0733	0.0892	0.0913
2012-2014	0.0735	0.0946	0.0913

General Males State Reduced Retirement Experience

Male Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
55	41	1,075	0.0381	0.0464	0.0550	0.0500	59	54
56	63	1,106	0.0570	0.0792	0.0650	0.0700	72	77
57	52	916	0.0568	0.0696	0.0550	0.0600	50	55
58	50	855	0.0585	0.0684	0.0550	0.0600	47	51
59	42	813	0.0517	0.0738	0.0650	0.0700	53	57
60	55	791	0.0695	0.0947	0.0900	0.0900	71	71
61	61	739	0.0825	0.1228	0.1250	0.1250	92	92
62	81	678	0.1195	0.1370	0.1600	0.1500	108	102
63	94	611	0.1538	0.1867	0.1700	0.1700	104	104
64	77	546	0.1410	0.1675	0.2100	0.2000	115	109
Totals	616	8,130	0.0758	0.0931	0.0931	0.0914	771	772

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0758	0.0931	0.0914
Previous Investigation Results			
2018-2020	0.0749	0.0904	0.0914
2015-2017	0.0733	0.0892	0.0913
2012-2014	0.0735	0.0946	0.0913

General Females Non-State Normal Retirement Experience

Female Age-Based Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
57	99	456	0.2171	0.1747	0.1700	0.1700	78	78
58	82	473	0.1734	0.1666	0.1800	0.1800	85	85
59	81	480	0.1688	0.1681	0.1400	0.1500	67	72
60	105	488	0.2152	0.2096	0.2000	0.2000	98	98
61	92	466	0.1974	0.1969	0.1800	0.1800	84	84
62	116	468	0.2479	0.2491	0.2400	0.2400	112	112
63	109	393	0.2774	0.2750	0.2900	0.2900	114	114
64	92	330	0.2788	0.2788	0.2300	0.2400	76	79
65	741	2,652	0.2794	0.3871	0.3500	0.3600	928	955
66	528	1,816	0.2907	0.4053	0.3900	0.3900	708	708
67	301	1,108	0.2717	0.3910	0.3300	0.3500	366	388
68	142	752	0.1888	0.2834	0.3000	0.3000	226	226
69	110	576	0.1910	0.2716	0.2200	0.2300	127	132
70	68	483	0.1408	0.1954	0.2600	0.2400	126	116
71	67	363	0.1846	0.3276	0.2800	0.2900	102	105
72	31	271	0.1144	0.2238	0.3000	0.2800	81	76
73	28	202	0.1386	0.2229	0.3000	0.2800	61	57
74	14	163	0.0859	0.1638	0.1600	0.1600	26	26
Sub Totals	2,806	11,940	0.2350	0.2707	0.2376	0.2517	3,465	3,511
75 & Over	78	599	0.1302	0.2168			599	599
Total	2,884	12,539	0.2300	0.2695			4,064	4,110

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.2350	0.2707	0.2517
Previous Investigation Results			
2018-2020	0.2270	0.2551	0.2517
2015-2017	0.2314	0.2524	0.2269
2012-2014	0.2075	0.2147	0.2029



General Females State Normal Retirement Experience

Female Age-Based Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
57	82	314	0.2611	0.2083	0.1900	0.1900	60	60
58	61	312	0.1955	0.2097	0.1900	0.1900	59	59
59	67	304	0.2204	0.2278	0.1900	0.1900	58	58
60	62	290	0.2138	0.2264	0.2100	0.2100	61	61
61	75	282	0.2660	0.2749	0.2500	0.2500	71	71
62	73	252	0.2897	0.3027	0.2900	0.2900	73	73
63	71	231	0.3074	0.2918	0.2800	0.2800	65	65
64	59	192	0.3073	0.2917	0.3100	0.3100	60	60
65	190	837	0.2270	0.2916	0.3100	0.3100	259	259
66	162	617	0.2626	0.3340	0.3600	0.3600	222	222
67	122	432	0.2824	0.3436	0.3300	0.3300	143	143
68	57	287	0.1986	0.2440	0.2500	0.2500	72	72
69	48	221	0.2172	0.2823	0.2700	0.2700	60	60
70	42	157	0.2675	0.3188	0.2900	0.2900	46	46
71	31	103	0.3010	0.3826	0.3400	0.3400	35	35
72	14	70	0.2000	0.1966	0.3300	0.3300	23	23
73	7	59	0.1186	0.1139	0.2400	0.2400	14	14
74	8	44	0.1818	0.2731	0.1800	0.1800	8	8
Sub Totals	1,231	5,004	0.2460	0.2697	0.2270	0.2565	1,389	1,389
75 & Over	21	91	0.2308	0.4675			91	91
Total	1,252	5,095	0.2457	0.2715			1,480	1,480

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.2460	0.2697	0.2565
Previous Investigation Results			
2018-2020	0.2553	0.2665	0.2565
2015-2017	0.2314	0.2524	0.2269
2012-2014	0.2075	0.2147	0.2029

General Females Non-State Reduced Retirement Experience

Female Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
55	190	4,196	0.0453	0.0836	0.0700	0.0700	294	294
56	181	4,233	0.0428	0.0640	0.0700	0.0700	296	296
57	174	3,918	0.0444	0.0682	0.0550	0.0550	215	215
58	199	3,972	0.0501	0.0750	0.0650	0.0650	258	258
59	231	3,917	0.0590	0.0846	0.0700	0.0700	274	274
60	322	3,856	0.0835	0.1115	0.0950	0.0950	366	366
61	327	3,629	0.0901	0.1147	0.0950	0.0950	345	345
62	504	3,406	0.1480	0.1815	0.1600	0.1600	545	545
63	502	2,832	0.1773	0.2124	0.1800	0.1800	510	510
64	433	2,373	0.1825	0.2182	0.1800	0.1800	427	427
Totals	3,063	36,332	0.0843	0.1113	0.0948	0.0948	3,530	3,530

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0843	0.1113	0.0948
Previous Investigation Results			
2018-2020	0.0741	0.0963	0.0948
2015-2017	0.0746	0.0980	0.0912
2012-2014	0.0702	0.0910	0.0835

General Females State Reduced Retirement Experience

Female Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
55	74	1,658	0.0446	0.0639	0.0600	0.0600	99	99
56	86	1,621	0.0531	0.0730	0.0800	0.0800	130	130
57	66	1,328	0.0497	0.0701	0.0600	0.0600	80	80
58	78	1,294	0.0603	0.0864	0.0900	0.0900	116	116
59	87	1,289	0.0675	0.0841	0.0750	0.0800	97	103
60	95	1,225	0.0776	0.0985	0.1000	0.1000	123	123
61	90	1,217	0.0740	0.1054	0.1100	0.1100	134	134
62	151	1,145	0.1319	0.1617	0.1800	0.1800	206	206
63	160	948	0.1688	0.2144	0.1950	0.2000	185	190
64	143	751	0.1904	0.2365	0.1800	0.1900	135	143
Totals	1,030	12,476	0.0826	0.1041	0.0903	0.0981	1,305	1,324

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0826	0.1041	0.0981
Previous Investigation Results			
2018-2020	0.0798	0.0995	0.0981
2015-2017	0.0746	0.0980	0.0912
2012-2014	0.0702	0.0910	0.0835

Public School Males Non-State Normal Retirement Experience

Male Age-Based Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
57	182	522	0.3487	0.3452	0.3100	0.3200	162	167
58	125	391	0.3197	0.3283	0.2900	0.3000	113	117
59	100	297	0.3367	0.3347	0.2800	0.2900	83	86
60	85	232	0.3664	0.3665	0.2700	0.2900	63	67
61	60	167	0.3593	0.3473	0.2600	0.2800	43	47
62	51	131	0.3893	0.3689	0.3900	0.3800	51	50
63	40	89	0.4494	0.3840	0.3300	0.3400	29	30
64	19	68	0.2794	0.2986	0.3000	0.3000	20	20
65	91	287	0.3171	0.3801	0.3200	0.3400	92	98
66	57	190	0.3000	0.3715	0.3500	0.3600	67	68
67	27	144	0.1875	0.2516	0.3100	0.3000	45	43
68	21	116	0.1810	0.3198	0.2800	0.2900	32	34
69	20	94	0.2128	0.2614	0.2000	0.2200	19	21
70	16	79	0.2025	0.2680	0.3000	0.2900	24	23
71	8	59	0.1356	0.1640	0.2500	0.2300	15	14
72	6	47	0.1277	0.1868	0.2500	0.2300	12	11
73	3	30	0.1000	0.2258	0.2500	0.2400	8	7
74	4	28	0.1429	0.2321	0.2500	0.2500	7	7
Totals	915	2,971	0.3080	0.3370	0.2882	0.2997	885	910
75 & Over	7	77	0.0909	0.3876			77	77
Total	922	3,048	0.3025	0.3373			962	987

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.3080	0.3370	0.2997
Previous Investigation Results			
2018-2020	0.2715	0.3102	0.2997
2015-2017	0.2487	0.2840	0.2878
2012-2014	0.2720	0.3163	0.3024



Public School Males Non-State Reduced Retirement Experience

Male Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
55	170	1,770	0.0960	0.1165	0.1200	0.1200	212	212
56	195	1,611	0.1210	0.1402	0.1300	0.1300	209	209
57	83	892	0.0930	0.1100	0.1300	0.1300	116	116
58	71	700	0.1014	0.1283	0.1200	0.1200	84	84
59	79	588	0.1344	0.1723	0.1430	0.1430	84	84
60	63	489	0.1288	0.1582	0.1600	0.1600	78	78
61	66	418	0.1579	0.1897	0.1600	0.1600	67	67
62	74	367	0.2016	0.2222	0.2300	0.2300	84	84
63	58	306	0.1895	0.2349	0.2100	0.2100	64	64
64	41	246	0.1667	0.2131	0.2100	0.2100	52	52
Totals	900	7,387	0.1218	0.1426	0.1399	0.1404	1,050	1,050

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.1218	0.1426	0.1404
Previous Investigation Results			
2018-2020	0.1202	0.1420	0.1404
2015-2017	0.1147	0.1330	0.1402
2012-2014	0.1358	0.1596	0.1407



Public School Females Non-State Normal Retirement Experience

Female Age-Based Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
57	369	1,250	0.2952	0.2980	0.2750	0.2750	344	344
58	295	918	0.3214	0.3196	0.2750	0.2750	252	252
59	221	717	0.3082	0.3024	0.2600	0.2600	186	186
60	191	570	0.3351	0.3215	0.2900	0.2900	165	165
61	112	431	0.2599	0.2492	0.2700	0.2700	116	116
62	137	369	0.3713	0.3666	0.3600	0.3600	133	133
63	74	238	0.3109	0.3031	0.3100	0.3100	74	74
64	70	199	0.3518	0.3185	0.3000	0.3000	60	60
65	231	753	0.3068	0.3639	0.3850	0.3850	290	290
66	133	468	0.2842	0.3858	0.4400	0.4400	206	206
67	89	304	0.2928	0.3711	0.3100	0.3100	94	94
68	51	209	0.2440	0.3555	0.3000	0.3000	63	63
69	35	154	0.2273	0.4435	0.3000	0.3000	46	46
70	21	125	0.1680	0.3076	0.3200	0.3200	40	40
71	19	99	0.1919	0.2607	0.2500	0.2500	25	25
72	15	81	0.1852	0.3265	0.2500	0.2500	20	20
73	6	49	0.1224	0.2382	0.2500	0.2500	12	12
74	-	42	0.0000	0.0000	0.2500	0.2500	11	11
Totals	2,069	6,976	0.2966	0.3178	0.2941	0.3007	2,137	2,137
75 & Over	9	117	0.0769	0.0808			117	117
Total	2,078	7,093	0.2930	0.3164			2,254	2,254

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.2966	0.3178	0.3007
Previous Investigation Results			
2018-2020	0.2922	0.3089	0.3007
2015-2017	0.2723	0.2943	0.2957
2012-2014	0.2879	0.3166	0.2972



Public School Females Non-State Reduced Retirement Experience

Female Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
55	497	4,943	0.1005	0.1347	0.1100	0.1100	544	544
56	490	4,270	0.1148	0.1422	0.1300	0.1300	555	555
57	236	2,425	0.0973	0.1269	0.1200	0.1200	291	291
58	237	2,053	0.1154	0.1442	0.1300	0.1300	267	267
59	211	1,779	0.1186	0.1511	0.1350	0.1350	240	240
60	225	1,544	0.1457	0.1803	0.1700	0.1700	262	262
61	203	1,368	0.1484	0.1887	0.1700	0.1700	233	233
62	236	1,141	0.2068	0.2408	0.2400	0.2400	274	274
63	185	933	0.1983	0.2326	0.2400	0.2400	224	224
64	146	688	0.2122	0.2508	0.2400	0.2400	165	165
Totals	2,666	21,144	0.1261	0.1546	0.1405	0.1428	3,055	3,055

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.1261	0.1546	0.1428
Previous Investigation Results			
2018-2020	0.1195	0.1455	0.1428
2015-2017	0.1168	0.1377	0.1409
2012-2014	0.1383	0.1691	0.1429

University Males State Normal Retirement Experience

Male Age-Based Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
57	9	47	0.1915	0.1382	0.1200	0.1200	6	6
58	9	55	0.1636	0.1426	0.1600	0.1600	9	9
59	10	74	0.1351	0.1191	0.0900	0.0900	7	7
60	11	79	0.1392	0.0800	0.1500	0.1500	12	12
61	11	86	0.1279	0.0901	0.0900	0.0900	8	8
62	11	98	0.1122	0.1042	0.1000	0.1000	10	10
63	25	121	0.2066	0.1802	0.1100	0.1100	13	13
64	22	142	0.1549	0.1171	0.1550	0.1550	22	22
65	80	527	0.1518	0.1546	0.1550	0.1550	82	82
66	89	450	0.1978	0.2072	0.2100	0.2100	95	95
67	67	341	0.1965	0.1646	0.1800	0.1800	61	61
68	40	264	0.1515	0.1435	0.1900	0.1900	50	50
69	49	212	0.2311	0.2334	0.1400	0.1400	30	30
70	55	180	0.3056	0.2912	0.2100	0.2100	38	38
71	32	140	0.2286	0.2337	0.2400	0.2400	34	34
72	19	111	0.1712	0.1694	0.2400	0.2400	27	27
73	16	85	0.1882	0.2664	0.2400	0.2400	20	20
74	13	66	0.1970	0.2114	0.2400	0.2400	16	16
Sub Totals	568	3,078	0.1845	0.1766	0.1600	0.1711	540	540
75 & Over	55	233	0.2361	0.2245			233	233
Total	623	3,311	0.1882	0.1826			773	773

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.1845	0.1766	0.1711
Previous Investigation Results			
2018-2020	0.1748	0.1745	0.1711
2015-2017	0.1732	0.1714	0.1578
2012-2014	0.1300	0.1199	0.1430



University Males State Reduced Retirement Experience

Male Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
55	19	691	0.0275	0.0332	0.0330	0.0330	23	23
56	30	648	0.0463	0.0455	0.0330	0.0330	21	21
57	24	627	0.0383	0.0411	0.0400	0.0400	25	25
58	21	613	0.0343	0.0388	0.0400	0.0400	25	25
59	17	573	0.0297	0.0262	0.0440	0.0440	25	25
60	24	497	0.0483	0.0364	0.0480	0.0480	24	24
61	29	454	0.0639	0.0585	0.0480	0.0480	22	22
62	36	431	0.0835	0.0826	0.0700	0.0700	30	30
63	46	417	0.1103	0.0970	0.0830	0.0830	35	35
64	34	379	0.0897	0.0654	0.1150	0.1150	44	44
Totals	280	5,330	0.0525	0.0497	0.0491	0.0523	274	274

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0525	0.0497	0.0523
Previous Investigation Results			
2018-2020	0.0551	0.0548	0.0523
2015-2017	0.0570	0.0564	0.0494
2012-2014	0.0382	0.0355	0.0413

University Females State Normal Retirement Experience

Female Age-Based Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
57	11	81	0.1358	0.1208	0.1000	0.1000	8	8
58	14	89	0.1573	0.1464	0.2000	0.2000	18	18
59	14	89	0.1573	0.1531	0.1200	0.1200	11	11
60	19	88	0.2159	0.2522	0.1400	0.1400	12	12
61	12	86	0.1395	0.1511	0.1300	0.1300	11	11
62	24	93	0.2581	0.2186	0.1500	0.1500	14	14
63	23	85	0.2706	0.1923	0.1900	0.1900	16	16
64	12	79	0.1519	0.0906	0.1700	0.1700	13	13
65	85	417	0.2038	0.2121	0.2100	0.2100	88	88
66	79	341	0.2317	0.2411	0.2500	0.2500	85	85
67	66	265	0.2491	0.2671	0.2500	0.2500	66	66
68	34	169	0.2012	0.2067	0.1800	0.1800	30	30
69	27	139	0.1942	0.2360	0.1650	0.1650	23	23
70	25	104	0.2404	0.2778	0.2200	0.2200	23	23
71	25	87	0.2874	0.3672	0.1650	0.1650	14	14
72	11	60	0.1833	0.2061	0.1700	0.1700	10	10
73	10	46	0.2174	0.1484	0.2100	0.2100	10	10
74	9	33	0.2727	0.3652	0.1400	0.1400	5	5
Totals	500	2,351	0.2127	0.2136	0.1793	0.1864	457	457
75 & Over	17	108	0.1574	0.1693			108	108
Total	517	2,459	0.2102	0.2099			565	565

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.2127	0.2136	0.1864
Previous Investigation Results			
2018-2020	0.1972	0.1914	0.1864
2015-2017	0.2205	0.2010	0.1796
2012-2014	0.1501	0.1332	0.1561



University Females State Reduced Retirement Experience

Female Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
55	21	789	0.0266	0.0329	0.0500	0.0500	39	39
56	35	791	0.0442	0.0443	0.0500	0.0500	40	40
57	33	752	0.0439	0.0451	0.0500	0.0500	38	38
58	36	703	0.0512	0.0489	0.0550	0.0550	39	39
59	45	664	0.0678	0.0678	0.0600	0.0600	40	40
60	39	590	0.0661	0.0708	0.0750	0.0750	44	44
61	43	553	0.0778	0.0817	0.0900	0.0900	50	50
62	62	505	0.1228	0.1183	0.1100	0.1100	56	56
63	64	401	0.1596	0.1467	0.1200	0.1200	48	48
64	58	346	0.1676	0.1415	0.1450	0.1450	50	50
Totals	436	6,094	0.0715	0.0711	0.0750	0.0740	444	444

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0715	0.0711	0.0740
Previous Investigation Results			
2018-2020	0.0663	0.0716	0.0740
2015-2017	0.0781	0.0817	0.0747
2012-2014	0.0682	0.0749	0.0704

Protective With Social Security Non-State Normal Retirement Experience

Male and Female Age-Based Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
50	74	780	0.0949	0.0882	0.0600	0.0600	47	47
51	99	806	0.1228	0.1144	0.0800	0.0800	64	64
52	90	755	0.1192	0.1201	0.1100	0.1100	83	83
53	245	668	0.3668	0.3832	0.3400	0.3400	227	227
54	157	519	0.3025	0.3562	0.3200	0.3200	166	166
55	114	361	0.3158	0.3538	0.2600	0.2600	94	94
56	67	275	0.2436	0.3047	0.2300	0.2300	63	63
57	61	216	0.2824	0.3279	0.2700	0.2700	58	58
58	51	174	0.2931	0.3277	0.2100	0.2100	37	37
59	33	133	0.2481	0.2966	0.2300	0.2300	31	31
60	27	121	0.2231	0.2604	0.2200	0.2200	27	27
61	16	98	0.1633	0.1743	0.3000	0.3000	29	29
62	22	68	0.3235	0.3485	0.3500	0.3500	24	24
63	12	43	0.2791	0.3191	0.2700	0.2700	12	12
64	12	36	0.3333	0.4228	0.3000	0.3000	11	11
65	16	35	0.4571	0.4031	0.3400	0.3400	12	12
66	15	29	0.5172	0.4232	0.3500	0.3500	10	10
67	5	21	0.2381	0.4173	0.3500	0.3500	7	7
68	1	13	0.0769	0.0468	0.3500	0.3500	5	5
69	7	12	0.5833	0.5958	0.3500	0.3500	4	4
70	2	4	0.5000	0.9678	1.0000	1.0000	4	4
71	-	3	0.0000	0.0000	1.0000	1.0000	3	3
72	-	2	0.0000	0.0000	1.0000	1.0000	2	2
73	1	2	0.5000	0.5298	1.0000	1.0000	2	2
74	-	2	0.0000	0.0000	1.0000	1.0000	2	2
Totals	1,127	5,176	0.2177	0.2336	0.1638	0.2015	1,024	1,024
75 & Over	-	12	0.0000	0.0000			12	12
Total	1,127	5,188	0.2172	0.2335			1,036	1,036

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.2177	0.2336	0.2015
Previous Investigation Results			
2018-2020	0.1979	0.2142	0.2015
2015-2017	0.1812	0.1945	0.1702
2012-2014	0.1502	0.1683	0.1552



Protective With Social Security State Normal Retirement Experience

Male and Female Age-Based Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
50	49	484	0.1012	0.0871	0.0750	0.0750	36	36
51	49	530	0.0925	0.0908	0.0900	0.0900	48	48
52	70	535	0.1308	0.1346	0.1100	0.1100	59	59
53	135	487	0.2772	0.2990	0.2500	0.2500	122	122
54	109	499	0.2184	0.2981	0.2000	0.2000	100	100
55	67	383	0.1749	0.2057	0.2000	0.2000	77	77
56	67	326	0.2055	0.2583	0.2000	0.2000	65	65
57	56	280	0.2000	0.2546	0.2000	0.2000	56	56
58	58	235	0.2468	0.3028	0.2000	0.2000	47	47
59	47	223	0.2108	0.2644	0.2000	0.2000	45	45
60	38	197	0.1929	0.2472	0.2000	0.2000	39	39
61	35	187	0.1872	0.1993	0.2000	0.2000	37	37
62	31	137	0.2263	0.2151	0.2500	0.2500	34	34
63	45	125	0.3600	0.4039	0.2500	0.2500	31	31
64	17	86	0.1977	0.2015	0.3600	0.3600	31	31
65	28	70	0.4000	0.4153	0.3800	0.3800	27	27
66	15	40	0.3750	0.4275	0.3800	0.3800	15	15
67	10	25	0.4000	0.5013	0.3800	0.3800	10	10
68	12	24	0.5000	0.4960	0.3800	0.3800	9	9
69	2	10	0.2000	0.1693	0.3800	0.3800	4	4
70	1	6	0.1667	0.1893	1.0000	1.0000	6	6
71	-	2	0.0000	0.0000	1.0000	1.0000	2	2
72	1	2	0.5000	0.4247	1.0000	1.0000	2	2
73	-	-	N\A	N\A	1.0000	1.0000	-	-
74	-	-	N\A	N\A	1.0000	1.0000	-	-
Totals	942	4,893	0.1925	0.2112	0.1683	0.1712	902	902
75 & Over	1	2	0.5000	0.5023			2	2
Total	943	4,895	0.1926	0.2112			904	904

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.1925	0.2112	0.1712
Previous Investigation Results			
2018-2020	0.1581	0.1728	0.1712
2015-2017	0.1812	0.1945	0.1702
2012-2014	0.1502	0.1683	0.1552



Protective Without Social Security Non-State Normal Retirement Experience

Male and Female Age-Based Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
50	8	226	0.0354	0.0325	0.0300	0.0300	7	7
51	12	231	0.0519	0.0538	0.0350	0.0400	8	9
52	17	242	0.0702	0.0679	0.0450	0.0500	11	12
53	64	216	0.2963	0.3068	0.1700	0.2000	37	43
54	64	176	0.3636	0.4112	0.2400	0.2800	42	49
55	31	111	0.2793	0.3255	0.2900	0.3000	32	33
56	29	106	0.2736	0.3003	0.3200	0.3200	34	34
57	27	86	0.3140	0.3417	0.2300	0.2600	20	22
58	17	56	0.3036	0.3446	0.2700	0.3000	15	17
59	20	47	0.4255	0.4377	0.4000	0.4000	19	19
60	12	29	0.4138	0.4418	0.2500	0.3000	7	9
61	11	20	0.5500	0.5794	0.2500	0.3300	5	7
62	4	14	0.2857	0.3675	0.3100	0.3300	4	5
63	2	11	0.1818	0.1396	0.4000	0.3300	4	4
64	5	11	0.4545	0.3893	0.4000	0.4000	4	4
65	2	4	0.5000	0.3954	0.4000	0.4000	2	2
66	-	1	0.0000	0.0000	1.0000	1.0000	1	1
67	1	1	1.0000	1.0000	1.0000	1.0000	1	1
68	-	1	0.0000	0.0000	1.0000	1.0000	1	1
69	1	1	1.0000	1.0000	1.0000	1.0000	1	1
70	-	1	0.0000	0.0000	1.0000	1.0000	1	1
71	1	1	1.0000	1.0000	1.0000	1.0000	1	1
72	-	-	N\A	N\A	1.0000	1.0000	-	-
73	-	-	N\A	N\A	1.0000	1.0000	-	-
74	-	-	N\A	N\A	1.0000	1.0000	-	-
Totals	328	1,592	0.2060	0.2259	0.1718	0.1824	257	282
75 & Over	-	-	N\A	N\A			-	-
Total	328	1,592	0.2060	0.2259			257	282

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.2060	0.2259	0.1824
Previous Investigation Results			
2018-2020	0.1718	0.1810	0.1824
2015-2017	0.1560	0.1719	0.1658
2012-2014	0.1485	0.1630	0.1626



Executive and Elective Non-State Normal Retirement Experience

Male and Female Age-Based Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
57	3	9	0.3333	0.3591	0.1000	0.1000	1	1
58	2	8	0.2500	0.2391	0.1000	0.1000	1	1
59	-	12	0.0000	0.0000	0.1000	0.1000	1	1
60	2	16	0.1250	0.1850	0.1000	0.1000	2	2
61	5	17	0.2941	0.3178	0.1000	0.1000	2	2
62	7	52	0.1346	0.2108	0.1000	0.1000	5	6
63	12	63	0.1905	0.2871	0.1000	0.1000	6	6
64	7	50	0.1400	0.2748	0.1500	0.1500	8	8
65	11	45	0.2444	0.4383	0.1500	0.1500	7	7
66	6	36	0.1667	0.2320	0.1500	0.1500	5	5
67	8	40	0.2000	0.4338	0.1500	0.1500	6	6
68	5	26	0.1923	0.2232	0.1000	0.1000	3	3
69	2	23	0.0870	0.2872	0.1000	0.1000	2	2
70	2	23	0.0870	0.0936	0.1000	0.1000	2	2
71	1	22	0.0455	0.0876	0.1000	0.1000	2	2
72	1	16	0.0625	0.1113	0.1000	0.1000	2	2
73	1	16	0.0625	0.5073	0.2000	0.2000	3	3
74	2	16	0.1250	0.2348	0.2000	0.2000	3	3
Totals	77	490	0.1571	0.2709	0.1448	0.1213	61	62
75 & Over	4	95	0.0421	0.1560			95	95
Total	81	585	0.1385	0.2642			156	157

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.1571	0.2709	0.1213
Previous Investigation Results			
2018-2020	0.0771	0.1123	0.1213
2015-2017	0.1270	0.1717	0.1483
2012-2014	0.0967	0.1151	0.1307



Executive and Elective State Normal Retirement Experience

Male and Female Age-Based Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
57	1	14	0.0714	0.0240	0.1200	0.1200	2	2
58	2	12	0.1667	0.1284	0.1200	0.1200	1	1
59	-	10	0.0000	0.0000	0.1200	0.1200	1	1
60	4	17	0.2353	0.2489	0.1200	0.1200	2	2
61	4	20	0.2000	0.1177	0.1200	0.1200	2	2
62	4	69	0.0580	0.0973	0.1800	0.1800	12	12
63	9	75	0.1200	0.1562	0.1800	0.1800	14	14
64	6	68	0.0882	0.1164	0.1800	0.1800	12	12
65	5	59	0.0847	0.1076	0.1800	0.1800	11	11
66	6	49	0.1224	0.2280	0.1800	0.1800	9	9
67	9	38	0.2368	0.2998	0.1800	0.1800	7	7
68	2	29	0.0690	0.0172	0.1800	0.1800	5	5
69	2	31	0.0645	0.0638	0.1800	0.1800	6	6
70	5	32	0.1563	0.2409	0.1800	0.1800	6	6
71	2	27	0.0741	0.1261	0.1500	0.1500	4	4
72	7	20	0.3500	0.3334	0.1500	0.1500	3	3
73	4	16	0.2500	0.3461	0.1500	0.1500	2	2
74	4	12	0.3333	0.4024	0.1500	0.1500	2	2
Totals	76	598	0.1271	0.1660	0.1522	0.1675	101	101
75 & Over	11	49	0.2245	0.2722			49	49
Total	87	647	0.1345	0.1763			150	150

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.1271	0.1660	0.1675
Previous Investigation Results			
2018-2020	0.1374	0.1696	0.1675
2015-2017	0.1270	0.1717	0.1483
2012-2014	0.0967	0.1151	0.1307

Executive and Elective Non-State Reduced Retirement Experience

Male and Female Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
55	3	56	0.0536	0.0435	0.0250	0.0250	1	1
56	1	49	0.0204	0.0492	0.0250	0.0250	1	1
57	2	47	0.0426	0.0629	0.0250	0.0250	1	1
58	2	45	0.0444	0.0220	0.0250	0.0250	1	1
59	3	52	0.0577	0.0577	0.0250	0.0250	1	1
60	5	49	0.1020	0.0919	0.0500	0.0500	2	2
61	7	52	0.1346	0.1233	0.0500	0.0500	3	3
62	1	12	0.0833	0.0736	0.0100	0.0100	-	-
63	-	11	0.0000	0.0000	0.0100	0.0100	-	-
64	-	9	0.0000	0.0000	0.0100	0.0100	-	-
Totals	24	382	0.0628	0.0636	0.0350	0.0312	10	10

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0628	0.0636	0.0312
Previous Investigation Results			
2018-2020	0.0289	0.0292	0.0312
2015-2017	0.0445	0.0542	0.0347
2012-2014	0.0245	0.0309	0.0361

Executive and Elective State Reduced Retirement Experience

Male and Female Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Population Weighted Rates	Liability Weighted Rates	Sample Rates		Expected Retirements	
					Present	Proposed	Present	Proposed
55	2	74	0.0270	0.0355	0.0600	0.0600	4	4
56	2	74	0.0270	0.0339	0.0600	0.0600	4	4
57	1	60	0.0167	0.0083	0.0600	0.0600	4	4
58	7	61	0.1148	0.1362	0.0600	0.0600	4	4
59	4	55	0.0727	0.0356	0.0600	0.0600	3	3
60	5	53	0.0943	0.1277	0.0600	0.0600	3	3
61	3	48	0.0625	0.0511	0.0600	0.0600	3	3
62	1	7	0.1429	0.1252	0.0600	0.0600	-	-
63	1	10	0.1000	0.0617	0.0300	0.0300	-	-
64	1	11	0.0909	0.1119	0.0300	0.0300	-	-
Totals	27	453	0.0596	0.0603	0.0358	0.0597	25	25

	<u>Actual Experience</u>		<u>Proposed Assumption</u>
Current	0.0596	0.0603	0.0597
Previous Investigation Results			
2018-2020	0.0637	0.0820	0.0597
2015-2017	0.0445	0.0542	0.0347
2012-2014	0.0245	0.0309	0.0361

SECTION E

MORTALITY EXPERIENCE

Male Retired-Life Mortality Experience Population-Weighted (Normal Retirement, Original Annuitants Only)

Age	Life Years Exposure	Post - Retirement Death			Post - Retirement Death Rates			A/E Ratio	
		Actual Experience	Expected		Actual	Expected		Present	Proposed
			Present	Proposed		Present	Proposed		
50-54	3,467	9	6	6	0.0026	0.0016	0.0016	1.5000	1.5000
55-59	16,556	65	53	53	0.0039	0.0030	0.0030	1.2264	1.2264
60-64	32,616	222	173	173	0.0068	0.0051	0.0051	1.2832	1.2832
65-69	52,737	550	447	447	0.0104	0.0082	0.0082	1.2304	1.2304
70-74	60,897	1,076	888	888	0.0177	0.0141	0.0141	1.2117	1.2117
75-79	46,356	1,401	1,238	1,238	0.0302	0.0264	0.0264	1.1317	1.1317
80-84	28,134	1,520	1,432	1,432	0.0540	0.0507	0.0507	1.0615	1.0615
85-89	15,898	1,694	1,536	1,536	0.1066	0.0975	0.0975	1.1029	1.1029
90-94	6,799	1,251	1,161	1,161	0.1840	0.1771	0.1771	1.0775	1.0775
95-99	1,455	460	389	389	0.3162	0.2831	0.2831	1.1825	1.1825
100 & Up	147	70	52	52	0.4762	0.3537	0.3537	1.3462	1.3462
Totals	265,062	8,318	7,375	7,375	0.0314	0.0278	0.0278	1.1279	1.1279

Current	0.0314	0.0278
Previous Investigation Results		
2018-2020	0.0289	0.0266
2015-2017	0.0278	0.0265
2012-2014	0.0273	0.0271

Male Retired-Life Mortality Experience Benefits-Weighted (Normal Retirement, Original Annuitants Only)

Age	Life Years Exposure	Post - Retirement Death			Post - Retirement Death Rates			A/E Ratio	
		Actual Experience	Expected		Actual	Expected		Present	Proposed
			Present	Proposed		Present	Proposed		
50-54	12,143,601	30,903	22,059	22,059	0.0025	0.0016	0.0016	1.4009	1.4009
55-59	55,805,261	208,731	176,954	176,954	0.0037	0.0030	0.0030	1.1796	1.1796
60-64	95,462,474	502,364	495,337	495,337	0.0053	0.0051	0.0051	1.0142	1.0142
65-69	140,157,785	1,280,425	1,183,377	1,183,377	0.0091	0.0082	0.0082	1.0820	1.0820
70-74	172,880,334	2,624,278	2,499,840	2,499,840	0.0152	0.0141	0.0141	1.0498	1.0498
75-79	138,305,434	3,623,956	3,639,475	3,639,475	0.0262	0.0264	0.0264	0.9957	0.9957
80-84	86,086,411	4,136,612	4,319,591	4,319,591	0.0481	0.0507	0.0507	0.9576	0.9576
85-89	49,988,316	4,858,200	4,770,491	4,770,491	0.0972	0.0975	0.0975	1.0184	1.0184
90-94	22,176,947	3,772,939	3,755,978	3,755,978	0.1701	0.1771	0.1771	1.0045	1.0045
95-99	4,735,325	1,532,228	1,256,104	1,256,104	0.3236	0.2831	0.2831	1.2198	1.2198
100 & Up	422,148	206,219	148,739	148,739	0.4885	0.3537	0.3537	1.3864	1.3864
Totals	778,164,036	22,776,855	22,267,945	22,267,945	0.0293	0.0286	0.0286	1.0229	1.0229

Female Retired-Life Mortality Experience Population-Weighted (Normal Retirement, Original Annuitants Only)

Age	Life Years Exposure	Post - Retirement Death			Post - Retirement Death Rates			A/E Ratio	
		Actual Experience	Expected		Actual	Expected		Present	Proposed
			Present	Proposed		Present	Proposed		
50-54	1,820	4	3	3	0.0022	0.0016	0.0016	1.3333	1.3333
55-59	21,195	56	61	61	0.0026	0.0027	0.0027	0.9180	0.9180
60-64	52,973	229	220	220	0.0043	0.0040	0.0040	1.0409	1.0409
65-69	87,613	499	527	527	0.0057	0.0058	0.0058	0.9469	0.9469
70-74	94,785	969	981	981	0.0102	0.0100	0.0100	0.9878	0.9878
75-79	64,843	1,374	1,294	1,294	0.0212	0.0197	0.0197	1.0618	1.0618
80-84	40,498	1,634	1,611	1,611	0.0403	0.0394	0.0394	1.0143	1.0143
85-89	25,284	1,968	1,934	1,934	0.0778	0.0768	0.0768	1.0176	1.0176
90-94	12,997	1,910	1,821	1,821	0.1470	0.1435	0.1435	1.0489	1.0489
95-99	3,994	1,088	927	927	0.2724	0.2448	0.2448	1.1737	1.1737
100 & Up	651	252	207	207	0.3871	0.3180	0.3180	1.2174	1.2174
Totals	404,182	9,983	9,586	9,586	0.0247	0.0237	0.0237	1.0414	1.0414

Current	0.0247	0.0237
Previous Investigation Results		
2018-2020	0.0231	0.0228
2015-2017	0.0233	0.0223
2012-2014	0.0234	0.0230

Female Retired-Life Mortality Experience Benefits-Weighted (Normal Retirement, Original Annuitants Only)

Age	Life Years Exposure	Post - Retirement Death			Post - Retirement Death Rates			A/E Ratio	
		Actual Experience	Expected		Actual	Expected		Present	Proposed
			Present	Proposed		Present	Proposed		
50-54	3,825,557	2,506	5,722	5,722	0.0007	0.0016	0.0016	0.4380	0.4380
55-59	51,470,260	119,066	146,898	146,898	0.0023	0.0027	0.0027	0.8105	0.8105
60-64	117,672,574	482,249	479,542	479,542	0.0041	0.0040	0.0040	1.0056	1.0056
65-69	181,625,867	916,442	1,085,790	1,085,790	0.0050	0.0058	0.0058	0.8440	0.8440
70-74	209,868,818	1,941,465	2,135,034	2,135,034	0.0093	0.0100	0.0100	0.9093	0.9093
75-79	137,529,571	2,674,057	2,672,406	2,672,406	0.0194	0.0197	0.0197	1.0006	1.0006
80-84	79,948,839	3,051,561	3,129,236	3,129,236	0.0382	0.0394	0.0394	0.9752	0.9752
85-89	52,026,843	3,942,074	3,955,652	3,955,652	0.0758	0.0768	0.0768	0.9966	0.9966
90-94	27,588,881	3,755,422	3,843,667	3,843,667	0.1361	0.1435	0.1435	0.9770	0.9770
95-99	7,991,955	2,136,258	1,848,104	1,848,104	0.2673	0.2448	0.2448	1.1559	1.1559
100 & Up	1,263,498	473,087	399,176	399,176	0.3744	0.3180	0.3180	1.1852	1.1852
Totals	865,723,608	19,018,594	19,296,329	19,296,329	0.0220	0.0223	0.0223	0.9856	0.9856

SECTION F

COMPLETE LISTS OF PROPOSED DECREMENT ASSUMPTIONS

Actuarial Assumptions Based on 2021-2023 Experience Study

Select and Ultimate Withdrawal

Age	Service	% of Active Participants Withdrawing												
		General Non-State		General State		Public Schools Non-State		University State		Protective			Executive & Elected	Executive & Elected
		Male	Female	Male	Female	Male	Female	Male	Female	With SS Non-State	With SS State	Without SS Non-State	Non-State	State
Under 30	0-1	17.7%	20.0%	17.2%	19.5%	12.6%	12.0%	14.0%	14.1%	15.6%	21.0%	5.5%	29.0%	19.0%
	1-2	12.5%	15.0%	12.9%	15.5%	11.6%	10.0%	13.8%	14.0%	9.4%	17.0%	4.2%	25.0%	16.0%
	2-3	9.0%	11.5%	9.5%	12.5%	8.5%	8.5%	12.6%	12.7%	5.3%	11.0%	2.4%	22.0%	13.0%
	3-4	7.1%	9.6%	7.4%	10.0%	6.0%	6.2%	11.0%	10.0%	4.4%	7.0%	2.2%	19.0%	12.5%
	4-5	6.6%	9.0%	7.3%	8.7%	5.6%	5.8%	8.6%	9.3%	4.2%	6.0%	1.6%	15.0%	12.0%
	5-6	5.3%	7.4%	6.1%	7.8%	4.5%	4.8%	8.5%	8.1%	3.3%	5.5%	1.4%	7.0%	6.0%
	6-7	4.8%	6.3%	5.2%	6.9%	3.7%	4.1%	7.0%	7.0%	3.2%	4.9%	1.3%	4.0%	6.0%
	7-8	4.6%	6.0%	5.1%	6.0%	2.9%	3.5%	5.6%	5.6%	3.0%	4.1%	1.2%	4.0%	6.0%
	8-9	4.1%	5.7%	4.5%	5.6%	2.6%	3.4%	4.6%	4.9%	2.7%	3.5%	1.1%	4.0%	6.0%
	9-10	4.0%	5.0%	3.6%	5.5%	2.5%	3.0%	4.3%	4.3%	2.3%	3.4%	1.0%	4.0%	6.0%
	10 & Up	3.2%	4.9%	3.4%	4.8%	2.0%	2.2%	3.9%	4.0%	2.1%	2.9%	0.7%	3.8%	4.5%
	31	3.1%	4.8%	3.4%	4.8%	1.9%	2.1%	3.7%	4.0%	2.0%	2.8%	0.7%	3.8%	4.5%
	32	3.0%	4.8%	3.4%	4.7%	1.7%	2.0%	3.6%	4.0%	2.0%	2.8%	0.7%	3.7%	4.5%
	33	2.9%	4.6%	3.3%	4.4%	1.7%	2.0%	3.6%	4.0%	1.9%	2.7%	0.6%	3.6%	4.5%
	34	2.8%	4.3%	3.3%	4.2%	1.6%	1.9%	3.5%	4.0%	1.8%	2.6%	0.6%	3.5%	4.5%
	35	2.8%	4.1%	3.3%	3.9%	1.6%	1.9%	3.5%	4.0%	1.8%	2.4%	0.6%	3.5%	4.5%
	36	2.7%	3.8%	3.2%	3.7%	1.5%	1.8%	3.4%	4.0%	1.7%	2.3%	0.6%	3.4%	4.5%
	37	2.6%	3.6%	3.2%	3.4%	1.5%	1.8%	3.4%	4.0%	1.6%	2.2%	0.6%	3.3%	4.5%
	38	2.5%	3.5%	3.1%	3.3%	1.5%	1.7%	3.3%	3.9%	1.6%	2.1%	0.6%	3.2%	4.5%
	39	2.4%	3.4%	3.0%	3.2%	1.5%	1.7%	3.2%	3.8%	1.6%	2.0%	0.6%	3.2%	4.5%
	40	2.4%	3.2%	3.0%	3.0%	1.4%	1.6%	3.1%	3.7%	1.5%	1.8%	0.6%	3.1%	4.5%
	41	2.3%	3.1%	2.9%	2.9%	1.4%	1.5%	3.0%	3.6%	1.5%	1.7%	0.6%	3.1%	4.5%
	42	2.2%	3.0%	2.8%	2.8%	1.4%	1.5%	2.9%	3.5%	1.5%	1.6%	0.6%	3.0%	4.5%
	43	2.1%	3.0%	2.7%	2.8%	1.4%	1.4%	2.8%	3.4%	1.5%	1.5%	0.5%	3.0%	4.4%
	44	2.0%	3.0%	2.6%	2.7%	1.4%	1.4%	2.7%	3.3%	1.5%	1.5%	0.5%	2.9%	4.3%
	45	2.0%	2.9%	2.5%	2.7%	1.4%	1.4%	2.6%	3.2%	1.4%	1.4%	0.5%	2.9%	4.2%
	46	1.9%	2.9%	2.4%	2.6%	1.4%	1.3%	2.5%	3.1%	1.4%	1.4%	0.5%	2.8%	4.1%
47	1.8%	2.9%	2.3%	2.6%	1.4%	1.3%	2.4%	3.0%	1.4%	1.3%	0.5%	2.8%	4.0%	
48	1.8%	2.8%	2.2%	2.4%	1.3%	1.3%	2.3%	2.9%	1.4%	1.3%	0.5%	2.8%	3.9%	
49	1.7%	2.6%	2.1%	2.3%	1.3%	1.2%	2.2%	2.8%	1.4%	1.3%	0.5%	2.8%	3.8%	
50	1.7%	2.5%	2.0%	2.1%	1.3%	1.2%	2.2%	2.7%	1.3%	1.2%	0.5%	2.7%	3.7%	
51	1.6%	2.3%	1.9%	2.0%	1.3%	1.2%	2.1%	2.6%	1.3%	1.2%	0.5%	2.7%	3.6%	
52	1.6%	2.2%	1.9%	1.8%	1.3%	1.2%	2.0%	2.5%	1.3%	1.2%	0.5%	2.7%	3.5%	
53	1.6%	2.2%	1.9%	1.8%	1.3%	1.2%	2.0%	2.5%	1.3%	1.2%	0.5%	2.7%	3.5%	
54	1.6%	2.2%	1.9%	1.8%	1.3%	1.2%	2.0%	2.5%	1.3%	1.2%	0.5%	2.7%	3.5%	



Actuarial Assumptions Based on 2021-2023 Experience Study

Disability Rates

Age	% of Active Participants Becoming Disabled												
	General Non-State		General State		Public Schools Non-State		University State		Protective			Executive & Elected Non-State	Executive & Elected State
	Male	Female	Male	Female	Male	Female	Male	Female	With SS Non-State	With SS State	Without SS Non-State		
20	0.01%	0.00%	0.01%	0.01%	0.01%	0.01%	0.00%	0.01%	0.02%	0.02%	0.04%	0.00%	0.00%
21	0.01%	0.00%	0.01%	0.01%	0.01%	0.01%	0.00%	0.01%	0.02%	0.02%	0.04%	0.00%	0.00%
22	0.01%	0.00%	0.01%	0.01%	0.01%	0.01%	0.00%	0.01%	0.02%	0.02%	0.04%	0.00%	0.00%
23	0.01%	0.00%	0.01%	0.01%	0.01%	0.01%	0.00%	0.01%	0.02%	0.02%	0.04%	0.00%	0.00%
24	0.01%	0.00%	0.01%	0.01%	0.01%	0.01%	0.00%	0.01%	0.02%	0.02%	0.04%	0.00%	0.00%
25	0.01%	0.00%	0.01%	0.01%	0.01%	0.01%	0.00%	0.01%	0.02%	0.02%	0.04%	0.00%	0.00%
26	0.01%	0.00%	0.01%	0.01%	0.01%	0.01%	0.00%	0.01%	0.02%	0.02%	0.04%	0.00%	0.00%
27	0.01%	0.00%	0.01%	0.01%	0.01%	0.01%	0.00%	0.01%	0.02%	0.02%	0.04%	0.00%	0.00%
28	0.01%	0.01%	0.01%	0.03%	0.01%	0.01%	0.00%	0.01%	0.02%	0.02%	0.04%	0.00%	0.00%
29	0.01%	0.01%	0.01%	0.03%	0.01%	0.01%	0.00%	0.01%	0.02%	0.02%	0.04%	0.00%	0.00%
30	0.01%	0.02%	0.01%	0.04%	0.01%	0.01%	0.00%	0.01%	0.02%	0.02%	0.04%	0.00%	0.00%
31	0.01%	0.02%	0.01%	0.04%	0.01%	0.01%	0.00%	0.01%	0.02%	0.02%	0.04%	0.00%	0.00%
32	0.01%	0.02%	0.01%	0.04%	0.01%	0.01%	0.00%	0.01%	0.02%	0.02%	0.04%	0.00%	0.00%
33	0.01%	0.02%	0.01%	0.04%	0.01%	0.01%	0.00%	0.02%	0.02%	0.02%	0.04%	0.00%	0.00%
34	0.01%	0.02%	0.01%	0.05%	0.01%	0.01%	0.00%	0.02%	0.03%	0.03%	0.04%	0.00%	0.00%
35	0.01%	0.02%	0.01%	0.05%	0.01%	0.01%	0.00%	0.03%	0.03%	0.03%	0.04%	0.01%	0.01%
36	0.01%	0.02%	0.01%	0.05%	0.01%	0.01%	0.00%	0.03%	0.04%	0.04%	0.04%	0.01%	0.01%
37	0.02%	0.02%	0.02%	0.05%	0.01%	0.01%	0.00%	0.04%	0.04%	0.04%	0.04%	0.01%	0.01%
38	0.02%	0.03%	0.02%	0.06%	0.01%	0.01%	0.00%	0.04%	0.04%	0.04%	0.05%	0.01%	0.01%
39	0.03%	0.03%	0.03%	0.07%	0.01%	0.02%	0.00%	0.04%	0.04%	0.04%	0.05%	0.01%	0.01%
40	0.03%	0.03%	0.03%	0.07%	0.01%	0.02%	0.01%	0.04%	0.05%	0.05%	0.06%	0.01%	0.01%
41	0.04%	0.04%	0.04%	0.08%	0.02%	0.02%	0.01%	0.04%	0.05%	0.05%	0.06%	0.01%	0.01%
42	0.05%	0.04%	0.05%	0.08%	0.02%	0.02%	0.01%	0.05%	0.05%	0.05%	0.07%	0.01%	0.01%
43	0.05%	0.04%	0.05%	0.09%	0.02%	0.04%	0.01%	0.04%	0.06%	0.06%	0.08%	0.01%	0.01%
44	0.06%	0.05%	0.06%	0.11%	0.03%	0.05%	0.01%	0.04%	0.06%	0.06%	0.10%	0.01%	0.01%
45	0.06%	0.05%	0.06%	0.11%	0.03%	0.06%	0.02%	0.04%	0.07%	0.07%	0.11%	0.01%	0.01%
46	0.06%	0.05%	0.06%	0.12%	0.03%	0.07%	0.02%	0.04%	0.07%	0.07%	0.13%	0.02%	0.02%
47	0.06%	0.05%	0.06%	0.12%	0.03%	0.09%	0.02%	0.04%	0.08%	0.08%	0.14%	0.02%	0.02%
48	0.09%	0.06%	0.09%	0.14%	0.04%	0.09%	0.02%	0.05%	0.09%	0.09%	0.31%	0.02%	0.02%
49	0.11%	0.06%	0.11%	0.15%	0.06%	0.10%	0.02%	0.06%	0.10%	0.10%	0.48%	0.02%	0.02%
50	0.13%	0.07%	0.13%	0.17%	0.08%	0.10%	0.03%	0.07%	0.11%	0.11%	0.64%	0.02%	0.02%
51	0.15%	0.08%	0.15%	0.18%	0.10%	0.11%	0.03%	0.08%	0.12%	0.12%	0.81%	0.03%	0.03%
52	0.17%	0.09%	0.17%	0.20%	0.12%	0.12%	0.04%	0.09%	0.13%	0.13%	0.98%	0.03%	0.03%
53	0.19%	0.10%	0.20%	0.23%	0.13%	0.13%	0.05%	0.10%	0.66%	0.66%	0.81%	0.05%	0.05%
54	0.21%	0.12%	0.22%	0.27%	0.13%	0.14%	0.07%	0.10%	1.20%	1.20%	0.64%	0.08%	0.08%
55	0.24%	0.13%	0.25%	0.30%	0.14%	0.15%	0.08%	0.11%	1.73%	1.73%	0.48%	0.09%	0.09%
56	0.27%	0.14%	0.29%	0.34%	0.15%	0.17%	0.10%	0.12%	2.27%	2.27%	0.31%	0.11%	0.11%
57	0.30%	0.16%	0.31%	0.38%	0.16%	0.18%	0.12%	0.13%	2.80%	2.80%	0.14%	0.12%	0.12%
58	0.33%	0.17%	0.34%	0.40%	0.19%	0.20%	0.12%	0.14%	2.84%	2.84%	0.14%	0.12%	0.12%
59	0.36%	0.18%	0.38%	0.41%	0.21%	0.22%	0.11%	0.15%	2.88%	2.88%	0.14%	0.11%	0.11%
60	0.43%	0.18%	0.45%	0.43%	0.24%	0.22%	0.11%	0.17%	2.92%	2.92%	0.14%	0.11%	0.11%

Actuarial Assumptions Based on 2021-2023 Experience Study

Salary Scale – Service Based Rates

Service	% Merit Increases in Salaries Next Year								
	General Non-State (Not Including Schools)	General State (Not Including Schools)	University Teachers State	Public School Teachers Non-State	Protective With SS Non-State	Protective With SS State	Protective Without SS Non-State	Executive & Elected Non-State	Executive & Elected State
1	3.6%	3.6%	3.1%	5.7%	4.9%	4.9%	5.5%	2.6%	2.6%
2	3.6%	3.6%	3.1%	5.7%	4.9%	4.9%	5.5%	2.6%	2.6%
3	3.2%	3.2%	3.0%	5.3%	4.2%	4.2%	4.7%	2.1%	2.1%
4	2.9%	2.9%	2.9%	4.8%	3.6%	3.6%	3.8%	1.7%	1.7%
5	2.6%	2.6%	2.8%	4.4%	2.9%	2.9%	3.0%	1.2%	1.2%
6	2.3%	2.3%	2.7%	3.9%	2.3%	2.3%	2.1%	0.8%	0.8%
7	2.0%	2.0%	2.6%	3.5%	1.6%	1.6%	1.3%	0.3%	0.3%
8	1.9%	1.9%	2.5%	3.2%	1.5%	1.5%	1.2%	0.3%	0.3%
9	1.7%	1.7%	2.4%	3.0%	1.4%	1.4%	1.0%	0.3%	0.3%
10	1.6%	1.6%	2.3%	2.7%	1.2%	1.2%	0.9%	0.3%	0.3%
11	1.5%	1.5%	2.2%	2.5%	1.1%	1.1%	0.7%	0.3%	0.3%
12	1.4%	1.4%	2.1%	2.2%	1.0%	1.0%	0.6%	0.3%	0.3%
13	1.3%	1.3%	2.0%	2.0%	1.0%	1.0%	0.6%	0.3%	0.3%
14	1.3%	1.3%	1.9%	1.8%	1.0%	1.0%	0.6%	0.3%	0.3%
15	1.2%	1.2%	1.8%	1.5%	0.9%	0.9%	0.5%	0.3%	0.3%
16	1.2%	1.2%	1.7%	1.3%	0.9%	0.9%	0.5%	0.3%	0.3%
17	1.1%	1.1%	1.6%	1.1%	0.9%	0.9%	0.5%	0.3%	0.3%
18	1.1%	1.1%	1.5%	1.0%	0.9%	0.9%	0.5%	0.3%	0.3%
19	1.0%	1.0%	1.4%	0.8%	0.9%	0.9%	0.5%	0.3%	0.3%
20	1.0%	1.0%	1.3%	0.7%	0.8%	0.8%	0.4%	0.3%	0.3%
21	0.9%	0.9%	1.2%	0.6%	0.8%	0.8%	0.4%	0.3%	0.3%
22	0.9%	0.9%	1.1%	0.5%	0.8%	0.8%	0.4%	0.3%	0.3%
23	0.8%	0.8%	1.0%	0.4%	0.8%	0.8%	0.4%	0.3%	0.3%
24	0.8%	0.8%	1.0%	0.4%	0.8%	0.8%	0.4%	0.3%	0.3%
25	0.7%	0.7%	1.0%	0.4%	0.7%	0.7%	0.3%	0.3%	0.3%
26	0.7%	0.7%	0.9%	0.3%	0.7%	0.7%	0.3%	0.3%	0.3%
27	0.6%	0.6%	0.9%	0.3%	0.7%	0.7%	0.3%	0.3%	0.3%
28	0.6%	0.6%	0.9%	0.3%	0.7%	0.7%	0.3%	0.3%	0.3%
29	0.5%	0.5%	0.8%	0.3%	0.7%	0.7%	0.3%	0.3%	0.3%
30	0.5%	0.5%	0.8%	0.3%	0.6%	0.6%	0.2%	0.3%	0.3%
31	0.4%	0.4%	0.7%	0.3%	0.6%	0.6%	0.2%	0.3%	0.3%
32	0.4%	0.4%	0.7%	0.3%	0.6%	0.6%	0.2%	0.3%	0.3%
33	0.4%	0.4%	0.6%	0.2%	0.6%	0.6%	0.2%	0.3%	0.3%
34	0.4%	0.4%	0.5%	0.2%	0.6%	0.6%	0.2%	0.3%	0.3%
35	0.3%	0.3%	0.5%	0.2%	0.5%	0.5%	0.1%	0.3%	0.3%
36	0.3%	0.3%	0.4%	0.2%	0.5%	0.5%	0.1%	0.3%	0.3%
37	0.3%	0.3%	0.3%	0.2%	0.5%	0.5%	0.1%	0.3%	0.3%
38	0.3%	0.3%	0.3%	0.2%	0.5%	0.5%	0.1%	0.3%	0.3%
39	0.3%	0.3%	0.3%	0.2%	0.4%	0.4%	0.1%	0.3%	0.3%
40	0.2%	0.2%	0.2%	0.2%	0.4%	0.4%	0.1%	0.3%	0.3%

Actuarial Assumptions Based on 2021-2023 Experience Study

Normal Retirement Pattern

Age	% of Active Participants Retiring												
	General Non-State		General State		Public Schools Non-State		University State		Protective			Executive & Elected Non-State	Executive & Elected State
	Male	Female	Male	Female	Male	Female	Male	Female	With SS Non-State *	With SS State *	Without SS Non-State*		
50									6%	8%	3%		
51									8%	9%	4%		
52									11%	11%	5%		
53									34%	25%	20%		
54									32%	20%	28%		
55									26%	20%	30%		
56									23%	20%	32%		
57	20%	17%	19%	19%	32%	28%	12%	10%	27%	20%	26%	10%	12%
58	20%	18%	19%	19%	30%	28%	16%	20%	21%	20%	30%	10%	12%
59	20%	15%	19%	19%	29%	26%	9%	12%	23%	20%	40%	10%	12%
60	20%	20%	19%	21%	29%	29%	15%	14%	22%	20%	30%	10%	12%
61	20%	18%	19%	25%	28%	27%	9%	13%	30%	20%	33%	10%	12%
62	30%	24%	28%	29%	38%	36%	10%	15%	35%	25%	33%	10%	18%
63	30%	29%	30%	28%	34%	31%	11%	19%	27%	25%	33%	10%	18%
64	30%	24%	25%	31%	30%	30%	16%	17%	30%	36%	40%	15%	18%
65	30%	36%	27%	31%	34%	39%	16%	21%	34%	38%	40%	15%	18%
66	40%	39%	35%	36%	36%	44%	21%	25%	35%	38%	100%	15%	18%
67	32%	35%	32%	33%	30%	31%	18%	25%	35%	38%	100%	15%	18%
68	32%	30%	21%	25%	29%	30%	19%	18%	35%	38%	100%	10%	18%
69	28%	23%	21%	27%	22%	30%	14%	17%	35%	38%	100%	10%	18%
70	28%	24%	21%	29%	29%	32%	21%	22%	100%	100%	100%	10%	18%
71	28%	29%	21%	34%	23%	25%	24%	17%	100%	100%	100%	10%	15%
72	28%	28%	21%	33%	23%	25%	24%	17%	100%	100%	100%	10%	15%
73	18%	28%	30%	24%	24%	25%	24%	21%	100%	100%	100%	20%	15%
74	18%	16%	30%	18%	25%	25%	24%	14%	100%	100%	100%	20%	15%
75	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

* Includes Reduced Retirement.



Actuarial Assumptions Based on 2021-2023 Experience Study

Reduced Retirement Pattern

Age	% of Active Participants Retiring									
	General Non-State		General State		Public Schools Non-State		University State		Executive & Elected Non-State	Executive & Elected State
	Male	Female	Male	Female	Male	Female	Male	Female		
55	7%	7%	5%	6%	12%	11%	3%	5%	3%	6%
56	6%	7%	7%	8%	13%	13%	3%	5%	3%	6%
57	5%	6%	6%	6%	13%	12%	4%	5%	3%	6%
58	6%	7%	6%	9%	12%	13%	4%	6%	3%	6%
59	6%	7%	7%	8%	14%	14%	4%	6%	3%	6%
60	9%	10%	9%	10%	16%	17%	5%	8%	5%	6%
61	8%	10%	13%	11%	16%	17%	5%	9%	5%	6%
62	19%	16%	15%	18%	23%	24%	7%	11%	1%	6%
63	20%	18%	17%	20%	21%	24%	8%	12%	1%	3%
64	18%	18%	20%	19%	21%	24%	12%	15%	1%	3%

Age	% of Active Participants Retiring									
	General Non-State		General State		Public Schools Non-State		University State		Executive & Elected Non-State	Executive & Elected State
	Male	Female	Male	Female	Male	Female	Male	Female		
55	7%	7%	5%	6%	12%	11%	3%	5%	3%	6%
56	6%	7%	7%	8%	13%	13%	3%	5%	3%	6%
57	5%	6%	6%	6%	13%	12%	4%	5%	3%	6%
58	6%	7%	6%	9%	12%	13%	4%	6%	3%	6%
59	6%	7%	7%	8%	14%	14%	4%	6%	3%	6%
60	9%	10%	9%	10%	16%	17%	5%	8%	5%	6%
61	8%	10%	13%	11%	16%	17%	5%	9%	5%	6%
62	19%	16%	15%	18%	23%	24%	7%	11%	1%	6%
63	20%	18%	17%	20%	21%	24%	8%	12%	1%	3%
64	18%	18%	20%	19%	21%	24%	12%	15%	1%	3%

Actuarial Assumptions Based on 2021-2023 Experience Study

Post-Retirement Mortality Rates* – Healthy Lives

Age	% Dying Next Year		Age	% Dying Next Year		Age	% Dying Next Year	
	Male	Female		Male	Female		Male	Female
20	0.0400%	0.0166%	60	0.4164%	0.3473%	100	35.2338%	31.5929%
21	0.0359%	0.0156%	61	0.4614%	0.3746%	101	37.5405%	34.0365%
22	0.0306%	0.0133%	62	0.5103%	0.4017%	102	39.8444%	36.5161%
23	0.0264%	0.0123%	63	0.5610%	0.4306%	103	42.1321%	39.0031%
24	0.0234%	0.0126%	64	0.6175%	0.4611%	104	44.3701%	41.4751%
25	0.0215%	0.0130%	65	0.6785%	0.4964%	105	46.5390%	43.9200%
26	0.0237%	0.0147%	66	0.7467%	0.5352%	106	48.6446%	46.2964%
27	0.0261%	0.0152%	67	0.8234%	0.5815%	107	50.6821%	48.6102%
28	0.0286%	0.0171%	68	0.9107%	0.6369%	108	52.6026%	50.8407%
29	0.0327%	0.0191%	69	1.0105%	0.7041%	109	54.4412%	52.9627%
30	0.0353%	0.0227%	70	1.1257%	0.7859%	110	55.9376%	54.9771%
31	0.0397%	0.0248%	71	1.2597%	0.8834%	111	56.1284%	56.8828%
32	0.0422%	0.0267%	72	1.4144%	0.9996%	112	56.3198%	57.9583%
33	0.0463%	0.0284%	73	1.5952%	1.1381%	113	56.5230%	58.1267%
34	0.0484%	0.0317%	74	1.8039%	1.3012%	114	56.7270%	58.2781%
35	0.0521%	0.0330%	75	2.0453%	1.4926%	115	56.9202%	58.4415%
36	0.0552%	0.0356%	76	2.3250%	1.7157%	116	56.9544%	58.4708%
37	0.0578%	0.0377%	77	2.6448%	1.9726%	117	56.9772%	58.4824%
38	0.0614%	0.0394%	78	3.0097%	2.2683%	118	56.9943%	58.5000%
39	0.0628%	0.0424%	79	3.4270%	2.6076%	119	57.0000%	58.5000%
40	0.0652%	0.0433%	80	3.9021%	2.9941%	120	100.0000%	100.0000%
41	0.0684%	0.0454%	81	4.4477%	3.4376%			
42	0.0711%	0.0473%	82	5.0731%	3.9422%			
43	0.0747%	0.0502%	83	5.7871%	4.5164%			
44	0.0777%	0.0518%	84	6.6039%	5.1701%			
45	0.0831%	0.0546%	85	7.5327%	5.9093%			
46	0.0882%	0.0586%	86	8.5790%	6.7424%			
47	0.0943%	0.0628%	87	9.7489%	7.6808%			
48	0.1017%	0.0674%	88	11.0552%	8.7359%			
49	0.1092%	0.0723%	89	12.5068%	9.9179%			
50	0.1224%	0.0862%	90	14.1056%	11.2373%			
51	0.1384%	0.1030%	91	15.8479%	12.7184%			
52	0.1580%	0.1239%	92	17.7121%	14.3508%			
53	0.1808%	0.1503%	93	19.6779%	16.1323%			
54	0.2080%	0.1828%	94	21.7216%	18.0313%			
55	0.2419%	0.2222%	95	23.8018%	20.0357%			
56	0.2697%	0.2452%	96	26.0363%	22.2153%			
57	0.3011%	0.2693%	97	28.3087%	24.4779%			
58	0.3366%	0.2952%	98	30.6022%	26.8047%			
59	0.3749%	0.3210%	99	32.9205%	29.1785%			

* Mortality rates for 2023. Future years will reflect improvements in mortality.



Actuarial Assumptions Based on 2021-2023 Experience Study

Mortality Rates* – Disabled Lives

% Dying Next Year			% Dying Next Year			% Dying Next Year		
Age	Male	Female	Age	Male	Female	Age	Male	Female
20	0.4851%	0.2967%	60	2.9197%	2.3669%	100	35.2338%	31.5929%
21	0.4622%	0.2797%	61	3.0338%	2.4018%	101	37.5405%	34.0365%
22	0.4309%	0.2583%	62	3.1471%	2.4297%	102	39.8444%	36.5161%
23	0.3976%	0.2402%	63	3.2618%	2.4551%	103	42.1321%	39.0031%
24	0.3755%	0.2296%	64	3.3757%	2.4798%	104	44.3701%	41.4751%
25	0.3740%	0.2356%	65	3.4886%	2.5111%	105	46.5390%	43.9200%
26	0.4078%	0.2642%	66	3.6013%	2.5518%	106	48.6446%	46.2964%
27	0.4437%	0.2971%	67	3.7161%	2.6092%	107	50.6821%	48.6102%
28	0.4829%	0.3344%	68	3.8345%	2.6871%	108	52.6026%	50.8407%
29	0.5250%	0.3742%	69	3.9628%	2.7896%	109	54.4412%	52.9627%
30	0.5690%	0.4176%	70	4.1042%	2.9211%	110	55.9376%	54.9771%
31	0.6143%	0.4639%	71	4.2677%	3.0821%	111	56.1284%	56.8828%
32	0.6601%	0.5120%	72	4.4555%	3.2771%	112	56.3198%	57.9583%
33	0.7051%	0.5623%	73	4.6758%	3.5072%	113	56.5230%	58.1267%
34	0.7516%	0.6117%	74	4.9316%	3.7765%	114	56.7270%	58.2781%
35	0.7946%	0.6605%	75	5.2285%	4.0895%	115	56.9202%	58.4415%
36	0.8378%	0.7070%	76	5.5681%	4.4454%	116	56.9544%	58.4708%
37	0.8800%	0.7522%	77	5.9566%	4.8492%	117	56.9772%	58.4824%
38	0.9215%	0.7952%	78	6.3975%	5.3049%	118	56.9943%	58.5000%
39	0.9615%	0.8377%	79	6.8964%	5.8148%	119	57.0000%	58.5000%
40	1.0009%	0.8791%	80	7.4551%	6.3825%	120	100.0000%	100.0000%
41	1.0415%	0.9207%	81	8.0829%	7.0144%			
42	1.0849%	0.9636%	82	8.7763%	7.7118%			
43	1.1319%	1.0099%	83	9.5344%	8.4783%			
44	1.1870%	1.0620%	84	10.3628%	9.3185%			
45	1.2486%	1.1210%	85	11.2584%	10.2376%			
46	1.3216%	1.1878%	86	12.2207%	11.1965%			
47	1.4046%	1.2648%	87	13.2519%	12.1792%			
48	1.4991%	1.3547%	88	14.3646%	13.1782%			
49	1.6051%	1.4596%	89	15.7579%	14.1889%			
50	1.7241%	1.5782%	90	17.2895%	15.2202%			
51	1.8219%	1.6461%	91	18.8578%	16.3002%			
52	1.9285%	1.7241%	92	20.4319%	17.4407%			
53	2.0436%	1.8134%	93	22.0070%	18.6696%			
54	2.1660%	1.9083%	94	23.5926%	19.9946%			
55	2.2935%	2.0053%	95	25.1917%	21.4472%			
56	2.4235%	2.0986%	96	26.9731%	23.1382%			
57	2.5515%	2.1844%	97	28.8553%	25.0289%			
58	2.6788%	2.2582%	98	30.8546%	27.0650%			
59	2.8010%	2.3186%	99	32.9927%	29.2535%			

* Mortality rates for 2023. Future years will reflect improvements in mortality.



Actuarial Assumptions Based on 2021-2023 Experience Study

Mortality Rates* – Death-in-Service

Age	% Dying Next Year		Age	% Dying Next Year	
	Male	Female		Male	Female
20	0.0400%	0.0166%	60	0.3079%	0.1948%
21	0.0359%	0.0156%	61	0.3417%	0.2126%
22	0.0306%	0.0133%	62	0.3773%	0.2322%
23	0.0264%	0.0123%	63	0.4146%	0.2525%
24	0.0234%	0.0126%	64	0.4551%	0.2755%
25	0.0215%	0.0130%	65	0.4985%	0.3006%
26	0.0237%	0.0147%	66	0.5425%	0.3285%
27	0.0261%	0.0152%	67	0.5896%	0.3600%
28	0.0286%	0.0171%	68	0.6387%	0.3974%
29	0.0327%	0.0191%	69	0.6919%	0.4423%
30	0.0353%	0.0227%	70	0.7459%	0.4950%
31	0.0397%	0.0248%	71	0.8031%	0.5579%
32	0.0422%	0.0267%	72	0.8646%	0.6324%
33	0.0463%	0.0284%	73	0.9313%	0.7188%
34	0.0484%	0.0317%	74	1.0035%	0.8217%
35	0.0521%	0.0330%	75	1.0846%	0.9409%
36	0.0552%	0.0356%	76	1.2409%	1.0861%
37	0.0578%	0.0377%	77	1.4225%	1.2553%
38	0.0614%	0.0394%	78	1.6338%	1.4520%
39	0.0628%	0.0424%	79	1.8783%	1.6779%
40	0.0652%	0.0433%	80	2.1611%	1.9401%
41	0.0684%	0.0454%	81	2.7178%	2.3924%
42	0.0711%	0.0473%	82	3.4193%	2.9477%
43	0.0747%	0.0502%	83	4.3012%	3.6286%
44	0.0777%	0.0518%	84	5.4133%	4.4650%
45	0.0831%	0.0546%	85	6.8144%	5.4892%
46	0.0882%	0.0586%			
47	0.0943%	0.0628%			
48	0.1017%	0.0674%			
49	0.1092%	0.0723%			
50	0.1192%	0.0777%			
51	0.1298%	0.0847%			
52	0.1411%	0.0935%			
53	0.1553%	0.1017%			
54	0.1705%	0.1116%			
55	0.1866%	0.1232%			
56	0.2059%	0.1349%			
57	0.2272%	0.1478%			
58	0.2514%	0.1626%			
59	0.2780%	0.1781%			

* Mortality rates for 2023. Future years will reflect improvements in mortality.