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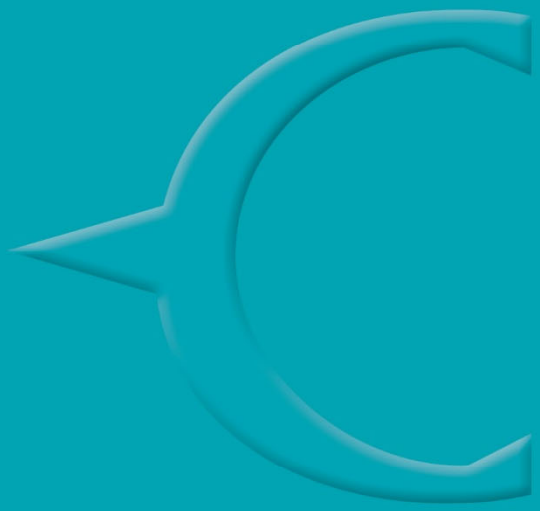

Public Employees' Retirement System of New Jersey

Actuarial Experience Study for July 1, 2021 through June 30, 2024

Produced by Cheiron

August 2025

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August 26, 2025

Board of Trustees
Public Employees' Retirement System of New Jersey
State of New Jersey
Department of the Treasury
Division of Pension and Benefits, CN 295
Trenton, NJ 08625-0295

Dear Board Members:

The purpose of this report is to present the Actuarial Experience Study of the Public Employees' Retirement System of New Jersey (PERS, the System) in accordance with Title 43, Chapter 15A-19 of the NJ State Statute. This Statute requires the actuary to conduct an actuarial investigation into the mortality, service, and salary experience of the members and beneficiaries of the System at least once in every three-year period.

This study covers the actuarial experience from July 1, 2021 through June 30, 2024. The report includes analyses and results of our study as well as recommended assumptions for consideration by the Board to be used beginning with the July 1, 2025 actuarial valuation. It also includes the estimated financial impact of these assumption changes. The prior experience study was performed by Cheiron and covered the period July 1, 2018 through June 30, 2021.

If you have any questions about the report or would like additional information, please let us know.

Sincerely,
Cheiron

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Principal Consulting Actuary

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SECTION I – EXECUTIVE SUMMARY

Actuarial assumptions (economic and demographic) are intended to be long-term in nature and should be both individually reasonable and consistent in the aggregate. The purpose of this experience study is to evaluate whether the current assumptions adequately reflect the long-term expectations for PERS, and if not, to recommend adjustments. It is important to note that frequent and significant changes in the actuarial assumptions are not typically recommended, unless there are known fundamental changes in expectations of the economy, or with respect to PERS' membership, membership's future behavior or assets that would warrant such frequent or significant changes.

Before summarizing the key results of our experience study, we present in the tables below a historical review of the deviation of actual experience against anticipated experience based on the assumptions used in past actuarial valuations. When experience deviates from the assumptions, liability gains or losses occur. When experience produces consistent liability gains or losses from year to year, assumptions may need to be revised to better reflect actual experience and better anticipate future experience. In the following tables, we show a 10-year history of the source of changes in the Unfunded Actuarial Liability (UAL) with the liability gains and losses (Liability (G)/L) shown in the red box. The other sources of changes in UAL shown in the tables are investment gains and losses on the Actuarial Value of Assets (AVA) basis, assumption and method changes, plan provision changes, and contributions compared to the tread water level of contributions (normal cost plus interest on the UAL).

Table I-1
Changes in Unfunded Actuarial Liability
(Dollar amounts in millions)
State

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Discount Rate	**7.90%**	**7.65%**	**7.50%**	**7.50%**	**7.30%**	**7.30%**	**7.00%**	**7.00%**	**7.00%**	**7.00%**	
Source											
AVA (G)/L	$ 162.4	$ 274.0	$ 171.9	$ 131.0	$ 140.7	$ 199.0	$ (56.7)	$ 217.2	$ 169.4	$ 100.5	$ 1,509.4
Liability (G)/L	164.5	21.2	103.2	93.3	461.3	138.4	(70.6)	377.5	179.4	323.6	1,791.7
Assumptions/Methods	53.2	199.0	328.7	(112.3)	1,081.7	0.0	798.4	(100.6)	0.0	0.0	2,248.3
Plan/Policy Changes	0.0	0.0	0.0	0.0	(6.6)	0.0	4.8	2.9	0.0	0.0	1.1
Contributions	672.7	683.4	567.9	460.2	283.5	252.8	(315.1)	(267.1)	(316.3)	(346.6)	1,675.3
Net UAL Change	**$ 1,052.8**	**$ 1,177.6**	**$ 1,171.7**	**$ 572.1**	**$ 1,960.7**	**$ 590.1**	**$ 360.9**	**$ 230.0**	**$ 32.5**	**$ 77.5**	**$ 7,225.8**

Over the last 10 years, the State's portion of the System's experience resulted in liability losses for 9 out of the 10 years totaling $1.8 billion, of which $0.9 billion of liability losses have occurred since the last experience study.

SECTION I – EXECUTIVE SUMMARY

Table I-2
Changes in Unfunded Actuarial Liability
(Dollar amounts in millions)
Local Employers

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Discount Rate	**7.90%**	**7.65%**	**7.50%**	**7.50%**	**7.30%**	**7.30%**	**7.00%**	**7.00%**	**7.00%**	**7.00%**	
Source											
AVA (G)/L	$ 234.6	$ 536.0	$ 263.1	$ 154.9	$ 169.8	$ 383.2	$ (591.0)	$ 234.1	$ 72.7	$ (131.3)	$ 1,326.2
Liability (G)/L	90.1	28.9	249.2	161.1	207.2	(53.2)	(27.0)	202.5	200.7	168.5	1,228.0
Assumptions/Methods	152.6	252.0	439.2	(176.7)	1,392.6	0.0	1,086.4	(150.1)	0.0	0.0	2,995.8
Plan/Policy Changes	0.0	0.0	0.0	0.0	(6.4)	0.0	0.0	8.2	0.0	0.0	1.8
Contributions	(29.6)	20.5	(9.2)	(16.2)	(4.2)	57.8	(26.0)	(99.5)	(168.2)	(191.4)	(466.1)
Net UAL Change	**$ 447.7**	**$ 837.4**	**$ 942.2**	**$ 123.0**	**$ 1,758.9**	**$ 387.8**	**$ 442.4**	**$ 195.2**	**$ 105.2**	**$ (154.1)**	**$ 5,085.7**

Over the last 10 years, the Local employers' portion of the System's experience resulted in liability losses for 8 of the 10 years totaling $1.2 billion, of which $0.6 billion of liability losses have occurred since the last experience study.

While aggregate liability experience in 2020 and 2021 was generally in line with expectations, consistent liability losses have occurred since then. Higher than expected salary increases have been the primary driver of the recent liability losses. These increases may be partially related to recent high inflation and may not reoccur in the future. Section IV describes how we developed our recommended salary increase rates after reviewing the experience data and our expectations for the future. The recommended assumptions presented in this report have a relatively small impact on the actuarial liabilities because recommendations for salary increases and mortality have offsetting impacts. However, normal costs and Statutory contributions increase, primarily due to the recommended salary increase assumption.

SUMMARY OF ASSUMPTION ANALYSIS

This experience study specifically analyzes and makes the following recommendations for the demographic assumptions.

- **Retirement rates** – Modify retirement rates for most members.
- **Termination rates** – Modify termination rates and the percentage of members electing a deferred retirement benefit.
- **Disability rates** – Modify ordinary disability rates for Local employer members. Modify ordinary and accidental disability rates for State members.
- **Mortality rates** – Update to newly published Pub-2016 base mortality tables and update adjustment factors. Continue with generational mortality improvement scale MP-2021.
- **Family composition** – Continue with current assumptions.
- **Price and wage inflation rates** – Continue with the current assumptions.
- **Salary increase rates** – Modify rates based on recent experience and long-term inflation expectations.

SECTION I – EXECUTIVE SUMMARY

The recommended changes to the assumptions in aggregate would have relatively little impact on the actuarial liability but would increase normal costs and the Statutory contributions.

Further information about the impact of the recommended assumption changes to overall contribution rates can be found on the following pages. We illustrate the cost impact based on the July 1, 2024 valuation results. However, assumption changes adopted by the Board will first impact the July 1, 2025 actuarial valuation.

The body of this report provides additional detail and support for our conclusions and recommendations.

SECTION I – EXECUTIVE SUMMARY

Table I-3
Cost Impact of Assumption Changes on July 1, 2024 Valuation Results
State

	Current Assumptions	Recommended Assumptions	Total Change in $	% Change
Assets and Liabilities				
Actuarial Liability	$ 29,484,814,054	$ 29,550,969,801	$ 66,155,747	0.2%
Actuarial Value of Assets (AVA)[1]	10,544,572,052	10,544,572,052	0	0.0%
Unfunded Actuarial Liability/(Surplus)	$ 18,940,242,002	$ 19,006,397,749	$ 66,155,747	0.3%
Funded Ratio	35.8%	35.7%		-0.1%
Contribution Amounts				
Gross Normal Cost at End of Year[2]	$ 609,816,623	$ 635,291,620	$ 25,474,997	4.2%
Expected Member Contributions	(377,570,588)	(377,082,077)	488,511	-0.1%
State Normal Cost at End of Year[2]	$ 232,246,035	$ 258,209,543	$ 25,963,508	11.2%
Amortization Payment of UAL[2]	1,642,121,245	1,647,798,103	5,676,858	0.3%
Total Statutory Contribution for FYE	$ 1,874,367,280	$ 1,906,007,646	$ 31,640,366	1.7%

[1] Includes discounted State appropriations receivable and Lottery proceeds

[2] Includes Local obligations payable by the State

The recommended assumptions increased the State normal cost by 11.2%, resulting in an increase of 1.7% in the total Statutory contribution. The increase in normal cost was primarily caused by the change in the salary increase assumption. The gross normal cost increased by 4.2% due to assumption changes. Because the member contribution rate is fixed, the increase in gross normal cost flows into the State's share of the normal cost, resulting in the 11.2% increase in State normal cost.

SECTION I – EXECUTIVE SUMMARY

Table I-4
Cost Impact of Assumption Changes on July 1, 2024 Valuation Results
Local Employers

	Current Assumptions	Recommended Assumptions	Total Change in $	% Change
Assets and Liabilities				
Actuarial Liability	$ 41,377,056,578	$ 41,340,500,069	$ (36,556,509)	-0.1%
Actuarial Value of Assets (AVA)[1]	28,802,958,441	28,802,958,441	0	0.0%
Unfunded Actuarial Liability/(Surplus)	$ 12,574,098,137	$ 12,537,541,628	$ (36,556,509)	-0.3%
Funded Ratio	69.6%	69.7%		0.1%
Contribution Amounts				
Gross Normal Cost at End of Year[2]	$ 851,376,693	$ 881,786,369	$ 30,409,676	3.6%
Expected Member Contributions	(615,015,749)	(614,318,415)	697,334	-0.1%
Employer Normal Cost at End of Year[2]	$ 236,360,944	$ 267,467,954	$ 31,107,010	13.2%
Amortization Payment of UAL[2]	1,069,885,388	1,066,748,455	(3,136,933)	-0.3%
ERI and Chapter 19 Payments	10,753,748	10,753,748	0	0.0%
Total Statutory Contribution for FYE	$ 1,317,000,080	$ 1,344,970,157	$ 27,970,077	2.1%
Non-Contributory Group Insurance Contribution	$ 60,417,617	$ 61,247,441	$ 829,824	1.4%

[1] Includes discounted State appropriations receivable

[2] Excludes Local obligations payable by the State

SECTION I – EXECUTIVE SUMMARY

The recommended assumptions increased the Local employer normal cost by 13.2%, resulting in an increase of 2.1% in the total Statutory contribution. The increase in normal cost is primarily caused by the change in the salary increase assumption. The gross normal cost increased by 3.6% due to assumption changes. Because the member contribution rate is fixed, the increase in gross normal cost flows into the Local employers' share of the normal cost resulting in the 13.2% increase in Local employer normal cost.

SECTION II – CERTIFICATION

The purpose of this report is to provide the results of an Actuarial Experience Study of the Public Employees' Retirement System of New Jersey (PERS) covering the three-year period from July 1, 2021 through June 30, 2024. This report is for the use of the Division of Pensions and Benefits and the PERS Board of Trustees in selecting assumptions to be used in actuarial valuations beginning July 1, 2025. This experience study was completed in accordance with the provisions of Title 43, Chapter 15A-19 of the NJ State Statute which requires periodic review of the experience of the System.

In preparing our report, we relied on information (some oral and some written) supplied by the Division of Pensions and Benefits. This information includes, but is not limited to, the plan provisions, employee data, and financial information. We also relied on reports prepared by the prior actuary for purposes of reporting on trends and sources of actuarial gains and losses. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23, *Data Quality*.

Cheiron utilizes ProVal, an actuarial valuation software leased from Winklevoss Technologies (WinTech) to calculate liabilities and project benefit payments. We have relied on WinTech as the developer of ProVal. We have reviewed ProVal and have used ProVal in accordance with its original intended purpose. We have not identified any material inconsistencies in ProVal assumptions or output that would affect this analysis.

The data, plan provisions, and actuarial methods are the same as those shown in our July 1, 2024 actuarial valuation report, and the actuarial assumptions are the same except as modified for the purpose of estimating the financial impact of the recommended assumption changes.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys, and our firm does not provide any legal services or advice.

This report was prepared exclusively for the Public Employees' Retirement System of New Jersey for the purposes described herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any such party.

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SECTION III – DEMOGRAPHIC ASSUMPTIONS

Demographic assumptions are used to predict membership behavior, including rates of retirement, termination, disability, and mortality. These assumptions are based primarily on the historical experience of PERS, with some adjustments where future experience is expected to differ from historical experience and with deference to standard tables where PERS experience is not fully credible, which means there is insufficient data to support an assumption, and a standard table is available.

ANALYSIS OF DEMOGRAPHIC ASSUMPTIONS

For all of the demographic assumptions, we determined the ratio of the actual (A) number of decrements for each membership group compared to the expected (E) number of decrements (A/E ratio or actual-to-expected ratio). Generally, the goal is to get as close as possible to an A/E ratio of 100%. Appropriate assumptions are often dependent on the amount of data available, and if there is insufficient data, then the best assumption may be a reflection of standard tables. For example, there are typically relatively low incidences of pre-retirement deaths so using standard mortality tables may be more appropriate. This could result in the A/E ratio moving further away from 100%. Also, we aggregate members for demographic assumptions review when the data at individual ages is not credible. For example, we may reduce the number of service bands for an assumption with low incidences, if retaining those service bands does not materially improve the quality of the results.

We also calculate an *r-squared statistic* for each assumption. R-squared measures how well the assumption fits the actual data and can be thought of as the percentage of the variation in actual data explained by the assumption. Ideally, r-squared would equal 1.000, although this is never the case in reality. Any recommended assumption change should increase the r-squared compared to the current assumption, making it closer to 1.000, unless the pattern of future decrements is expected to be different from the pattern experienced during the period of study.

In addition, we calculate the 90% confidence interval, which represents the range within which the true decrement rate during the experience study period is expected to fall 90% of the time. In the graphs, the black squares represent the actual experience observed, and the gray bars represent the 90% confidence interval around that experience. The red and green lines represent the current and recommended assumptions, respectively. When the recommended assumption is the same as the current assumption, the green line sits over the red line and the red line does not show. Where there is sufficient experience, the confidence interval is relatively narrow, and where there is little experience, the confidence interval can be very wide. We generally recommend assumption changes when the current assumption is outside the 90% confidence interval of the observed experience. However, adjustments are made to account for differences between future expectations and historical experience and to account for the past experience represented by the current assumption. For mortality rates, we compare PERS' experience to that of a standard table.

SECTION III – DEMOGRAPHIC ASSUMPTIONS

NON-CONTRIBUTING MEMBERS

The valuation census data provided by the Division of Pensions and Benefits includes non-contributing members. These members previously contributed to the System and, therefore, accrued benefits. However, they no longer contribute or accrue benefits. Typically, these members have terminated employment or applied for a retirement, disability, or death benefit, and their paperwork was not processed in time to be reflected in the fiscal year end census data. For the purpose of determining the actual number of decrements during the experience period, we make assumptions regarding the ultimate status of these non-contributing members.

We reviewed the experience among members who became non-contributing members during both the current and preceding three-year experience periods to determine the status reported for these non-contributing members in subsequent years. This experience was used to estimate the proportion of this population that returned to work, elected a refund of their contributions, retired, became disabled, and died.

Based on this experience, for those who became non-contributing members during the study, 15% were assumed to return to active contributing status. Of the 85% of members not assumed to return to work, 0.5% were assumed to have become accidentally disabled, 9.0% of members eligible for ordinary disability were assumed to have become ordinarily disabled, 1.0% were assumed to have died, and all others were assumed to have permanently terminated employment. Among members assumed to terminate employment, those eligible for a retirement benefit were assumed to have retired. Among members assumed to terminate employment prior to eligibility for a retirement benefit, 80% of members eligible for a deferred annuity were assumed to elect the deferred annuity, and all other members were assumed to elect a refund of their contributions.

These assumptions are the same as those used in the prior experience study, except that the percentage of non-contributing members assumed to return to active contributing status decreased from 20% to 15%, and the percentage of non-contributing members eligible for a deferred annuity that were assumed to elect the deferred annuity increased from 75% to 80%.

The available experience data is limited because the experience period is relatively short and some non-contributing members maintain that status for several years before electing a refund or returning to work. Therefore, we will continue to monitor this experience and may update the assumptions during the next experience study.

RETIREMENT RATES

The current retirement rates vary by age, service, and State vs. Local employers and are applied to all members who are eligible to retire. As a result, a member who is age 60 with 20 years of service, for example, is assumed to be less likely to retire than a member from the same employer who is age 60 with 25 years of service. In reviewing the data for PERS, we find that at many ages, members are more likely to retire once they have attained 25 years of service, and those with less than 25 years of service are less likely to retire.

PERS is not large enough to provide credible data for each age and service combination within each tier, so we recommend assumptions by State or Local employers and service groups separately for Tiers 1-4 and for Tier 5. The actual results shown on the following pages reflect eligible members and retirements in all five tiers.

We did not separate the results by tier because very few members in Tiers 2 through 5 are eligible for retirement. As of June 30, 2024, members in Tiers 2 through 5 can only retire under a service retirement allowance because they do not have sufficient service to meet early retirement eligibility. In addition, Tiers 2 through 4 are closed to new members so there likely will not be significant experience for these tiers. Due to these limited exposures for Tiers 2 through 5, the current assumed rates shown on the following pages are based only on the current Tier 1 retirement rates.

We recommend separate retirement rates for Tier 5 because Tier 5 members need 30 years of service to retire early whereas Tiers 1 through 4 only require 25 years of service. Recommended retirement rates for Tier 5 members are based on professional judgement due to limited experience. We recommend separate assumptions for the following service groups, tiers, and employer.

State Tiers 1-4 Members

- Members with less than 25 years of service,
- Members with 25 years of service, and
- Members with 26 or more years of service.

State Tier 5 Members

- Members with less than 25 years of service,
- Members with 25 years of service,
- Members with 26 to 29 years of service,
- Members with 30 years of service, and
- Members with 31 or more years of service.

SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Local Employers' Tiers 1-4 Members

- Members with less than 25 years of service,
- Members with 25 years of service, and
- Members with 26 or more years of service.

Local Employers' Tier 5 Members

- Members with less than 25 years of service,
- Members with 25 years of service,
- Members with 26 to 29 years of service,
- Members with 30 years of service, and
- Members with 31 or more years of service.

State and Local Employers' Prosecutors

- Members with less than 25 years of service,
- Members with 25 years of service, and
- Members with 26 or more years of service.

State Worker's Compensation Judges (WCJ)

- Members with less than 15 years of WCJ service,
- Members with 15 to 19 years of WCJ service, and
- Members with 20 or more years of WCJ service.

SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

In Table III-R1, we show the calculation of actual-to-expected ratios and the r-squared statistic for State Tiers 1-5 members with less than 25 years of service, and Chart III-R1 shows the information graphically along with the 90% confidence interval. For retirements with less than 25 years of service, we recommend increasing the retirement assumption at age 65 and decreasing the assumption at age 66.

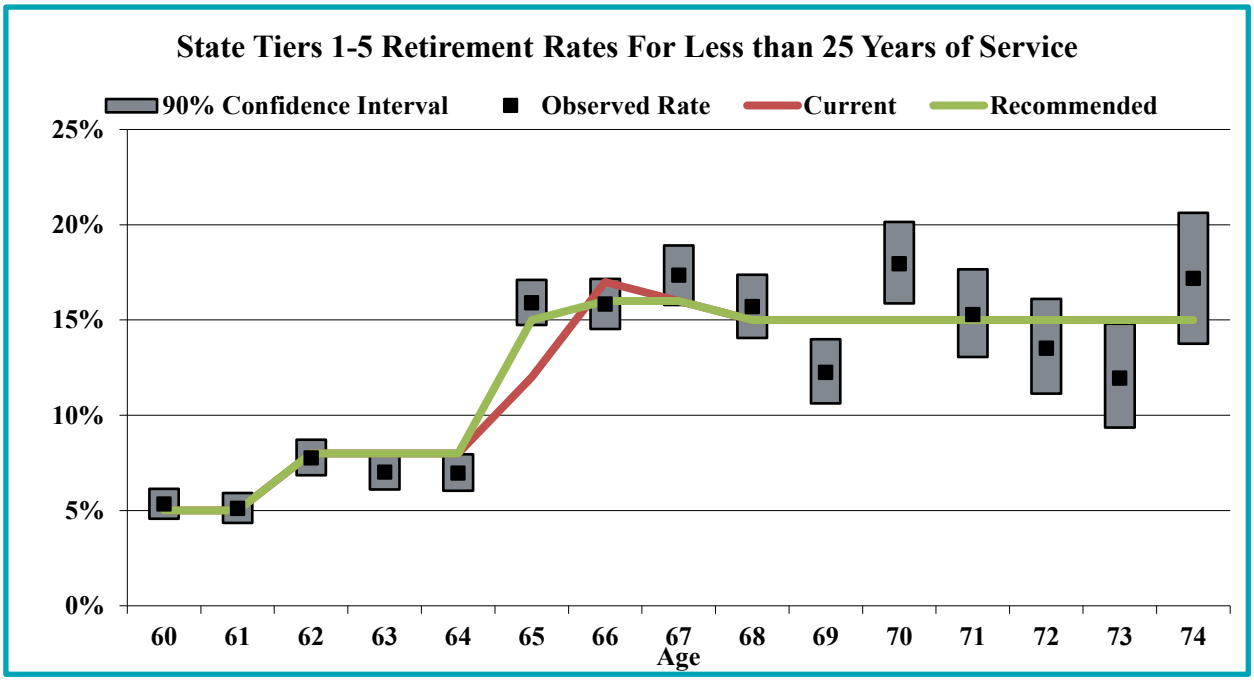
Table III-R1

State Tiers 1-5 Retirement Rates For Less than 25 Years of Service

		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
60	2,167	116	108.4	108.4	5.4%	5.0%	5.0%	107%	107%
61	2,094	107	104.7	104.7	5.1%	5.0%	5.0%	102%	102%
62	2,203	171	176.2	176.2	7.8%	8.0%	8.0%	97%	97%
63	2,082	146	166.6	166.6	7.0%	8.0%	8.0%	88%	88%
64	1,938	135	155.0	155.0	7.0%	8.0%	8.0%	87%	87%
65	2,572	409	308.6	385.8	15.9%	12.0%	15.0%	133%	106%
66	2,051	325	348.7	328.2	15.8%	17.0%	16.0%	93%	99%
67	1,602	278	256.3	256.3	17.4%	16.0%	16.0%	108%	108%
68	1,260	198	189.0	189.0	15.7%	15.0%	15.0%	105%	105%
69	1,036	127	155.4	155.4	12.3%	15.0%	15.0%	82%	82%
70	869	156	130.4	130.4	18.0%	15.0%	15.0%	120%	120%
71	674	103	101.1	101.1	15.3%	15.0%	15.0%	102%	102%
72	503	68	75.5	75.5	13.5%	15.0%	15.0%	90%	90%
73	385	46	57.8	57.8	11.9%	15.0%	15.0%	80%	80%
74	320	55	48.0	48.0	17.2%	15.0%	15.0%	115%	115%
Total	**21,756**	**2,440**	**2,381.6**	**2,438.2**	**11.2%**	**10.9%**	**11.2%**	**102%**	**100%**
R-squared			**0.917**	**0.977**					

SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart III-R1



Note that the current and recommended assumptions assume 100% retirement at age 75.

SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

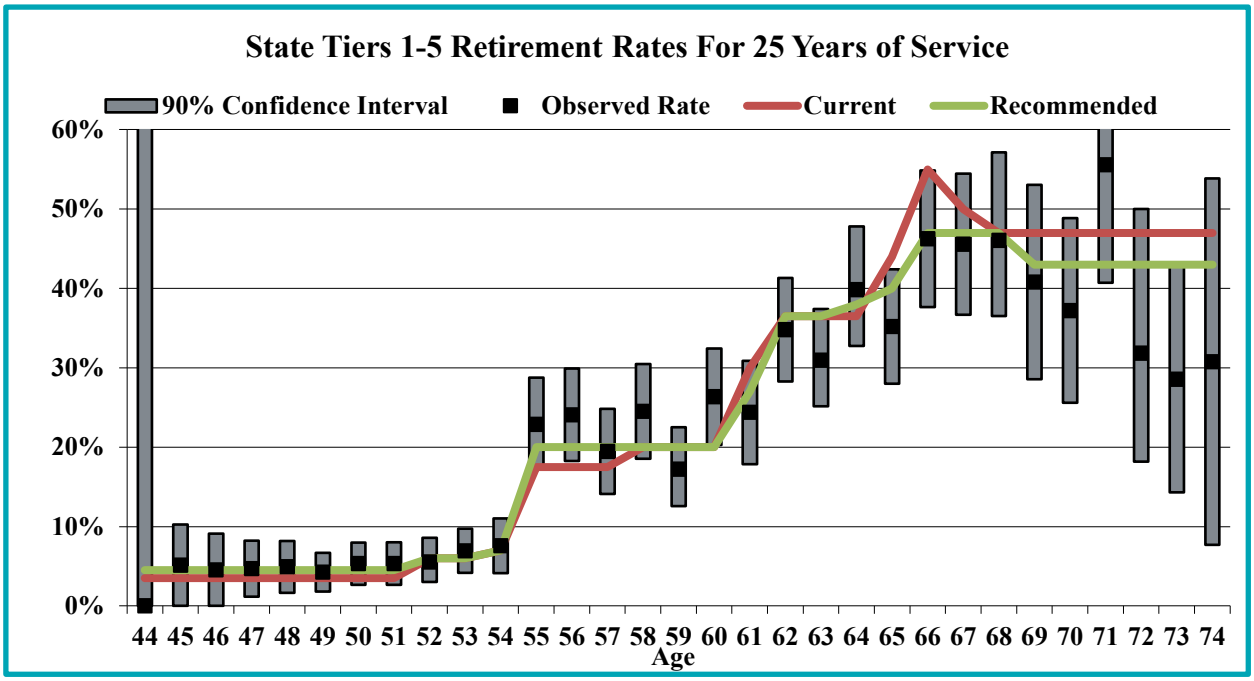
Table III-R2 shows the calculation of actual-to-expected ratios and the r-squared statistic for State Tiers 1-5 members with 25 years of service, and Chart III-R2 shows the information graphically along with the 90% confidence interval. For retirements with 25 years of service, we recommend adjusting the assumption to reflect recent experience.

Table III-R2

State Tiers 1-5 Retirement Rates For 25 Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
44	18	0	0.6	0.8	0.0%	3.5%	4.5%	0%	0%
45	39	2	1.4	1.8	5.1%	3.5%	4.5%	147%	114%
46	44	2	1.5	2.0	4.5%	3.5%	4.5%	130%	101%
47	85	4	3.0	3.8	4.7%	3.5%	4.5%	134%	105%
48	122	6	4.3	5.5	4.9%	3.5%	4.5%	141%	109%
49	164	7	5.7	7.4	4.3%	3.5%	4.5%	122%	95%
50	188	10	6.6	8.5	5.3%	3.5%	4.5%	152%	118%
51	187	10	6.5	8.4	5.3%	3.5%	4.5%	153%	119%
52	198	11	11.9	11.9	5.6%	6.0%	6.0%	93%	93%
53	216	15	13.0	13.0	6.9%	6.0%	6.0%	116%	116%
54	145	11	10.2	10.2	7.6%	7.0%	7.0%	108%	108%
55	153	35	26.8	30.6	22.9%	17.5%	20.0%	131%	114%
56	137	33	24.0	27.4	24.1%	17.5%	20.0%	138%	120%
57	149	29	26.1	29.8	19.5%	17.5%	20.0%	111%	97%
58	151	37	30.2	30.2	24.5%	20.0%	20.0%	123%	123%
59	151	26	30.2	30.2	17.2%	20.0%	20.0%	86%	86%
60	148	39	29.6	29.6	26.4%	20.0%	20.0%	132%	132%
61	123	30	36.9	33.2	24.4%	30.0%	27.0%	81%	90%
62	138	48	50.4	50.4	34.8%	36.5%	36.5%	95%	95%
63	155	48	56.6	56.6	31.0%	36.5%	36.5%	85%	85%
64	113	45	41.2	42.9	39.8%	36.5%	38.0%	109%	105%
65	125	44	55.0	50.0	35.2%	44.0%	40.0%	80%	88%
66	93	43	51.2	43.7	46.2%	55.0%	47.0%	84%	98%
67	90	41	45.0	42.3	45.6%	50.0%	47.0%	91%	97%
68	63	29	29.6	29.6	46.0%	47.0%	47.0%	98%	98%
69	49	20	23.0	21.1	40.8%	47.0%	43.0%	87%	95%
70	43	16	20.2	18.5	37.2%	47.0%	43.0%	79%	87%
71	27	15	12.7	11.6	55.6%	47.0%	43.0%	118%	129%
72	22	7	10.3	9.5	31.8%	47.0%	43.0%	68%	74%
73	21	6	9.9	9.0	28.6%	47.0%	43.0%	61%	66%
74	13	4	6.1	5.6	30.8%	47.0%	43.0%	65%	72%
Total	**3,370**	**673**	**679.6**	**674.9**	**20.0%**	**20.2%**	**20.0%**	**99%**	**100%**
R-squared			**0.918**	**0.953**					

SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart III-R2



Note that the current and recommended assumptions assume 100% retirement at age 75.

SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

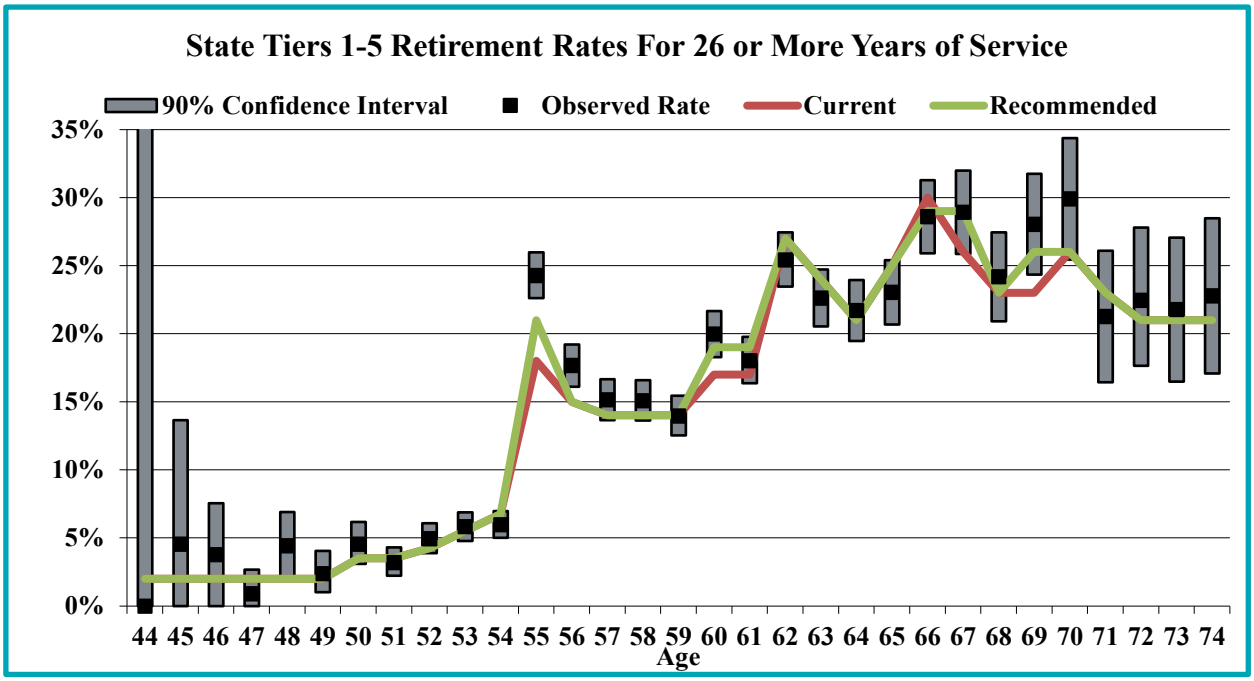
Table III-R3 shows the calculation of actual-to-expected ratios and the r-squared statistic for State Tiers 1-5 members with 26 or more years of service, and Chart III-R3 shows the information graphically along with the 90% confidence interval. For retirements with 26 or more years of service, we recommend adjustments to the retirement assumption at certain ages to reflect recent experience.

Table III-R3

State Tiers 1-5 Retirement Rates For 26 or More Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
44	3	0	0.1	0.1	0.00%	2.00%	2.00%	0%	0%
45	22	1	0.4	0.4	4.55%	2.00%	2.00%	227%	227%
46	53	2	1.1	1.1	3.77%	2.00%	2.00%	189%	189%
47	112	1	2.2	2.2	0.89%	2.00%	2.00%	45%	45%
48	203	9	4.1	4.1	4.43%	2.00%	2.00%	222%	222%
49	296	7	5.9	5.9	2.36%	2.00%	2.00%	118%	118%
50	485	22	17.0	17.0	4.54%	3.50%	3.50%	130%	130%
51	721	23	25.2	25.2	3.19%	3.50%	3.50%	91%	91%
52	1,052	52	44.7	44.7	4.94%	4.25%	4.25%	116%	116%
53	1,339	78	73.6	73.6	5.83%	5.50%	5.50%	106%	106%
54	1,577	94	106.4	106.4	5.96%	6.75%	6.75%	88%	88%
55	1,747	424	314.5	366.9	24.27%	18.00%	21.00%	135%	116%
56	1,603	283	240.5	240.5	17.65%	15.00%	15.00%	118%	118%
57	1,525	231	213.5	213.5	15.15%	14.00%	14.00%	108%	108%
58	1,592	240	222.9	222.9	15.08%	14.00%	14.00%	108%	108%
59	1,548	216	216.7	216.7	13.95%	14.00%	14.00%	100%	100%
60	1,537	307	261.3	292.0	19.97%	17.00%	19.00%	117%	105%
61	1,376	248	233.9	261.4	18.02%	17.00%	19.00%	106%	95%
62	1,275	324	344.3	344.3	25.41%	27.00%	27.00%	94%	94%
63	1,052	238	252.5	252.5	22.62%	24.00%	24.00%	94%	94%
64	940	204	197.4	197.4	21.70%	21.00%	21.00%	103%	103%
65	851	196	212.8	212.8	23.03%	25.00%	25.00%	92%	92%
66	745	213	223.5	216.1	28.59%	30.00%	29.00%	95%	99%
67	588	170	152.9	170.5	28.91%	26.00%	29.00%	111%	100%
68	459	111	105.6	105.6	24.18%	23.00%	23.00%	105%	105%
69	378	106	86.9	98.3	28.04%	23.00%	26.00%	122%	108%
70	291	87	75.7	75.7	29.90%	26.00%	26.00%	115%	115%
71	207	44	47.6	47.6	21.26%	23.00%	23.00%	92%	92%
72	187	42	39.3	39.3	22.46%	21.00%	21.00%	107%	107%
73	170	37	35.7	35.7	21.76%	21.00%	21.00%	104%	104%
74	158	36	33.2	33.2	22.78%	21.00%	21.00%	108%	108%
Total	**24,092**	**4,046**	**3,791.2**	**3,923.4**	**16.79%**	**15.74%**	**16.29%**	**107%**	**103%**
R-squared			**0.964**	**0.984**					

SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart III-R3



Note that the current and recommended assumptions assume 100% retirement at age 75.

There is insufficient data to show tables and charts for Tier 5 members separately. The recommended Tier 5 specific retirement rates are shown in Appendix A.

SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

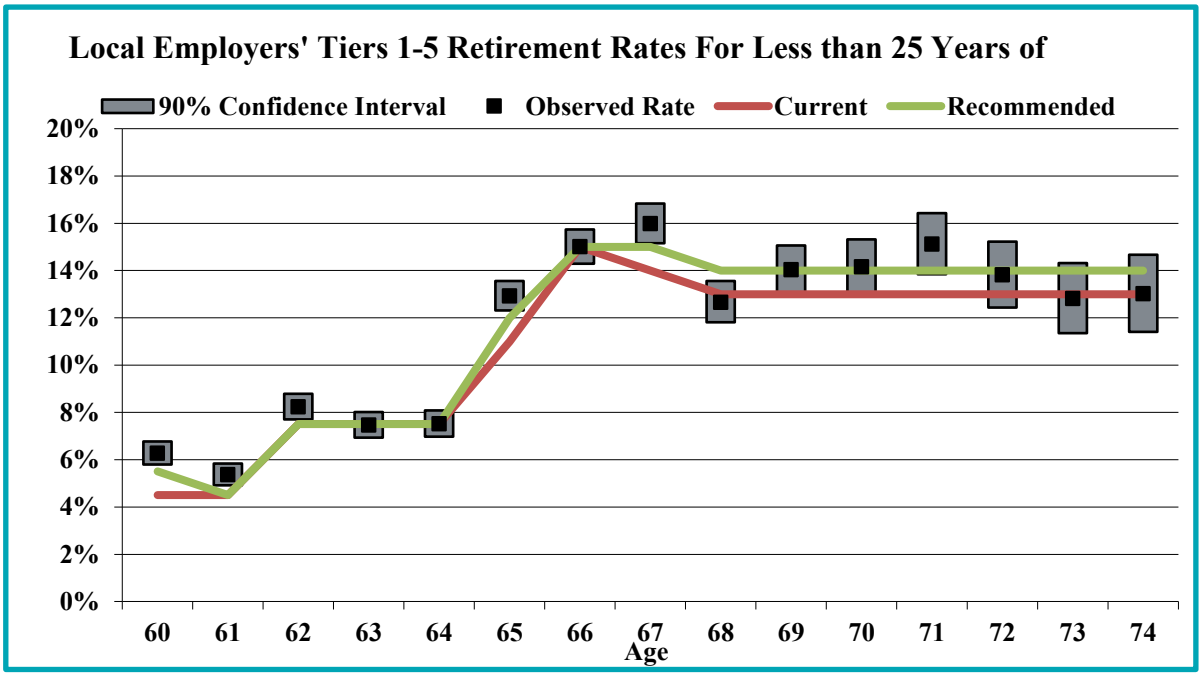
Table III-R4 shows the calculation of actual-to-expected ratios and the r-squared statistic for Local employers' Tiers 1-5 members with less than 25 years of service, and Chart III-R4 shows the information graphically along with the 90% confidence interval. For retirements with less than 25 years of service, we recommend increasing the retirement assumption at ages 60, 65, and 67 and older.

Table III-R4

Local Employers' Tiers 1-5 Retirement Rates For Less than 25 Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
60	6,741	423	303.3	370.8	6.3%	4.5%	5.5%	139%	114%
61	6,514	350	293.1	293.1	5.4%	4.5%	4.5%	119%	119%
62	6,997	577	524.8	524.8	8.2%	7.5%	7.5%	110%	110%
63	6,481	484	486.1	486.1	7.5%	7.5%	7.5%	100%	100%
64	6,137	462	460.3	460.3	7.5%	7.5%	7.5%	100%	100%
65	7,900	1,022	869.0	948.0	12.9%	11.0%	12.0%	118%	108%
66	6,461	970	969.2	969.2	15.0%	15.0%	15.0%	100%	100%
67	5,102	816	714.3	765.3	16.0%	14.0%	15.0%	114%	107%
68	3,954	501	514.0	553.6	12.7%	13.0%	14.0%	97%	91%
69	3,239	455	421.1	453.5	14.0%	13.0%	14.0%	108%	100%
70	2,632	373	342.2	368.5	14.2%	13.0%	14.0%	109%	101%
71	2,095	317	272.4	293.3	15.1%	13.0%	14.0%	116%	108%
72	1,656	229	215.3	231.8	13.8%	13.0%	14.0%	106%	99%
73	1,348	173	175.2	188.7	12.8%	13.0%	14.0%	99%	92%
74	1,166	152	151.6	163.2	13.0%	13.0%	14.0%	100%	93%
Total	**68,423**	**7,304**	**6,711.7**	**7,070.1**	**10.7%**	**9.8%**	**10.3%**	**109%**	**103%**
R-squared			**0.968**	**0.984**					

SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart III-R4



Note that the current and recommended assumptions assume 100% retirement at age 75.

SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

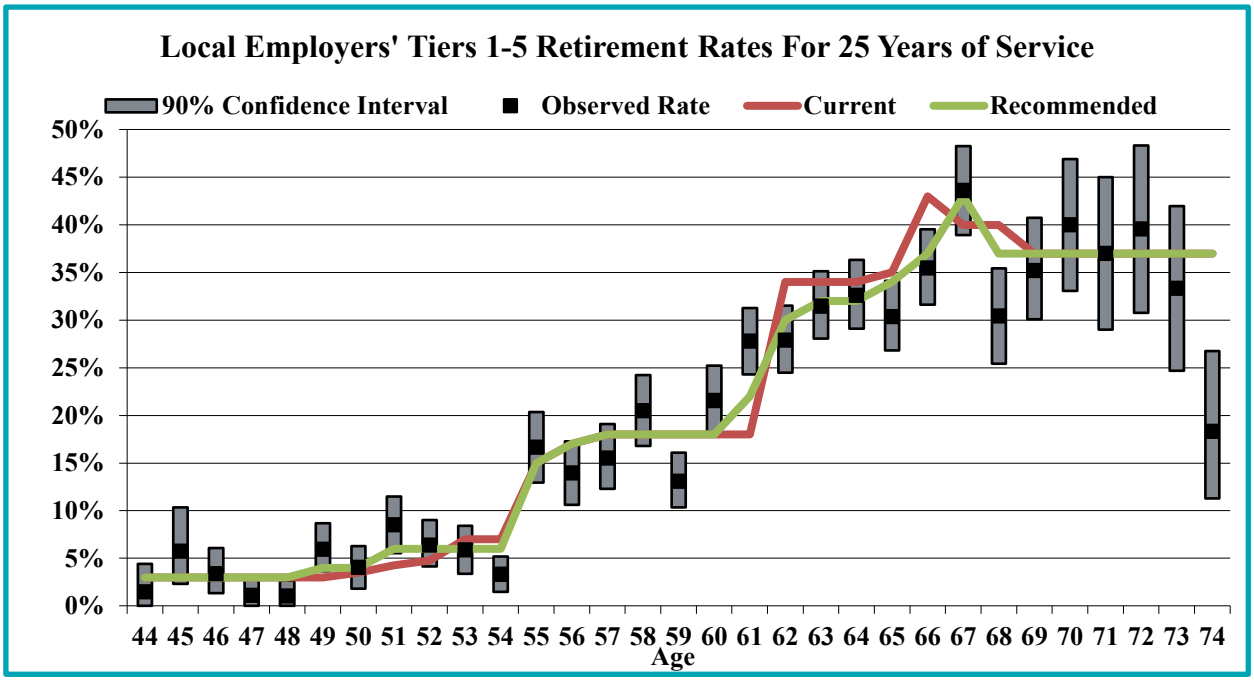
Table III-R5 shows the calculation of actual-to-expected ratios and the r-squared statistic for Local employers' Tiers 1-5 members with 25 years of service, and Chart III-R5 shows the information graphically along with the 90% confidence interval. For retirements with 25 years of service, we recommend modifying the assumption to reflect recent experience.

Table III-R5

Local Employers' Tiers 1-5 Retirement Rates For 25 Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
44	68	1	2.0	2.0	1.47%	3.00%	3.00%	49%	49%
45	87	5	2.6	2.6	5.75%	3.00%	3.00%	192%	192%
46	148	5	4.4	4.4	3.38%	3.00%	3.00%	113%	113%
47	180	2	5.4	5.4	1.11%	3.00%	3.00%	37%	37%
48	190	2	5.7	5.7	1.05%	3.00%	3.00%	35%	35%
49	219	13	6.6	8.8	5.94%	3.00%	4.00%	198%	148%
50	223	9	7.8	8.9	4.04%	3.50%	4.00%	115%	101%
51	235	20	10.0	14.1	8.51%	4.25%	6.00%	200%	142%
52	266	17	12.6	16.0	6.39%	4.75%	6.00%	135%	107%
53	238	14	16.7	14.3	5.88%	7.00%	6.00%	84%	98%
54	271	9	19.0	16.3	3.32%	7.00%	6.00%	47%	55%
55	270	45	40.5	40.5	16.67%	15.00%	15.00%	111%	111%
56	301	42	51.2	51.2	13.95%	17.00%	17.00%	82%	82%
57	309	48	55.6	55.6	15.53%	18.00%	18.00%	86%	86%
58	322	66	58.0	58.0	20.50%	18.00%	18.00%	114%	114%
59	367	48	66.1	66.1	13.08%	18.00%	18.00%	73%	73%
60	357	77	64.3	64.3	21.57%	18.00%	18.00%	120%	120%
61	432	120	77.8	95.0	27.78%	18.00%	22.00%	154%	126%
62	441	123	149.9	132.3	27.89%	34.00%	30.00%	82%	93%
63	467	147	158.8	149.4	31.48%	34.00%	32.00%	93%	98%
64	457	149	155.4	146.2	32.60%	34.00%	32.00%	96%	102%
65	425	129	148.8	144.5	30.35%	35.00%	34.00%	87%	89%
66	392	139	168.6	145.0	35.46%	43.00%	37.00%	82%	96%
67	321	140	128.4	138.0	43.61%	40.00%	43.00%	109%	101%
68	240	73	96.0	88.8	30.42%	40.00%	37.00%	76%	82%
69	216	76	79.9	79.9	35.19%	37.00%	37.00%	95%	95%
70	130	52	48.1	48.1	40.00%	37.00%	37.00%	108%	108%
71	100	37	37.0	37.0	37.00%	37.00%	37.00%	100%	100%
72	91	36	33.7	33.7	39.56%	37.00%	37.00%	107%	107%
73	81	27	30.0	30.0	33.33%	37.00%	37.00%	90%	90%
74	71	13	26.3	26.3	18.31%	37.00%	37.00%	49%	49%
Total	**7,915**	**1,684**	**1,766.9**	**1,728.4**	**21.28%**	**22.32%**	**21.84%**	**95%**	**97%**
R-squared			**0.937**	**0.971**					

SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart III-R5



Note that the current and recommended assumptions assume 100% retirement at age 75.

SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

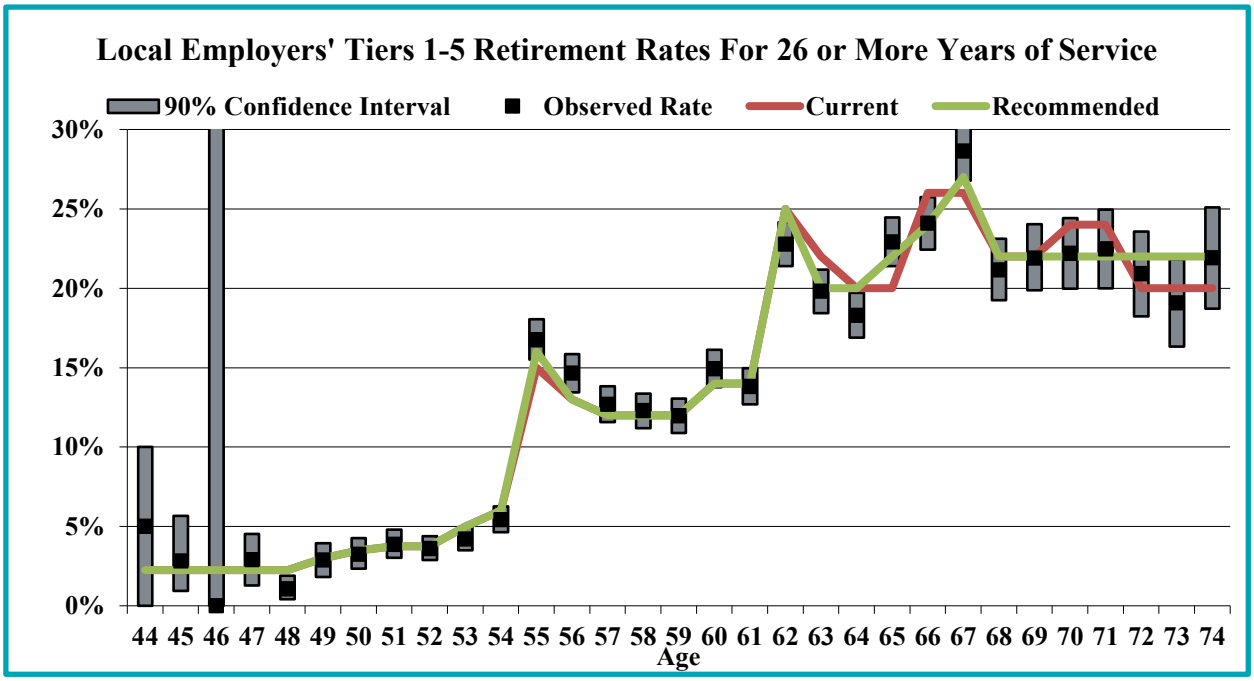
Table III-R6 shows the calculation of actual-to-expected ratios and the r-squared statistic for Local employers' Tiers 1-5 members with 26 or more years of service, and Chart III-R6 shows the information graphically along with the 90% confidence interval. For retirements with 26 or more years of service, we recommend adjusting the retirement assumption to reflect recent experience.

Table III-R6

Local Employers' Tiers 1-5 Retirement Rates For 26 or More Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
44	40	2	0.9	0.9	5.00%	2.25%	2.25%	222%	222%
45	106	3	2.4	2.4	2.83%	2.25%	2.25%	126%	126%
46	173	0	3.9	3.9	0.00%	2.25%	2.25%	0%	0%
47	310	9	7.0	7.0	2.90%	2.25%	2.25%	129%	129%
48	475	5	10.7	10.7	1.05%	2.25%	2.25%	47%	47%
49	659	19	19.8	19.8	2.88%	3.00%	3.00%	96%	96%
50	893	29	31.3	31.3	3.25%	3.50%	3.50%	93%	93%
51	1,291	50	48.4	48.4	3.87%	3.75%	3.75%	103%	103%
52	1,664	60	62.4	62.4	3.61%	3.75%	3.75%	96%	96%
53	1,971	83	98.6	98.6	4.21%	5.00%	5.00%	84%	84%
54	2,154	117	129.2	129.2	5.43%	6.00%	6.00%	91%	91%
55	2,309	387	346.4	369.4	16.76%	15.00%	16.00%	112%	105%
56	2,335	342	303.6	303.6	14.65%	13.00%	13.00%	113%	113%
57	2,402	305	288.2	288.2	12.70%	12.00%	12.00%	106%	106%
58	2,467	303	296.0	296.0	12.28%	12.00%	12.00%	102%	102%
59	2,414	289	289.7	289.7	11.97%	12.00%	12.00%	100%	100%
60	2,504	374	350.6	350.6	14.94%	14.00%	14.00%	107%	107%
61	2,497	345	349.6	349.6	13.82%	14.00%	14.00%	99%	99%
62	2,534	577	633.5	633.5	22.77%	25.00%	25.00%	91%	91%
63	2,261	448	497.4	452.2	19.81%	22.00%	20.00%	90%	99%
64	2,055	376	411.0	411.0	18.30%	20.00%	20.00%	91%	91%
65	2,020	463	404.0	444.4	22.92%	20.00%	22.00%	115%	104%
66	1,810	436	470.6	434.4	24.09%	26.00%	24.00%	93%	100%
67	1,557	446	404.8	420.4	28.64%	26.00%	27.00%	110%	106%
68	1,220	258	268.4	268.4	21.15%	22.00%	22.00%	96%	96%
69	1,082	237	238.0	238.0	21.90%	22.00%	22.00%	100%	100%
70	946	210	227.0	208.1	22.20%	24.00%	22.00%	92%	101%
71	765	172	183.6	168.3	22.48%	24.00%	22.00%	94%	102%
72	636	133	127.2	139.9	20.91%	20.00%	22.00%	105%	95%
73	545	104	109.0	119.9	19.08%	20.00%	22.00%	95%	87%
74	470	103	94.0	103.4	21.91%	20.00%	22.00%	110%	100%
Total	**44,565**	**6,685**	**6,707.1**	**6,703.5**	**15.00%**	**15.05%**	**15.04%**	**100%**	**100%**
R-squared			**0.980**	**0.990**					

SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart III-R6



Note that the current and recommended assumptions assume 100% retirement at age 75.

There is insufficient data to show tables and charts for Tier 5 members separately. The recommended Tier 5 specific retirement rates are shown in Appendix A.

SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chapter 366, P.L. 2001 provides benefits similar to those of the Police and Firemen's Retirement System (PFRS) to prosecutor members of PERS who are not eligible for enrollment in PFRS. Therefore, we have separately analyzed the retirement pattern of prosecutors. Chapter 1 P.L. 2010 closed the Prosecutors Part to new members enrolled on or after May 22, 2010 and Chapter 226, P.L. 2021 reopened the Prosecutors Part effective September 24, 2021.

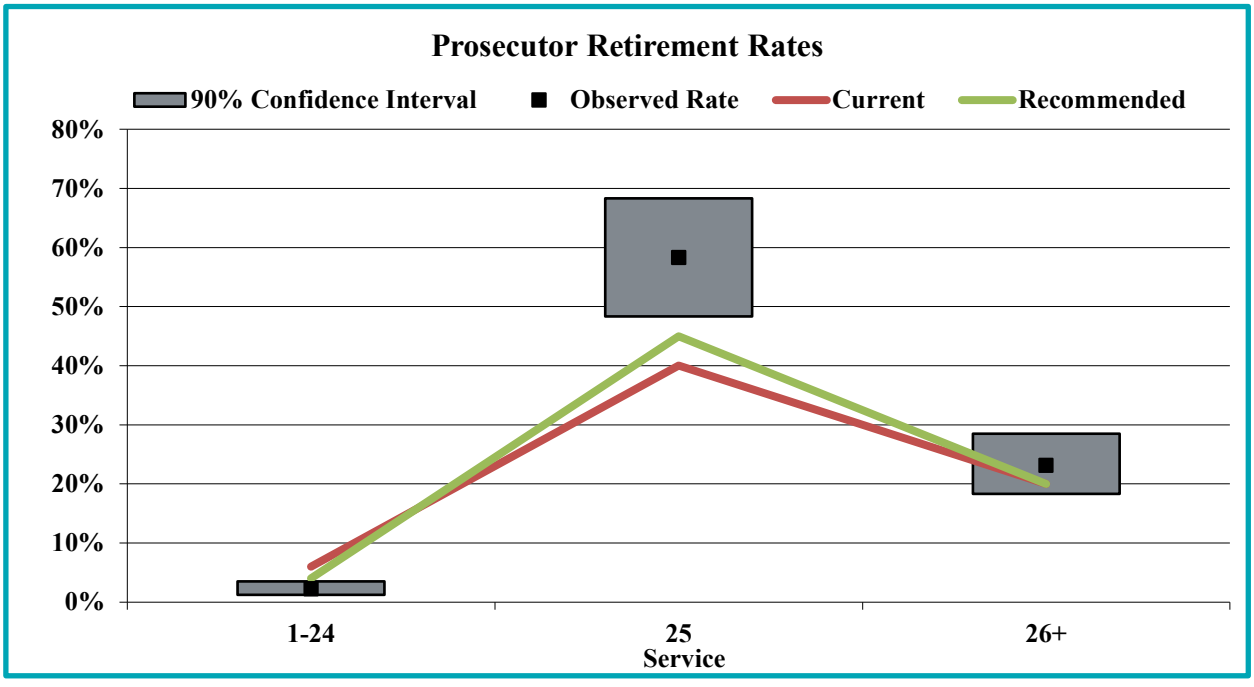
Table III-R7 shows the calculation of actual-to-expected ratios and the r-squared statistic for State and Local Employers' prosecutors, and Chart III-R7 shows the information graphically along with the 90% confidence interval. The data shows that the actual retirement rates are generally lower than expected at lower years of service and higher than expected at higher years of service. Therefore, we recommend decreasing the retirement assumption for prosecutors with less than 25 years of service and increasing the assumption for those first attaining eligibility for a Special Retirement at 25 years of service. Due to the relatively small amount of data, we also considered the experience from prior periods.

Table III-R7

Prosecutor Retirement Rates

		Retirements			Retirement Rates			A/E Ratios	
Service	Exposures	Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
1-24	491	11	29.5	19.6	2.2%	6.0%	4.0%	37%	56%
25	60	35	24.0	27.0	58.3%	40.0%	45.0%	146%	130%
26+	186	43	37.2	37.2	23.1%	20.0%	20.0%	116%	116%
Total	**737**	**89**	**90.7**	**83.8**	**12.1%**	**12.3%**	**11.4%**	**98%**	**106%**
R-squared			**0.900**	**0.951**					

Chart III-R7



SECTION III – DEMOGRAPHIC ASSUMPTIONS

RETIREMENT RATES

Chapter 140, P.L. 2021 reopened the Workers' Compensation Judges (WCJ) Part of PERS. For this group, we recommend using the same retirement rates as those used in the actuarial valuation of the Judicial Retirement System (JRS) of New Jersey. The JRS retirement assumptions are appropriate for this purpose because of the similarity between WCJ and JRS retirement benefits. The recommended retirement rates for JRS that are currently pending State House Commission approval are shown in Appendix A.

There is insufficient data during the experience period to show tables and charts for WCJ members.

SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Termination rates reflect the frequency at which active members leave employment for reasons other than retirement, death, or disability. We recommend separate assumptions for the following age, service, employer, and post-termination elections.

Electing a Deferred Annuity

- State members with 10 or more years of service
- Local employers' members with 10 or more years of service

Electing a Refund of Contributions

- State members younger than age 31 with less than 10 years of service
- State members ages 31 or older with less than 10 years of service
- State members with 10 or more years of service
- Local employers' members younger than age 31 with less than 10 years of service
- Local employers' members ages 31 or older with less than 10 years of service
- Local employers' members with 10 or more years of service

During the current three-year experience period, we found higher than expected levels of termination at almost all ages and levels of service. This is a change from the trend observed in the prior experience period. Because of the potential impact of the COVID-19 pandemic, we do not recommend fully reflecting the higher termination levels in future expectations. We have reviewed the experience from this experience study, along with the prior two studies, to develop our recommended termination rates.

SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

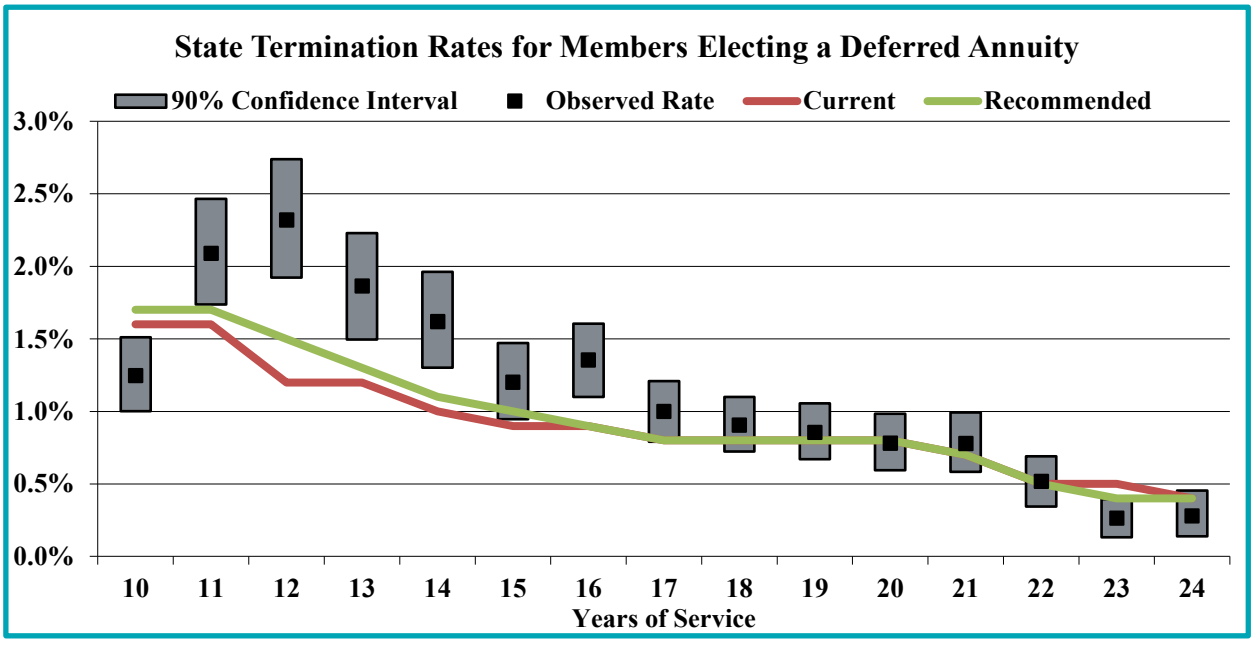
Table III-T1 shows the number of terminations for State members with 10 or more years of service who elect a deferred annuity, the current and recommended termination rates based on years of service, the calculation of actual-to-expected ratios for each year of service, and the r-squared statistic. Chart III-T1 shows the information graphically along with the 90% confidence interval. We recommend increasing the assumption for members with 15 or less years of service. The combined A/E ratio using the data from the last three studies and the recommended assumptions is 97%, compared to an A/E ratio of 103% using the current assumptions.

Table III-T1

State Termination Rates for Members Electing a Deferred Annuity

		Terminations			Termination Rates			A/E Ratios	
Service	Exposures	Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
10	4,895	61	78.3	83.2	1.25%	1.60%	1.70%	78%	73%
11	4,259	89	68.1	72.4	2.09%	1.60%	1.70%	131%	123%
12	3,795	88	45.5	56.9	2.32%	1.20%	1.50%	193%	155%
13	3,542	66	42.5	46.0	1.86%	1.20%	1.30%	155%	143%
14	4,076	66	40.8	44.8	1.62%	1.00%	1.10%	162%	147%
15	4,752	57	42.8	47.5	1.20%	0.90%	1.00%	133%	120%
16	5,542	75	49.9	49.9	1.35%	0.90%	0.90%	150%	150%
17	6,201	62	49.6	49.6	1.00%	0.80%	0.80%	125%	125%
18	6,631	60	53.0	53.0	0.90%	0.80%	0.80%	113%	113%
19	5,968	51	47.7	47.7	0.85%	0.80%	0.80%	107%	107%
20	5,387	42	43.1	43.1	0.78%	0.80%	0.80%	97%	97%
21	5,135	40	35.9	35.9	0.78%	0.70%	0.70%	111%	111%
22	4,631	24	23.2	23.2	0.52%	0.50%	0.50%	104%	104%
23	3,804	10	19.0	15.2	0.26%	0.50%	0.40%	53%	66%
24	2,870	8	11.5	11.5	0.28%	0.40%	0.40%	70%	70%
Total	**71,488**	**799**	**651.0**	**680.1**	**1.12%**	**0.91%**	**0.95%**	**123%**	**117%**
R-squared			**0.605**	**0.696**					

Chart III-T1



SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

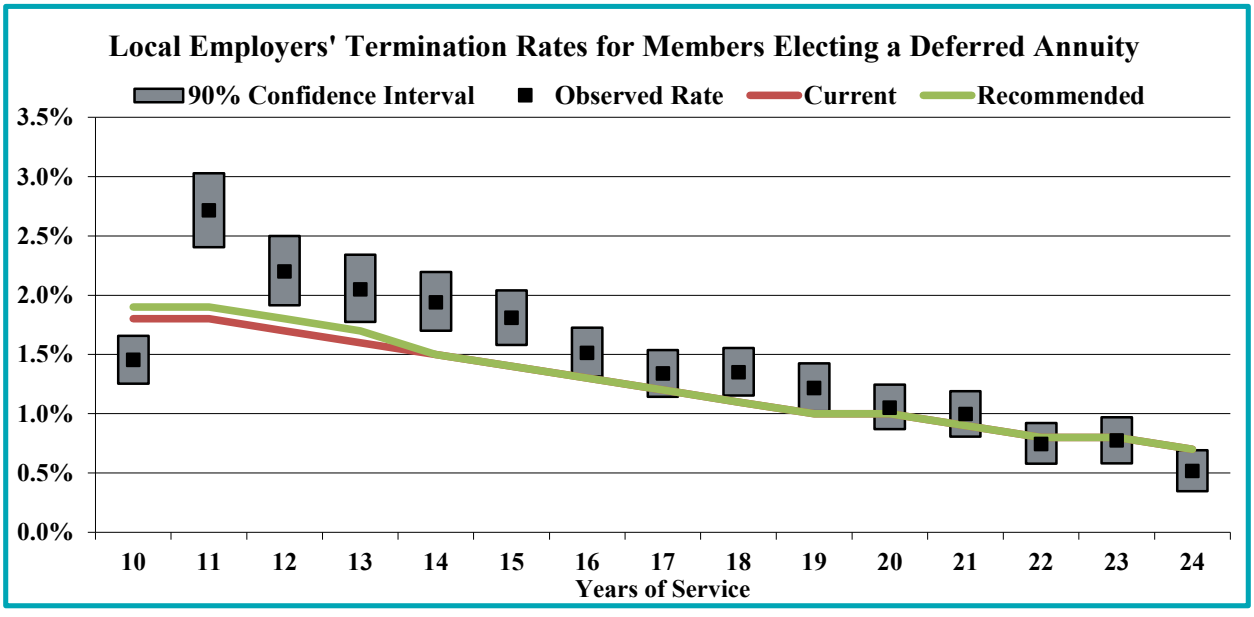
Table III-T2 shows the number of terminations for Local employers' members with 10 or more years of service who elect a deferred annuity, the current and recommended termination rates based on years of service, the calculation of actual-to-expected ratios for each year of service, and the r-squared statistic. Chart III-T2 shows the information graphically along with the 90% confidence interval. We recommend increasing the assumption for members with 10 – 13 years of service. The combined A/E ratio using the data from the last three studies and the recommended assumptions is 99% compared to an A/E ratio of 102% using the current assumptions.

Table III-T2

Local Employers' Termination Rates for Members Electing a Deferred Annuity

		Terminations			Termination Rates			A/E Ratios	
Service	Exposures	Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
10	9,422	137	169.6	179.0	1.45%	1.80%	1.90%	81%	77%
11	7,399	201	133.2	140.6	2.72%	1.80%	1.90%	151%	143%
12	6,681	147	113.6	120.3	2.20%	1.70%	1.80%	129%	122%
13	6,875	141	110.0	116.9	2.05%	1.60%	1.70%	128%	121%
14	8,293	161	124.4	124.4	1.94%	1.50%	1.50%	129%	129%
15	9,115	165	127.6	127.6	1.81%	1.40%	1.40%	129%	129%
16	9,439	143	122.7	122.7	1.51%	1.30%	1.30%	117%	117%
17	9,174	123	110.1	110.1	1.34%	1.20%	1.20%	112%	112%
18	8,745	118	96.2	96.2	1.35%	1.10%	1.10%	123%	123%
19	8,138	99	81.4	81.4	1.22%	1.00%	1.00%	122%	122%
20	7,709	81	77.1	77.1	1.05%	1.00%	1.00%	105%	105%
21	7,318	73	65.9	65.9	1.00%	0.90%	0.90%	111%	111%
22	6,721	50	53.8	53.8	0.74%	0.80%	0.80%	93%	93%
23	5,674	44	45.4	45.4	0.78%	0.80%	0.80%	97%	97%
24	4,627	24	32.4	32.4	0.52%	0.70%	0.70%	74%	74%
Total	**115,330**	**1,707**	**1,463.2**	**1,493.6**	**1.48%**	**1.27%**	**1.30%**	**117%**	**114%**
R-squared			**0.798**	**0.789**					

Chart III-T2



SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

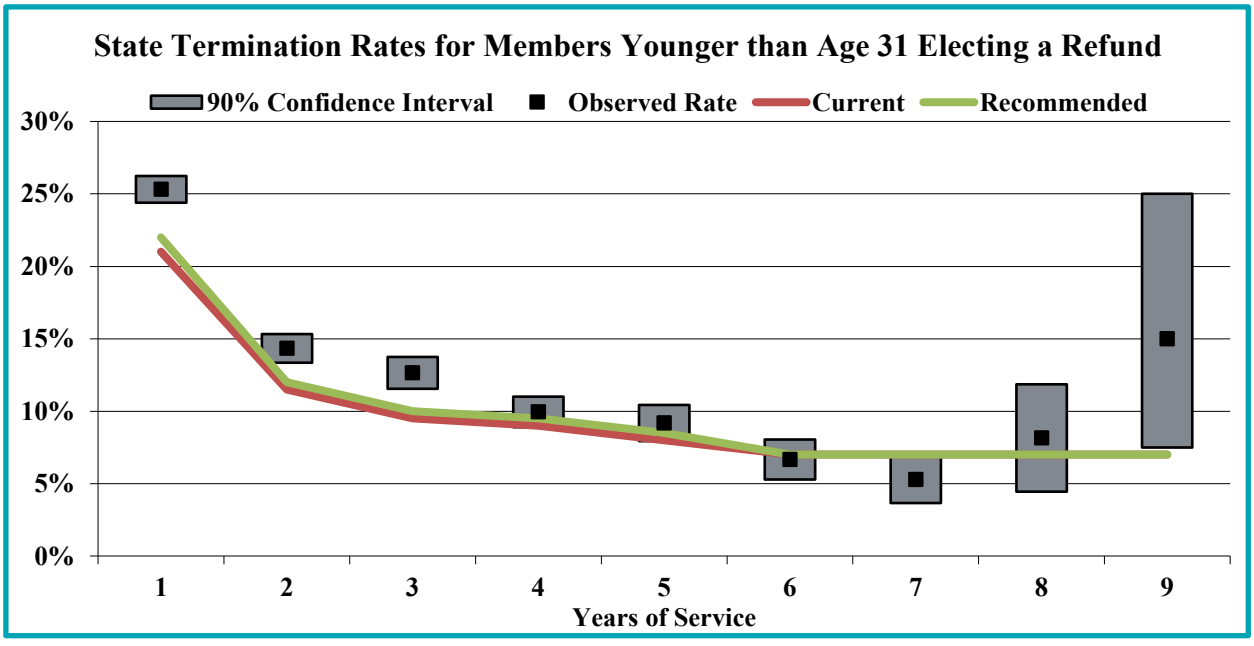
Table III-T3 shows the number of terminations for State members younger than age 31 with less than 10 years of service who elect a refund of contributions, the current and recommended termination rates based on years of service, the calculation of actual-to-expected ratios for each year of service, and the r-squared statistic. Chart III-T3 shows the information graphically along with the 90% confidence interval. We recommend increasing the termination assumption for members with five or less years of service. The combined A/E ratio using the data from the last three studies improves from 106% using the current termination assumptions to 102% using the recommended termination assumptions.

Table III-T3

State Termination Rates for Members Younger than Age 31 Electing a Refund

		Terminations			Termination Rates			A/E Ratios	
Service	Exposures	Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
1	5,999	1,518	1,259.8	1,319.8	25.30%	21.00%	22.00%	120%	115%
2	3,406	488	391.7	408.7	14.33%	11.50%	12.00%	125%	119%
3	2,451	310	232.8	245.1	12.65%	9.50%	10.00%	133%	126%
4	2,181	217	196.3	207.2	9.95%	9.00%	9.50%	111%	105%
5	1,448	133	115.8	123.1	9.19%	8.00%	8.50%	115%	108%
6	870	58	60.9	60.9	6.67%	7.00%	7.00%	95%	95%
7	436	23	30.5	30.5	5.28%	7.00%	7.00%	75%	75%
8	135	11	9.5	9.5	8.15%	7.00%	7.00%	116%	116%
9	40	6	2.8	2.8	15.00%	7.00%	7.00%	214%	214%
Total	**16,966**	**2,764**	**2,300.1**	**2,407.5**	**16.29%**	**13.56%**	**14.19%**	**120%**	**115%**
R-squared			**0.999**	**0.999**					

Chart III-T3



SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

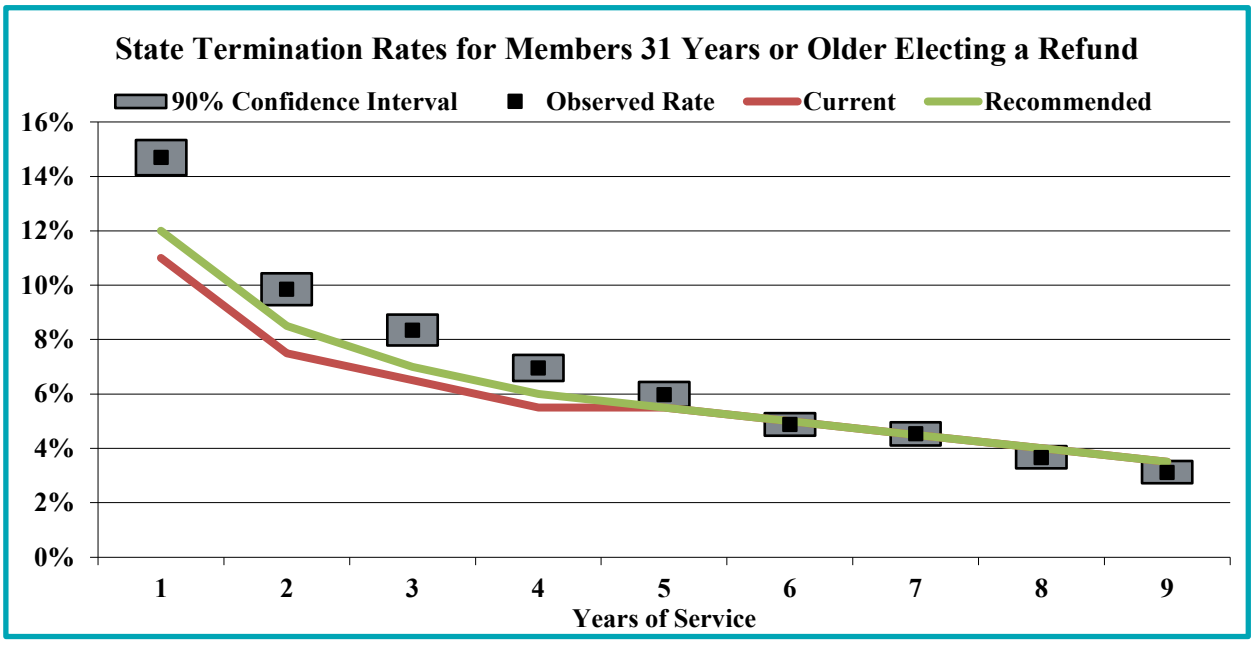
Table III-T4 shows the number of terminations for State members age 31 or older with less than 10 years of service who elect a refund of contributions, the current and recommended termination rates based on years of service, the calculation of actual-to-expected ratios for each year of service, and the r-squared statistic. Chart III-T4 shows the information graphically along with the 90% confidence interval. We recommend increasing the termination assumption for members with four or less years of service. The combined A/E ratio using the data from the last three studies improves from 107% using the current termination assumptions to 100% using the recommended termination assumptions.

Table III-T4

State Termination Rates for Members 31 Years or Older Electing a Refund

		Terminations			Termination Rates			A/E Ratios	
Service	Exposures	Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
1	8,066	1,185	887.3	967.9	14.69%	11.00%	12.00%	134%	122%
2	7,047	694	528.5	599.0	9.85%	7.50%	8.50%	131%	116%
3	6,564	548	426.7	459.5	8.35%	6.50%	7.00%	128%	119%
4	7,510	522	413.1	450.6	6.95%	5.50%	6.00%	126%	116%
5	7,397	442	406.8	406.8	5.98%	5.50%	5.50%	109%	109%
6	7,214	352	360.7	360.7	4.88%	5.00%	5.00%	98%	98%
7	6,290	285	283.1	283.1	4.53%	4.50%	4.50%	101%	101%
8	5,730	210	229.2	229.2	3.66%	4.00%	4.00%	92%	92%
9	5,075	158	177.6	177.6	3.11%	3.50%	3.50%	89%	89%
Total	**60,893**	**4,396**	**3,712.9**	**3,934.4**	**7.22%**	**6.10%**	**6.46%**	**118%**	**112%**
R-squared			**0.988**	**0.997**					

Chart III-T4



SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Table III-T5 shows the number of terminations for all State members with 10 or more years of service who elect a refund of contributions, the current and recommended termination rates based on years of service, the calculation of actual-to-expected ratios for each year of service, and the r-squared statistic. Chart III-T5 on the next page shows the information graphically along with the 90% confidence interval. We recommend increasing the assumption for members with 12 – 18 years of service and slightly decreasing the assumption for members with 22 – 23 years of service. The combined A/E ratio using the data from the last three studies improves from 111% using the current termination assumptions to 99% using the recommended termination assumptions.

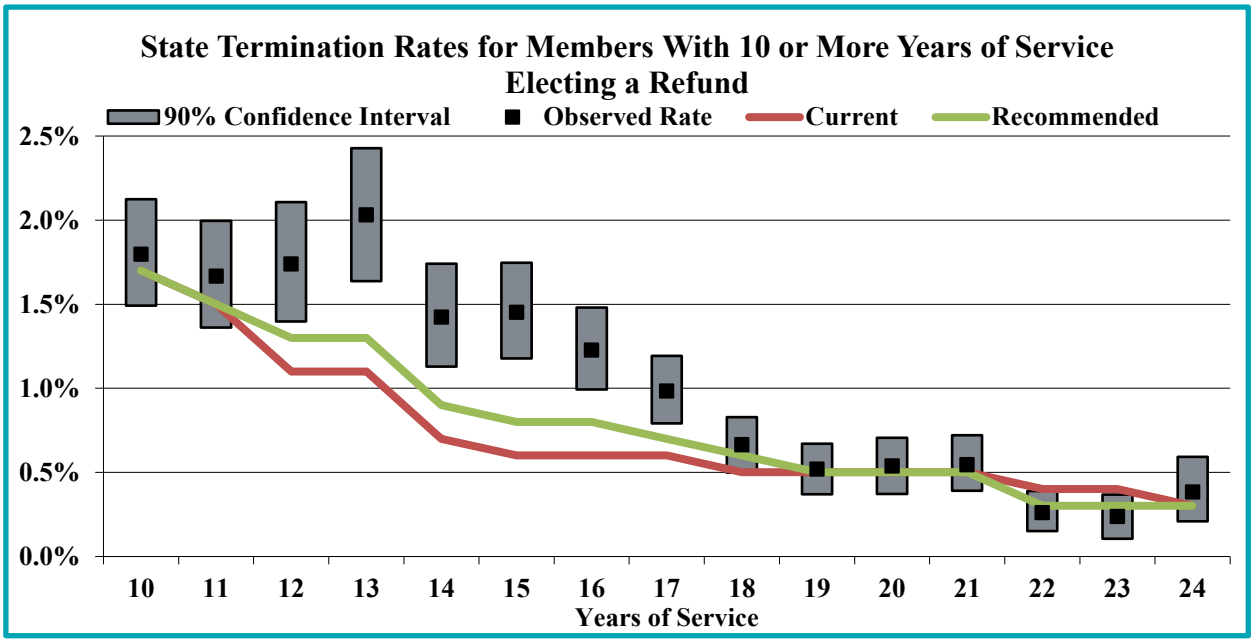
Table III-T5

State Termination Rates for Members With 10 or More Years of Service Electing a Refund

		Terminations			Termination Rates			A/E Ratios	
Service	Exposures	Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
10	4,895	88	83.2	83.2	1.80%	1.70%	1.70%	106%	106%
11	4,259	71	63.9	63.9	1.67%	1.50%	1.50%	111%	111%
12	3,795	66	41.7	49.3	1.74%	1.10%	1.30%	158%	134%
13	3,542	72	39.0	46.0	2.03%	1.10%	1.30%	185%	156%
14	4,076	58	28.5	36.7	1.42%	0.70%	0.90%	203%	158%
15	4,752	69	28.5	38.0	1.45%	0.60%	0.80%	242%	182%
16	5,542	68	33.3	44.3	1.23%	0.60%	0.80%	204%	153%
17	6,201	61	37.2	43.4	0.98%	0.60%	0.70%	164%	141%
18	6,631	44	33.2	39.8	0.66%	0.50%	0.60%	133%	111%
19	5,968	31	29.8	29.8	0.52%	0.50%	0.50%	104%	104%
20	5,387	29	26.9	26.9	0.54%	0.50%	0.50%	108%	108%
21	5,135	28	25.7	25.7	0.55%	0.50%	0.50%	109%	109%
22	4,631	12	18.5	13.9	0.26%	0.40%	0.30%	65%	86%
23	3,804	9	15.2	11.4	0.24%	0.40%	0.30%	59%	79%
24	2,870	11	8.6	8.6	0.38%	0.30%	0.30%	128%	128%
Total	**71,488**	**717**	**513.3**	**561.1**	**1.00%**	**0.72%**	**0.78%**	**140%**	**128%**
R-squared			**0.634**	**0.838**					

SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Chart III-T5



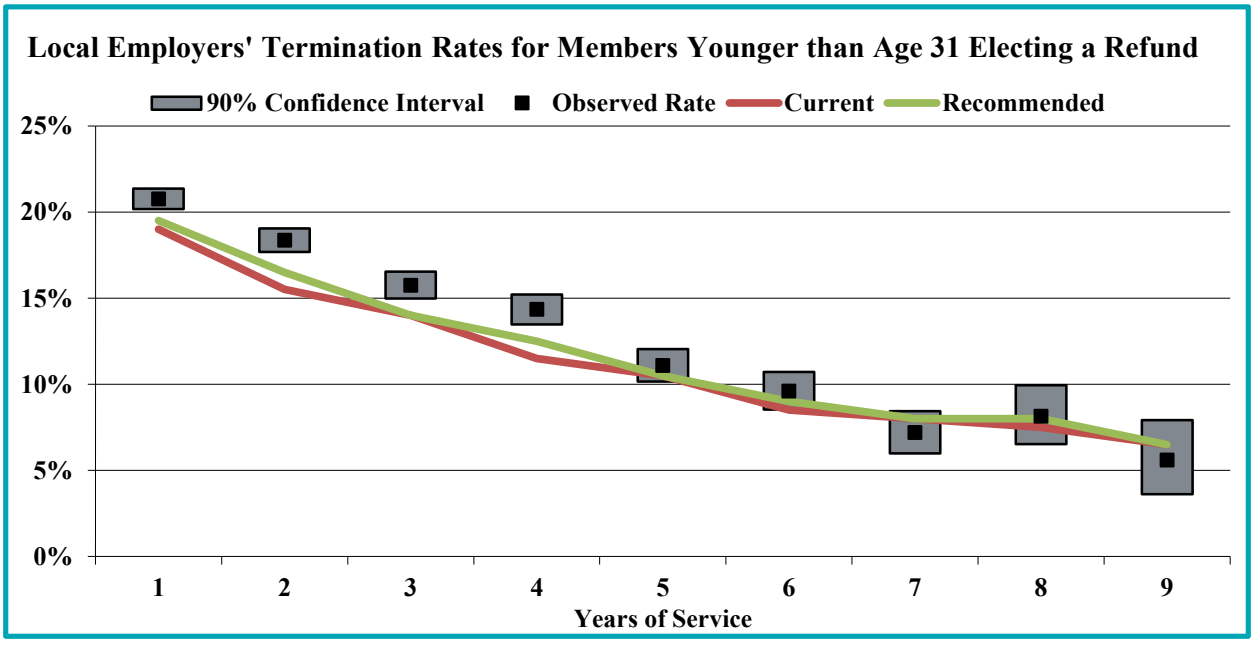
SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Table III-T6 shows the number of terminations for Local employers' members younger than age 31 with less than 10 years of service who elect a refund of contributions, the current and recommended termination rates based on years of service, the calculation of actual-to-expected ratios for each year of service, and the r-squared statistic. Chart III-T6 shows the information graphically along with the 90% confidence interval. We recommend increasing the termination assumption for some years of service. The combined A/E ratio using the data from the last three studies improves from 105% using the current termination assumptions to 101% using the recommended termination assumptions.

Table III-T6

Local Employers' Termination Rates for Members Younger than Age 31 Electing a Refund									
		Terminations			Termination Rates			A/E Ratios	
Service	Exposures	Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
1	12,939	2,687	2,458.4	2,523.1	20.77%	19.00%	19.50%	109%	106%
2	8,833	1,622	1,369.1	1,457.4	18.36%	15.50%	16.50%	118%	111%
3	5,814	916	814.0	814.0	15.76%	14.00%	14.00%	113%	113%
4	4,364	626	501.9	545.5	14.34%	11.50%	12.50%	125%	115%
5	3,022	335	317.3	317.3	11.09%	10.50%	10.50%	106%	106%
6	1,968	189	167.3	177.1	9.60%	8.50%	9.00%	113%	107%
7	1,221	88	97.7	97.7	7.21%	8.00%	8.00%	90%	90%
8	674	55	50.6	53.9	8.16%	7.50%	8.00%	109%	102%
9	303	17	19.7	19.7	5.61%	6.50%	6.50%	86%	86%
Total	**39,138**	**6,535**	**5,795.9**	**6,005.7**	**16.70%**	**14.81%**	**15.35%**	**113%**	**109%**
R-squared			**0.997**	**0.999**					

Chart III-T6



SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

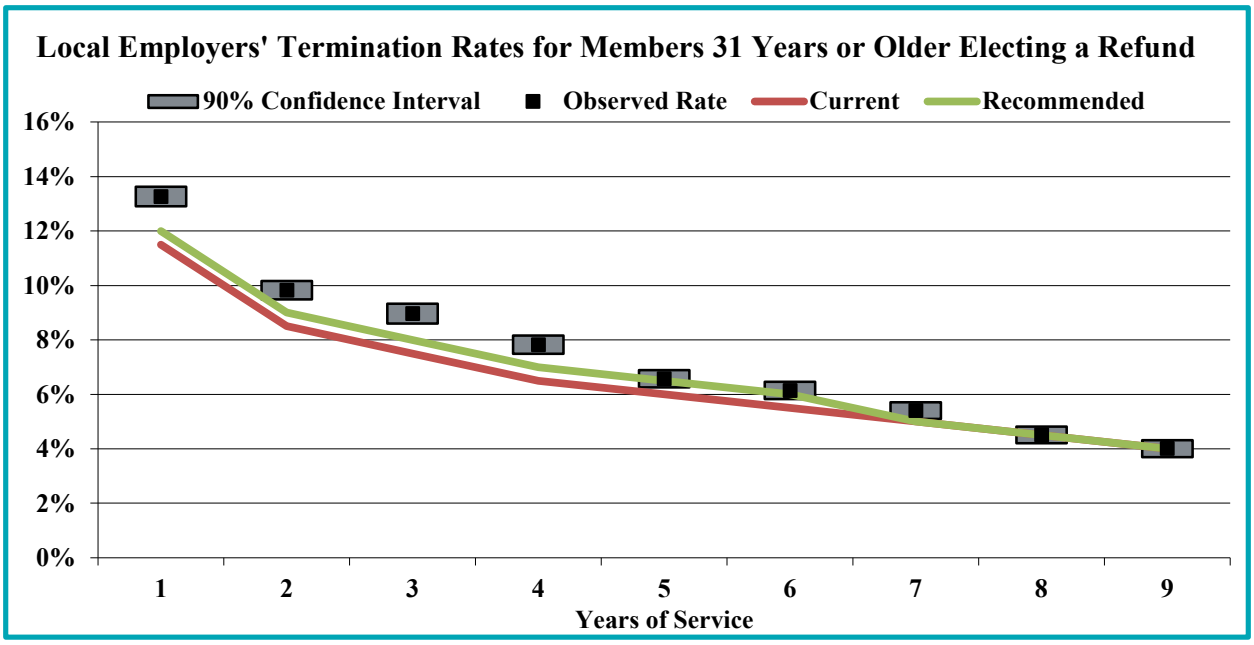
Table III-T7 shows the number of terminations for Local employers' members age 31 or older with less than 10 years of service who elect a refund of contributions, the current and recommended termination rates based on years of service, the calculation of actual-to-expected ratios for each year of service, and the r-squared statistic. Chart III-T7 shows the information graphically along with the 90% confidence interval. We recommend increasing the termination assumption for members with less than seven years of service. The combined A/E ratio using the data from the last three studies improves from 105% using the current termination assumptions to 100% using the recommended termination assumptions.

Table III-T7

Local Employers' Termination Rates for Members 31 Years or Older Electing a Refund

		Terminations			Termination Rates			A/E Ratios	
Service	Exposures	Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
1	24,155	3,203	2,777.8	2,898.6	13.26%	11.50%	12.00%	115%	111%
2	20,273	1,991	1,723.2	1,824.6	9.82%	8.50%	9.00%	116%	109%
3	16,774	1,504	1,258.1	1,341.9	8.97%	7.50%	8.00%	120%	112%
4	17,039	1,333	1,107.5	1,192.7	7.82%	6.50%	7.00%	120%	112%
5	16,244	1,068	974.6	1,055.9	6.57%	6.00%	6.50%	110%	101%
6	15,347	943	844.1	920.8	6.14%	5.50%	6.00%	112%	102%
7	14,310	773	715.5	715.5	5.40%	5.00%	5.00%	108%	108%
8	12,948	584	582.7	582.7	4.51%	4.50%	4.50%	100%	100%
9	11,005	441	440.2	440.2	4.01%	4.00%	4.00%	100%	100%
Total	**148,095**	**11,840**	**10,423.7**	**10,972.9**	**7.99%**	**7.04%**	**7.41%**	**114%**	**108%**
R-squared			**0.997**	**0.998**					

Chart III-T7



SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

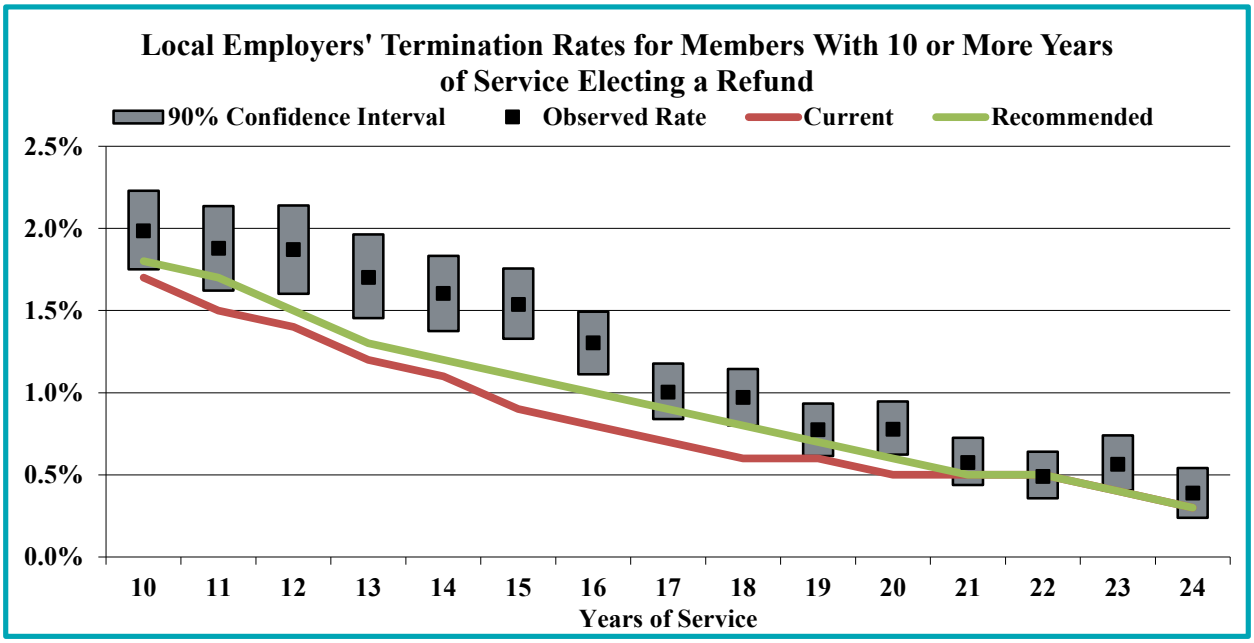
Table III-T8 shows the number of terminations for all Local employers' members with 10 or more years of service who elect a refund of contributions, the current and recommended termination rates based on years of service, the calculation of actual-to-expected ratios for each year of service, and the r-squared statistic. Chart III-T8 on the next page shows the information graphically along with the 90% confidence interval. We recommend increasing the assumption for members with 20 or less years of service. The combined A/E ratio using the data from the last three studies improves from 113% using the current termination assumptions to 100% using the recommended termination assumptions.

Table III-T8

Local Employers' Termination Rates for Members With 10 or More Years of Service Electing a Refund									
		Terminations			Termination Rates			A/E Ratios	
Service	Exposures	Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
10	9,422	187	160.2	169.6	1.98%	1.70%	1.80%	117%	110%
11	7,399	139	111.0	125.8	1.88%	1.50%	1.70%	125%	111%
12	6,681	125	93.5	100.2	1.87%	1.40%	1.50%	134%	125%
13	6,875	117	82.5	89.4	1.70%	1.20%	1.30%	142%	131%
14	8,293	133	91.2	99.5	1.60%	1.10%	1.20%	146%	134%
15	9,115	140	82.0	100.3	1.54%	0.90%	1.10%	171%	140%
16	9,439	123	75.5	94.4	1.30%	0.80%	1.00%	163%	130%
17	9,174	92	64.2	82.6	1.00%	0.70%	0.90%	143%	111%
18	8,745	85	52.5	70.0	0.97%	0.60%	0.80%	162%	121%
19	8,138	63	48.8	57.0	0.77%	0.60%	0.70%	129%	111%
20	7,709	60	38.5	46.3	0.78%	0.50%	0.60%	156%	130%
21	7,318	42	36.6	36.6	0.57%	0.50%	0.50%	115%	115%
22	6,721	33	33.6	33.6	0.49%	0.50%	0.50%	98%	98%
23	5,674	32	22.7	22.7	0.56%	0.40%	0.40%	141%	141%
24	4,627	18	13.9	13.9	0.39%	0.30%	0.30%	130%	130%
Total	**115,330**	**1,389**	**1,006.8**	**1,141.7**	**1.20%**	**0.87%**	**0.99%**	**138%**	**122%**
R-squared			**0.923**	**0.963**					

SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Chart III-T8



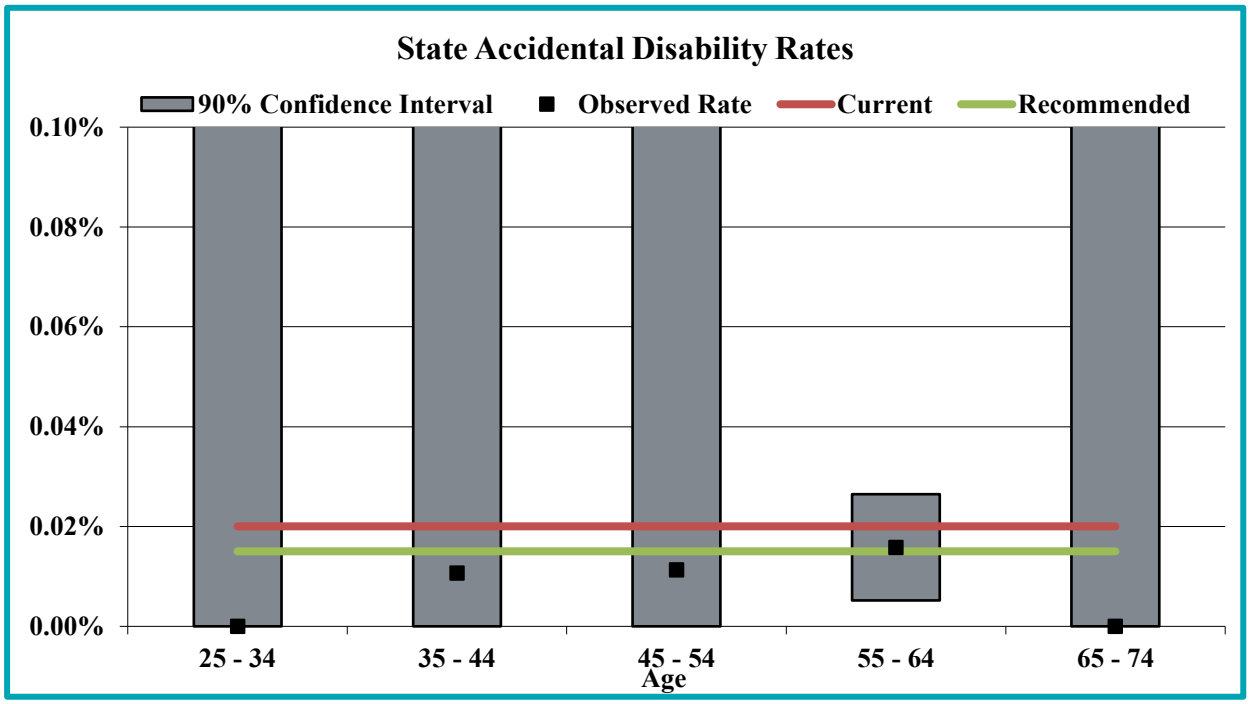
SECTION III – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

Table III-D1 shows the calculation of actual-to-expected ratios and the r-squared statistic for accidental disability for State members. Chart III-D1 shows the information graphically along with the 90% confidence interval. The experience shows lower than expected incidents of accidental disability, which is consistent with the trend in the prior study. Therefore, we recommend decreasing the rates for all age bands.

Table III-D1

State Accidental Disability Rates									
Age Band	Exposures	Disabilities			Disability Rates			A/E Ratios	
		Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
25 - 34	300	0	0.1	0.0	0.000%	0.020%	0.015%	0%	0%
35 - 44	18,747	2	3.7	2.8	0.011%	0.020%	0.015%	53%	71%
45 - 54	35,424	4	7.1	5.3	0.011%	0.020%	0.015%	56%	75%
55 - 64	37,955	6	7.6	5.7	0.016%	0.020%	0.015%	79%	105%
65 - 74	12,462	0	2.5	1.9	0.000%	0.020%	0.015%	0%	0%
Total	**104,888**	**12**	**21.0**	**15.7**	**0.011%**	**0.020%**	**0.015%**	**57%**	**76%**
R-squared			**0.147**	**0.147**					

Chart III-D1



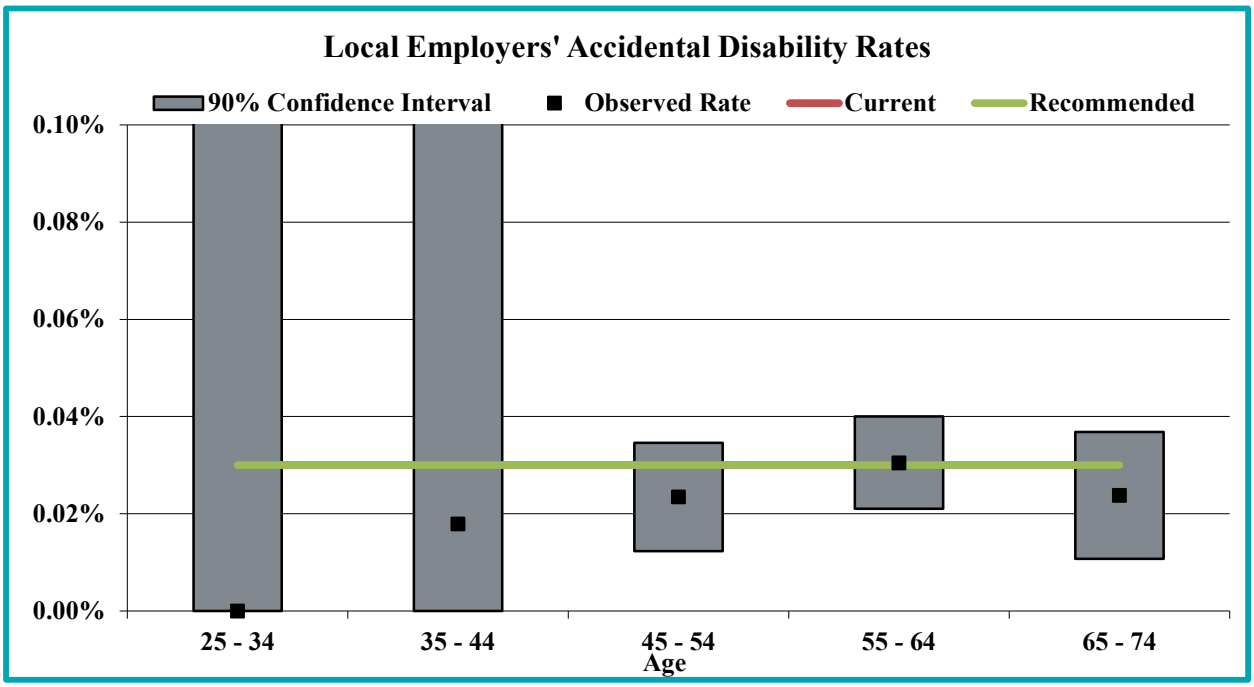
SECTION III – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

Table III-D2 shows the calculation of actual-to-expected ratios and the r-squared statistic for accidental disability for Local employers' members. Chart III-D2 shows the information graphically along with the 90% confidence interval. Recent experience has shown that, though the number of occurrences is low for ages younger than 55, the incidence rate is relatively consistent across all age bands and tracks reasonably closely to the current assumption. Therefore, we recommend continuing with the current assumption.

Table III-D2

Local Employers' Accidental Disability Rates									
Age Band	Exposures	Disabilities			Disability Rates			A/E Ratios	
		Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
25 - 34	1,029	0	0.3	0.3	0.000%	0.030%	0.030%	0%	0%
35 - 44	22,308	4	6.7	6.7	0.018%	0.030%	0.030%	60%	60%
45 - 54	51,144	12	15.3	15.3	0.023%	0.030%	0.030%	78%	78%
55 - 64	91,774	28	27.5	27.5	0.031%	0.030%	0.030%	102%	102%
65 - 74	37,857	9	11.4	11.4	0.024%	0.030%	0.030%	79%	79%
Total	**204,112**	**53**	**61.2**	**61.2**	**0.026%**	**0.030%**	**0.030%**	**87%**	**87%**
R-squared			**0.540**	**0.540**					

Chart III-D2



SECTION III – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

For ordinary disability, the current rates apply upon attainment of 10 years of service and continue through the ultimate retirement age. However, experience shows that very few ordinary disabilities occur after members reach age 55 with at least 25 years of service. Therefore, we recommend applying the ordinary disability rates only until the attainment of age 55 with at least 25 years of service. This will focus the assumption on the subset of the population in which nearly all ordinary disabilities occur.

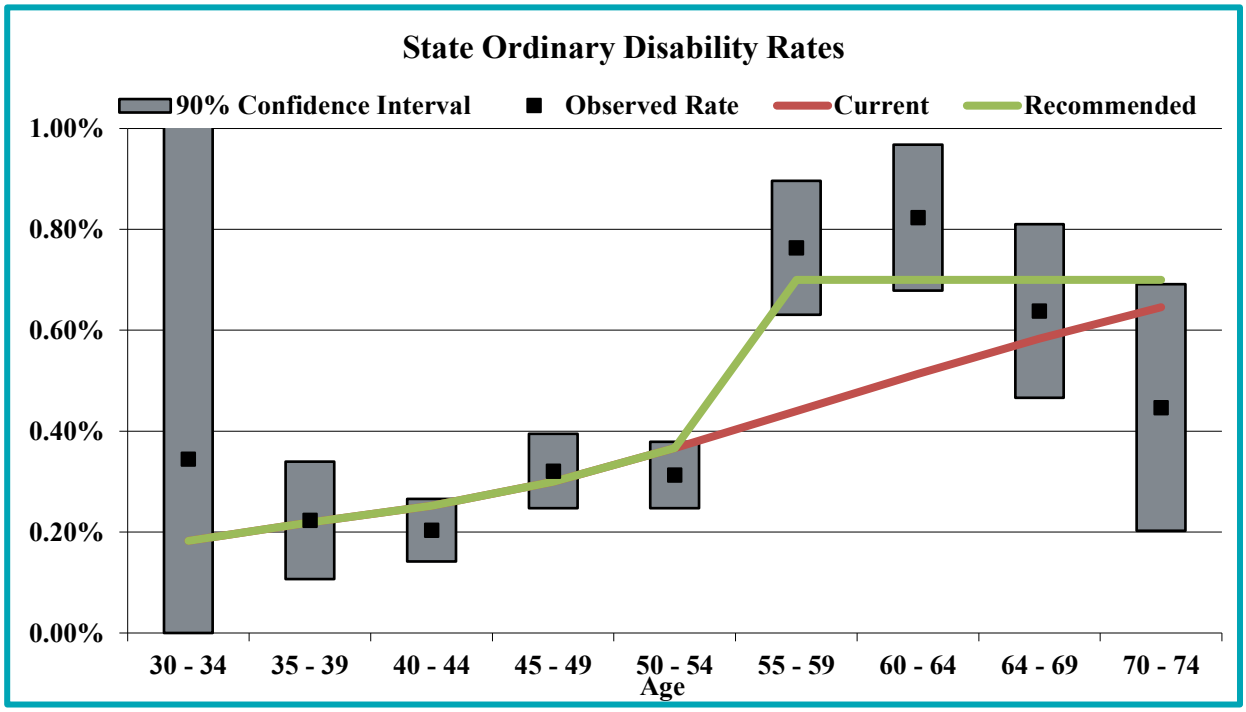
Table III-D3 shows the calculation of actual-to-expected ratios and the r-squared statistic for ordinary disability for State members, and Chart III-D3 on the next page shows the information graphically along with the 90% confidence interval. We recommend increasing the rates for members ages 55 and older. This increase is partially due to the recommended change in the application of the rates.

Table III-D3

State Ordinary Disability Rates									
Age Band	Exposures	Disabilities			Disability Rates			A/E Ratios	
		Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
30 - 34	290	1	0.5	0.5	0.345%	0.183%	0.183%	189%	189%
35 - 39	4,474	10	9.8	9.8	0.224%	0.219%	0.219%	102%	102%
40 - 44	14,232	29	35.9	35.9	0.204%	0.252%	0.252%	81%	81%
45 - 49	15,888	51	47.6	47.6	0.321%	0.300%	0.300%	107%	107%
50 - 54	19,491	61	71.5	71.5	0.313%	0.367%	0.367%	85%	85%
55 - 59	11,659	89	51.3	81.6	0.763%	0.440%	0.700%	174%	109%
60 - 64	10,569	87	54.3	74.0	0.823%	0.513%	0.700%	160%	118%
64 - 69	5,799	37	33.8	40.6	0.638%	0.584%	0.700%	109%	91%
70 - 74	2,015	9	13.0	14.1	0.447%	0.645%	0.700%	69%	64%
Total	**84,417**	**374**	**317.7**	**375.6**	**0.443%**	**0.376%**	**0.445%**	**118%**	**100%**
R-squared			**0.628**	**0.792**					

SECTION III – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

Chart III-D3



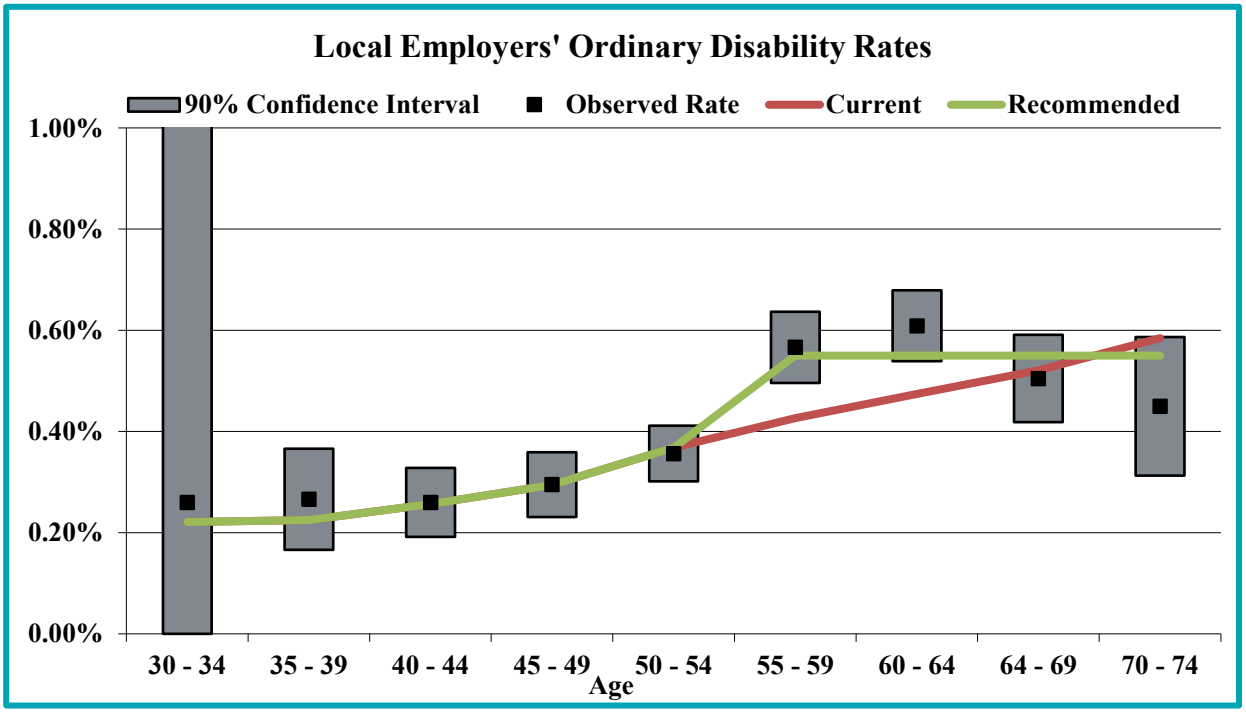
SECTION III – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

Table III-D4 shows the calculation of actual-to-expected ratios and the r-squared statistic for ordinary disability for Local employers' members, and Chart III-D4 shows the information graphically along with the 90% confidence interval. We recommend modifying the rates for members ages 55 and older to equal 0.55%. This increase is partially due to the recommended change in the application of the rates.

Table III-D4

Local Employers' Ordinary Disability Rates									
Age Band	Exposures	Disabilities			Disability Rates			A/E Ratios	
		Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
30 - 34	769	2	1.7	1.7	0.260%	0.221%	0.221%	118%	118%
35 - 39	7,145	19	16.1	16.1	0.266%	0.225%	0.225%	118%	118%
40 - 44	15,007	39	38.5	38.5	0.260%	0.256%	0.256%	101%	101%
45 - 49	19,320	57	56.9	56.9	0.295%	0.295%	0.295%	100%	100%
50 - 54	31,720	113	116.7	116.7	0.356%	0.368%	0.368%	97%	97%
55 - 59	30,719	174	131.0	169.0	0.566%	0.426%	0.550%	133%	103%
60 - 64	33,335	203	158.0	183.3	0.609%	0.474%	0.550%	128%	111%
64 - 69	18,222	92	94.9	100.2	0.505%	0.521%	0.550%	97%	92%
70 - 74	6,447	29	37.7	35.5	0.450%	0.584%	0.550%	77%	82%
Total	**162,684**	**728**	**651.4**	**717.8**	**0.447%**	**0.400%**	**0.441%**	**112%**	**101%**
R-squared			**0.906**	**0.938**					

Chart III-D4



SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Mortality assumptions are typically developed separately by gender. Unlike most demographic assumptions, mortality assumptions do not rely exclusively on the experience of the plan. Standard mortality tables and projection scales, reflecting future life expectancy improvements, serve as the primary basis for the assumptions. The standard table can then be modified to better reflect the System's experience, depending on the amount of available data.

The Society of Actuaries (SOA) completed an extensive mortality study of public pension plan experience and issued a set of mortality tables named the Pub-2016 mortality tables which provide insights into the composition of gender-specific pension mortality by factors such as job category (e.g. General Employees, Teachers, Public Safety), salary/benefit amount, and health status (e.g. healthy or disabled).

In addition, there has been a long history of mortality improvement among pensioners in the U.S., and there is an expectation that mortality rates will continue to improve in the future. The SOA periodically publishes a mortality improvement scale that reflects continued mortality improvement trends. The SOA's MP-2021 scale remains the most recent mortality improvement projection scale at the time this analysis was prepared. However, the MP-2021 scale only reflects historical mortality data through calendar year 2019. The COVID-19 pandemic may have caused a temporary change in mortality patterns.

The steps in our analysis of the mortality assumptions are as follows:

1. Select a standard mortality table that reflects the anticipated experience of the System.
2. Compare actual experience of the System to what would have been predicted by the selected standard table for the period of the experience study.
3. Adjust the standard table either fully or partially depending on the level of credibility for the System's experience. This adjusted table is called the base table.
4. Select an appropriate standard mortality improvement projection scale and apply it to the base table.

Similar to the methodology used to develop the Pub-2016 tables, when actual experience of the System is compared to that of the standard table, the experience is weighted based on the amount of income (salary for pre-retirement mortality and pension benefit for post-retirement mortality). Mortality studies in the U.S. have consistently shown that individuals with higher income have longer life expectancies than individuals with lower income. It is important for a pension plan to use assumptions that are weighted by income to reflect not just the incidence of a decrement but the impact on liabilities.

SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

In the prior study, PERS adopted the following assumptions:

Active Members (Non-Annuitants): The Pub-2010 General Below-Median Income Employee mortality table *[PubG-2010(B) Employee]* as published by the Society of Actuaries with an 82.2% adjustment for males and 101.4% adjustment for females, and with future improvement from the base year of 2010 on a generational basis using SOA's Scale MP-2021. All pre-retirement deaths are assumed to be ordinary deaths.

Healthy Retirees and Beneficiaries (Healthy Annuitants): The Pub-2010 General Below-Median Income Healthy Retiree mortality table *[PubG-2010(B) Healthy Retiree]* as published by the Society of Actuaries with a 91.4% adjustment for males and 99.7% adjustment for females, and with future improvement from the base year of 2010 on a generational basis using SOA's Scale MP-2021.

Disabled Retirees (Disabled Annuitants): The Pub-2010 Non-Safety Disabled Retiree mortality table *[PubNS-2010 Disabled Retiree]* as published by the Society of Actuaries with a 127.7% adjustment for males and 117.2% adjustment for females, and with future improvement from the base year of 2010 on a generational basis using SOA's Scale MP-2021.

There are enough deaths for PERS to provide meaningful statistics in the three-year period. However, the current period includes mortality experience from the COVID-19 pandemic. Mortality rates across the country were elevated during the pandemic and that experience is not necessarily indicative of future trends. Nonetheless, PERS' post-pandemic mortality experience remains higher than expected based on the current mortality assumptions. The recent Pub-2016 mortality table report covering public plan experience from 2013 – 2019 also found higher mortality rates than the previous Pub-2010 report, which covered 2008 – 2013. Therefore, we believe it is appropriate to update the mortality assumptions to partially reflect recent experience.

To avoid overweighting recent experience, we have expanded our review to include the past two studies in our analysis. We have developed our recommend assumptions using a total of 10 years of experience from July 1, 2014 through June 30, 2024. For healthy annuitants, there were 64,123 deaths over this period, for disabled retirees there were 6,205 deaths, and for active members there were 5,787 deaths. For reference, a fully credible sample would include 1,082 deaths. We therefore recommend using Pub-2016 tables for general employees with adjustments to account for PERS experience. The tables and graph shown in this section are based on the data covering the 10-year period ending June 30, 2024.

Since the SOA has not released a more recent mortality improvement scale due to the impact of the COVID-19 pandemic on underlying data, we recommend continuing to use MP-2021 as the mortality improvement scale.

SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

We recommend the following mortality assumptions:

Active Members (Non-Annuitants): The Pub-2016 General Below-Median Income Employee mortality table *[PubG-2016(B) Employee]* as published by the Society of Actuaries with an 86.3% adjustment for males and 97.6% adjustment for females, and with future improvement from the base year of 2016 on a generational basis using SOA's Scale MP-2021. All pre-retirement deaths are assumed to be ordinary deaths.

Healthy Retirees and Beneficiaries (Healthy Annuitants): The Pub-2016 General Below-Median Income Healthy Retiree mortality table *[PubG-2016(B) Healthy Retiree]* as published by the Society of Actuaries with a 93.3% adjustment for males and 99.5% adjustment for females, and with future improvement from the base year of 2016 on a generational basis using SOA's Scale MP-2021.

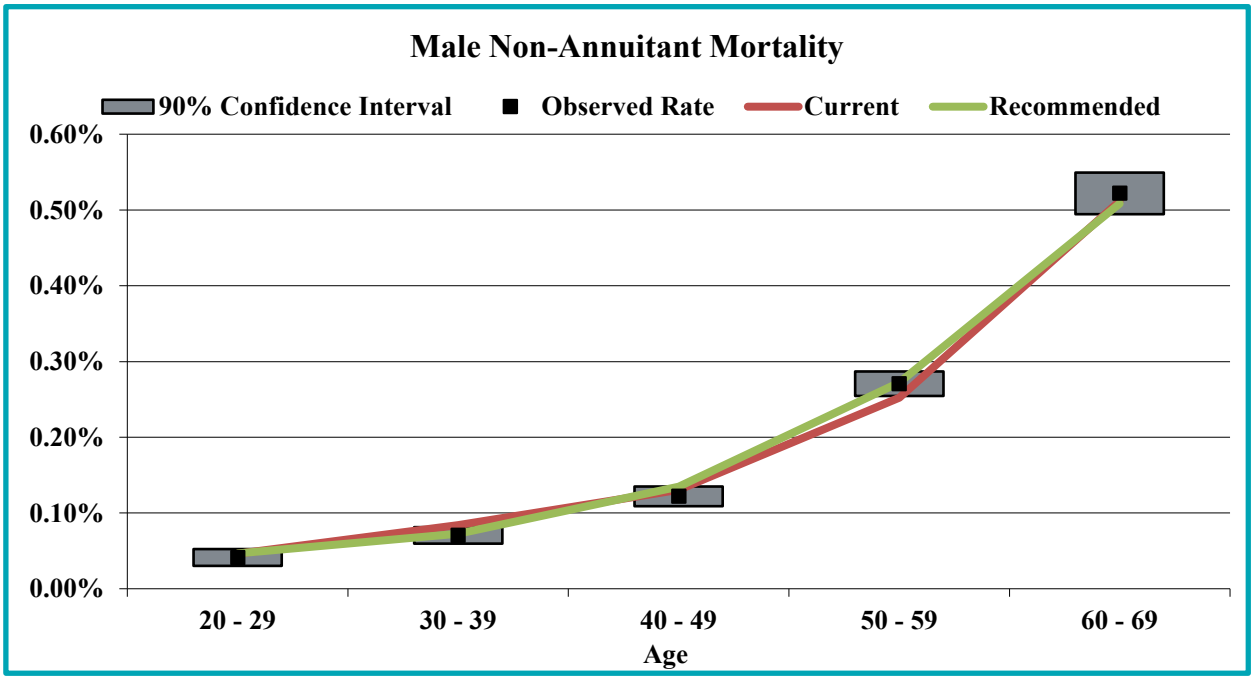
Disabled Retirees (Disabled Annuitants): The Pub-2016 Non-Safety Disabled Retiree mortality table *[PubNS-2016 Disabled Retiree]* as published by the Society of Actuaries with a 156.9% adjustment for males and 139.0% adjustment for females, and with future improvement from the base year of 2016 on a generational basis using SOA's Scale MP-2021.

SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Table III-M1 – Active Males

Non-Annuitant Mortality - Base Table for Males								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Recommended	Current	Recommended
20 - 29	80,034	33	3,097,412,938	1,265,771	1,435,417	1,451,427	88%	87%
30 - 39	161,025	127	8,052,956,187	5,661,856	6,772,514	5,849,961	84%	97%
40 - 49	193,929	293	11,467,059,413	13,969,648	14,955,148	15,435,829	93%	91%
50 - 59	279,030	902	17,488,109,798	47,317,488	44,084,998	47,648,880	107%	99%
60 - 69	184,701	1,153	11,232,966,566	58,629,408	57,477,269	57,106,470	102%	103%
70 +	41,134	532	1,878,725,716	19,311,952	19,323,182	18,742,844	100%	103%
Total	**939,853**	**3,040**	**53,217,230,618**	**146,156,123**	**144,048,527**	**146,235,410**	**101%**	**100%**
R-Squared					**0.976**	**0.976**		

Chart III-M1

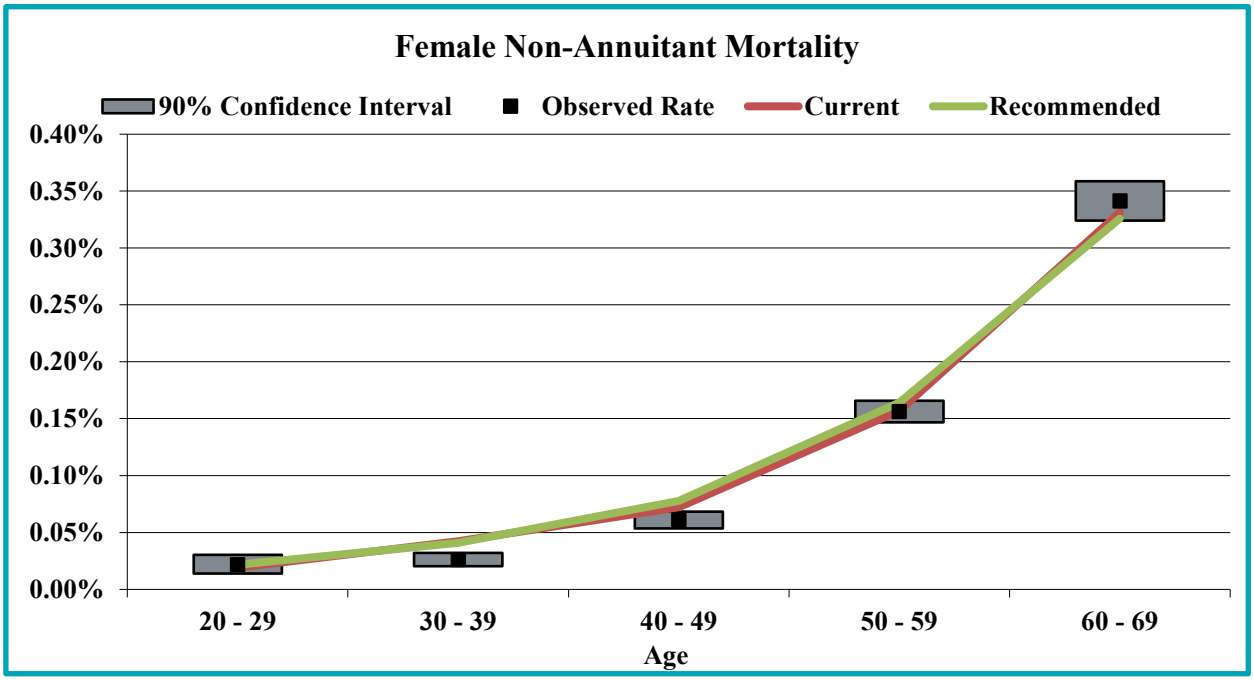


SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Table III-M2 – Active Females

Non-Annuitant Mortality - Base Table for Females								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Recommended	Current	Recommended
20 - 29	78,786	16	2,887,358,509	626,615	548,450	621,055	114%	101%
30 - 39	205,958	59	9,827,963,976	2,557,726	4,150,107	4,000,990	62%	64%
40 - 49	291,327	202	15,095,003,013	9,180,534	10,870,560	11,739,073	84%	78%
50 - 59	469,003	801	22,512,196,539	35,210,862	35,327,594	36,952,876	100%	95%
60 - 69	309,979	1,174	14,378,067,572	49,080,221	47,644,652	46,852,622	103%	105%
70 +	54,329	495	2,027,932,316	16,685,829	15,674,681	13,177,225	106%	127%
Total	**1,409,382**	**2,747**	**66,728,521,925**	**113,341,787**	**114,216,044**	**113,343,840**	**99%**	**100%**
R-Squared					**0.980**	**0.972**		

Chart III-M2



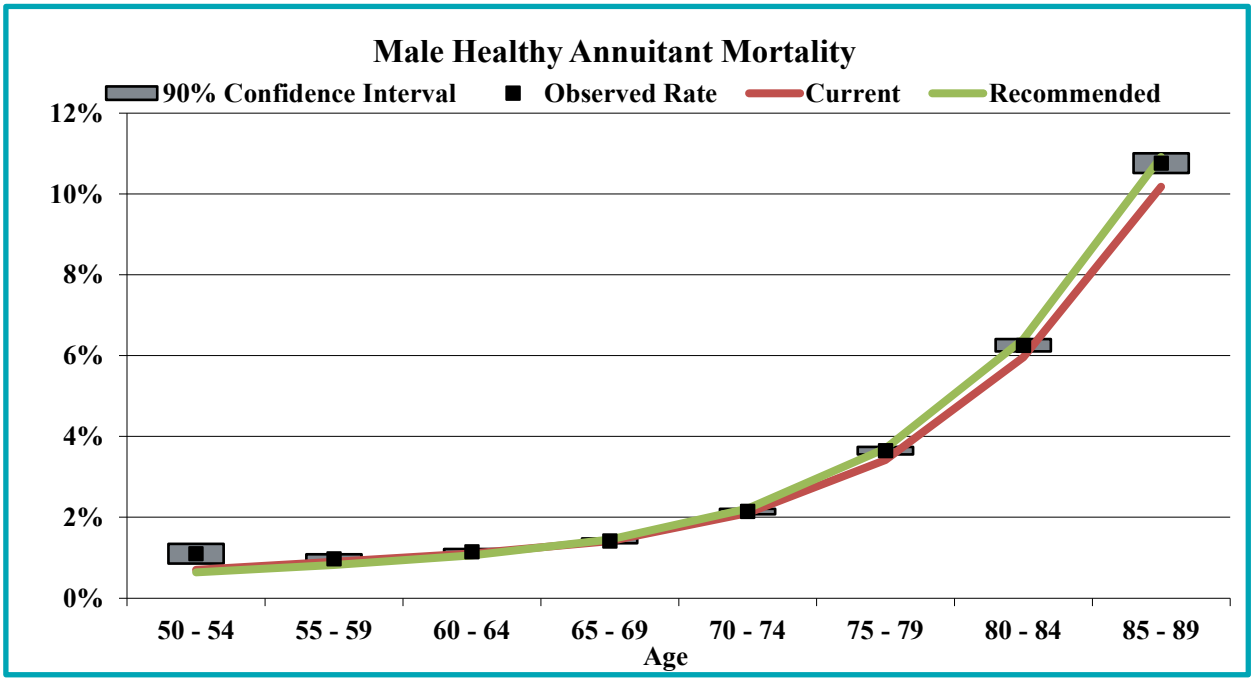
During the 10-year period, there were 5,787 deaths in active service. Of these deaths, only seven deaths were accidental. Therefore, we recommend assuming that all pre-retirement deaths are ordinary deaths.

SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Table III-M3 – Healthy Annuitant Males

Healthy Annuitant Mortality - Base Table for Males								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Recommended	Current	Recommended
50 - 54	5,139	54	134,157,558	1,474,678	941,819	853,406	157%	173%
55 - 59	25,271	263	920,208,356	8,982,659	8,294,249	7,505,073	108%	120%
60 - 64	66,260	853	2,308,224,093	26,525,741	25,466,437	24,417,217	104%	109%
65 - 69	117,112	1,889	3,665,423,409	51,912,522	51,587,766	52,973,031	101%	98%
70 - 74	128,585	3,070	3,550,144,864	76,023,027	74,751,504	78,397,534	102%	97%
75 - 79	100,852	3,928	2,338,825,961	85,326,443	79,957,587	86,507,944	107%	99%
80 - 84	69,746	4,652	1,358,526,425	84,988,282	80,913,834	86,986,119	105%	98%
85 - 89	44,514	5,063	775,139,665	83,417,658	78,889,365	84,639,711	106%	99%
90 - 94	20,872	3,880	339,287,367	60,537,924	53,671,942	59,561,047	113%	102%
95 +	5,970	1,638	82,873,224	23,895,367	18,481,161	21,121,550	129%	113%
Total	**584,321**	**25,290**	**15,472,810,922**	**503,084,301**	**472,955,663**	**502,962,632**	**106%**	**100%**
R-Squared					**0.988**	**0.991**		

Chart III-M3

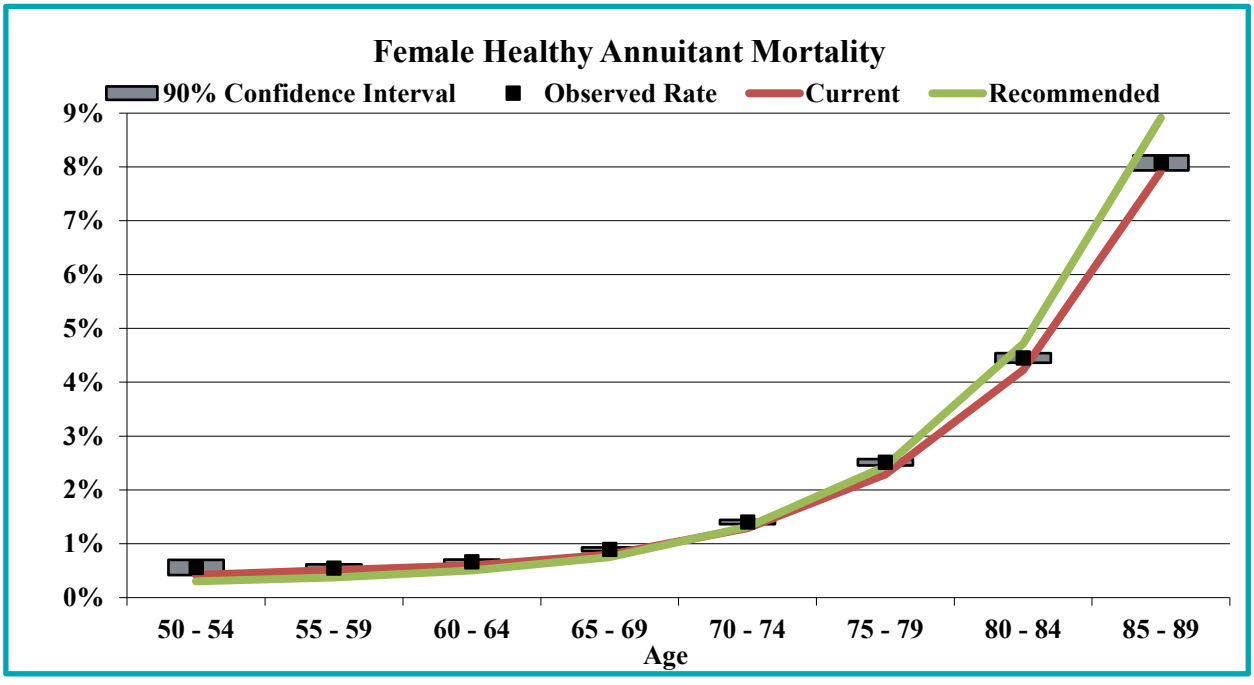


SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Table III-M4 – Healthy Annuitant Females

Healthy Annuitant Mortality - Base Table for Females								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Recommended	Current	Recommended
50 - 54	7,402	42	171,192,655	956,917	719,242	517,007	133%	185%
55 - 59	32,636	210	1,066,907,100	5,838,769	5,397,794	3,990,929	108%	146%
60 - 64	101,675	713	2,744,005,494	18,190,516	16,393,687	13,825,481	111%	132%
65 - 69	193,726	1,806	4,396,807,213	39,313,142	34,931,018	33,034,290	113%	119%
70 - 74	220,160	3,218	4,368,619,087	61,321,464	56,367,646	57,190,576	109%	107%
75 - 79	184,508	4,771	3,189,751,799	80,166,210	72,850,566	77,816,044	110%	103%
80 - 84	140,277	6,425	2,072,172,775	92,215,558	87,576,480	97,807,770	105%	94%
85 - 89	101,809	8,367	1,282,486,186	103,537,120	101,575,163	114,295,898	102%	91%
90 - 94	58,309	8,405	631,104,480	90,296,697	86,421,473	95,510,873	104%	95%
95 +	20,752	4,876	194,525,499	45,349,882	40,314,645	43,241,594	112%	105%
Total	**1,061,254**	**38,833**	**20,117,572,288**	**537,186,275**	**502,547,715**	**537,230,462**	**107%**	**100%**
R-Squared					**0.993**	**0.986**		

Chart III-M4

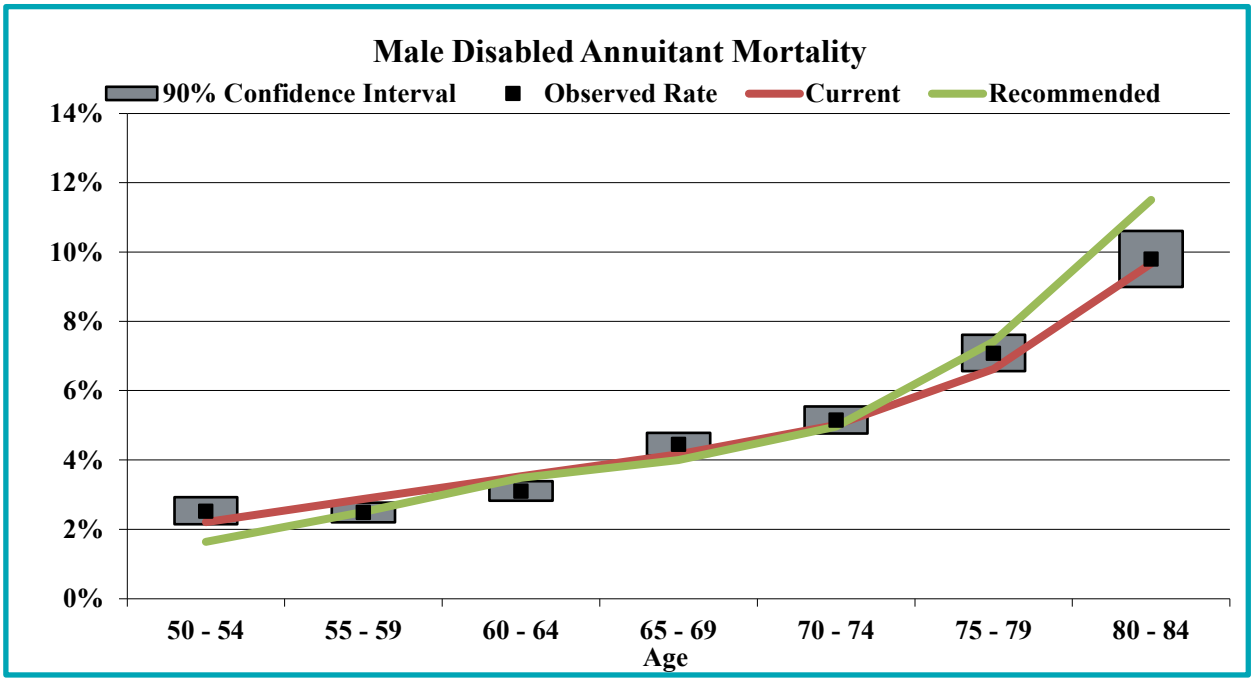


SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Table III-M5 – Disabled Annuitant Males

Disabled Annuitant Mortality - Base Table for Males								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Recommended	Current	Recommended
< 50	2,570	46	58,567,209	1,125,897	875,291	590,776	129%	191%
50 - 54	4,483	116	103,433,625	2,608,226	2,283,687	1,691,128	114%	154%
55 - 59	7,858	218	177,025,837	4,400,971	5,098,086	4,416,657	86%	100%
60 - 64	10,245	339	223,719,314	6,933,878	7,893,430	7,793,296	88%	89%
65 - 69	10,515	490	220,809,317	9,825,173	9,191,746	8,830,917	107%	111%
70 - 74	8,894	481	176,841,020	9,111,453	8,848,096	8,766,175	103%	104%
75 - 79	6,386	480	119,478,005	8,460,621	7,915,566	8,857,384	107%	96%
80 - 84	3,649	370	64,262,984	6,295,546	6,213,292	7,390,981	101%	85%
85 - 89	1,432	261	23,419,390	4,183,770	3,352,219	4,175,649	125%	100%
90 - 94	342	79	5,208,222	1,071,568	1,143,402	1,526,152	94%	70%
95 +	54	22	836,955	371,809	249,133	342,100	149%	109%
Total	**56,428**	**2,902**	**1,173,601,878**	**54,388,912**	**53,063,947**	**54,381,215**	**102%**	**100%**
R-Squared					**0.966**	**0.958**		

Chart III-M5

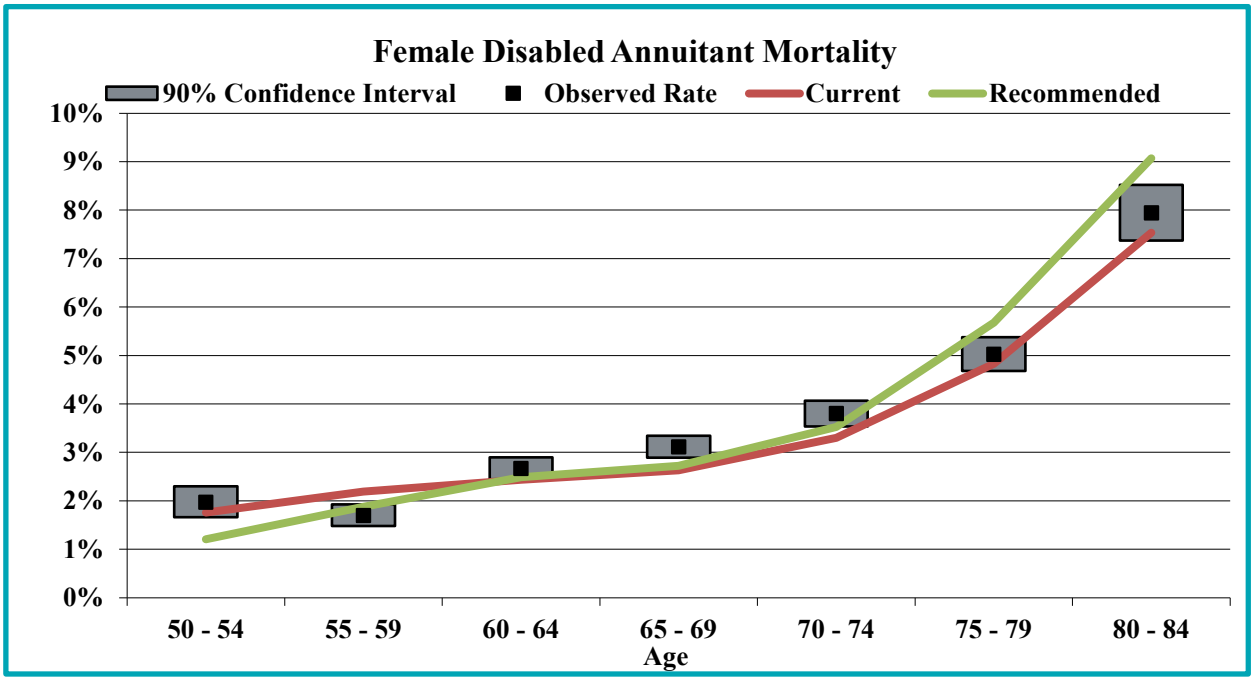


SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Table III-M6 – Disabled Annuitant Females

Disabled Annuitant Mortality - Base Table for Females								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Recommended	Current	Recommended
< 50	3,030	45	65,356,636	919,618	783,208	468,087	117%	196%
50 - 54	5,046	103	105,333,601	2,079,264	1,855,376	1,271,657	112%	164%
55 - 59	9,406	173	186,289,443	3,162,715	4,083,590	3,499,739	77%	90%
60 - 64	13,770	384	260,313,210	6,948,300	6,333,589	6,480,022	110%	107%
65 - 69	15,606	495	288,276,583	8,977,699	7,588,884	7,844,029	118%	114%
70 - 74	14,122	564	248,865,174	9,455,525	8,217,872	8,767,244	115%	108%
75 - 79	10,661	556	178,364,640	8,962,365	8,610,877	10,121,925	104%	89%
80 - 84	6,093	499	95,581,385	7,591,884	7,197,767	8,665,803	105%	88%
85 - 89	2,524	295	35,744,190	4,046,752	4,209,203	4,934,816	96%	82%
90 - 94	776	147	9,548,367	1,799,549	1,603,169	1,944,788	112%	93%
95 +	139	42	1,345,422	434,572	318,725	399,173	136%	109%
Total	**81,173**	**3,303**	**1,475,018,651**	**54,378,243**	**50,802,259**	**54,397,283**	**107%**	**100%**
R-Squared					**0.964**	**0.949**		

Chart III-M6



SECTION III – DEMOGRAPHIC ASSUMPTIONS

FAMILY COMPOSITION

In the event of a member death, pension benefits may extend to a surviving spouse. Spousal demographic information is important in determining the value of their potential future benefit. However, marital information is not always readily available. In the case of an unmarried active member, they could marry before commencing benefits. Even married retirees are sometimes reported without a beneficiary date of birth. With this uncertainty, we make assumptions regarding the frequency with which participants are married at the time of benefit commencement as well as the age difference between the retirees and their spouses.

We currently assume the following:

- For members not currently receiving a benefit, 50% of members are assumed married to spouses of the opposite sex.
- Males are assumed to be two years older than females.

Based on healthy and disabled retirees that have commenced benefits between July 1, 2021 and June 30, 2024, approximately 48.1% are married with males being older than females by an average of 2.1 years. For purposes of determining the percentage married, we assumed that all retirees reported with a beneficiary date of birth are married.

As a result, we recommend continuing the current assumptions.

SECTION IV – ECONOMIC ASSUMPTIONS

The economic assumptions used in actuarial valuations are intended to be long-term in nature and should be both individually reasonable and consistent with each other. The specific assumptions analyzed in this report are:

- **Price inflation** – used to project increases in the 401(a)(17) pay limit and to determine Local employer Early Retirement Incentive Program (ERI) payments for those Local employers who elected to amortize their ERI liability as a level percent of payroll. This assumption is also used indirectly as an underlying component of other economic assumptions.
- **Wage inflation** – broad-based wage growth which is used to project the Social Security Wage Base.
- **Salary increase rate** – used to project increases in pay for active members in determining liabilities and costs of the System.

We have not studied the investment rate of return assumption since that assumption is set by the NJ State Treasurer.

To develop recommendations for each of these assumptions, we considered historical data, both nationally and for the System, expectations for the future, and assumptions used by other public sector plans.

PRICE INFLATION

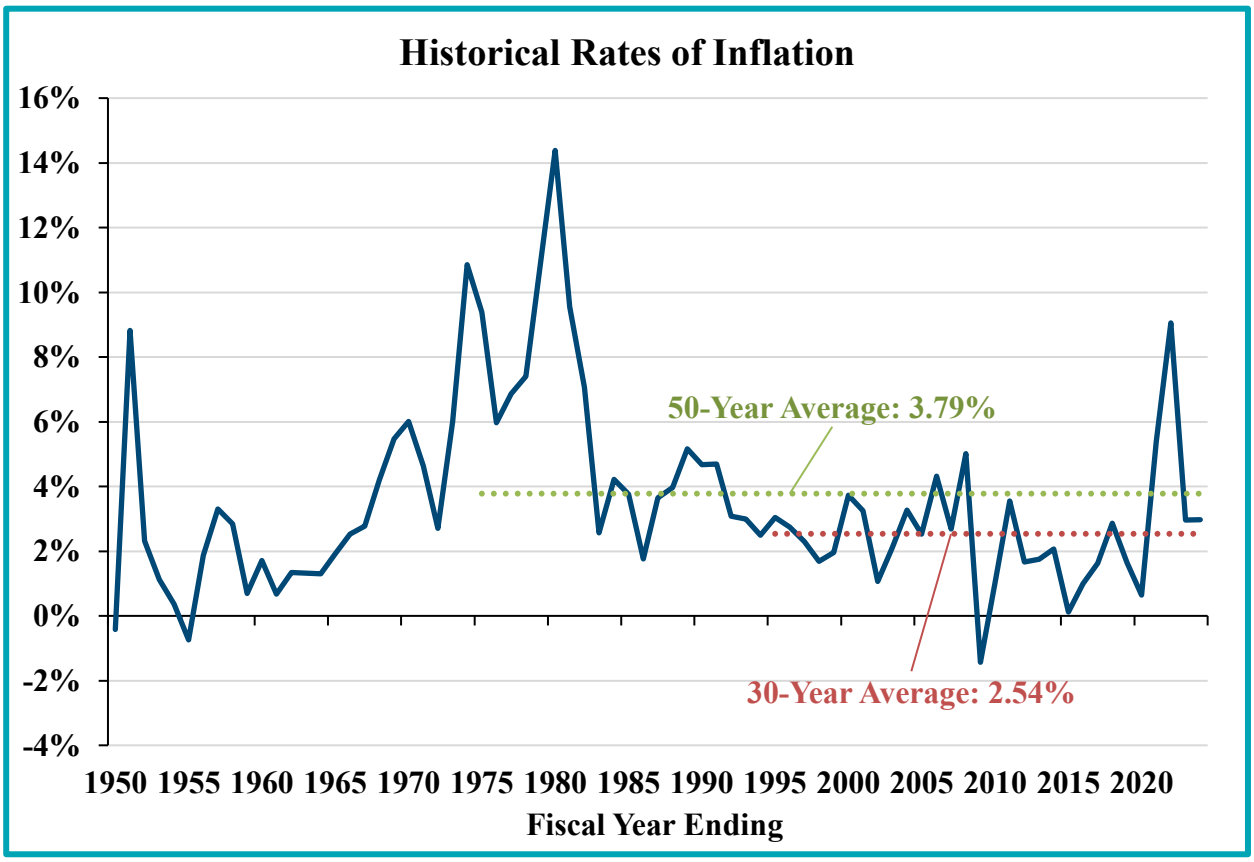
Long-term price inflation rates are the foundation of other economic assumptions. In a growing economy, wages and investments are expected to grow at the underlying inflation rate plus an additional real growth rate, whether it reflects productivity in terms of wages, or risk premiums in terms of investments.

SECTION IV – ECONOMIC ASSUMPTIONS

Historical Data

Chart IV-1 below shows inflation based on CPI-U for the U.S. by individual year from 1950 through 2024.

Chart IV-1



Data Source: US Bureau of Labor Statistics

Over the 50 years ending June 2024, the geometric average inflation rate for the U.S. has been about 3.8%, but this average is heavily influenced by the high inflation rates in the 1970s and early 1980s. Over the last 30 years, the geometric average inflation rate has been about 2.5%, and it has been 2.8% over the last 10 years.

Recently, inflation broke from the long-term trend with annual rates of 5.4% and 9.1% for the years ending June 2021 and 2022, respectively. This spike was followed by annual rates of 3.0% in both June 2023 and 2024.

Short-term deviations bear monitoring but do not require an immediate revision to expectations. Economic assumptions frequently deviate significantly from expectations. Often those deviations are followed by offsetting deviations in the opposite direction. The assumptions used in actuarial valuations are long-term in nature and are not necessarily driven by the most recent events.

SECTION IV – ECONOMIC ASSUMPTIONS

Future Expectations

A measure of the market consensus of expected future inflation rates is the difference in yields between conventional Treasury securities and Treasury inflation-protected securities (TIPS) at the same maturity. Table IV-1 shows the yields on both types of securities and the break-even inflation rate as of May 2025. Break-even inflation is the level of inflation needed for an investment in TIPS to "break even" with an investment in conventional treasury securities of the same maturity.

Table IV-1

Break-Even Inflation Based on Treasury Yields

Time to Maturity	Conventional Yield	TIPS Yield	Break Even Inflation
5 Years	4.02%	1.64%	**2.38%**
10 Years	4.42%	2.11%	**2.31%**
20 Years	4.92%	2.46%	**2.46%**

Data Source: Federal Reserve, Constant Maturity Yields, Monthly Series

The Federal Reserve Bank of Philadelphia publishes a quarterly survey of professional economic forecasters that includes their forecasts of inflation over the next 10 years. The survey for the second quarter of 2025 shows a median inflation (CPI) forecast of 2.35%, a minimum forecast of about 2.20%, and a maximum forecast of 2.80%.

Additionally, we consider the Federal Reserve's statutory mandate of stable prices. Inflation does not occur in a vacuum. The Federal Reserve actively conducts monetary policy to bring inflation in line with a target. While the effectiveness of monetary policy may vary, the Fed's inflation target is an important reference point when setting an inflation assumption.

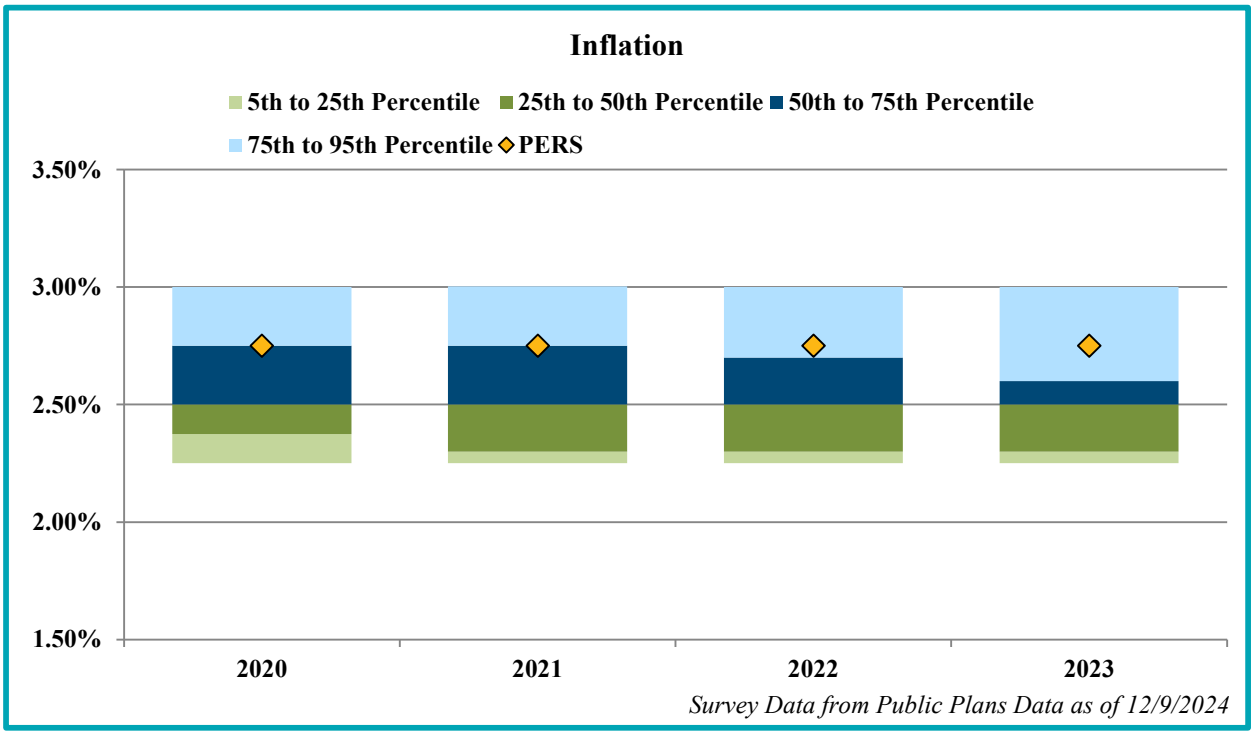
The Fed interprets stable prices as 2.0% annual inflation on a personal consumption expenditure (PCE) basis, which may differ from the CPI-based inflation used in setting the inflation assumption for PERS. Since 2000, the annual change in CPI-U has been higher than the annual change in PCE by about 40 basis points, on average[1]. Therefore, an inflation assumption somewhat above 2.0% may be consistent with the Fed's inflation target.

[1] Based on PCE data from US Bureau of Economic Analysis, retrieved from FRED, Federal Reserve Bank of St. Louis.

SECTION IV – ECONOMIC ASSUMPTIONS

Finally, Chart IV-2 below shows the distribution from the 5th to 95th percentile of inflation assumptions in the Public Plans Data[2], a database of information on large public sector retirement systems in the United States.

Chart IV-2



For 2020 through 2023, the median inflation assumption from this data was 2.50%. There has been a minor trend toward lowering the assumption, as evidenced by the decrease in the quartiles.

Recommendation

Based on these considerations, we believe a reasonable range for the long-term price inflation assumption is 2.00% to 3.00%. Recent inflation rates have been near the top end of this range, while future expectations generally point toward the midpoint. We recommend maintaining the current assumption of 2.75% since it remains within the reasonable range.

WAGE INFLATION

Wage inflation can be thought of as the annual across-the-board increase in wages. Individuals often receive salary increases in excess of the wage inflation rate, and we study these increases as a part of the merit salary scale assumption. Wage inflation generally exceeds price inflation by some margin reflecting the history of increased purchasing power.

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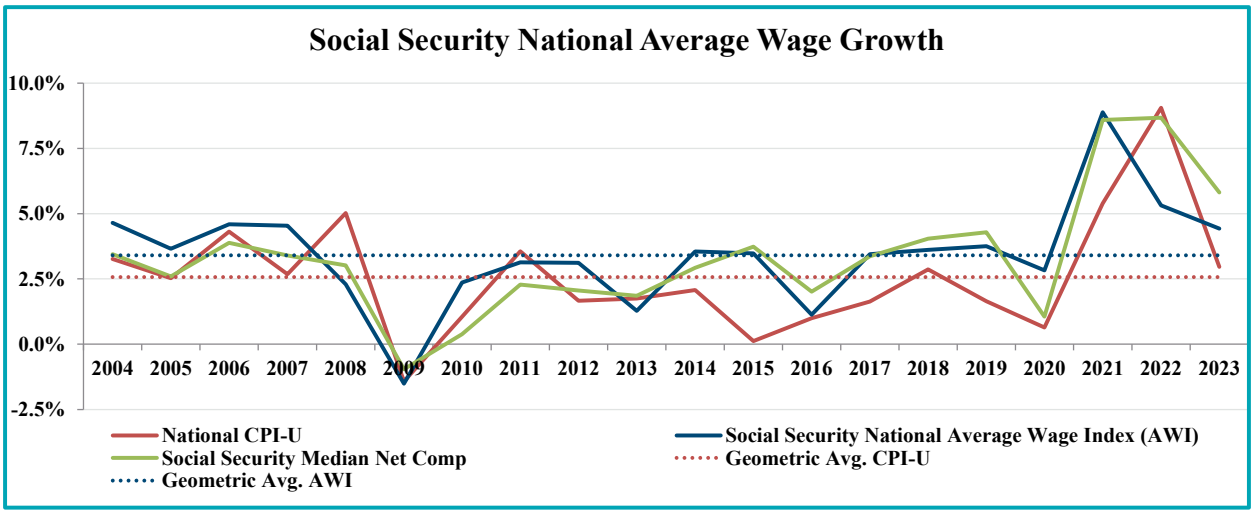
[2] www.publicplansdata.org. 2001-2023. Center for Retirement Research at Boston College, Mission Square Research Institute, National Association of State Retirement Administrators, and the Government Finance Officers Association.

SECTION IV – ECONOMIC ASSUMPTIONS

Wage inflation is used in the actuarial valuation to project the Social Security Wage Base in determining the actuarial liability.

Chart IV-3 shows the increase in national average wages (on a calendar basis, as reported by the Social Security Administration) compared to inflation (on a June to June basis) from 2004 through 2023. National average wage data for 2024 is not yet available.

Chart IV-3



Over this period, national wage inflation averaged approximately 3.4% compared to annual price inflation of 2.6%, making real wage increases about 0.8% above inflation. Over the same time period, the increase in the median real wage was about 0.7% per year.

It is acceptable to assume some additional level of base payroll increase beyond general inflation. Potential reasons contributing to the increase may include productivity increases, the presence of strong union representation in the collective bargaining process, competition in hiring among other similar employers, and regional factors such as the local inflation index exceeding the national average. Also, the Social Security Administration projects real wage growth of 0.5% to 1.7% going forward in their Social Security solvency projections included in the 2025 annual Trustees Report.

We recommend maintaining a small non-inflationary base payroll growth assumption of 0.5% annually. As a result, after factoring in inflation, the annual expected wage base increase assumption remains at 3.25%.

SALARY INCREASE RATE

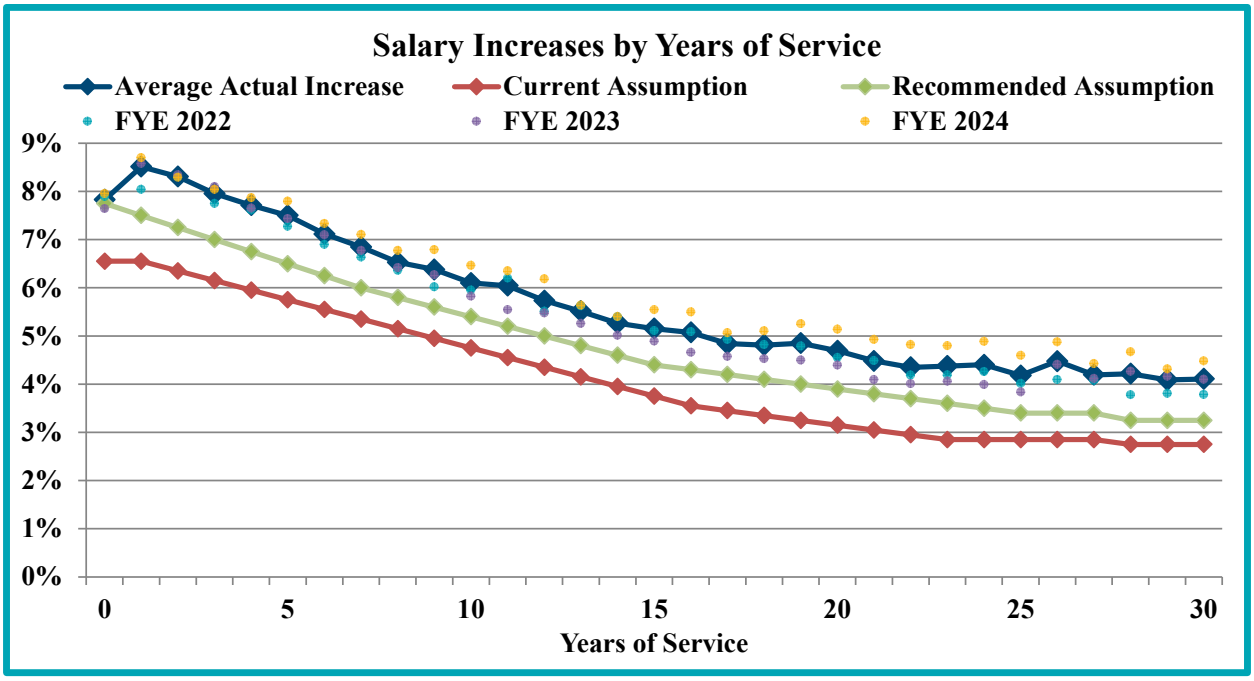
The salary increase rate represents the year over year increase in pay of continuing actives. Salary increases consist of three components: increases due to cost-of-living maintenance (inflation), increases related to non-inflationary pressures on base pay (such as productivity increases), and increases in individual pay due to merit, promotion, and longevity.

The current assumption varies by years of service. Salary increases are assumed to occur on July 1.

SECTION IV – ECONOMIC ASSUMPTIONS

Chart IV-4 shows the salary increases based on years of service for continuing active members for FYE 2022 through FYE 2024 as well as the current and recommended assumptions.

Chart IV-4



Salary increases have been greater than expected each year. Salaries for continuing actives, on average, increased 5.6%, 5.6%, and 6.2% in FYE 2022, FYE 2023, and FYE 2024, respectively.

Experience continues to show a consistent relationship between salary increases and years of service. We recommend increasing the rates for all years of service, with generally larger increases for lower years of service.

We have not fully adjusted the recommended assumptions to the average because recent salary increases may be related to recent high inflation. The high level of salary increases may not continue if future inflation is consistent with the inflation assumption of 2.75%. The recommended assumption is consistent with the current union contract information for PERS that has been provided to us.

APPENDIX A – SUMMARY OF RECOMMENDED ASSUMPTIONS

1. Salary Increases

Salaries are assumed to increase annually as follows:

Years of Service	Rates
0	7.75%
1	7.50
2	7.25
3	7.00
4	6.75
5	6.50
6	6.25
7	6.00
8	5.80
9	5.60
10	5.40
11	5.20
12	5.00
13	4.80
14	4.60
15	4.40
16	4.30
17	4.20
18	4.10
19	4.00
20	3.90
21	3.80
22	3.70
23	3.60
24	3.50
25-27	3.40
28+	3.25

Salary increases are assumed to occur on July 1.

2. 401(a)(17) Pay Limit

$345,000 in 2024, increasing 2.75% per annum, compounded annually.

3. Social Security Wage Base

$168,600 in 2024, increasing 3.25% per annum, compounded annually.

APPENDIX A – SUMMARY OF RECOMMENDED ASSUMPTIONS

4. Termination

Termination rates are shown separately for members electing a refund of contributions and members electing a deferred annuity.

Termination rates for members electing a refund of contributions are as follows:

Termination Rates for Members Electing a Refund

	State		Local Employers'	
Service	Less than 31 Years Old	31 Years or Older	Less than 31 Years Old	31 Years or Older
0	22.00%	12.00%	19.50%	12.00%
1	22.00	12.00	19.50	12.00
2	12.00	8.50	16.50	9.00
3	10.00	7.00	14.00	8.00
4	9.50	6.00	12.50	7.00
5	8.50	5.50	10.50	6.50
6	7.00	5.00	9.00	6.00
7	7.00	4.50	8.00	5.00
8	7.00	4.00	8.00	4.50
9	7.00	3.50	6.50	4.00
10	1.70	1.70	1.80	1.80
11	1.50	1.50	1.70	1.70
12	1.30	1.30	1.50	1.50
13	1.30	1.30	1.30	1.30
14	0.90	0.90	1.20	1.20
15	0.80	0.80	1.10	1.10
16	0.80	0.80	1.00	1.00
17	0.70	0.70	0.90	0.90
18	0.60	0.60	0.80	0.80
19	0.50	0.50	0.70	0.70
20	0.50	0.50	0.60	0.60
21	0.50	0.50	0.50	0.50
22	0.30	0.30	0.50	0.50
23	0.30	0.30	0.40	0.40
24-29	0.30	0.30	0.30	0.30

No termination is assumed after attainment of retirement eligibility.

APPENDIX A – SUMMARY OF RECOMMENDED ASSUMPTIONS

Termination rates for members electing a deferred annuity are as follows:

Termination Rates for Members Electing a Deferred Annuity

Service	State	Local Employers
< 10	N/A	N/A
10	1.70%	1.90%
11	1.70	1.90
12	1.50	1.80
13	1.30	1.70
14	1.10	1.50
15	1.00	1.40
16	0.90	1.30
17	0.80	1.20
18	0.80	1.10
19	0.80	1.00
20	0.80	1.00
21	0.70	0.90
22	0.50	0.80
23	0.40	0.80
24+	0.40	0.70

No termination is assumed after attainment of retirement eligibility.

5. Disability

Ordinary disability rates are as follows:

Ordinary Disability Rates					
Age	State	Local Employers'	Age	State	Local Employers'
25	0.100%	0.200%	50	0.335%	0.335%
26	0.110	0.200	51	0.350	0.350
27	0.120	0.200	52	0.365	0.365
28	0.130	0.200	53	0.380	0.380
29	0.140	0.200	54	0.395	0.395
30	0.150	0.205	55	0.700	0.550
31	0.160	0.210	56	0.700	0.550
32	0.170	0.215	57	0.700	0.550
33	0.180	0.220	58	0.700	0.550
34	0.190	0.225	59	0.700	0.550
35	0.205	0.225	60	0.700	0.550
36	0.220	0.225	61	0.700	0.550
37	0.220	0.225	62	0.700	0.550
38	0.220	0.225	63	0.700	0.550
39	0.220	0.225	64	0.700	0.550
40	0.230	0.235	65	0.700	0.550
41	0.240	0.245	66	0.700	0.550
42	0.250	0.255	67	0.700	0.550
43	0.260	0.265	68	0.700	0.550
44	0.270	0.275	69	0.700	0.550
45	0.280	0.275	70	0.700	0.550
46	0.290	0.275	71	0.700	0.550
47	0.300	0.290	72	0.700	0.550
48	0.310	0.305	73	0.700	0.550
49	0.320	0.320	74	0.700	0.550

Accidental disability rates are assumed to be 0.015% for all State members and 0.03% for all Local employers' members.

Ordinary disability rates apply upon attainment of 10 years of service until the attainment of age 55 with at least 25 years of service.

Members are assumed to receive the greater of the applicable disability benefit or the early or service retirement benefit, depending on eligibility.

Tier 4 and Tier 5 members are not eligible for the Ordinary or Accidental Disability benefits but the disability rates still apply. Such members terminating under the disability decrement are assumed to separate from service and elect a Deferred Retirement benefit.

APPENDIX A – SUMMARY OF RECOMMENDED ASSUMPTIONS

6. Mortality

Pre-Retirement Mortality (Non-Annuitants): The Pub-2016 General Below-Median Income Employee mortality table *[PubG-2016(B) Employee]* as published by the Society of Actuaries with an 86.3% adjustment for males and 97.6% adjustment for females, and with future improvement from the base year of 2016 on a generational basis using SOA's Scale MP-2021. All pre-retirement deaths are assumed to be ordinary deaths.

Healthy Retirees and Beneficiaries (Healthy Annuitants): The Pub-2016 General Below-Median Income Healthy Retiree mortality table *[PubG-2016(B) Healthy Retiree]* as published by the Society of Actuaries with a 93.3% adjustment for males and 99.5% adjustment for females, and with future improvement from the base year of 2016 on a generational basis using SOA's Scale MP-2021.

Disabled Retirees (Disabled Annuitants): The Pub-2016 Non-Safety Disabled Retiree mortality table *[PubNS-2016 Disabled Retiree]* as published by the Society of Actuaries with a 156.9% adjustment for males and 139.0% adjustment for females, and with future improvement from the base year of 2016 on a generational basis using SOA's Scale MP-2021.

APPENDIX A – SUMMARY OF RECOMMENDED ASSUMPTIONS

7. Retirement

Retirement rates for State Tier 1-4 members are as follows:

State Tiers 1-4 Retirement Rates			
Age	Years of Service	25 Years of Service	26 or More Years of Service
< 49	N/A	4.50%	2.00%
49	N/A	4.50	2.00
50	N/A	4.50	3.50
51	N/A	4.50	3.50
52	N/A	6.00	4.25
53	N/A	6.00	5.50
54	N/A	7.00	6.75
55	N/A	20.00	21.00
56	N/A	20.00	15.00
57	N/A	20.00	14.00
58	N/A	20.00	14.00
59	N/A	20.00	14.00
60	5.00	20.00	19.00
61	5.00	27.00	19.00
62	8.00	36.50	27.00
63	8.00	36.50	24.00
64	8.00	38.00	21.00
65	15.00	40.00	25.00
66	16.00	47.00	29.00
67	16.00	47.00	29.00
68	15.00	47.00	23.00
69	15.00	43.00	26.00
70	15.00	43.00	26.00
71	15.00	43.00	23.00
72	15.00	43.00	21.00
73	15.00	43.00	21.00
74	15.00	43.00	21.00
75	100.00	100.00	100.00

Rates apply upon retirement eligibility by tier.

APPENDIX A – SUMMARY OF RECOMMENDED ASSUMPTIONS

Retirement rates for Local employers' Tier 1-4 members are as follows:

Local Employers' Tiers 1-4 Retirement Rates			
Age	Years of Service	25 Years of Service	26 or More Years of Service
< 49	N/A	3.00%	2.25%
49	N/A	4.00	3.00
50	N/A	4.00	3.50
51	N/A	6.00	3.75
52	N/A	6.00	3.75
53	N/A	6.00	5.00
54	N/A	6.00	6.00
55	N/A	15.00	16.00
56	N/A	17.00	13.00
57	N/A	18.00	12.00
58	N/A	18.00	12.00
59	N/A	18.00	12.00
60	5.50	18.00	14.00
61	4.50	22.00	14.00
62	7.50	30.00	25.00
63	7.50	32.00	20.00
64	7.50	32.00	20.00
65	12.00	34.00	22.00
66	15.00	37.00	24.00
67	15.00	43.00	27.00
68	14.00	37.00	22.00
69	14.00	37.00	22.00
70	14.00	37.00	22.00
71	14.00	37.00	22.00
72	14.00	37.00	22.00
73	14.00	37.00	22.00
74	14.00	37.00	22.00
75	100.00	100.00	100.00

Rates apply upon eligibility by tier.

APPENDIX A – SUMMARY OF RECOMMENDED ASSUMPTIONS

Retirement rates for State Tier 5 members are as follows:

State Tier 5 Retirement Rates					
Age	Less Than 25 Years of Service	25 Years of Service	26 to 29 Years of Service	30 Years of Service	31 or More Years of Service
< 49	N/A	N/A	N/A	4.50%	2.00%
49	N/A	N/A	N/A	4.50	2.00
50	N/A	N/A	N/A	4.50	3.50
51	N/A	N/A	N/A	4.50	3.50
52	N/A	N/A	N/A	6.00	4.25
53	N/A	N/A	N/A	6.00	5.50
54	N/A	N/A	N/A	7.00	6.75
55	N/A	N/A	N/A	20.00	21.00
56	N/A	N/A	N/A	20.00	15.00
57	N/A	N/A	N/A	20.00	14.00
58	N/A	N/A	N/A	20.00	14.00
59	N/A	N/A	N/A	20.00	14.00
60	N/A	N/A	N/A	20.00	19.00
61	N/A	N/A	N/A	27.00	19.00
62	N/A	N/A	N/A	36.50	27.00
63	N/A	N/A	N/A	36.50	24.00
64	N/A	N/A	N/A	38.00	21.00
65	15.00	40.00	40.00	40.00	25.00
66	16.00	47.00	29.00	29.00	29.00
67	16.00	47.00	29.00	29.00	29.00
68	15.00	47.00	23.00	23.00	23.00
69	15.00	43.00	26.00	26.00	26.00
70	15.00	43.00	26.00	26.00	26.00
71	15.00	43.00	23.00	23.00	23.00
72	15.00	43.00	21.00	21.00	21.00
73	15.00	43.00	21.00	21.00	21.00
74	15.00	43.00	21.00	21.00	21.00
75	100.00	100.00	100.00	100.00	100.00

APPENDIX A – SUMMARY OF RECOMMENDED ASSUMPTIONS

Retirement rates for Local employers' Tier 5 members are as follows:

Local Employers' Tier 5 Retirement Rates

Age	Less Than 25 Years of Service	25 Years of Service	26 to 29 Years of Service	30 Years of Service	31 or More Years of Service
< 49	N/A	N/A	N/A	3.00%	2.25%
49	N/A	N/A	N/A	4.00	3.00
50	N/A	N/A	N/A	4.00	3.50
51	N/A	N/A	N/A	6.00	3.75
52	N/A	N/A	N/A	6.00	3.75
53	N/A	N/A	N/A	6.00	5.00
54	N/A	N/A	N/A	6.00	6.00
55	N/A	N/A	N/A	15.00	16.00
56	N/A	N/A	N/A	17.00	13.00
57	N/A	N/A	N/A	18.00	12.00
58	N/A	N/A	N/A	18.00	12.00
59	N/A	N/A	N/A	18.00	12.00
60	N/A	N/A	N/A	18.00	14.00
61	N/A	N/A	N/A	22.00	14.00
62	N/A	N/A	N/A	30.00	25.00
63	N/A	N/A	N/A	32.00	20.00
64	N/A	N/A	N/A	32.00	20.00
65	12.00	34.00	34.00	34.00	22.00
66	15.00	37.00	24.00	24.00	24.00
67	15.00	43.00	27.00	27.00	27.00
68	14.00	37.00	22.00	22.00	22.00
69	14.00	37.00	22.00	22.00	22.00
70	14.00	37.00	22.00	22.00	22.00
71	14.00	37.00	22.00	22.00	22.00
72	14.00	37.00	22.00	22.00	22.00
73	14.00	37.00	22.00	22.00	22.00
74	14.00	37.00	22.00	22.00	22.00
75	100.00	100.00	100.00	100.00	100.00

Retirement rates for members of Prosecutors Part (Chapter 366, P.L. 2001) are as follows:

- Members with less than 25 years of service: 4.0% for all ages,
- Members with 25 years of service: 45.0% for all ages,
- Members with 26 or more years of service: 20.0% for all ages.

Rates apply upon retirement eligibility. 100% retirement is assumed at age 70.

APPENDIX A – SUMMARY OF RECOMMENDED ASSUMPTIONS

Retirement rates for members of WCJ Part (Chapter 140, P.L. 2021) are as follows:

Age	Less than 15 Years of WCJ Part Service	15-19 Years of WCJ Part Service	20 or more Years of WCJ Part Service
<60	0.0%	0.0%	0.0%
60	2.0	2.0	20.0
61	2.0	2.0	20.0
62	2.0	2.0	20.0
63	2.0	2.0	20.0
64	2.0	2.0	20.0
65	5.0	40.0	30.0
66	2.0	40.0	20.0
67	2.0	40.0	20.0
68	2.0	40.0	20.0
69	2.0	40.0	20.0
70	100.0	100.0	100.0

8. Family Composition Assumptions

For members not currently in receipt, 50% of members are assumed married to spouses of the opposite sex. Males are assumed to be two years older than females.

For purposes of the optional form of payment death benefit for members currently in receipt, beneficiary status is based on the beneficiary allowance reported. If no beneficiary date of birth is provided, the beneficiary is assumed to be the member's spouse of the opposite sex with males assumed to be two years older than females.

No additional dependent children or parents are assumed.

9. Form of Payment

Current active members are assumed to elect the Maximum Option.

APPENDIX B – SUMMARY OF CURRENT ASSUMPTIONS

The following are the assumptions used in the actuarial valuation as of July 1, 2024. The demographic and economic assumptions (other than the investment rate of return) for that valuation were determined in the Actuarial Experience Study covering the period July 1, 2018 – June 30, 2021 and approved by the Board of Trustees on November 16, 2022.

1. Salary Increases

Salaries are assumed to increase annually as follows:

Years of Service	Rates
0	6.55%
1	6.55
2	6.35
3	6.15
4	5.95
5	5.75
6	5.55
7	5.35
8	5.15
9	4.95
10	4.75
11	4.55
12	4.35
13	4.15
14	3.95
15	3.75
16	3.55
17	3.45
18	3.35
19	3.25
20	3.15
21	3.05
22	2.95
23-27	2.85
28+	2.75

Salary increases are assumed to occur on July 1.

2. 401(a)(17) Pay Limit

$345,000 in 2024, increasing 2.75% per annum, compounded annually.

3. Social Security Wage Base

$168,600 in 2024, increasing 3.25% per annum, compounded annually.

APPENDIX B – SUMMARY OF CURRENT ASSUMPTIONS

4. Termination

Termination rates are shown separately for members electing a refund of contributions and members electing a deferred annuity.

Termination rates for members electing a refund of contributions are as follows:

Termination Rates for Members Electing a Refund

	State		Local Employers'	
Service	Less than 31 Years Old	31 Years or Older	Less than 31 Years Old	31 Years or Older
0	21.00%	11.00%	19.00%	11.50%
1	21.00	11.00	19.00	11.50
2	11.50	7.50	15.50	8.50
3	9.50	6.50	14.00	7.50
4	9.00	5.50	11.50	6.50
5	8.00	5.50	10.50	6.00
6	7.00	5.00	8.50	5.50
7	7.00	4.50	8.00	5.00
8	7.00	4.00	7.50	4.50
9	7.00	3.50	6.50	4.00
10	1.70	1.70	1.70	1.70
11	1.50	1.50	1.50	1.50
12	1.10	1.10	1.40	1.40
13	1.10	1.10	1.20	1.20
14	0.70	0.70	1.10	1.10
15	0.60	0.60	0.90	0.90
16	0.60	0.60	0.80	0.80
17	0.60	0.60	0.70	0.70
18	0.50	0.50	0.60	0.60
19	0.50	0.50	0.60	0.60
20	0.50	0.50	0.50	0.50
21	0.50	0.50	0.50	0.50
22	0.40	0.40	0.50	0.50
23	0.40	0.40	0.40	0.40
24-29	0.30	0.30	0.30	0.30

No termination is assumed after attainment of retirement eligibility.

APPENDIX B – SUMMARY OF CURRENT ASSUMPTIONS

Termination rates for members electing a deferred annuity are as follows:

Termination Rates for Members Electing a Deferred Annuity

Service	State	Local Employers
< 10	N/A	N/A
10	1.60%	1.80%
11	1.60	1.80
12	1.20	1.70
13	1.20	1.60
14	1.00	1.50
15	0.90	1.40
16	0.90	1.30
17	0.80	1.20
18	0.80	1.10
19	0.80	1.00
20	0.80	1.00
21	0.70	0.90
22	0.50	0.80
23	0.50	0.80
24	0.40	0.70

No termination is assumed after attainment of retirement eligibility.

APPENDIX B – SUMMARY OF CURRENT ASSUMPTIONS

5. Disability

Ordinary disability rates are as follows:

Ordinary Disability Rates					
Age	State	Local Employers	Age	State	Local Employers
25	0.100%	0.200%	50	0.335%	0.335%
26	0.110	0.200	51	0.350	0.350
27	0.120	0.200	52	0.365	0.365
28	0.130	0.200	53	0.380	0.380
29	0.140	0.200	54	0.395	0.395
30	0.150	0.205	55	0.410	0.405
31	0.160	0.210	56	0.425	0.415
32	0.170	0.215	57	0.440	0.425
33	0.180	0.220	58	0.455	0.435
34	0.190	0.225	59	0.470	0.445
35	0.205	0.225	60	0.485	0.455
36	0.220	0.225	61	0.500	0.465
37	0.220	0.225	62	0.515	0.475
38	0.220	0.225	63	0.530	0.485
39	0.220	0.225	64	0.545	0.495
40	0.230	0.235	65	0.560	0.505
41	0.240	0.245	66	0.575	0.515
42	0.250	0.255	67	0.590	0.525
43	0.260	0.265	68	0.605	0.535
44	0.270	0.275	69	0.620	0.545
45	0.280	0.275	70	0.630	0.560
46	0.290	0.275	71	0.640	0.575
47	0.300	0.290	72	0.650	0.590
48	0.310	0.305	73	0.660	0.605
49	0.320	0.320	74	0.670	0.620

Accidental disability rates are assumed to be 0.02% for all State members and 0.03% for all Local employers' members.

Ordinary disability rates apply upon attainment of 10 years of service and continue through the ultimate retirement age.

Members are assumed to receive the greater of the applicable disability benefit or the early or service retirement benefit, depending on eligibility.

Tier 4 and Tier 5 members are not eligible for the Ordinary or Accidental Disability benefits but the disability rates still apply. Such members terminating under the disability decrement are assumed to separate from service and elect a Deferred Retirement benefit.

APPENDIX B – SUMMARY OF CURRENT ASSUMPTIONS

6. Mortality

Pre-Retirement Mortality (Non-Annuitants): The Pub-2010 General Below-Median Income Employee mortality table *[PubG-2010(B) Employee]* as published by the Society of Actuaries with an 82.2% adjustment for males and 101.4% adjustment for females, and with future improvement from the base year of 2010 on a generational basis using SOA's Scale MP-2021. All pre-retirement deaths are assumed to be ordinary deaths.

Healthy Retirees and Beneficiaries (Healthy Annuitants): The Pub-2010 General Below-Median Income Healthy Retiree mortality table *[PubG-2010(B) Healthy Retiree]* as published by the Society of Actuaries with a 91.4% adjustment for males and 99.7% adjustment for females, and with future improvement from the base year of 2010 on a generational basis using SOA's Scale MP-2021.

Disabled Retirees (Disabled Annuitants): The Pub-2010 Non-Safety Disabled Retiree mortality table *[PubNS-2010 Disabled Retiree]* as published by the Society of Actuaries with a 127.7% adjustment for males and 117.2% adjustment for females, and with future improvement from the base year of 2010 on a generational basis using SOA's Scale MP-2021.

APPENDIX B – SUMMARY OF CURRENT ASSUMPTIONS

7. Retirement Retirement rates for State Tier 1-4 members are as follows:

State Tiers 1-4 Retirement Rates			
Age	Less Than 25 Years of Service	25 Years of Service	26 or More Years of Service
< 49	N/A	3.50%	2.00%
49	N/A	3.50	2.00
50	N/A	3.50	3.50
51	N/A	3.50	3.50
52	N/A	6.00	4.25
53	N/A	6.00	5.50
54	N/A	7.00	6.75
55	N/A	17.50	18.00
56	N/A	17.50	15.00
57	N/A	17.50	14.00
58	N/A	20.00	14.00
59	N/A	20.00	14.00
60	5.00	20.00	17.00
61	5.00	30.00	17.00
62	8.00	36.50	27.00
63	8.00	36.50	24.00
64	8.00	36.50	21.00
65	12.00	44.00	25.00
66	17.00	55.00	30.00
67	16.00	50.00	26.00
68	15.00	47.00	23.00
69	15.00	47.00	23.00
70	15.00	47.00	26.00
71	15.00	47.00	23.00
72	15.00	47.00	21.00
73	15.00	47.00	21.00
74	15.00	47.00	21.00
75	100.00	100.00	100.00

Rates apply upon retirement eligibility by tier.

APPENDIX B – SUMMARY OF CURRENT ASSUMPTIONS

Retirement rates for Local employers' Tier 1-4 members are as follows:

Local Employers' Tiers 1-4 Retirement Rates			
Age	Less Than 25 Years of Service	25 Years of Service	26 or More Years of Service
< 49	N/A	3.00%	2.25%
49	N/A	3.00	3.00
50	N/A	3.50	3.50
51	N/A	4.25	3.75
52	N/A	4.75	3.75
53	N/A	7.00	5.00
54	N/A	7.00	6.00
55	N/A	15.00	15.00
56	N/A	17.00	13.00
57	N/A	18.00	12.00
58	N/A	18.00	12.00
59	N/A	18.00	12.00
60	4.50	18.00	14.00
61	4.50	18.00	14.00
62	7.50	34.00	25.00
63	7.50	34.00	22.00
64	7.50	34.00	20.00
65	11.00	35.00	20.00
66	15.00	43.00	26.00
67	14.00	40.00	26.00
68	13.00	40.00	22.00
69	13.00	37.00	22.00
70	13.00	37.00	24.00
71	13.00	37.00	24.00
72	13.00	37.00	20.00
73	13.00	37.00	20.00
74	13.00	37.00	20.00
75	100.00	100.00	100.00

Rates apply upon retirement eligibility by tier.

APPENDIX B – SUMMARY OF CURRENT ASSUMPTIONS

Retirement rates for State Tier 5 members are as follows:

State Tier 5 Retirement Rates					
Age	Less Than 25 Years of Service	25 Years of Service	26 to 29 Years of Service	30 Years of Service	31 or More Years of Service
< 49	N/A	N/A	N/A	3.50%	2.00%
49	N/A	N/A	N/A	3.50	2.00
50	N/A	N/A	N/A	3.50	3.50
51	N/A	N/A	N/A	3.50	3.50
52	N/A	N/A	N/A	6.00	4.25
53	N/A	N/A	N/A	6.00	5.50
54	N/A	N/A	N/A	7.00	6.75
55	N/A	N/A	N/A	17.50	18.00
56	N/A	N/A	N/A	17.50	15.00
57	N/A	N/A	N/A	17.50	14.00
58	N/A	N/A	N/A	20.00	14.00
59	N/A	N/A	N/A	20.00	14.00
60	N/A	N/A	N/A	20.00	17.00
61	N/A	N/A	N/A	30.00	17.00
62	N/A	N/A	N/A	36.50	27.00
63	N/A	N/A	N/A	36.50	24.00
64	N/A	N/A	N/A	36.50	21.00
65	12.00	44.00	44.00	44.00	25.00
66	17.00	55.00	30.00	30.00	30.00
67	16.00	50.00	26.00	26.00	26.00
68	15.00	47.00	23.00	23.00	23.00
69	15.00	47.00	23.00	23.00	23.00
70	15.00	47.00	26.00	26.00	26.00
71	15.00	47.00	23.00	23.00	23.00
72	15.00	47.00	21.00	21.00	21.00
73	15.00	47.00	21.00	21.00	21.00
74	15.00	47.00	21.00	21.00	21.00
75	100.00	100.00	100.00	100.00	100.00

APPENDIX B – SUMMARY OF CURRENT ASSUMPTIONS

Retirement rates for Local employers' Tier 5 members are as follows:

Local Employers' Tier 5 Retirement Rates					
Age	Less Than 25 Years of Service	25 Years of Service	26 to 29 Years of Service	30 Years of Service	31 or More Years of Service
< 49	N/A	N/A	N/A	3.00%	2.25%
49	N/A	N/A	N/A	3.00	3.00
50	N/A	N/A	N/A	3.50	3.50
51	N/A	N/A	N/A	4.25	3.75
52	N/A	N/A	N/A	4.75	3.75
53	N/A	N/A	N/A	7.00	5.00
54	N/A	N/A	N/A	7.00	6.00
55	N/A	N/A	N/A	15.00	15.00
56	N/A	N/A	N/A	17.00	13.00
57	N/A	N/A	N/A	18.00	12.00
58	N/A	N/A	N/A	18.00	12.00
59	N/A	N/A	N/A	18.00	12.00
60	N/A	N/A	N/A	18.00	14.00
61	N/A	N/A	N/A	18.00	14.00
62	N/A	N/A	N/A	34.00	25.00
63	N/A	N/A	N/A	34.00	22.00
64	N/A	N/A	N/A	34.00	20.00
65	11.00	35.00	35.00	35.00	20.00
66	15.00	43.00	26.00	26.00	26.00
67	14.00	40.00	26.00	26.00	26.00
68	13.00	40.00	22.00	22.00	22.00
69	13.00	37.00	22.00	22.00	22.00
70	13.00	37.00	24.00	24.00	24.00
71	13.00	37.00	24.00	24.00	24.00
72	13.00	37.00	20.00	20.00	20.00
73	13.00	37.00	20.00	20.00	20.00
74	13.00	37.00	20.00	20.00	20.00
75	100.00	100.00	100.00	100.00	100.00

Retirement rates for members of Prosecutors Part (Chapter 366, P.L. 2001) are as follows:

- Members with less than 25 years of service: 6.0% for all ages,
- Members with 25 years of service: 40.0% for all ages,
- Members with 26 or more years of service: 20.0% for all ages.

Rates apply upon retirement eligibility. 100% retirement is assumed at age 70.

APPENDIX B – SUMMARY OF CURRENT ASSUMPTIONS

Retirement rates for members of WCJ Part (Chapter 140, P.L. 2021) are as follows:

Age	Less than 15 Years of WCJ Part Service	15-19 Years of WCJ Part Service	20 or more Years of WCJ Part Service
<60	0.0%	0.0%	0.0%
60	2.0	2.0	20.0
61	2.0	2.0	20.0
62	2.0	2.0	20.0
63	2.0	2.0	20.0
64	2.0	2.0	20.0
65	5.0	40.0	30.0
66	2.0	40.0	20.0
67	2.0	40.0	20.0
68	2.0	40.0	20.0
69	2.0	40.0	20.0
70	100.0	100.0	100.0

8. Family Composition Assumptions

For members not currently in receipt, 50% of members are assumed married to spouses of the opposite sex. Males are assumed to be two years older than females.

For purposes of the optional form of payment death benefit for members currently in receipt, beneficiary status is based on the beneficiary allowance reported. If no beneficiary date of birth is provided, the beneficiary is assumed to be the member's spouse of the opposite sex with males assumed to be two years older than females.

No additional dependent children or parents are assumed.

9. Form of Payment

Current active members are assumed to elect the Maximum Option.