CHEIRON Classic Values, Innovative Advice

San Francisco City and County Employees' Retirement System

Demographic Experience Study as of June 30, 2024

Produced by Cheiron

September 2025

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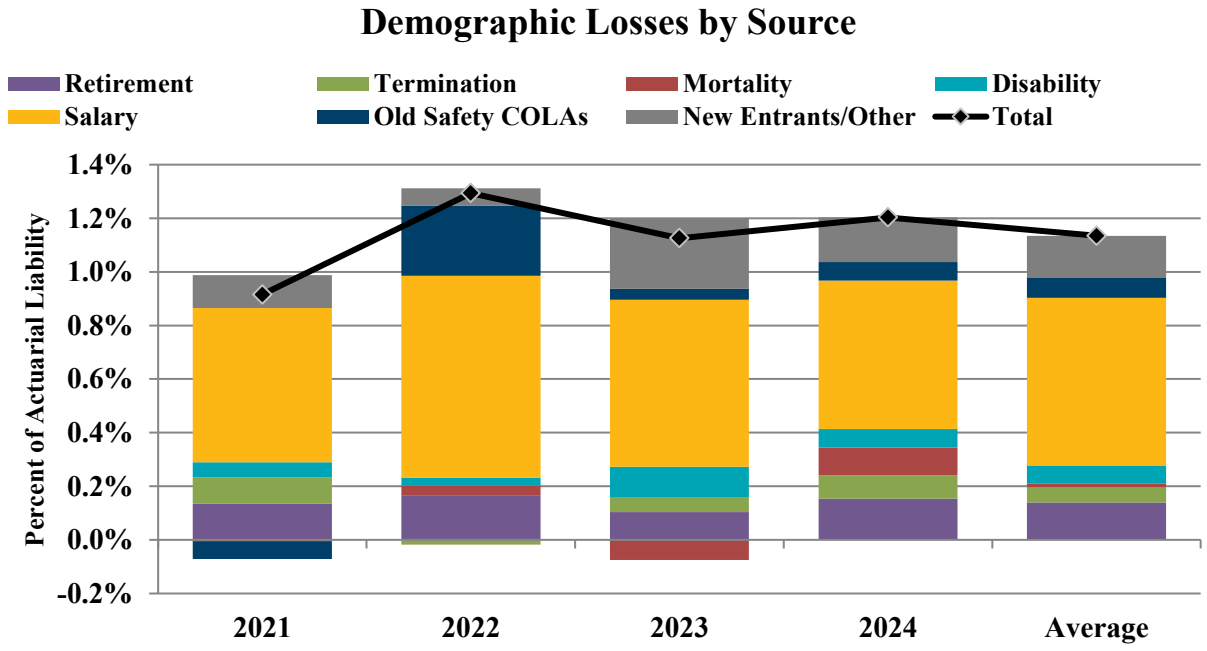
TABLE OF CONTENTS

SECTION 1 – EXECUTIVE SUMMARY

Actuarial assumptions (economic and demographic) are intended to be long term and should be both individually reasonable and consistent in the aggregate. The purpose of this experience study is to evaluate whether the current demographic assumptions adequately reflect the long-term expectations for the System, and if not, to recommend any adjustments that might be needed. It is important to note that significant changes in the actuarial assumptions are not typically proposed unless there are known fundamental changes in expectations warranting such significant changes.

The chart below shows the System's historical demographic losses by source as a percentage of the Actuarial Liability for each actuarial valuation since the demographic assumptions were last updated. Over the four-year period, the average loss was about 1.13% of the Actuarial Liability. The majority of this average loss was due to salary increases. In addition, over the four-year period, the System experienced net losses in all of the sources shown, ranging from an average of 0.02% (mortality) to 0.14% (retirement) of Actuarial Liability.

Chart 1-1



SECTION 1 – EXECUTIVE SUMMARY

SUMMARY OF DEMOGRAPHIC ASSUMPTION ANALYSIS

The table below summarizes the key changes proposed to demographic assumptions. In aggregate, the proposed changes to the assumptions are expected to increase contribution rates about 0.65% of pay. The following sections provide the details of our analysis and proposed assumption changes.

Table 1-1

Demographic Assumption	Proposed Changes
Merit or longevity salary increases	• Increased scale for all groups, partially reflecting the higher increases granted in the last five years.
Old Safety COLAs	• Reduced assumed Basic COLAs for most old safety groups
Retirement rates	• Minor adjustments reflecting emerging experience
Disability rates	• Reduced disability rates for Miscellaneous and Fire groups • Extend disability rates to age 69 for safety groups
Mortality rates	• Updated base tables to new public sector tables (Pub-2016 above median income) with adjustments for SFERS experience • Updated projection scale to MP-2021
Termination and refund rates	• Minor adjustments to termination rates reflecting emerging experience. • Lower refund rates for Safety groups; higher refund rates early in their career for Miscellaneous groups and no refunds when eligible for a vested retirement
Other assumptions	• Increased minimum valuation pay to $60,000 for active members • Load new June retiree benefits by 6%
Administrative Expenses	• No changes

SECTION 2 – CERTIFICATION

The purpose of this report is to present the results of the demographic experience study of the City and County of San Francisco Employees' Retirement System (the System) covering demographic experience through June 30, 2024. This report is for the use of the System in selecting assumptions to be used in actuarial valuations beginning July 1, 2025.

In preparing our report, we relied on information (some oral and some written) supplied by the Plan. This information includes, but is not limited to, the plan provisions, employee data, and financial information. 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.

Cheiron utilizes ProVal actuarial valuation software leased from Winklevoss Technologies (WinTech) to calculate actual decrements and exposures. We have relied on WinTech as the developer of ProVal. We have a basic understanding of ProVal and have used ProVal in accordance with its original intended purpose. We have not identified any material inconsistencies in assumptions or output of ProVal that would affect this experience study.

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 System for the purpose 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 other user.

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Consulting Actuary

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SECTION 3 – 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 the System, with some adjustments where future experience is expected to differ from historical experience and with deference to published mortality tables when the System's experience is not robust enough to be fully credible. For purposes of this study, merit and longevity salary increases are also considered a demographic assumption because the assumption is based primarily on the System's historical experience.

INTRODUCTION TO ANALYSIS OF DEMOGRAPHIC ASSUMPTIONS

For all demographic assumptions except the merit and longevity salary scale, we determined the ratio of the actual number of decrements for each membership group compared to the expected number of decrements (A/E ratio or actual-to-expected ratio). If the assumption is perfect, this ratio will be 100 percent, and any recommended assumption change should move from the current A/E ratio towards 100 percent unless future experience is expected to be different than the experience during the period of study.

In addition, we calculated the 90 percent confidence interval, which represents the range within which the true decrement rate during the experience study period fell with 90 percent confidence. (If there is insufficient data to calculate a confidence interval, the confidence interval is shown as the entire range of the graph.) We generally propose assumption changes when the current assumption is outside the 90 percent confidence interval of the observed experience. However, adjustments are made to account for differences between future expectations and historical experience, to account for past experience represented by the current assumption, and to maintain a neutral to slightly conservative bias in the assumption selection. For mortality rates, we compare the System's experience to that of a published table and only adjust the published table to the extent the System's experience is large enough to be credible.

To track how well the assumption fits the pattern of the data, we calculate the percentage of the assumptions that fall within the 90 percent confidence interval, and we calculate an R-squared statistic for each assumption. R-squared can be considered the percentage of the variation in actual data explained by the assumption. Ideally, all assumptions would fall within the 90 percent confidence interval, and the R-squared would equal 100 percent, although this is never the case. Any proposed assumption change should increase the percentage of assumptions within the confidence interval and generally increase the R-squared compared to the current assumption, making it closer to 100 percent unless the pattern of future decrements is expected to be different from the pattern experienced during the study period.

MERIT SALARY INCREASES

Salary increases have three components:

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

Inflation and real wage growth (or wage inflation) are studied as part of the economic assumptions. This section develops the third component: the merit or longevity increase. Generally, newer employees are more likely to earn a step increase or receive a promotion, so their salary increases tend to be greater than those for longer service employees.

The merit or longevity salary increase assumption is added to the wage inflation assumption to calculate an individual's expected salary increases. To analyze the merit component, the negotiated across-the-board salary increases paid to System members for a given year, representing wage inflation, are subtracted from the average total salary increase for continuing active members at each year of service.

The merit or longevity salary increase assumption analysis is based on experience from FYE 2020 through FYE 2024. Assumptions are set separately for Miscellaneous, Muni Drivers, Craft, Police, and Fire. This analysis uses the calculated pay rate as the basis for salary, rather than annual covered pay, to remove noise due to fluctuations in hours.

The study period included the COVID pandemic and a period of very high inflation, neither of which are projected to continue in the future. Consequently, the proposed assumptions weigh the current assumption more heavily, only partially reflecting the experience during the study period.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MERIT OR LONGEVITY SALARY INCREASES

Miscellaneous Members

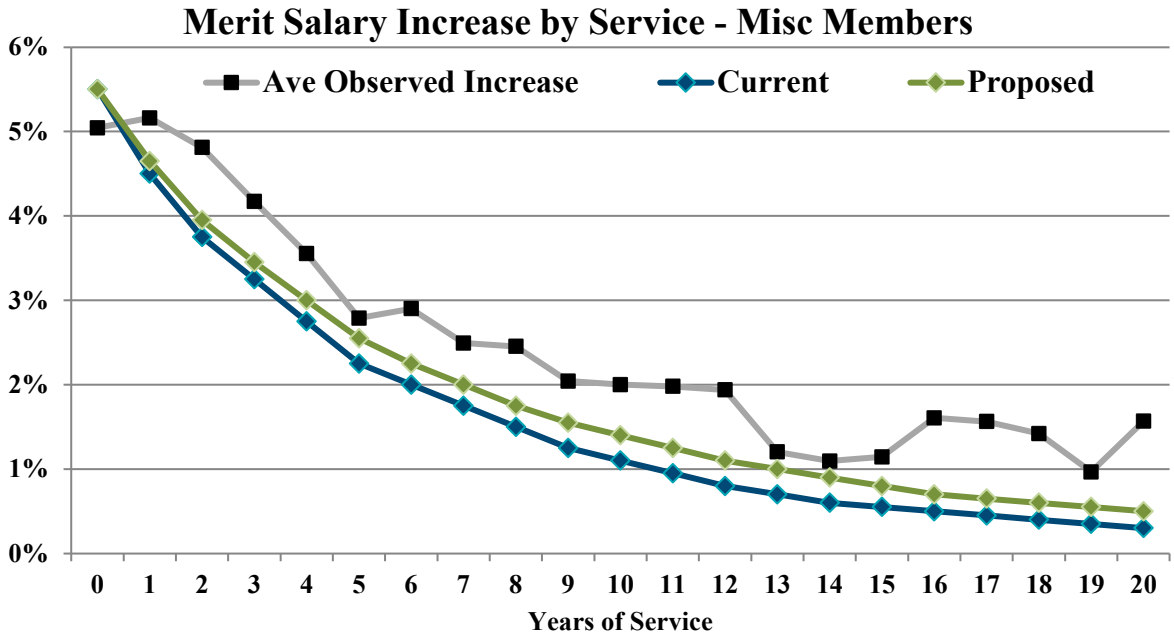
Table 3-S1 shows the actual increases, the current assumption, and the proposed assumption for Miscellaneous members. Chart 3-S1 on the following page shows the information graphically.

Table 3-S1

Merit Salary Increases			
	Miscellaneous Members		
Service	Actual	Current	Proposed
0	5.04%	5.50%	5.50%
1	5.16%	4.50%	4.65%
2	4.81%	3.75%	3.95%
3	4.17%	3.25%	3.45%
4	3.55%	2.75%	3.00%
5	2.79%	2.25%	2.55%
6	2.90%	2.00%	2.25%
7	2.49%	1.75%	2.00%
8	2.45%	1.50%	1.75%
9	2.04%	1.25%	1.55%
10	2.00%	1.10%	1.40%
11	1.98%	0.95%	1.25%
12	1.94%	0.80%	1.10%
13	1.20%	0.70%	1.00%
14	1.10%	0.60%	0.90%
15	1.14%	0.55%	0.80%
16	1.61%	0.50%	0.70%
17	1.56%	0.45%	0.65%
18	1.42%	0.40%	0.60%
19	0.97%	0.35%	0.55%
20	1.57%	0.30%	0.50%

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MERIT OR LONGEVITY SALARY INCREASES

Chart 3-S1



The proposed assumptions reflect an increase between the current assumptions and the actual experience during the period studied. This approach implicitly weighs the experience before the studied period that was used to set the current assumptions. The ultimate increase rate for 20 or more years of 0.5% reflects expected average increases due to promotion.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MERIT OR LONGEVITY SALARY INCREASES

Muni and Craft Members

Tables 3-S2 and 3-S3 show the actual increases, the current assumption, and the proposed assumption for Muni and Craft members. Charts 3-S2 and 3-S3 on the following page show the information graphically.

Table 3-S2

Merit Salary Increases			
	Muni Members		
Service	Actual	Current	Proposed
0	10.37%	16.00%	14.45%
1	9.76%	11.00%	10.75%
2	13.80%	6.50%	7.45%
3	11.23%	3.50%	5.05%
4	1.73%	1.75%	3.40%
5	0.58%	1.25%	2.55%
6	0.97%	1.00%	1.90%
7	1.03%	0.75%	1.35%
8	1.09%	0.50%	0.90%
9	1.20%	0.40%	0.60%
10	1.13%	0.30%	0.40%
11	1.15%	0.20%	0.30%
12	1.25%	0.15%	0.20%
13	0.30%	0.10%	0.20%
14	1.34%	0.05%	0.20%
15	0.05%	0.00%	0.20%
16	0.66%	0.00%	0.20%
17	1.46%	0.00%	0.20%
18	0.14%	0.00%	0.20%
19	1.61%	0.00%	0.20%
20	0.30%	0.00%	0.20%

Table 3-S3

Merit Salary Increases			
	Craft Members		
Service	Actual	Current	Proposed
0	4.78%	3.75%	4.05%
1	4.41%	3.00%	3.35%
2	3.55%	2.40%	2.80%
3	2.93%	1.80%	2.25%
4	2.95%	1.50%	1.95%
5	2.33%	1.20%	1.65%
6	1.89%	1.00%	1.40%
7	2.10%	0.80%	1.20%
8	1.76%	0.70%	1.10%
9	2.30%	0.60%	1.00%
10	1.57%	0.50%	0.90%
11	1.93%	0.50%	0.80%
12	2.27%	0.50%	0.70%
13	1.63%	0.50%	0.60%
14	1.90%	0.50%	0.55%
15	1.29%	0.50%	0.50%
16	1.25%	0.50%	0.50%
17	1.68%	0.50%	0.50%
18	2.48%	0.50%	0.50%
19	1.62%	0.50%	0.50%
20	1.59%	0.50%	0.50%

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MERIT OR LONGEVITY SALARY INCREASES

Chart 3-S2

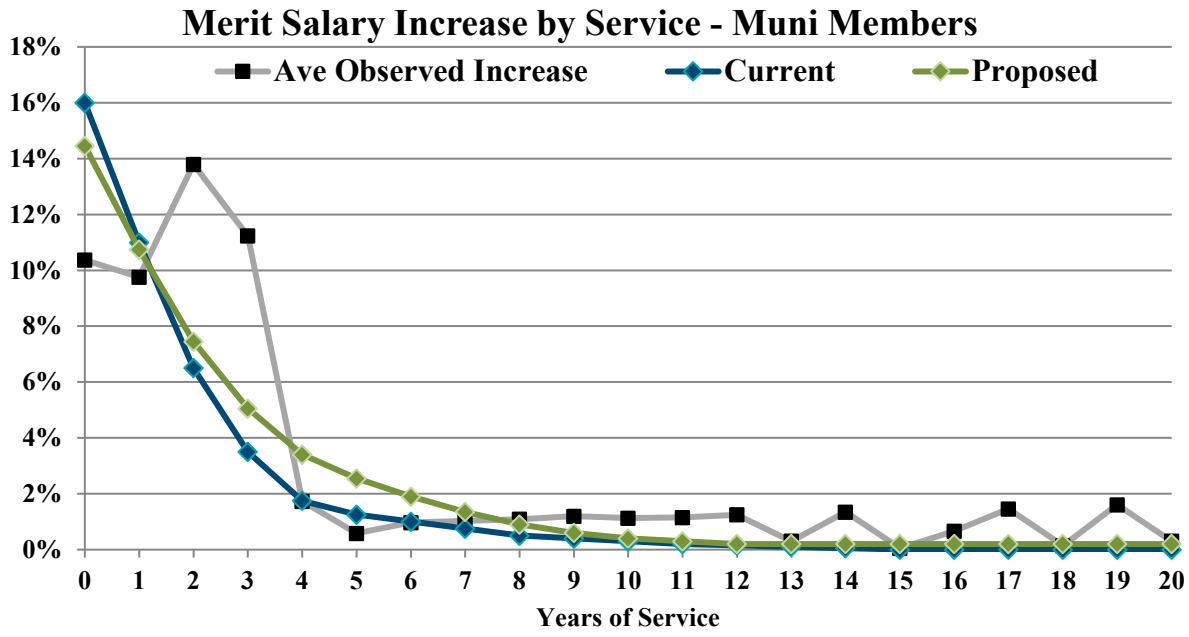
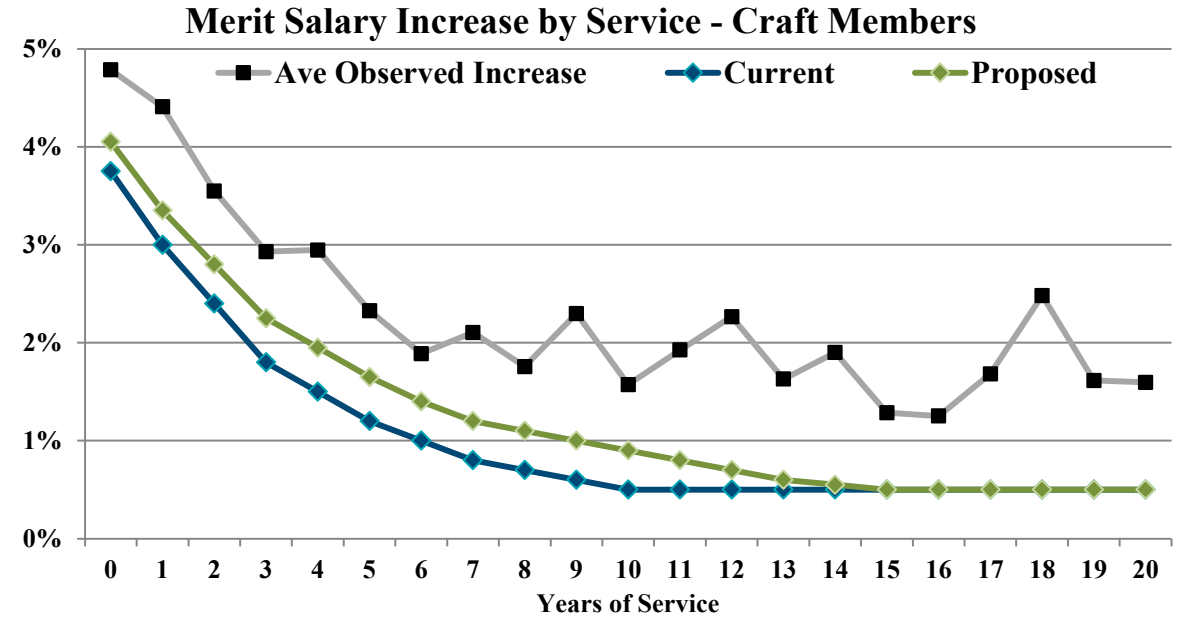


Chart 3-S3



The proposed assumptions reflect an increase between the current assumption and the actual experience during the period studied. This approach implicitly weighs the experience before the studied period that was used to set the current assumptions.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MERIT OR LONGEVITY SALARY INCREASES

Police and Fire Members

Tables 3-S4 and 3-S5 show the actual increases, the current assumption, and the proposed assumption for Police and Fire members. Charts 3-S4 and 3-S5 on the following page show the information graphically.

Table 3-S4

Merit Salary Increases			
	Fire Members		
Service	Actual	Current	Proposed
0	6.39%	14.00%	12.65%
1	8.84%	10.00%	9.75%
2	10.66%	8.00%	8.15%
3	10.04%	6.00%	6.60%
4	11.59%	5.00%	5.70%
5	6.25%	4.00%	4.85%
6	5.25%	3.00%	4.00%
7	4.25%	2.50%	3.50%
8	4.13%	2.00%	3.00%
9	2.94%	1.75%	2.70%
10	3.52%	1.50%	2.35%
11	4.49%	1.25%	2.00%
12	3.64%	1.00%	1.70%
13	3.27%	0.75%	1.40%
14	3.02%	0.50%	1.20%
15	3.34%	0.50%	1.00%
16	3.45%	0.50%	0.85%
17	2.47%	0.50%	0.70%
18	5.71%	0.50%	0.60%
19	4.12%	0.50%	0.55%
20	4.92%	0.50%	0.50%

Table 3-S5

Merit Salary Increases			
	Police Members		
Service	Actual	Current	Proposed
0	6.14%	7.50%	7.70%
1	7.40%	6.75%	6.90%
2	5.77%	6.00%	6.20%
3	7.76%	5.25%	5.50%
4	6.45%	4.50%	4.80%
5	5.35%	3.75%	4.10%
6	4.49%	3.00%	3.45%
7	3.62%	2.50%	2.90%
8	0.83%	2.00%	2.40%
9	1.03%	1.75%	2.05%
10	1.23%	1.50%	1.70%
11	1.74%	1.25%	1.40%
12	1.24%	1.00%	1.10%
13	0.69%	0.75%	0.85%
14	-0.08%	0.50%	0.60%
15	0.14%	0.50%	0.50%
16	0.74%	0.50%	0.50%
17	1.02%	0.50%	0.50%
18	0.73%	0.50%	0.50%
19	0.37%	0.50%	0.50%
20	0.55%	0.50%	0.50%

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MERIT OR LONGEVITY SALARY INCREASES

Chart 3-S4

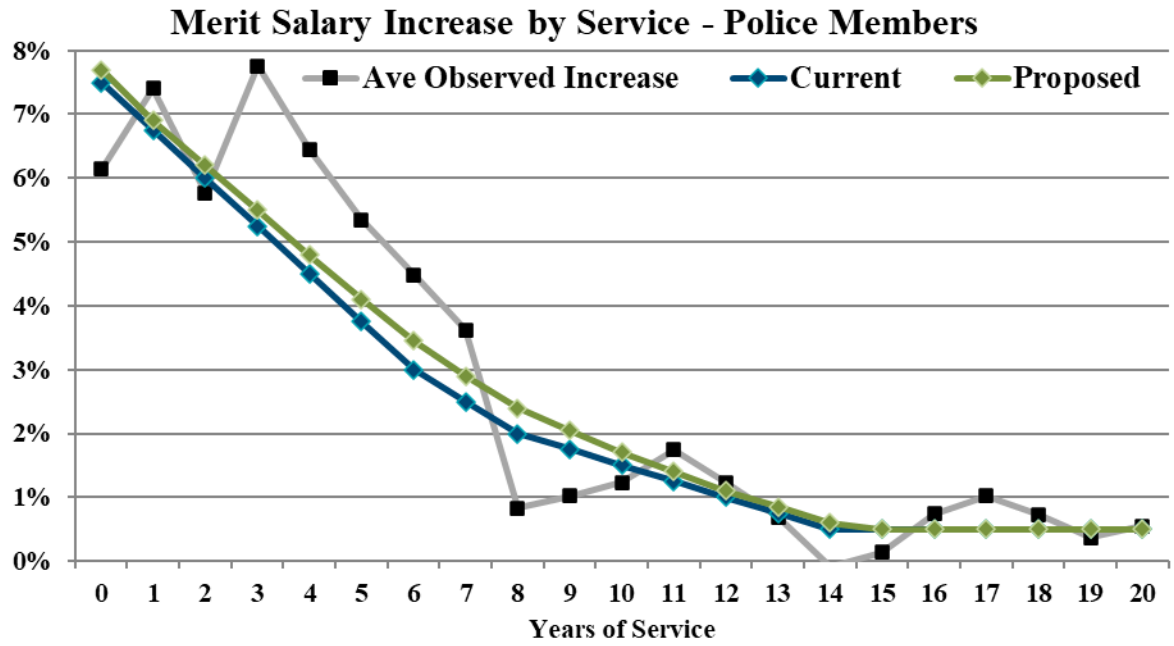
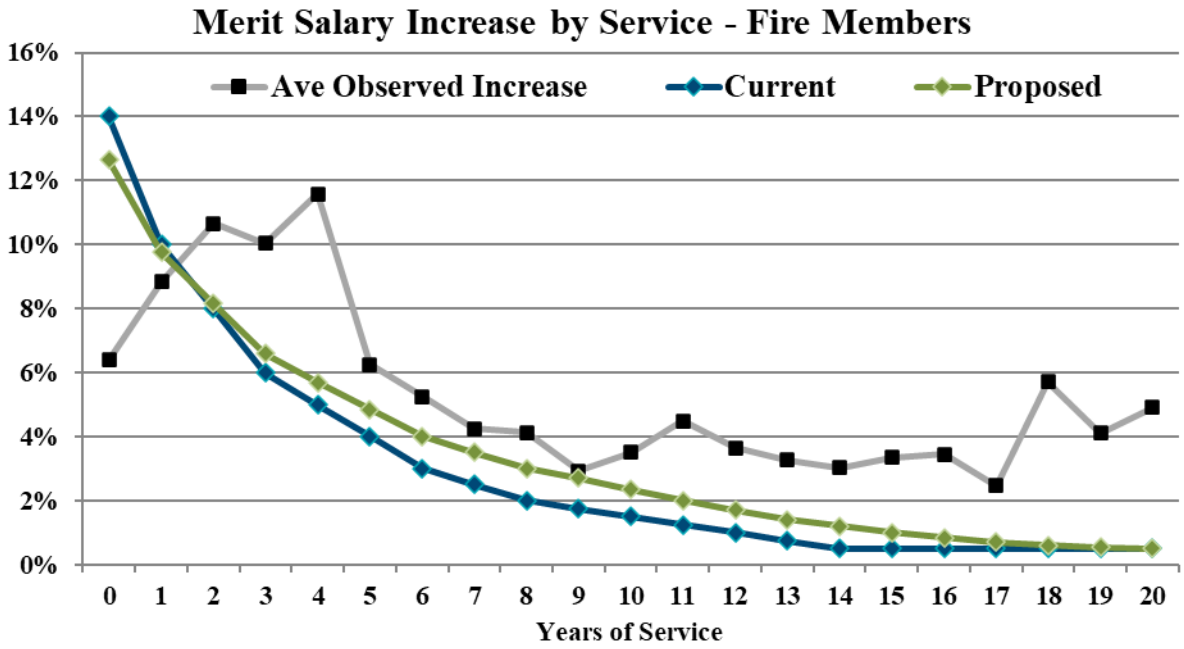


Chart 3-S5



The proposed assumptions reflect an increase between the current assumptions and the actual experience during the period studied. This approach implicitly weighs the experience before the studied period that was used to set the current assumptions. The ultimate increase rate for 20 or more years of 0.5% reflects expected average increases due to promotion.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MERIT OR LONGEVITY SALARY INCREASES

Final Year Salary Increase

In addition to annual merit or longevity increases, we have observed that some members receive an additional salary increase in their final year of employment prior to retirement. Since benefits are based on the highest year(s) of pay, these increases impact the benefits paid.

Table 3-S6

Group	Estimated Final Year Salary Increase[1]	Current Assumption	Proposed Assumption
Miscellaneous	1.40%	2.00%	2.00%
Craft Workers	1.30%	3.00%	2.75%
Municipal Drivers	3.00%	4.50%	4.25%
Safety	2.80%	3.00%	3.00%

[1] *Based on the average increase from the last two experience studies, net of actual wage inflation and ultimate salary merit increase assumption.*

As shown in the table above, we proposed minor reductions in the increases for Craft Workers and Municipal Drivers, and no change to the increases for Miscellaneous and Safety members.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
OLD SAFETY COST-OF-LIVING ADJUSTMENTS

OLD PLAN SAFETY COST-OF-LIVING ADJUSTMENTS

For Old Plan Safety members who retired prior to July 1, 1975, monthly benefits are adjusted annually by 50% of the percentage increase or decrease in salary for the last rank or position the member held. Consequently, we assume the annual increase for these members is equal to 50% of our assumption for wage inflation plus the applicable ultimate merit assumption.

For Old Plan Safety members who retired on or after July 1, 1975, monthly benefits are adjusted by 50% of the actual dollar increase or decrease in the salary for the last rank or position the member held. The dollar amount of the increase is translated into a percentage increase to estimate future cost-of-living increases. The percentage increase for each individual depends on the percentage salary increase and the size of the retirement benefit compared to the pay level for the last rank or position the member held.

We analyzed the experience separately for members in Charters 8.559 and 8.585 versus members in Charters 8.595 and 8.596 due to the groups' different retirement dates and applicable benefit multipliers. On average, the pay for the last rank or position was about 1.27 times the benefit for members in Charters 8.595 and 8.596 and about 1.70 times the benefit for members in Charters 8.559 and 8.585. Consequently, the proposed assumption for these groups is 50% of our assumption for wage inflation and the applicable ultimate merit assumption, all multiplied by 1.27 and 1.70, respectively.

Table 3-C1 shows each group's current and proposed assumptions, along with the component factors used to calculate the assumed COLA.

Table 3-C1

Group	Current Assumptions			Proposed Assumptions		
	Ultimate Wage Increase	Factor	Assumed COLA	Ultimate Wage Increase	Factor	Assumed COLA
Retirement before 7/1/1975	3.75%	N/A	1.9%	3.75%	N/A	1.9%
Charters 8.595 and 8.596	3.75%	1.30	2.5%	3.75%	1.27	2.4%
Charters 8.559 and 8.585	3.75%	1.90	3.6%	3.75%	1.70	3.2%

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

NON-PROP C RETIREMENT RATES

Retirement rates vary by age and service group and are applied only to members who are eligible to retire.

Miscellaneous Members

The analysis for Miscellaneous members is based on retirement experience from July 1, 2019 through June 30, 2024. Separate rates are developed for members with:

- 10 to 19 years of service,
- 20 to 29 years of service, and
- 30 or more years of service.

Table 3-R1 compares the actual retirement experience for Miscellaneous members with 10 to 19 years of service to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates that are within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R1 on the following page shows the information graphically.

Table 3-R1

Miscellaneous Retirement Rates For 10 to 19 Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
60	874	66	79	70	7.55%	9.00%	8.00%	84%	94%
61	775	89	103	93	11.48%	13.25%	12.00%	87%	96%
62	687	105	137	120	15.28%	20.00%	17.50%	76%	87%
63	613	61	98	77	9.95%	16.00%	12.50%	62%	80%
64	513	79	82	82	15.40%	16.00%	16.00%	96%	96%
65	423	79	85	85	18.68%	20.00%	20.00%	93%	93%
66	341	79	85	85	23.17%	25.00%	25.00%	93%	93%
67	247	45	62	49	18.22%	25.00%	20.00%	73%	91%
68	211	41	42	42	19.43%	20.00%	20.00%	97%	97%
69	164	37	33	33	22.56%	20.00%	20.00%	113%	113%
70 - 74	367	82	92	83	22.34%	25.00%	22.50%	89%	99%
Subtotal	**5,215**	**763**	**897**	**819**	**14.63%**	**17.21%**	**15.70%**	**85%**	**93%**
75 +	81	17	81	81	20.99%	100.00%	100.00%	21%	21%
Total	**5,296**	**780**	**978**	**900**	**14.73%**	**18.47%**	**16.99%**	**80%**	**87%**
Confidence Interval %			**73%**	**93%**					
R-squared			**93%**	**98%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R1

The experience is generally lower than the current assumptions. The proposed assumption includes minor decreases in rates from age 60 to 63, age 67, and age 70 to 74. The proposed assumptions increase the aggregate A/E ratio before age 75 from 85 percent to 93 percent; increase the percentage of rates within the confidence interval from 73 percent to 93 percent; and increase the R-squared from 93 percent to 98 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

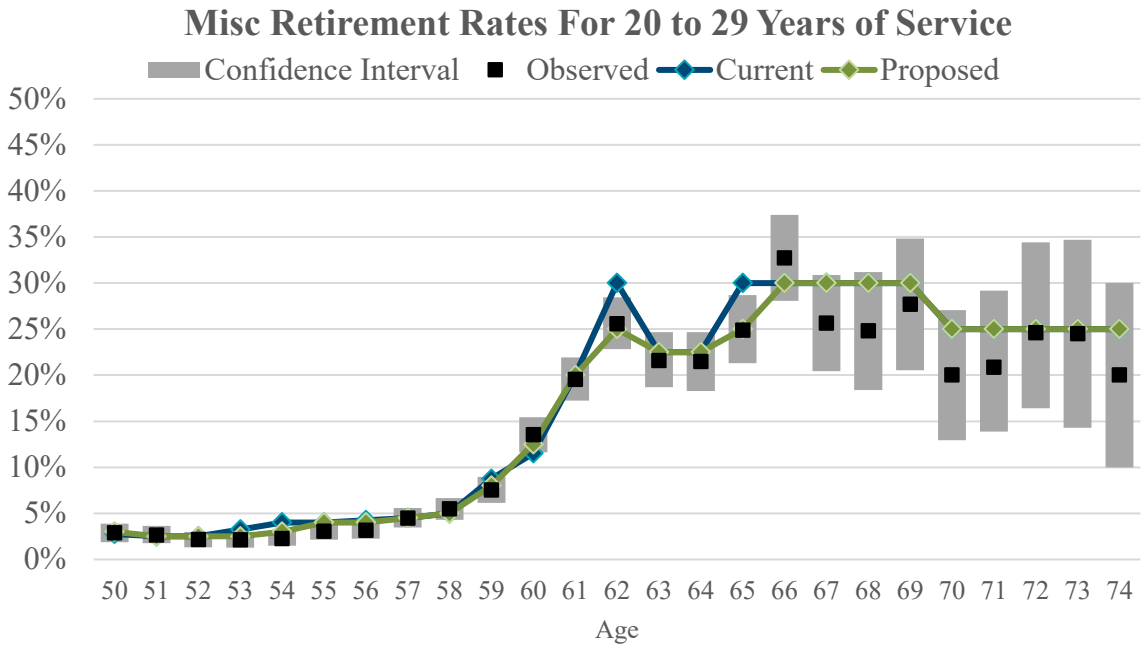
Table 3-R2 compares the actual retirement experience for Miscellaneous members with 20 to 29 years of service to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R2 on the following page shows the information graphically.

Table 3-R2

Miscellaneous Retirement Rates For 20 to 29 Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
50	696	20	19	21	2.87%	2.75%	3.00%	104%	96%
51	797	21	20	20	2.63%	2.50%	2.50%	105%	105%
52	843	18	21	21	2.14%	2.50%	2.50%	85%	85%
53	854	18	28	21	2.11%	3.25%	2.50%	65%	84%
54	935	21	37	28	2.25%	4.00%	3.00%	56%	75%
55	987	30	39	39	3.04%	4.00%	4.00%	76%	76%
56	981	31	42	39	3.16%	4.25%	4.00%	74%	79%
57	984	44	44	44	4.47%	4.50%	4.50%	99%	99%
58	1,005	55	50	50	5.47%	5.00%	5.00%	109%	109%
59	929	70	81	74	7.53%	8.75%	8.00%	86%	94%
60	836	113	96	105	13.52%	11.50%	12.50%	118%	108%
61	794	155	159	159	19.52%	20.00%	20.00%	98%	98%
62	657	168	197	164	25.57%	30.00%	25.00%	85%	102%
63	519	112	117	117	21.58%	22.50%	22.50%	96%	96%
64	438	94	99	99	21.46%	22.50%	22.50%	95%	95%
65	366	91	110	92	24.86%	30.00%	25.00%	83%	99%
66	278	91	83	83	32.73%	30.00%	30.00%	109%	109%
67	191	49	57	57	25.65%	30.00%	30.00%	86%	86%
68	125	31	38	38	24.80%	30.00%	30.00%	83%	83%
69	112	31	34	34	27.68%	30.00%	30.00%	92%	92%
70 - 74	307	67	77	77	21.82%	25.00%	25.00%	87%	87%
Subtotal	**13,634**	**1,330**	**1,448**	**1,382**	**9.76%**	**10.62%**	**10.13%**	**92%**	**96%**
75 +	116	28	116	116	24.14%	100.00%	100.00%	24%	24%
Total	**13,750**	**1,358**	**1,564**	**1,498**	**9.88%**	**11.37%**	**10.89%**	**87%**	**91%**
Confidence Interval %			**72%**	**96%**					
R-squared			**97%**	**99%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R2



The experience is reasonably consistent with the current assumption. The proposed assumption includes minor adjustments before age 62, and minor decreases at ages 62 and 65. The proposed assumptions increase the aggregate A/E ratio before age 75 from 92 percent to 96 percent, the percentage of rates within the confidence interval from 72 percent to 96 percent, and the R-squared from 97 percent to 99 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS

RETIREMENT RATES

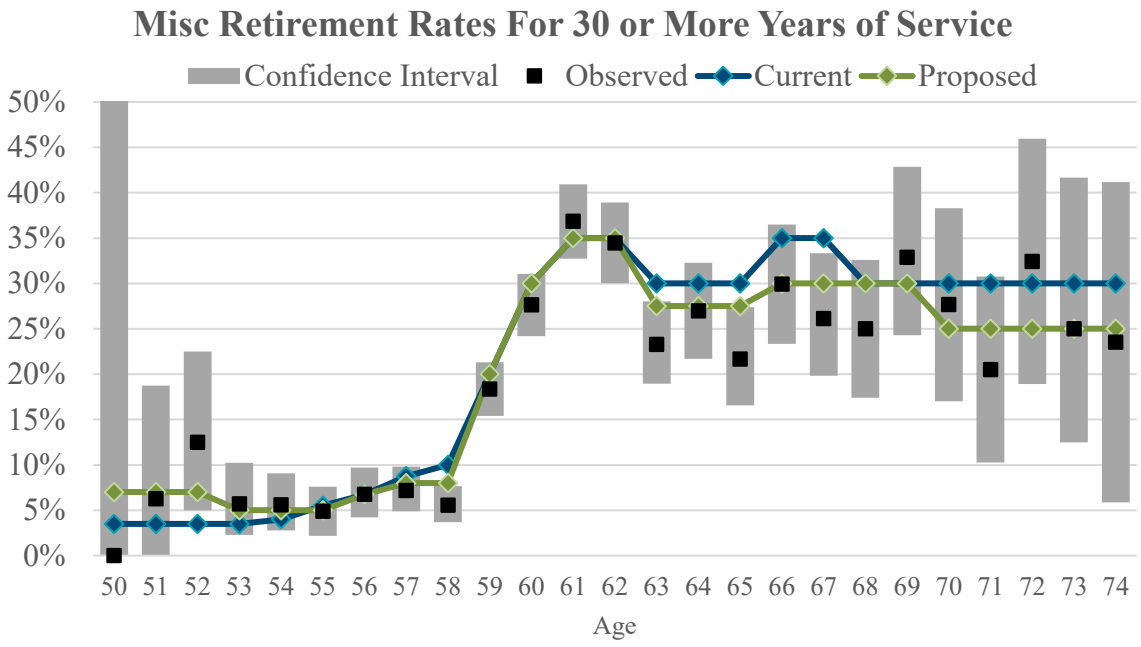
Table 3-R3 compares the actual retirement experience for Miscellaneous members with 30 or more years of service to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R3 on the following page shows the information graphically.

Table 3-R3

Miscellaneous Retirement Rates For 30 or More Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
50	6	0	0	0	0.00%	3.50%	7.00%	0%	0%
51	16	1	1	1	6.25%	3.50%	7.00%	179%	89%
52	40	5	1	3	12.50%	3.50%	7.00%	357%	179%
53	88	5	3	4	5.68%	3.50%	5.00%	162%	114%
54	143	8	6	7	5.59%	4.00%	5.00%	140%	112%
55	184	9	10	9	4.89%	5.50%	5.00%	89%	98%
56	237	16	16	16	6.75%	6.75%	6.75%	100%	100%
57	306	22	27	24	7.19%	8.75%	8.00%	82%	90%
58	378	21	38	30	5.56%	10.00%	8.00%	56%	69%
59	474	87	95	95	18.35%	20.00%	20.00%	92%	92%
60	467	129	140	140	27.62%	30.00%	30.00%	92%	92%
61	391	144	137	137	36.83%	35.00%	35.00%	105%	105%
62	293	101	103	103	34.47%	35.00%	35.00%	98%	98%
63	232	54	70	64	23.28%	30.00%	27.50%	78%	85%
64	189	51	57	52	26.98%	30.00%	27.50%	90%	98%
65	157	34	47	43	21.66%	30.00%	27.50%	72%	79%
66	137	41	48	41	29.93%	35.00%	30.00%	86%	100%
67	111	29	39	33	26.13%	35.00%	30.00%	75%	87%
68	92	23	28	28	25.00%	30.00%	30.00%	83%	83%
69	70	23	21	21	32.86%	30.00%	30.00%	110%	110%
70 - 74	164	43	49	41	26.22%	30.00%	25.00%	87%	105%
Subtotal	**4,175**	**846**	**934**	**893**	**20.26%**	**22.37%**	**21.39%**	**91%**	**95%**
75 +	75	13	75	75	17.33%	100.00%	100.00%	17%	17%
Total	**4,250**	**859**	**1,009**	**968**	**20.21%**	**23.74%**	**22.78%**	**85%**	**89%**
Confidence Interval %			**80%**	**92%**					
R-squared			**98%**	**99%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R3



The experience is generally higher than the current assumption through age 54, and similar or lower for ages 55 and older. The proposed assumptions increase the aggregate A/E ratio prior to age 75 from 91 percent to 95 percent, the percentage of rates within the confidence interval from 80 percent to 92 percent, and the R-squared from 98 percent to 99 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Muni Drivers

The analysis for Muni Drivers is based on retirement experience from July 1, 2014 through June 30, 2024. The current and proposed assumptions assume 100% retirement rates at age 70 and above. Separate rates are developed for members with:

- 10 to 19 years of service,
- 20 to 29 years of service, and
- 30 or more years of service.

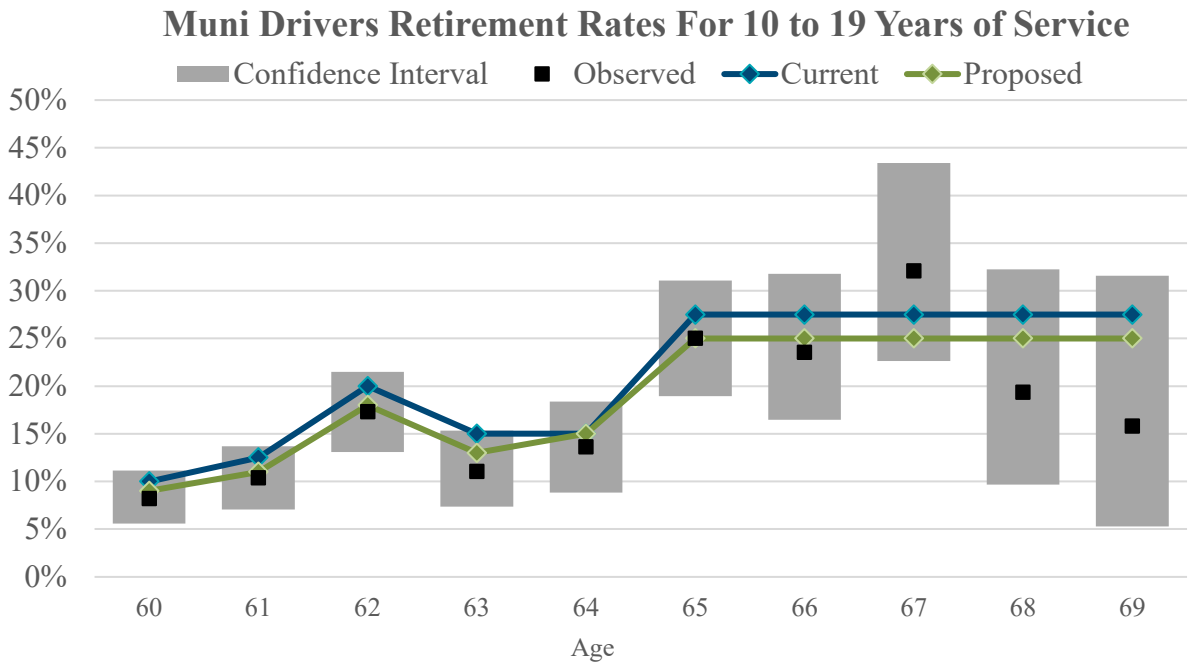
Table 3-R4 compares the actual retirement experience for Muni Drivers with 10 to 19 years of service to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R4 on the following page shows the information graphically.

Table 3-R4

Muni Drivers Retirement Rates For 10 to 19 Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
60	269	22	27	24	8.18%	10.00%	9.00%	82%	91%
61	241	25	30	27	10.37%	12.50%	11.00%	83%	94%
62	214	37	43	39	17.29%	20.00%	18.00%	86%	96%
63	163	18	24	21	11.04%	15.00%	13.00%	74%	85%
64	147	20	22	22	13.61%	15.00%	15.00%	91%	91%
65	132	33	36	33	25.00%	27.50%	25.00%	91%	100%
66	85	20	23	21	23.53%	27.50%	25.00%	86%	94%
67	53	17	15	13	32.08%	27.50%	25.00%	117%	128%
68	31	6	9	8	19.35%	27.50%	25.00%	70%	77%
69	19	3	5	5	15.79%	27.50%	25.00%	57%	63%
Subtotal	**1,354**	**201**	**234**	**212**	**14.84%**	**17.31%**	**15.69%**	**86%**	**95%**
70 +	32	7	32	13	21.88%	100.00%	40.63%	22%	54%
Total	**1,386**	**208**	**266**	**225**	**15.01%**	**19.22%**	**16.27%**	**78%**	**92%**
Confidence Interval %			**100%**	**100%**					
R-squared			**96%**	**97%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R4



The experience is slightly lower than the current assumption at most ages. The proposed assumptions increase the aggregate A/E ratio before age 70 from 86 to 95 percent and the R-squared from 96 to 97 percent. The percentage of rates within the confidence interval remains at 100 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

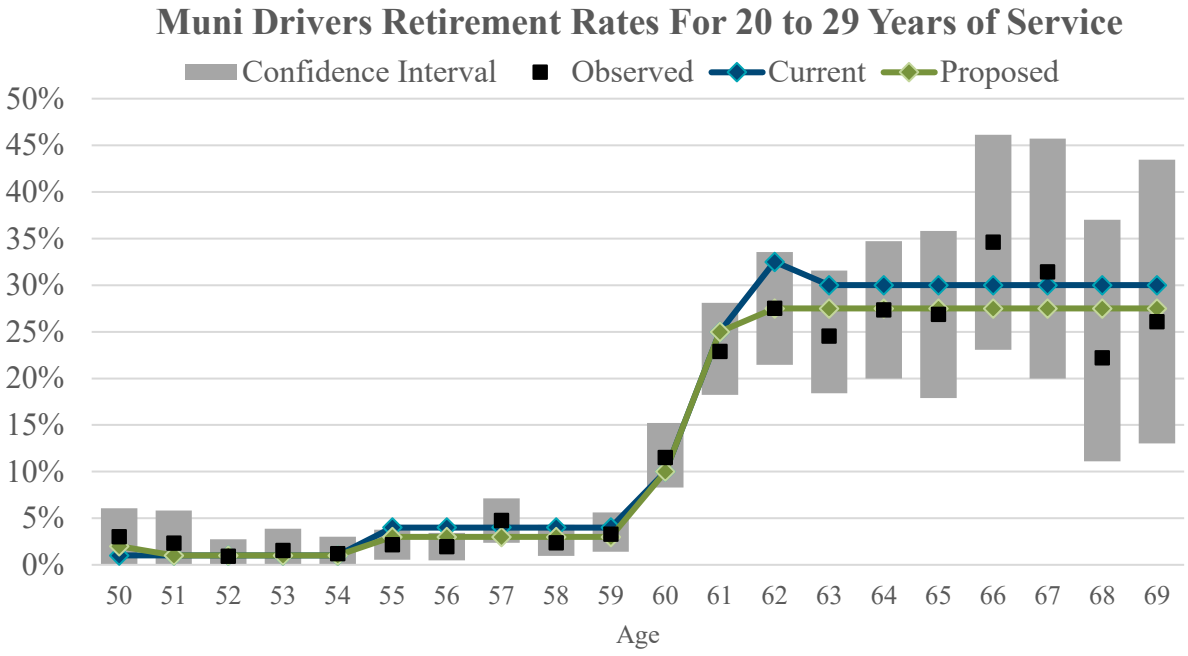
Table 3-R5 compares the actual retirement experience for Muni Drivers with 20 to 29 years of service to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R5 on the following page shows the information graphically.

Table 3-R5

Muni Drivers Retirement Rates For 20 to 29 Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
50	66	2	1	1	3.03%	1.00%	2.00%	303%	152%
51	86	2	1	1	2.33%	1.00%	1.00%	233%	233%
52	109	1	1	1	0.92%	1.00%	1.00%	92%	92%
53	129	2	1	1	1.55%	1.00%	1.00%	155%	155%
54	166	2	2	2	1.20%	1.00%	1.00%	120%	120%
55	185	4	7	6	2.16%	4.00%	3.00%	54%	72%
56	204	4	8	6	1.96%	4.00%	3.00%	49%	65%
57	210	10	8	6	4.76%	4.00%	3.00%	119%	159%
58	210	5	8	6	2.38%	4.00%	3.00%	60%	79%
59	213	7	9	6	3.29%	4.00%	3.00%	82%	110%
60	217	25	22	22	11.52%	10.00%	10.00%	115%	115%
61	192	44	48	48	22.92%	25.00%	25.00%	92%	92%
62	149	41	48	41	27.52%	32.50%	27.50%	85%	100%
63	114	28	34	31	24.56%	30.00%	27.50%	82%	89%
64	95	26	29	26	27.37%	30.00%	27.50%	91%	100%
65	67	18	20	18	26.87%	30.00%	27.50%	90%	98%
66	52	18	16	14	34.62%	30.00%	27.50%	115%	126%
67	35	11	11	10	31.43%	30.00%	27.50%	105%	114%
68	27	6	8	7	22.22%	30.00%	27.50%	74%	81%
69	23	6	7	6	26.09%	30.00%	27.50%	87%	95%
Subtotal	**2,549**	**262**	**288**	**261**	**10.28%**	**11.32%**	**10.24%**	**91%**	**100%**
70 +	31	11	31	31	35.48%	100.00%	100.00%	35%	35%
Total	**2,580**	**273**	**319**	**292**	**10.58%**	**12.38%**	**11.32%**	**85%**	**93%**
Confidence Interval %			**83%**	**100%**					
R-squared			**97%**	**98%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R5



The experience is generally slightly lower than the current assumption, particularly for ages 62 and older. The proposed assumptions increase the aggregate A/E ratio before age 70 from 91 percent to 100 percent, the percentage of rates within the confidence interval from 83 percent to 100 percent, and the R-squared from 97 percent to 98 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

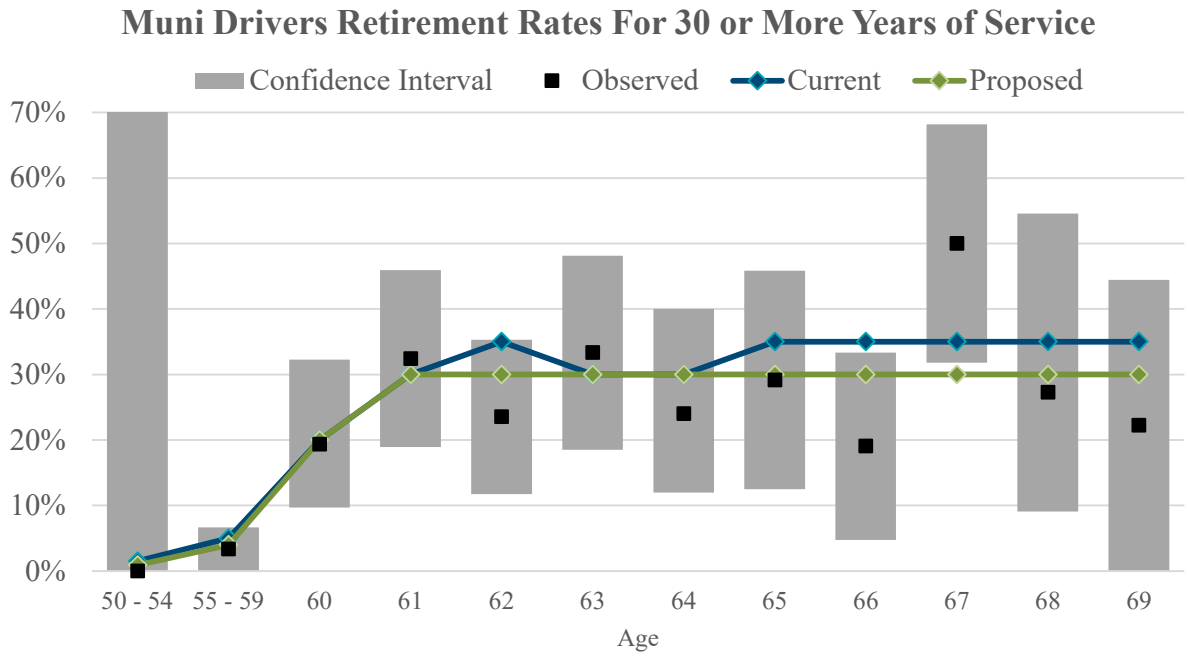
Table 3-R6 compares the actual retirement experience for Muni Drivers with 30 or more years of service to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R6 on the following page shows the information graphically.

Table 3-R6

Muni Drivers Retirement Rates For 30 or More Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
50 - 54	4	0	0	0	0.00%	1.50%	0.90%	0%	0%
55 - 59	60	2	3	2	3.33%	5.00%	4.00%	67%	83%
60	31	6	6	6	19.35%	20.00%	20.00%	97%	97%
61	37	12	11	11	32.43%	30.00%	30.00%	108%	108%
62	34	8	12	10	23.53%	35.00%	30.00%	67%	78%
63	27	9	8	8	33.33%	30.00%	30.00%	111%	111%
64	25	6	8	8	24.00%	30.00%	30.00%	80%	80%
65	24	7	8	7	29.17%	35.00%	30.00%	83%	97%
66	21	4	7	6	19.05%	35.00%	30.00%	54%	63%
67	22	11	8	7	50.00%	35.00%	30.00%	143%	167%
68	11	3	4	3	27.27%	35.00%	30.00%	78%	91%
69	9	2	3	3	22.22%	35.00%	30.00%	63%	74%
Subtotal	**305**	**70**	**78**	**72**	**22.95%**	**25.68%**	**23.50%**	**89%**	**98%**
70 +	28	6	28	28	21.43%	100.00%	100.00%	21%	21%
Total	**333**	**76**	**106**	**100**	**22.82%**	**31.92%**	**29.93%**	**71%**	**76%**
Confidence Interval %			**92%**	**92%**					
R-squared			**87%**	**89%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R6



The experience is generally similar or slightly lower than the current assumption. The proposed assumptions increase the aggregate A/E ratio prior to age 70 from 89 to 98 percent, and the R-squared from 87 to 89 percent. The percentage of rates within the confidence interval remains at 92 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Craft Members

The analysis for Craft members is based on retirement experience from July 1, 2014 through June 30, 2024. The current and proposed assumptions assume 100% retirement rates at age 70 and above. Separate rates are developed for members with:

- 10 to 19 years of service,
- 20 to 29 years of service, and
- 30 or more years of service.

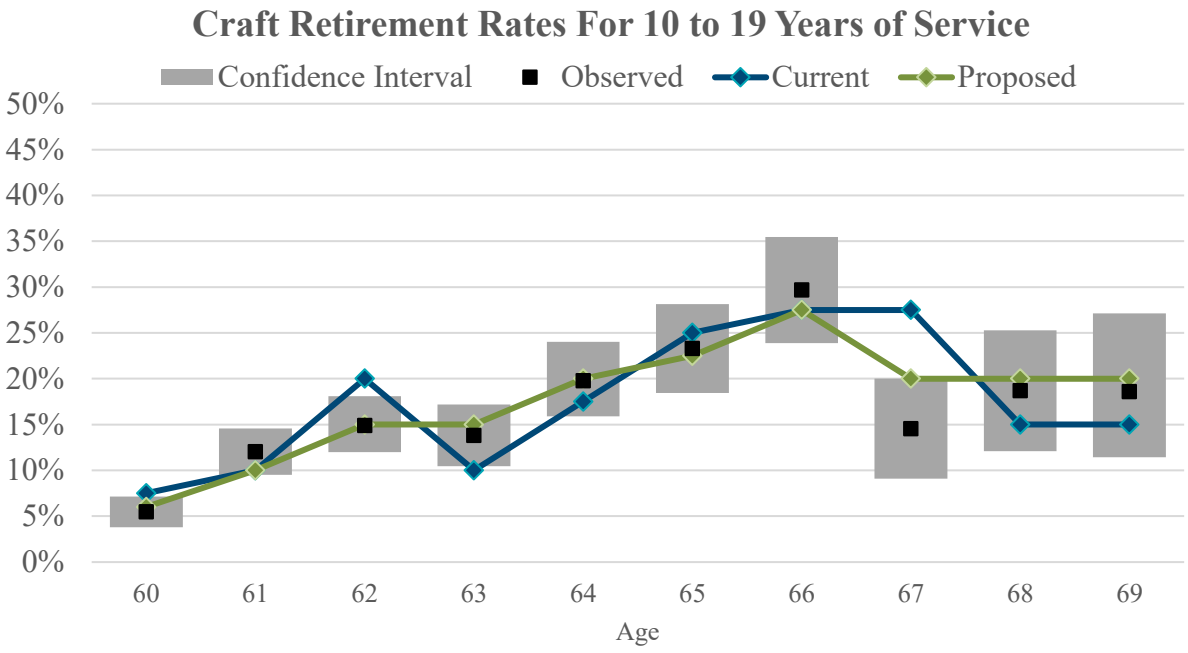
Table 3-R7 compares the actual retirement experience for Craft members with 10 to 19 years of service to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R7 on the following page shows the information graphically.

Table 3-R7

Craft Retirement Rates For 10 to 19 Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
60	476	26	36	29	5.46%	7.50%	6.00%	73%	91%
61	432	52	43	43	12.04%	10.00%	10.00%	120%	120%
62	376	56	75	56	14.89%	20.00%	15.00%	74%	99%
63	297	41	30	45	13.80%	10.00%	15.00%	138%	92%
64	258	51	45	52	19.77%	17.50%	20.00%	113%	99%
65	206	48	52	46	23.30%	25.00%	22.50%	93%	104%
66	155	46	43	43	29.68%	27.50%	27.50%	108%	108%
67	110	16	30	22	14.55%	27.50%	20.00%	53%	73%
68	91	17	14	18	18.68%	15.00%	20.00%	125%	93%
69	70	13	11	14	18.57%	15.00%	20.00%	124%	93%
Subtotal	**2,471**	**366**	**377**	**367**	**14.81%**	**15.28%**	**14.87%**	**97%**	**100%**
70 +	152	43	152	152	28.29%	100.00%	100.00%	28%	28%
Total	**2,623**	**409**	**529**	**519**	**15.59%**	**20.19%**	**19.80%**	**77%**	**79%**
Confidence Interval %			**60%**	**100%**					
R-squared			**71%**	**95%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R7



The experience is similar to current assumptions, but the rate pattern differs. The proposed assumptions increase the aggregate A/E ratio prior to age 70 from 97 to 100 percent, the percentage of rates within the confidence interval from 60 to 100 percent, and the R-squared from 71 percent to 95 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Table 3-R8 compares the actual retirement experience for Craft members with 20 to 29 years of service to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R8 on the following page shows the information graphically.

Table 3-R8

Craft Retirement Rates For 20 to 29 Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
50	179	1	3	3	0.56%	1.50%	1.50%	37%	37%
51	219	1	3	3	0.46%	1.50%	1.50%	30%	30%
52	250	5	4	4	2.00%	1.50%	1.50%	133%	133%
53	266	5	7	7	1.88%	2.50%	2.50%	75%	75%
54	321	7	8	8	2.18%	2.50%	2.50%	87%	87%
55	328	8	8	8	2.44%	2.50%	2.50%	98%	98%
56	347	9	10	10	2.59%	3.00%	3.00%	86%	86%
57	359	7	11	11	1.95%	3.00%	3.00%	65%	65%
58	388	14	12	12	3.61%	3.00%	3.00%	120%	120%
59	400	27	32	32	6.75%	8.00%	8.00%	84%	84%
60	392	46	47	47	11.73%	12.00%	12.00%	98%	98%
61	363	77	73	73	21.21%	20.00%	20.00%	106%	106%
62	307	97	92	92	31.60%	30.00%	30.00%	105%	105%
63	226	48	57	45	21.24%	25.00%	20.00%	85%	106%
64	184	45	46	46	24.46%	25.00%	25.00%	98%	98%
65	150	39	41	41	26.00%	27.50%	27.50%	95%	95%
66	114	41	34	31	35.96%	30.00%	27.50%	120%	131%
67	82	24	25	23	29.27%	30.00%	27.50%	98%	106%
68	53	11	13	15	20.75%	25.00%	27.50%	83%	75%
69	45	16	11	12	35.56%	25.00%	27.50%	142%	129%
Subtotal	**4,973**	**528**	**536**	**522**	**10.62%**	**10.78%**	**10.51%**	**98%**	**101%**
70 +	102	22	102	102	21.57%	100.00%	100.00%	22%	22%
Total	**5,075**	**550**	**638**	**624**	**10.84%**	**12.58%**	**12.30%**	**86%**	**88%**
Confidence Interval %			**95%**	**90%**					
R-squared			**98%**	**98%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R8

The experience is similar to the current assumption, but slightly lower after age 62. The proposed assumptions increase the aggregate A/E ratio before age 70 from 98 to 101 percent and maintain the R-squared at 98 percent. The percentage of rates within the confidence interval declines from 95 to 90 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Table 3-R9 compares the actual retirement experience for Craft members with 30 or more years of service to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R9 on the following page shows the information graphically.

Table 3-R9

Craft Retirement Rates For 30 or More Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
50 - 54	178	4	6	6	2.25%	3.28%	3.28%	68%	68%
55	104	5	5	5	4.81%	5.00%	5.00%	96%	96%
56	136	2	7	7	1.47%	5.00%	5.00%	29%	29%
57	203	9	10	10	4.43%	5.00%	5.00%	89%	89%
58	239	15	12	18	6.28%	5.00%	7.50%	126%	84%
59	267	51	53	53	19.10%	20.00%	20.00%	96%	96%
60	257	88	84	90	34.24%	32.50%	35.00%	105%	98%
61	196	77	69	78	39.29%	35.00%	40.00%	112%	98%
62	143	58	54	57	40.56%	37.50%	40.00%	108%	101%
63	106	24	32	29	22.64%	30.00%	27.50%	75%	82%
64	92	31	28	25	33.70%	30.00%	27.50%	112%	123%
65	69	13	21	19	18.84%	30.00%	27.50%	63%	69%
66	66	19	21	18	28.79%	32.50%	27.50%	89%	105%
67	49	13	16	13	26.53%	32.50%	27.50%	82%	96%
68	39	10	12	11	25.64%	30.00%	27.50%	85%	93%
69	30	13	9	12	43.33%	30.00%	40.00%	144%	108%
Subtotal	**2,174**	**432**	**437**	**453**	**19.87%**	**20.11%**	**20.82%**	**99%**	**95%**
70 +	89	21	89	89	23.60%	100.00%	100.00%	24%	24%
Total	**2,263**	**453**	**526**	**542**	**20.02%**	**23.26%**	**23.93%**	**86%**	**84%**
Confidence Interval %			**88%**	**94%**					
R-squared			**98%**	**99%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R9

The experience is generally reasonable compared to current assumptions. Observed rates of retirement are higher from age 58 to 62, lower from age 63 to 68, and higher at age 69. The proposed assumptions decrease the aggregate A/E ratio before age 70 from 99 to 95 percent, increase the percentage of rates within the confidence interval from 88 to 94 percent, and increase the R-squared statistic from 98 to 99 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Fire Members

The analysis for Fire members is based on retirement experience from July 1, 2014 through June 30, 2024. This analysis includes Prop C members as well as non-Prop C members since the multipliers and retirement ages are the same for both groups. The current and proposed assumptions assume 100% retirement rates at age 65 and above. Separate rates are developed for members with:

- Less than 25 years of service,
- 25 to 29 years of service, and
- 30 or more years of service.

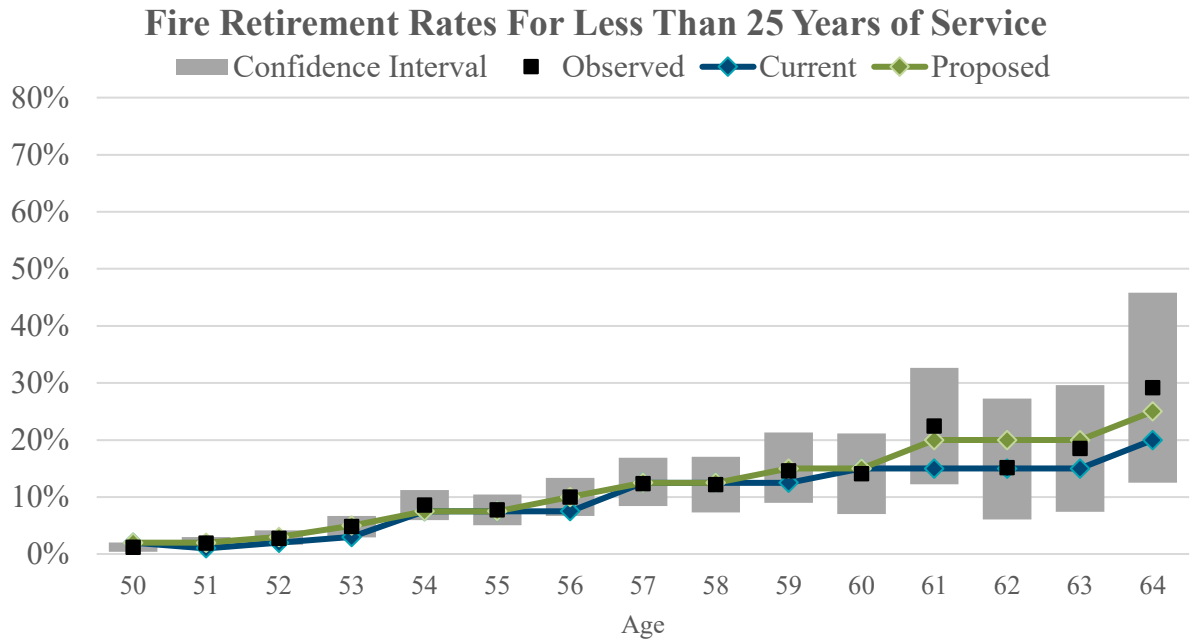
Table 3-R10 compares the actual retirement experience for Fire members with less than 25 years of service to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R10 on the following page shows the information graphically.

Table 3-R10

Fire Retirement Rates For Less Than 25 Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
50	494	6	10	10	1.21%	2.00%	2.00%	61%	61%
51	471	9	5	9	1.91%	1.00%	2.00%	191%	96%
52	432	12	9	13	2.78%	2.00%	3.00%	139%	93%
53	373	18	11	19	4.83%	3.00%	5.00%	161%	97%
54	303	26	23	23	8.58%	7.50%	7.50%	114%	114%
55	258	20	19	19	7.75%	7.50%	7.50%	103%	103%
56	210	21	16	21	10.00%	7.50%	10.00%	133%	100%
57	154	19	19	19	12.34%	12.50%	12.50%	99%	99%
58	123	15	15	15	12.20%	12.50%	12.50%	98%	98%
59	89	13	11	13	14.61%	12.50%	15.00%	117%	97%
60	71	10	11	11	14.08%	15.00%	15.00%	94%	94%
61	49	11	7	10	22.45%	15.00%	20.00%	150%	112%
62	33	5	5	7	15.15%	15.00%	20.00%	101%	76%
63	27	5	4	5	18.52%	15.00%	20.00%	123%	93%
64	24	7	5	6	29.17%	20.00%	25.00%	146%	117%
Subtotal	**3,111**	**197**	**170**	**200**	**6.33%**	**5.46%**	**6.44%**	**116%**	**98%**
65+	27	4	27	27	14.81%	100.00%	100.00%	15%	15%
Total	**3,138**	**201**	**197**	**227**	**6.41%**	**6.27%**	**7.25%**	**102%**	**88%**
Confidence Interval %			**100%**	**100%**					
R-squared			**82%**	**95%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R10



The experience is generally slightly higher than the current assumption. The proposed assumptions reduce the aggregate A/E ratio before age 65 from 116 to 98 percent, maintain the percentage of rates within the confidence interval at 100 percent, and increase the R-squared from 82 to 95 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

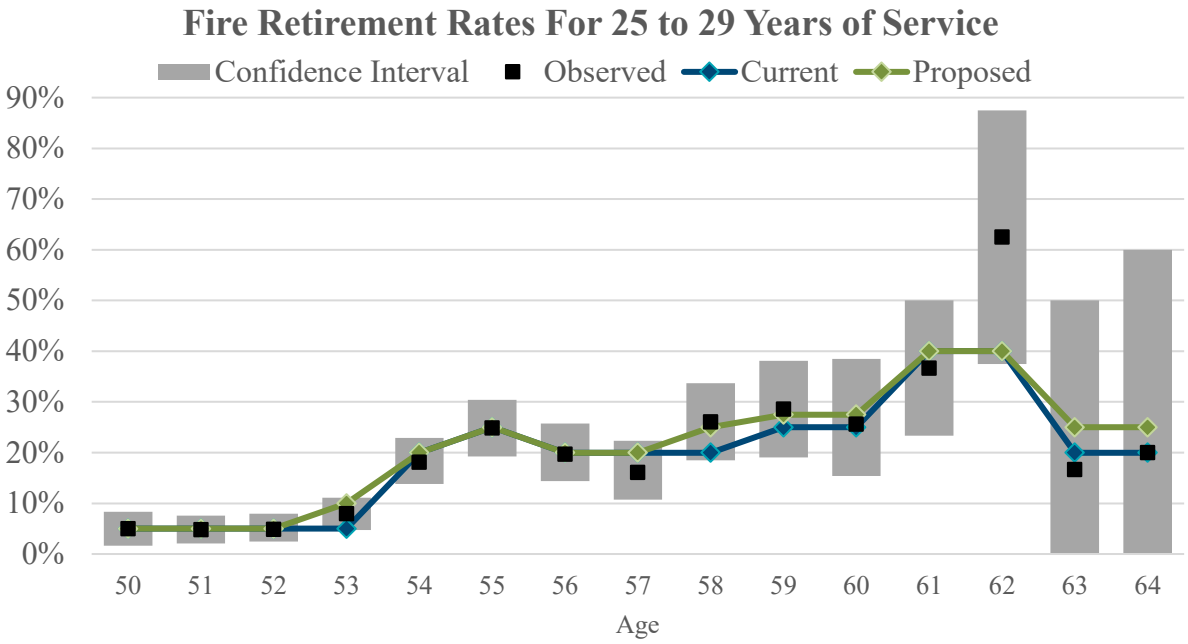
Table 3-R11 compares the retirement experience for Fire members with 25 to 29 years of service to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R11 on the following page shows the information graphically.

Table 3-R11

Fire Retirement Rates For 25 to 29 Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
50	120	6	6	6	5.00%	5.00%	5.00%	100%	100%
51	145	7	7	7	4.83%	5.00%	5.00%	97%	97%
52	164	8	8	8	4.88%	5.00%	5.00%	98%	98%
53	189	15	9	19	7.94%	5.00%	10.00%	159%	79%
54	188	34	38	38	18.09%	20.00%	20.00%	90%	90%
55	161	40	40	40	24.84%	25.00%	25.00%	99%	99%
56	132	26	26	26	19.70%	20.00%	20.00%	98%	98%
57	112	18	22	22	16.07%	20.00%	20.00%	80%	80%
58	92	24	18	23	26.09%	20.00%	25.00%	130%	104%
59	63	18	16	17	28.57%	25.00%	27.50%	114%	104%
60	39	10	10	11	25.64%	25.00%	27.50%	103%	93%
61	30	11	12	12	36.67%	40.00%	40.00%	92%	92%
62	8	5	3	3	62.50%	40.00%	40.00%	156%	156%
63	6	1	1	2	16.67%	20.00%	25.00%	83%	67%
64	5	1	1	1	20.00%	20.00%	25.00%	100%	80%
Subtotal	**1,454**	**224**	**219**	**236**	**15.41%**	**15.05%**	**16.23%**	**102%**	**95%**
65+	25	8	25	25	32.00%	100.00%	100.00%	32%	32%
Total	**1,479**	**232**	**244**	**261**	**15.69%**	**16.49%**	**17.65%**	**95%**	**89%**
Confidence Interval %			**100%**	**100%**					
R-squared			**95%**	**98%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R11



The experience is reasonably consistent with the current assumption, with minor reductions proposed at some ages. The proposed assumptions decrease the aggregate A/E ratio before age 65 from 102 to 95 percent, maintain the percentage of rates that are within the confidence interval at 100 percent, and increase the R-squared from 95 to 98 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

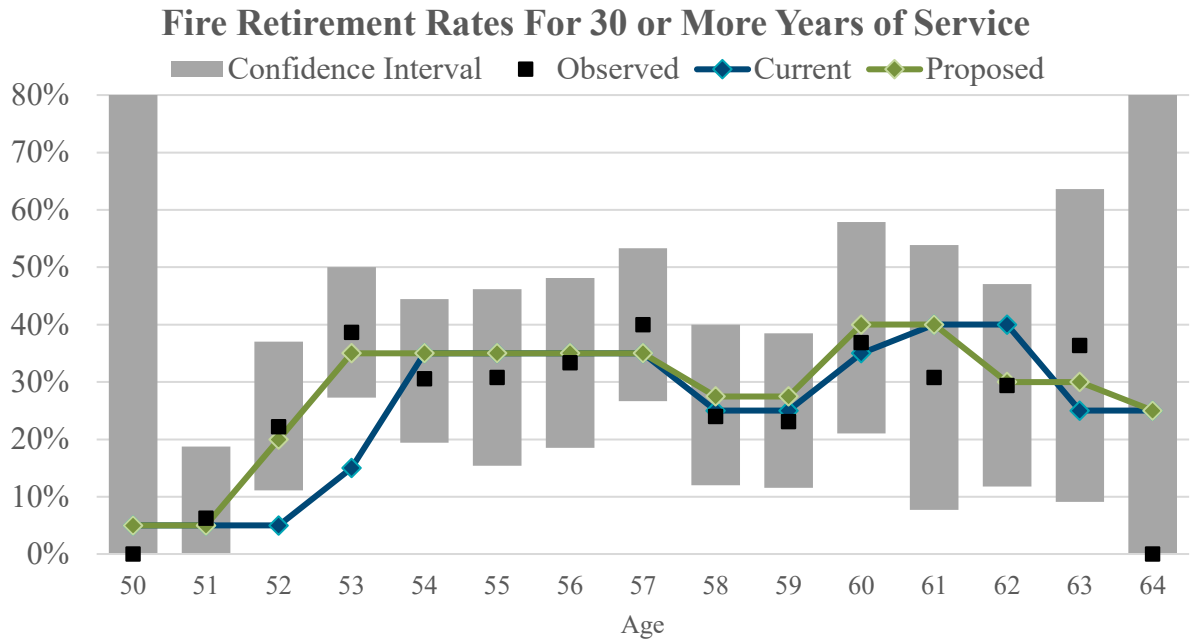
Table 3-R12 compares the retirement experience for Fire members with 30 or more years of service to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R12 on the following page shows the information graphically.

Table 3-R12

Fire Retirement Rates For 30 or More Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
50	6	0	0	0	0.00%	5.00%	5.00%	0%	0%
51	16	1	1	1	6.25%	5.00%	5.00%	125%	125%
52	27	6	1	5	22.22%	5.00%	20.00%	444%	111%
53	44	17	7	15	38.64%	15.00%	35.00%	258%	110%
54	36	11	13	13	30.56%	35.00%	35.00%	87%	87%
55	26	8	9	9	30.77%	35.00%	35.00%	88%	88%
56	27	9	9	9	33.33%	35.00%	35.00%	95%	95%
57	30	12	11	11	40.00%	35.00%	35.00%	114%	114%
58	25	6	6	7	24.00%	25.00%	27.50%	96%	87%
59	26	6	7	7	23.08%	25.00%	27.50%	92%	84%
60	19	7	7	8	36.84%	35.00%	40.00%	105%	92%
61	13	4	5	5	30.77%	40.00%	40.00%	77%	77%
62	17	5	7	5	29.41%	40.00%	30.00%	74%	98%
63	11	4	3	3	36.36%	25.00%	30.00%	145%	121%
64	7	0	2	2	0.00%	25.00%	25.00%	0%	0%
Subtotal	**330**	**96**	**87**	**101**	**29.09%**	**26.24%**	**30.46%**	**111%**	**95%**
65+	33	6	33	33	18.18%	100.00%	100.00%	18%	18%
Total	**363**	**102**	**120**	**134**	**28.10%**	**32.95%**	**36.78%**	**85%**	**76%**
Confidence Interval %			**87%**	**100%**					
R-squared			**54%**	**95%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R12



The experience is consistent with the current assumption, with increases proposed at a few ages and decreases proposed at other ages. The proposed assumptions decrease the aggregate A/E ratio prior to age 65 from 111 to 95 percent, increase the percentage of rates within the confidence interval from 85 to 100 percent, and increase the R-squared from 54 to 95 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Police Members

The analysis for Police members is based on retirement experience from July 1, 2014 through June 30, 2024. The current and proposed assumptions assume 100% retirement rates at age 65 and above. Separate rates are developed for members with:

- Less than 25 years of service,
- 25 to 29 years of service, and
- 30 or more years of service.

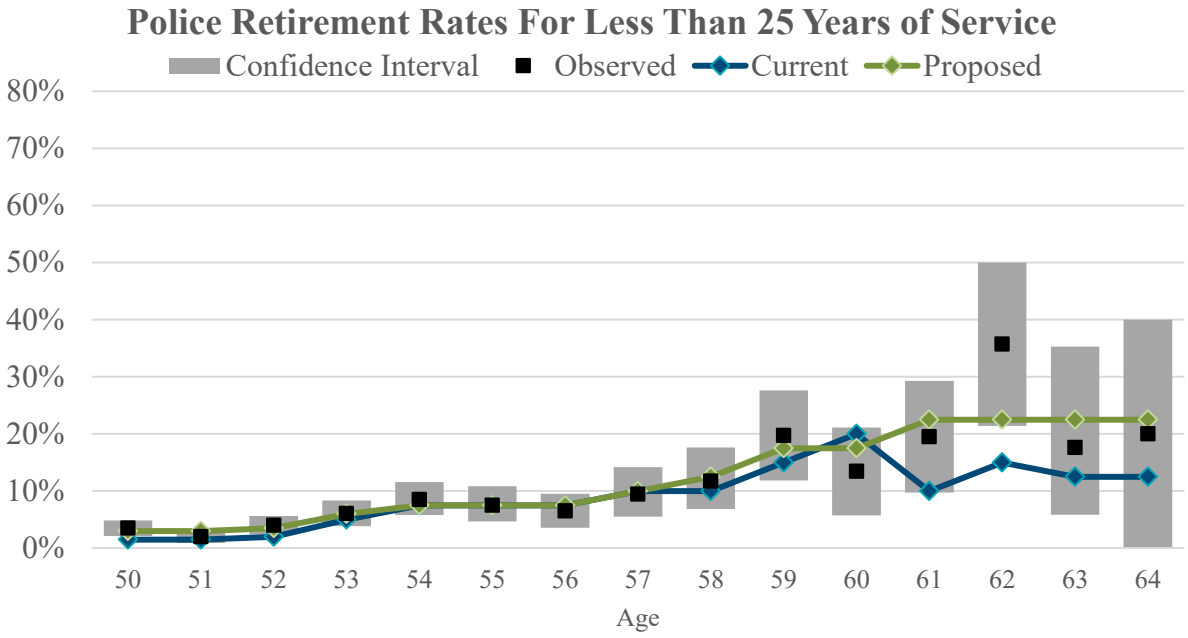
Table 3-R13 compares the retirement experience for Police members with less than 25 years of service to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R13 on the following page shows the information graphically.

Table 3-R13

Police Retirement Rates For Less Than 25 Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
50	513	18	8	15	3.51%	1.50%	3.00%	234%	117%
51	449	9	7	13	2.00%	1.50%	3.00%	134%	67%
52	374	15	7	13	4.01%	2.00%	3.50%	201%	115%
53	312	19	16	19	6.09%	5.00%	6.00%	122%	101%
54	259	22	19	19	8.49%	7.50%	7.50%	113%	113%
55	212	16	16	16	7.55%	7.50%	7.50%	101%	101%
56	168	11	13	13	6.55%	7.50%	7.50%	87%	87%
57	127	12	13	13	9.45%	10.00%	10.00%	94%	94%
58	102	12	10	13	11.76%	10.00%	12.50%	118%	94%
59	76	15	11	13	19.74%	15.00%	17.50%	132%	113%
60	52	7	10	9	13.46%	20.00%	17.50%	67%	77%
61	41	8	4	9	19.51%	10.00%	22.50%	195%	87%
62	28	10	4	6	35.71%	15.00%	22.50%	238%	159%
63	17	3	2	4	17.65%	12.50%	22.50%	141%	78%
64	10	2	1	2	20.00%	12.50%	22.50%	160%	89%
Subtotal	**2,740**	**179**	**142**	**178**	**6.53%**	**5.18%**	**6.50%**	**126%**	**101%**
65+	38	6	38	38	15.79%	100.00%	100.00%	16%	16%
Total	**2,778**	**185**	**180**	**216**	**6.66%**	**6.47%**	**7.78%**	**103%**	**86%**
Confidence Interval %			**80%**	**100%**					
R-squared			**63%**	**86%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R13



The experience is slightly higher than the current assumption. The proposed assumptions reduce the aggregate A/E ratio before age 65 from 126 to 101 percent, increase the percentage of rates within the confidence interval from 80 to 100 percent, and increase the R-squared from 63 percent to 86 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

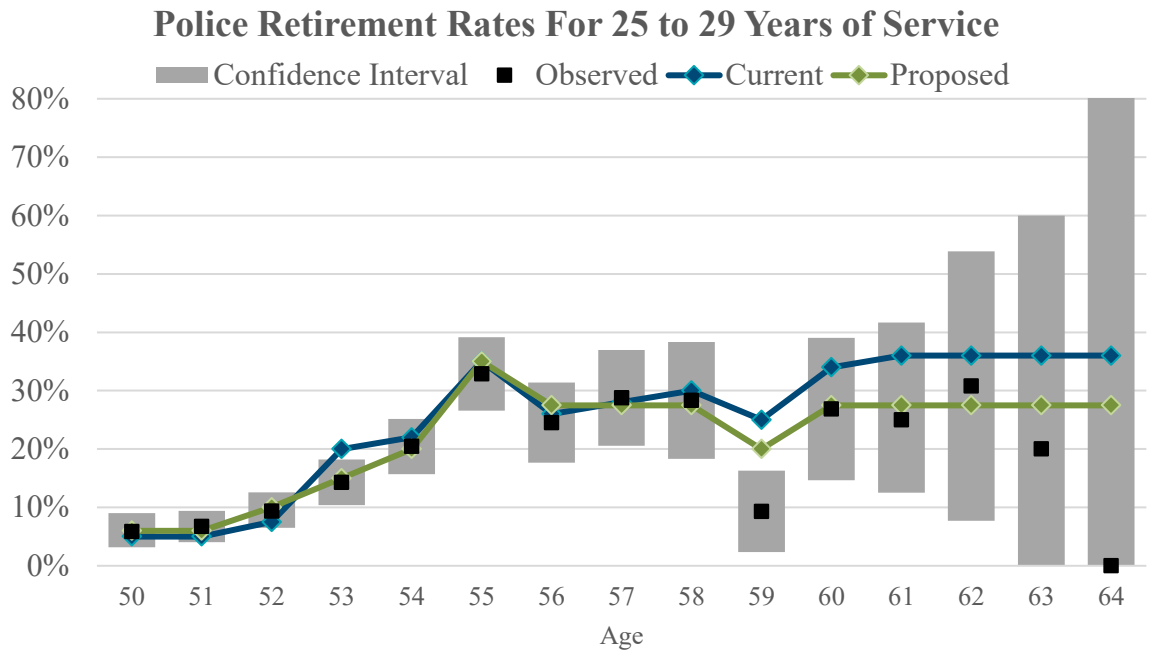
Table 3-R14 compares the retirement experience for Police members with 25 to 29 years of service to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R14 on the following page shows the information graphically.

Table 3-R14

Police Retirement Rates For 25 to 29 Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
50	189	11	9	11	5.82%	5.00%	6.00%	116%	97%
51	223	15	11	13	6.73%	5.00%	6.00%	135%	112%
52	247	23	19	25	9.31%	7.50%	10.00%	124%	93%
53	231	33	46	35	14.29%	20.00%	15.00%	71%	95%
54	191	39	42	38	20.42%	22.00%	20.00%	93%	102%
55	143	47	50	50	32.87%	35.00%	35.00%	94%	94%
56	102	25	27	28	24.51%	26.00%	27.50%	94%	89%
57	73	21	20	20	28.77%	28.00%	27.50%	103%	105%
58	60	17	18	17	28.33%	30.00%	27.50%	94%	103%
59	43	4	11	9	9.30%	25.00%	20.00%	37%	47%
60	41	11	14	11	26.83%	34.00%	27.50%	79%	98%
61	24	6	9	7	25.00%	36.00%	27.50%	69%	91%
62	13	4	5	4	30.77%	36.00%	27.50%	85%	112%
63	5	1	2	1	20.00%	36.00%	27.50%	56%	73%
64	7	0	3	2	0.00%	36.00%	27.50%	0%	0%
Subtotal	**1,592**	**257**	**285**	**270**	**16.14%**	**17.88%**	**16.98%**	**90%**	**95%**
65+	28	6	28	28	21.43%	100.00%	100.00%	21%	21%
Total	**1,620**	**263**	**313**	**298**	**16.23%**	**19.30%**	**18.41%**	**84%**	**88%**
Confidence Interval %			**87%**	**93%**					
R-squared			**93%**	**99%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R14



The experience is reasonably consistent with the current assumption, with minor adjustments proposed at some ages. The proposed assumptions increase the aggregate A/E ratio before age 65 from 90 to 95 percent, the percentage of rates that are within the confidence interval from 87 to 93 percent, and the R-squared from 93 to 99 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Table 3-R15 compares the retirement experience for Police members with 30 or more years of service to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R15 on the following page shows the information graphically.

Table 3-R15

Police Retirement Rates For 30 or More Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
50	6	0	0	0	0.00%	5.00%	5.00%	0%	0%
51	10	1	2	2	10.00%	15.00%	15.00%	67%	67%
52	28	8	6	8	28.57%	20.00%	30.00%	143%	95%
53	69	21	28	21	30.43%	40.00%	30.00%	76%	101%
54	79	43	40	40	54.43%	50.00%	50.00%	109%	109%
55	57	24	29	23	42.11%	50.00%	40.00%	84%	105%
56	52	17	21	18	32.69%	40.00%	35.00%	82%	93%
57	43	16	19	15	37.21%	45.00%	35.00%	83%	106%
58	26	6	12	9	23.08%	45.00%	35.00%	51%	66%
59	19	7	9	7	36.84%	45.00%	35.00%	82%	105%
60	11	4	5	4	36.36%	45.00%	35.00%	81%	104%
61	9	3	4	3	33.33%	40.00%	35.00%	83%	95%
62	10	3	4	4	30.00%	40.00%	35.00%	75%	86%
63	7	1	3	2	14.29%	40.00%	35.00%	36%	41%
64	7	0	3	2	0.00%	40.00%	35.00%	0%	0%
Subtotal	**433**	**154**	**182**	**158**	**35.57%**	**41.93%**	**36.40%**	**85%**	**98%**
65+	10	4	10	10	40.00%	100.00%	100.00%	40%	40%
Total	**443**	**158**	**192**	**168**	**35.67%**	**43.24%**	**37.83%**	**82%**	**94%**
Confidence Interval %			**87%**	**100%**					
R-squared			**95%**	**99%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R15

The experience is generally lower than the current assumption, with a slightly higher rate at age 52. The proposed assumptions increase the aggregate A/E ratio before age 65 from 85 to 98 percent, the percentage of rates within the confidence interval from 87 to 100 percent, and the R-squared from 95 percent to 99 percent.

PROP C RETIREMENT RATES

Prop C Members (hired on or after January 7, 2012, under the Charter Sections A8.603 and above) reach the highest benefit multiplier at a later age than non-Prop C members for the Miscellaneous and Police groups. A Miscellaneous member hired before January 7, 2012, reaches the highest benefit multiplier of 2.3% at age 62, while a member under Prop C does not reach 2.3% until age 65. Similarly, a Prop C Police member's highest benefit multiplier of 3.0% is not reached until age 58 compared to age 55 for members hired before January 7, 2012. In addition, the benefit multipliers at earlier ages are lower under Prop C.

For Fire members, Prop C retirement rates are the same as non-Prop C retirement rates because the benefit multipliers are now the same.

The current Prop C retirement rates were set using professional judgment to adjust the rates developed for non-Prop C members to reflect the difference in benefit multipliers at each age. During the study period, there was enough experience of members retiring with less than 20 years of service to propose modified assumptions for Miscellaneous and Craft members. Modifications to assumptions for Muni Drivers and Police members were made based on changes to the non-Prop C retirement rates.

The tables on the following pages show the current and proposed retirement rates for Prop C members.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Miscellaneous Members

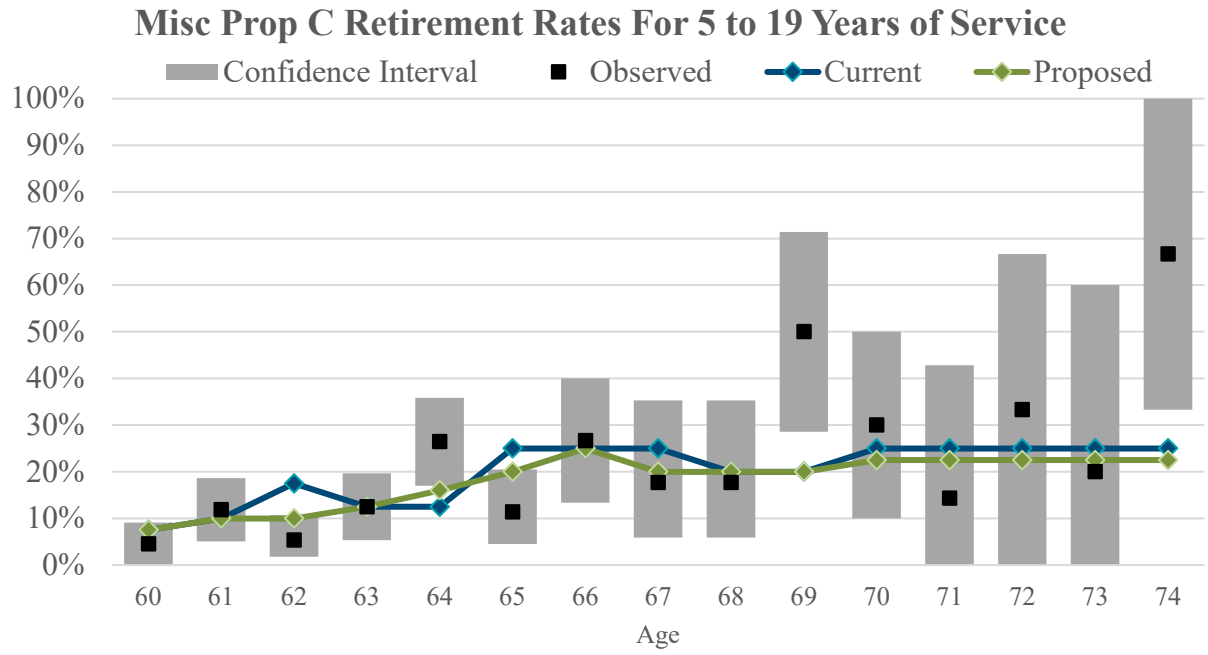
Table 3-R16 compares the retirement experience for Miscellaneous Prop C members to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R16 on the following page shows the information graphically.

Table 3-R16

Misc Prop C Retirement Rates For 5 to 19 Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
60	44	2	3	3	4.5%	7.5%	7.5%	61%	61%
61	59	7	6	6	11.9%	10.0%	10.0%	119%	119%
62	56	3	10	6	5.4%	17.5%	10.0%	31%	54%
63	56	7	7	7	12.5%	12.5%	12.5%	100%	100%
64	53	14	7	8	26.4%	12.5%	16.0%	211%	165%
65	44	5	11	9	11.4%	25.0%	20.0%	45%	57%
66	30	8	8	8	26.7%	25.0%	25.0%	107%	107%
67	17	3	4	3	17.6%	25.0%	20.0%	71%	88%
68	17	3	3	3	17.6%	20.0%	20.0%	88%	88%
69	14	7	3	3	50.0%	20.0%	20.0%	250%	250%
70	10	3	3	2	30.0%	25.0%	22.5%	120%	133%
71	7	1	2	2	14.3%	25.0%	22.5%	57%	63%
72	3	1	1	1	33.3%	25.0%	22.5%	133%	148%
73	5	1	1	1	20.0%	25.0%	22.5%	80%	89%
74	3	2	1	1	66.7%	25.0%	22.5%	267%	296%
TOTAL	**376**	**52**	**59**	**53**	**13.8%**	**15.6%**	**14.2%**	**88%**	**97%**
Confidence Interval %			**67%**	**80%**					
R-squared			**53%**	**76%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R16



The Prop C experience is slightly lower than the current assumptions. The proposed assumptions increase the aggregate A/E ratio from 88 to 97 percent, the percentage of rates within the confidence interval from 67 to 80 percent, and the R-squared from 53 to 76 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Craft Members

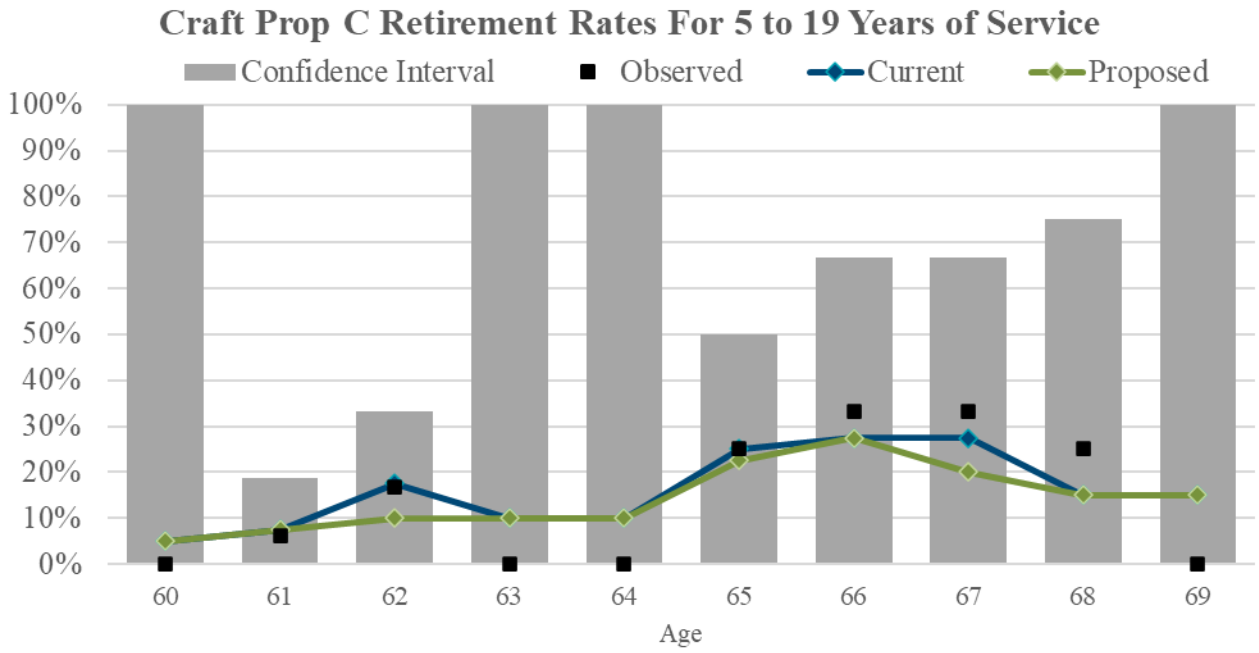
Table 3-R17 compares the retirement experience for Craft Prop C members to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-R17 on the following page shows the information graphically.

Table 3-R17

Craft Prop C Retirement Rates For 5 to 19 Years of Service									
		Retirements			Retirement Rates			A/E Ratios	
Age	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
60	13	0	1	1	0.0%	5.0%	5.0%	0%	0%
61	16	1	1	1	6.3%	7.5%	7.5%	83%	83%
62	12	2	2	1	16.7%	17.5%	10.0%	95%	167%
63	11	0	1	1	0.0%	10.0%	10.0%	0%	0%
64	8	0	1	1	0.0%	10.0%	10.0%	0%	0%
65	8	2	2	2	25.0%	25.0%	22.5%	100%	111%
66	3	1	1	1	33.3%	27.5%	27.5%	121%	121%
67	3	1	1	1	33.3%	27.5%	20.0%	121%	167%
68	4	1	1	1	25.0%	15.0%	15.0%	167%	167%
69	5	0	1	1	0.0%	15.0%	15.0%	0%	0%
Subtotal	**83**	**8**	**11**	**10**	**9.64%**	**13.07%**	**11.48%**	**74%**	**84%**
70+	6	1	6	6	16.7%	100.0%	100.0%	17%	17%
TOTAL	**89**	**9**	**17**	**16**	**10.1%**	**18.9%**	**17.4%**	**53%**	**58%**
Confidence Interval %			**83%**	**83%**					
R-squared			**82%**	**76%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart 3-R17



The preliminary Prop C experience is reasonably consistent with the current assumption, with minor adjustments proposed. The proposed assumptions increase the aggregate A/E ratio before age 70 from 74 percent to 84 percent, maintain the percentage of rates within the confidence interval at 83 percent, and slightly decrease the R-squared from 82 percent to 76 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Tables 3-R18 through 3-R21 provide the current and proposed Prop C member retirement assumptions for all service groups.

Table 3-R18

Miscellaneous Prop C Retirement Rates						
	10-19 Years of Service		20-29 Years of Service		30 + Years of Service	
Age	Current	Proposed	Current	Proposed	Current	Proposed
53	0.00%	0.00%	3.25%	2.50%	3.25%	3.25%
54	0.00%	0.00%	4.00%	3.00%	4.00%	4.00%
55	0.00%	0.00%	4.00%	4.00%	4.00%	4.00%
56	0.00%	0.00%	4.25%	4.00%	4.25%	4.25%
57	0.00%	0.00%	4.50%	4.50%	4.50%	4.50%
58	0.00%	0.00%	5.00%	5.00%	7.50%	7.50%
59	0.00%	0.00%	8.75%	8.00%	10.00%	10.00%
60	7.50%	7.50%	10.00%	10.00%	12.50%	12.50%
61	10.00%	10.00%	15.00%	15.00%	15.00%	15.00%
62	17.50%	10.00%	25.00%	20.00%	25.00%	25.00%
63	12.50%	12.50%	17.50%	17.50%	20.00%	20.00%
64	12.50%	16.00%	17.50%	17.50%	20.00%	20.00%
65	25.00%	20.00%	40.00%	35.00%	40.00%	40.00%
66	25.00%	25.00%	30.00%	30.00%	35.00%	30.00%
67	25.00%	20.00%	30.00%	30.00%	35.00%	30.00%
68	20.00%	20.00%	30.00%	30.00%	30.00%	30.00%
69	20.00%	20.00%	30.00%	30.00%	30.00%	30.00%
70	25.00%	22.50%	25.00%	25.00%	30.00%	25.00%
71	25.00%	22.50%	25.00%	25.00%	30.00%	25.00%
72	25.00%	22.50%	25.00%	25.00%	30.00%	25.00%
73	25.00%	22.50%	25.00%	25.00%	30.00%	25.00%
74	25.00%	22.50%	25.00%	25.00%	30.00%	25.00%
75 +	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Table 3-R19

Muni Drivers Prop C Retirement Rates						
	10-19 Years of Service		20-29 Years of Service		30 + Years of Service	
Age	Current	Proposed	Current	Proposed	Current	Proposed
53	0.00%	0.00%	1.00%	1.00%	1.50%	1.50%
54	0.00%	0.00%	1.00%	1.00%	1.50%	1.50%
55	0.00%	0.00%	1.00%	1.00%	5.00%	4.00%
56	0.00%	0.00%	1.00%	1.00%	5.00%	4.00%
57	0.00%	0.00%	2.00%	2.00%	5.00%	4.00%
58	0.00%	0.00%	2.00%	2.00%	5.00%	4.00%
59	0.00%	0.00%	2.00%	2.00%	5.00%	4.00%
60	5.00%	5.00%	10.00%	10.00%	15.00%	15.00%
61	7.50%	7.50%	12.50%	12.50%	20.00%	20.00%
62	10.00%	10.00%	15.00%	15.00%	30.00%	30.00%
63	10.00%	10.00%	20.00%	20.00%	25.00%	25.00%
64	10.00%	10.00%	25.00%	25.00%	25.00%	25.00%
65	27.50%	25.00%	30.00%	27.50%	40.00%	35.00%
66	27.50%	25.00%	30.00%	27.50%	35.00%	30.00%
67	27.50%	25.00%	30.00%	27.50%	35.00%	30.00%
68	27.50%	25.00%	30.00%	27.50%	35.00%	30.00%
69	27.50%	25.00%	30.00%	27.50%	35.00%	30.00%
70 +	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Table 3-R20

Craft Prop C Retirement Rates						
	10-19 Years of Service		20-29 Years of Service		30 + Years of Service	
Age	Current	Proposed	Current	Proposed	Current	Proposed
53	0.00%	0.00%	1.50%	1.50%	1.50%	1.50%
54	0.00%	0.00%	1.50%	1.50%	1.50%	1.50%
55	0.00%	0.00%	1.50%	1.50%	2.50%	2.50%
56	0.00%	0.00%	1.50%	1.50%	2.50%	2.50%
57	0.00%	0.00%	2.00%	2.00%	2.50%	2.50%
58	0.00%	0.00%	2.00%	2.00%	5.00%	7.50%
59	0.00%	0.00%	2.00%	2.00%	10.00%	10.00%
60	5.00%	5.00%	7.50%	7.50%	15.00%	15.00%
61	7.50%	7.50%	12.50%	12.50%	20.00%	25.00%
62	17.50%	10.00%	25.00%	25.00%	30.00%	30.00%
63	10.00%	10.00%	17.50%	15.00%	25.00%	25.00%
64	10.00%	10.00%	17.50%	17.50%	25.00%	25.00%
65	25.00%	22.50%	30.00%	27.50%	40.00%	40.00%
66	27.50%	27.50%	30.00%	27.50%	32.50%	27.50%
67	27.50%	20.00%	30.00%	27.50%	32.50%	27.50%
68	15.00%	15.00%	25.00%	27.50%	30.00%	27.50%
69	15.00%	15.00%	25.00%	27.50%	30.00%	40.00%
70 +	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Table 3-R21

Police Prop C Retirement Rates						
	24 or Less Years of Service		25-29 Years of Service		30 + Years of Service	
Age	Current	Proposed	Current	Proposed	Current	Proposed
50	1.50%	3.00%	5.00%	6.00%	5.00%	5.00%
51	1.50%	3.00%	5.00%	6.00%	10.00%	10.00%
52	2.00%	3.50%	7.50%	10.00%	20.00%	20.00%
53	5.00%	6.00%	15.00%	15.00%	25.00%	25.00%
54	7.50%	7.50%	17.50%	17.50%	30.00%	30.00%
55	7.50%	7.50%	20.00%	20.00%	35.00%	30.00%
56	7.50%	7.50%	24.00%	24.00%	35.00%	30.00%
57	10.00%	10.00%	26.00%	26.00%	40.00%	30.00%
58	10.00%	12.50%	35.00%	35.00%	60.00%	50.00%
59	15.00%	17.50%	25.00%	20.00%	45.00%	35.00%
60	20.00%	17.50%	34.00%	27.50%	45.00%	35.00%
61	10.00%	22.50%	36.00%	27.50%	40.00%	35.00%
62	15.00%	22.50%	36.00%	27.50%	40.00%	35.00%
63	12.50%	22.50%	36.00%	27.50%	40.00%	35.00%
64	12.50%	22.50%	36.00%	27.50%	40.00%	35.00%
65 +	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

The Police Prop C rates also apply to Miscellaneous Safety (Charter Section A8.610) and Sheriff's Department (Charter Section A8.608) members.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

RETIREMENT AGE FOR TERMINATED VESTED MEMBERS

If a vested terminated member does not elect a refund, he or she will receive a deferred annuity at retirement. Table 3-R22 shows the average age at which terminated members choose to begin their retirement benefits. The experience was consistent with the current assumption for Miscellaneous and Safety members. Consequently, we propose no changes.

Table 3-R22

Group	Deferred Retirement Count	Average Age at Deferred Retirement Date	Current Assumption	Proposed Assumption
Miscellaneous				
Reciprocal	345	59.4	60	60
Non-Reciprocal	696	57.1	55	55
Safety				
Non-Prop C	58	53.7	51	51
Prop C	N/A	N/A	55	55

DISABILITY RATES

This section analyzes the incidence of disability, the type of disability granted, and the level of Police and Fire industrial disability benefits. The analysis uses disability experience data from July 1, 2014 through June 30, 2024. Given the low number of disabilities reported, the primary analysis is based on 5-year age groups.

The reporting of a disability often occurs well after the member incurs the disability. Frequently, members appear on the valuation data as inactive or retired for several years before switching to disabled status. We adjusted the data to account for this timing lag. Table 3-D1 below shows the number of new disabilities reported in each of the last five valuations and the years before the valuation for which the disability was reported. For example, in the June 30, 2020 valuation, there were 71 new disabilities reported, and 25 of those disabilities occurred in FYE 2018 – two years before the valuation, while only 17 were reported in the year the disability occurred.

Table 3-D1

Disability Reporting Lag								
Timing	Valuation						Percent	Cumulative
Lag	2020	2021	2022	2023	2024	Total	Reported	Percent
0	17	13	15	24	19	88	24%	24%
1	7	15	4	14	9	49	13%	37%
2	25	16	10	15	26	92	25%	62%
3	13	19	11	20	24	87	24%	85%
4	7	6	8	7	4	32	9%	94%
5+	2	2	4	10	4	22	6%	100%
Total	71	71	52	90	86	370	100%	

To adjust for this reporting lag, the exposures for recent fiscal years are multiplied by the factors shown in Table 3-D2 that approximate the cumulative percentage of disabilities reported. That is, we assume only 25% of FYE 2024 disabilities have been reported in the valuation data, and the other 75% will be reported in future years. By multiplying the exposures for 2024 by 25%, we are reducing the weight given to 2024 data in the study and increasing the reported rates of disability to approximate what we expect to be the rate when all disabilities have been reported.

Table 3-D2

Disability Exposure Adjustment Factor						
FYE	2024	2023	2022	2021	2020	2019 -
Exposure Adjustment	25%	40%	60%	85%	95%	100%

Miscellaneous Members

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

Disability incidence rates are set by age separately for males and females.

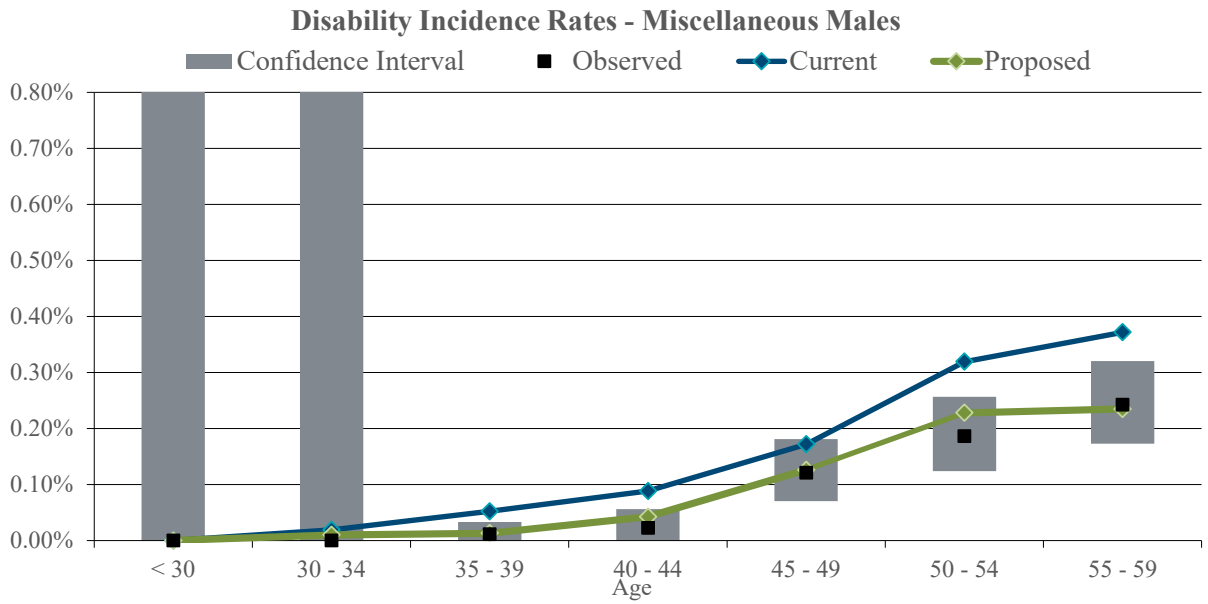
Table 3-D3 compares the disability experience for Miscellaneous male members to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-D3 on the following page shows the information graphically.

Table 3-D3

Disability Incidence Rates - Miscellaneous Males									
Age Band	Exposures	Disabilities			Average Disability Rates			A/E Ratios	
		Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
< 30	4,813	0	0	0	0.00%	0.00%	0.00%	0%	0%
30 - 34	7,601	0	1	1	0.00%	0.02%	0.01%	0%	0%
35 - 39	9,115	1	5	1	0.01%	0.05%	0.01%	21%	85%
40 - 44	8,936	2	8	4	0.02%	0.09%	0.04%	25%	53%
45 - 49	9,949	12	17	13	0.12%	0.17%	0.13%	70%	96%
50 - 54	11,298	21	36	26	0.19%	0.32%	0.23%	58%	82%
55 - 59	11,559	28	43	27	0.24%	0.37%	0.23%	65%	103%
60 +	11,137	0	0	0	0.00%	0.00%	0.00%	0%	0%
Total	**74,408**	**64**	**110**	**71**	**0.09%**	**0.15%**	**0.10%**	**58%**	**90%**
Confidence Interval %			**43%**	**100%**					
R-squared			**75%**	**79%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

Chart 3-D3



The experience is generally lower than the current assumption. The proposed assumptions increase the aggregate A/E ratio from 58 to 90 percent, the percentage of rates within the confidence interval from 43 to 100 percent, and the R-squared from 75 to 79 percent.

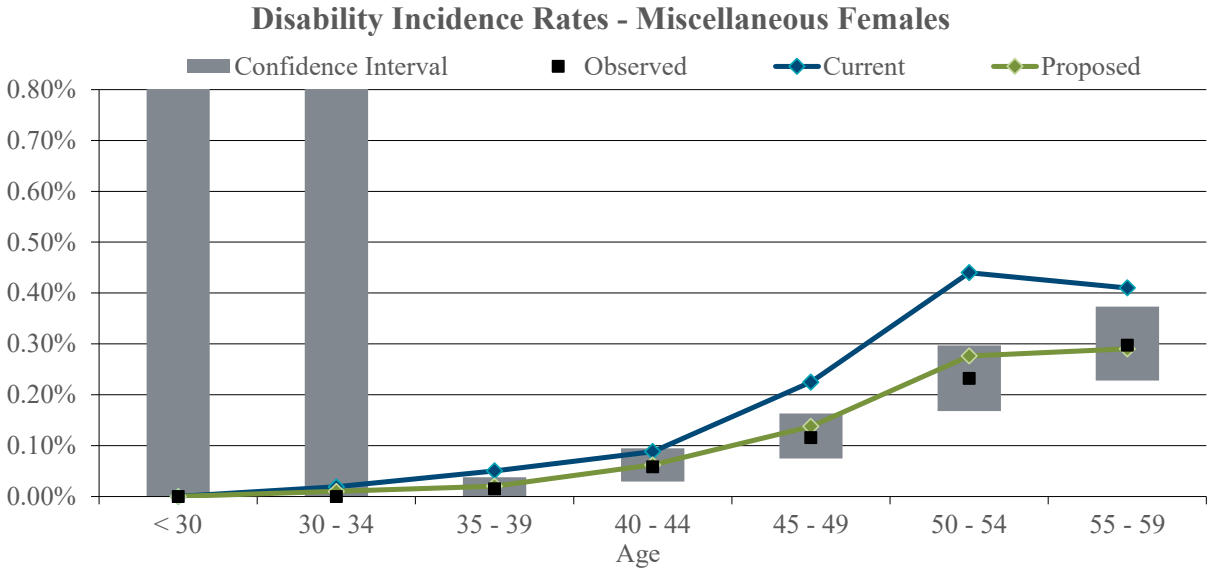
Table 3-D4 compares the disability experience for Miscellaneous female members to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-D4 on the following page shows the information graphically.

Table 3-D4

Disability Incidence Rates - Miscellaneous Females									
Age Band	Exposures	Disabilities			Average Disability Rates			A/E Ratios	
		Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
< 30	6,175	0	0	0	0.00%	0.00%	0.00%	0%	0%
30 - 34	11,223	0	2	1	0.00%	0.02%	0.01%	0%	0%
35 - 39	13,284	2	7	3	0.02%	0.05%	0.02%	30%	75%
40 - 44	13,746	8	12	9	0.06%	0.09%	0.06%	66%	94%
45 - 49	14,708	17	33	20	0.12%	0.22%	0.14%	51%	84%
50 - 54	15,506	36	68	43	0.23%	0.44%	0.28%	53%	84%
55 - 59	15,800	47	65	46	0.30%	0.41%	0.29%	73%	102%
60 +	14,692	0	0	0	0.00%	0.00%	0.00%	0%	0%
Total	**105,135**	**110**	**187**	**121**	**0.10%**	**0.18%**	**0.12%**	**59%**	**91%**
Confidence Interval %			**43%**	**100%**					
R-squared			**91%**	**90%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

Chart 3-D4



The experience is generally lower than the current assumption. The proposed assumptions increase the aggregate A/E ratio from 59 to 91 percent, the percentage of rates within the confidence interval from 43 to 100 percent, and the R-squared from 82 to 92 percent.

Muni Drivers and Craft Members

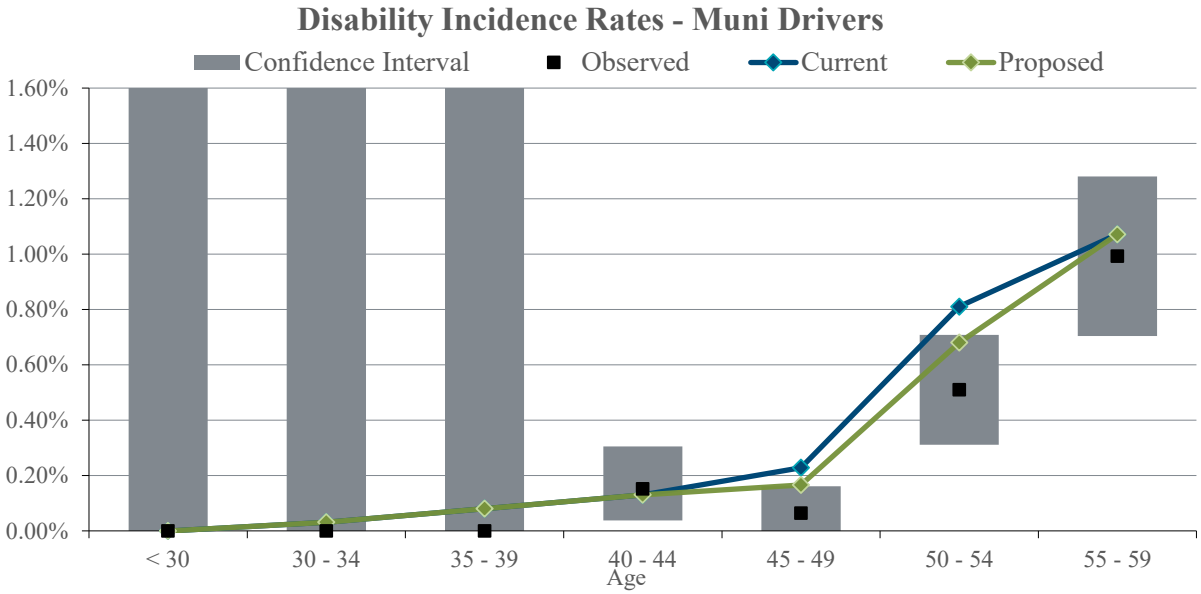
Table 3-D5 compares the disability experience for Muni Drivers to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-D5 on the following page shows the information graphically.

Table 3-D5

Disability Incidence Rates - Muni Drivers									
Age Band	Exposures	Disabilities			Average Disability Rates			Actual to Expected Ratios	
		Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
< 30	639	0	0	0	0.00%	0.00%	0.00%	0%	0%
30 - 34	1,657	0	1	1	0.00%	0.03%	0.03%	0%	0%
35 - 39	2,273	0	2	2	0.00%	0.08%	0.08%	0%	0%
40 - 44	2,618	4	3	3	0.15%	0.13%	0.13%	117%	117%
45 - 49	3,094	2	7	5	0.06%	0.23%	0.17%	28%	39%
50 - 54	3,527	18	29	24	0.51%	0.81%	0.68%	63%	75%
55 - 59	3,123	31	33	33	0.99%	1.07%	1.07%	93%	93%
60 +	2,047	0	0	0	0.00%	0.00%	0.00%	0%	0%
Total	**18,978**	**55**	**75**	**68**	**0.29%**	**0.39%**	**0.36%**	**73%**	**80%**
Confidence Interval %			**86%**	**100%**					
R-squared			**73%**	**78%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

Chart 3-D5



The experience is slightly lower than the current assumption at older ages. The proposed assumptions increase the aggregate A/E ratio from 73 to 80 percent, the percentage of rates within the confidence interval from 86 to 100 percent, and the R-squared from 73 to 78 percent.

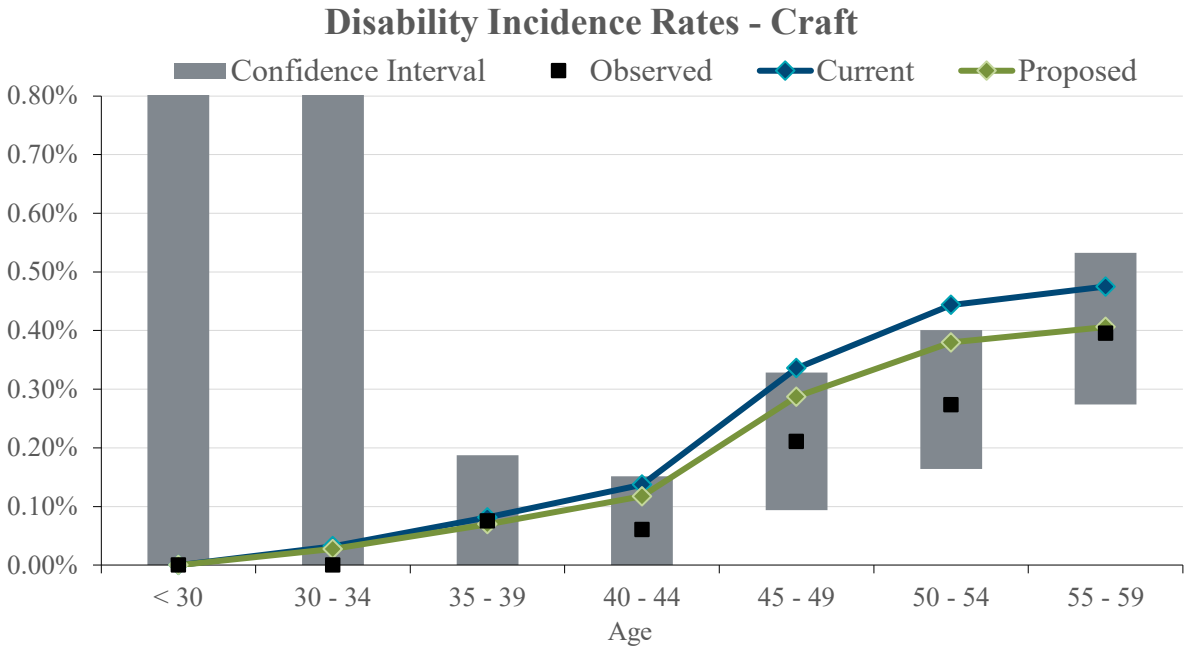
Table 3-D6 below compares the disability experience for Craft members to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-D6 below shows the information graphically.

Table 3-D6

Disability Incidence Rates - Craft									
Age Band	Exposures	Disabilities			Average Disability Rates			A/E Ratios	
		Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
< 30	887	0	0	0	0.00%	0.00%	0.00%	0%	0%
30 - 34	1,671	0	1	0	0.00%	0.03%	0.03%	0%	0%
35 - 39	2,665	2	2	2	0.08%	0.08%	0.07%	92%	108%
40 - 44	3,307	2	5	4	0.06%	0.14%	0.12%	44%	52%
45 - 49	4,267	9	14	12	0.21%	0.34%	0.29%	63%	73%
50 - 54	5,489	15	24	21	0.27%	0.44%	0.38%	62%	72%
55 - 59	6,575	26	31	27	0.40%	0.48%	0.41%	83%	97%
60 +	93	0	0	0	0.00%	0.00%	0.00%	0%	0%
Total	**24,952**	**54**	**77**	**66**	**0.22%**	**0.31%**	**0.26%**	**70%**	**82%**
Confidence Interval %			**71%**	**100%**					
R-squared			**75%**	**75%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

Chart 3-D6



The experience is slightly lower than the current assumption. The proposed assumptions increase the aggregate A/E ratio from 70 to 82 percent, increase the percentage of rates within the confidence interval from 71 to 100 percent, and maintain the R-squared at 75%.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

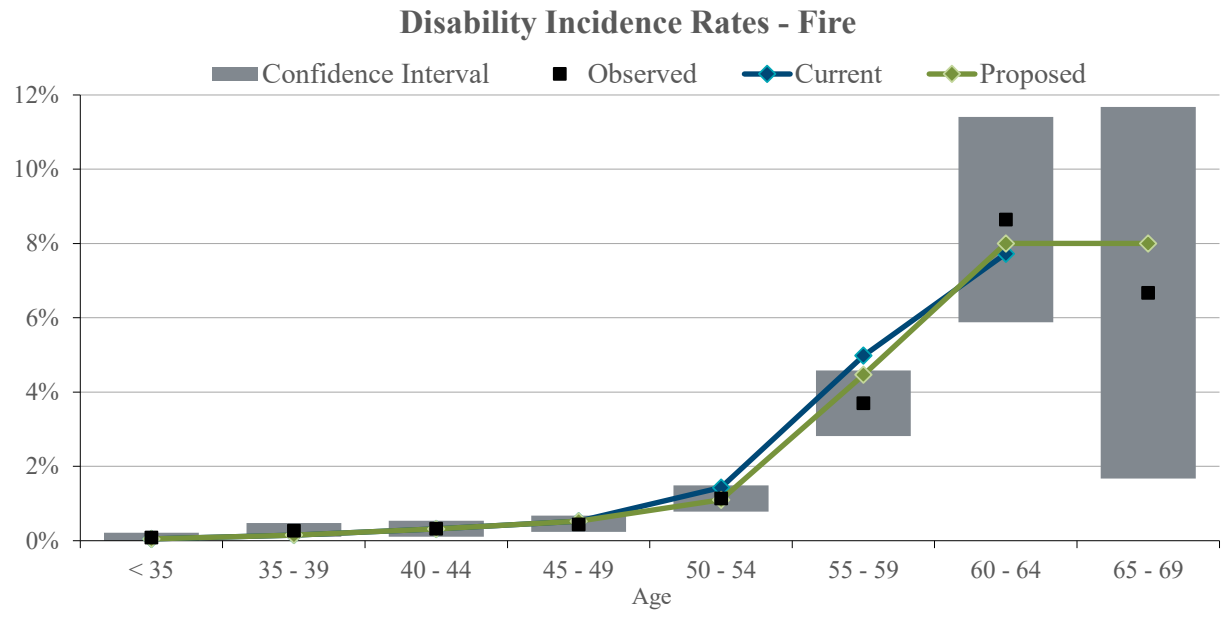
Safety Members

Table 3-D7 compares the disability experience for Fire members to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-D7 shows the information graphically.

Table 3-D7

Disability Incidence Rates - Fire									
Age Band	Exposures	Disabilities			Average Disability Rates			A/E Ratios	
		Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
< 35	2,347	2	1	1	0.09%	0.04%	0.04%	193%	193%
35 - 39	1,896	5	3	3	0.26%	0.15%	0.15%	177%	177%
40 - 44	1,860	6	6	6	0.32%	0.31%	0.31%	103%	103%
45 - 49	2,521	11	13	13	0.44%	0.52%	0.52%	83%	83%
50 - 54	2,555	29	36	28	1.14%	1.43%	1.10%	80%	103%
55 - 59	1,244	46	62	56	3.70%	4.98%	4.46%	74%	83%
60 - 64	289	25	22	23	8.64%	7.73%	8.00%	112%	108%
65 - 69	60	4	0	5	6.67%	N/A	8.00%	0%	83%
Total	**12,712**	**124**	**144**	**130**	**0.98%**	**1.13%**	**1.02%**	**86%**	**96%**
Confidence Interval %			**75%**	**100%**					
R-squared			**77%**	**77%**					

Chart 3-D7



The experience is generally lower than the current assumption through age 64, but for ages 65-69, the data is sufficient to show there should be an assumption for disability. The proposed assumptions increase the aggregate A/E ratio from 86 to 96 percent, increase the percentage of rates within the confidence interval from 86 to 100 percent, and maintain the R-squared at 77 percent.

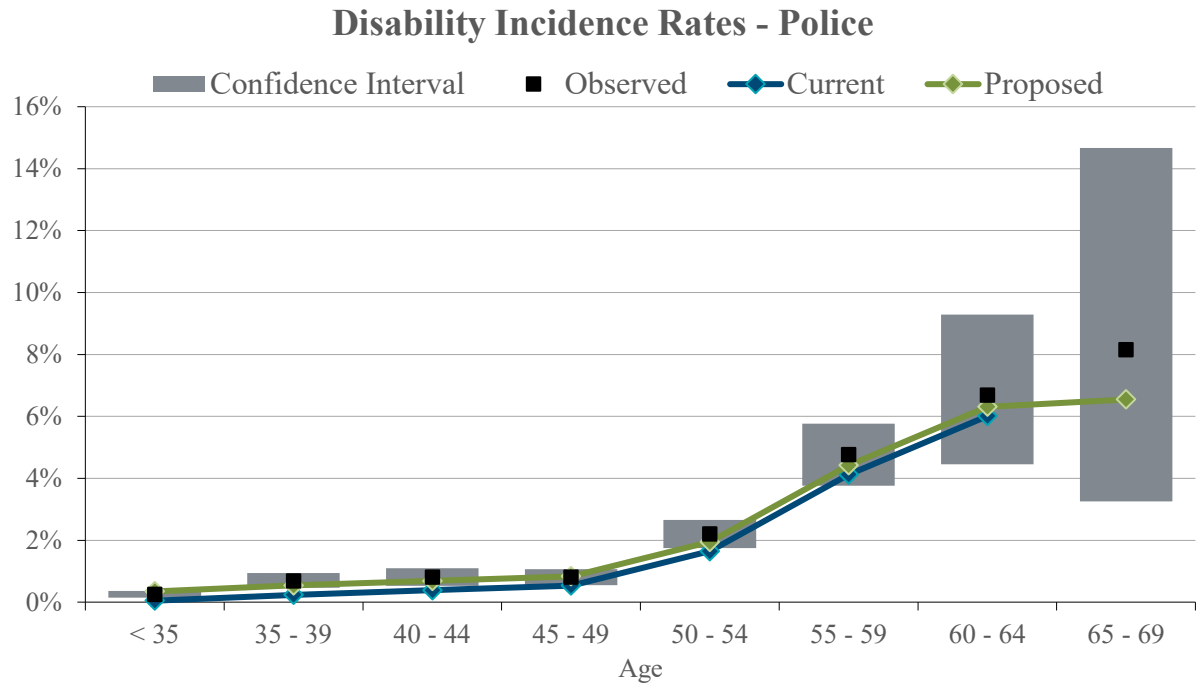
SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

Table 3-D8 below compares the disability experience for Police members to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-D8 shows the information graphically.

Table 3-D8

Disability Incidence Rates - Police									
Age Band	Exposures	Disabilities			Average Disability Rates			A/E Ratios	
		Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
< 35	5,931	15	3	21	0.25%	0.05%	0.35%	486%	72%
35 - 39	3,185	22	8	17	0.69%	0.24%	0.54%	286%	128%
40 - 44	2,823	23	11	19	0.81%	0.39%	0.69%	209%	118%
45 - 49	3,077	25	17	26	0.81%	0.54%	0.84%	151%	97%
50 - 54	2,858	63	47	56	2.20%	1.65%	1.95%	134%	113%
55 - 59	1,197	57	49	53	4.76%	4.12%	4.42%	115%	108%
60 - 64	269	18	16	17	6.69%	6.01%	6.31%	111%	106%
65 - 69	61	5	0	4	8.15%	N/A	6.55%	0%	124%
Total	**19,401**	**228**	**151**	**213**	**1.18%**	**0.78%**	**1.10%**	**151%**	**107%**
Confidence Interval %			**25%**	**100%**					
R-squared			**85%**	**88%**					

Chart 3-D8



The experience is slightly higher than the current assumption through age 64, and for ages 65-69, the data is sufficient to show there should be an assumption for disability. The proposed assumptions reduce the aggregate A/E ratio from 151 to 107 percent, increase the percentage of rates within the confidence interval from 71 to 100 percent, and increase the R-squared from 79 to 82 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

PROPORTION OF DUTY AND NON-DUTY DISABILITIES

The total disability rates cover both industrial and non-industrial disabilities. We currently assume that all disabilities to Safety members are industrial and all disabilities to Miscellaneous members are non-industrial. Based on actual incidences during the study period, we propose no changes to these assumptions.

Table 3-D9

Group	Industrial Disability Count	Total Disability Count	Percent Industrial	Current Assumption	Proposed Assumption
Safety	148	150	98.7%	100%	100%
Misc	0	210	0.0%	0%	0%

LEVEL OF POLICE AND FIRE INDUSTRIAL DISABILITY BENEFITS

When a police or fire member suffers an industrial disability prior to being eligible for qualified service retirement, the benefit prior to qualified service retirement is equal to final compensation multiplied by a percentage of disability as determined by the Workers' Compensation Appeals Board. The current assumption is that this level will be 55% for Police and Fire members. We propose no change to this assumption.

Table 3-D10

Group	Count	Average Level of Industrial Disability	Current Assumption	Proposed Assumption
Police	58	51.9%	55%	55%
Fire	15	52.4%	55%	55%

MORTALITY RATES

Mortality assumptions are developed separately by sex for active employees, healthy retirees, and disabled retirees. We exclude beneficiary experience from our analysis due to data quality issues and the potential impact of a widow(er) effect on mortality rates.

Unlike many of the other demographic assumptions that rely exclusively on the experience of the System, for mortality, published mortality tables and projection scales serve as the primary basis for the assumption.

The steps in our analysis are as follows:

1. Select an appropriate mortality improvement projection scale to apply to the base mortality table.
2. Select a published mortality table that is based on experience most closely matching the anticipated experience of the System.
3. Compare actual experience of the System to what would have been predicted by the selected published table projected to the central date of the experience study using the selected projection scale.
4. Adjust the published table either fully or partially depending on the level of credibility for the System's experience. This adjusted table is called the base table.

When actual experience of the System is compared to that of the published table, the experience is weighted based on the amount of benefit being paid (or salary for active members). Mortality studies in the U.S. have consistently shown that higher income individuals have longer life expectancies than lower income individuals. Because higher income individuals also typically have higher pension benefit amounts, it is important for a pension plan to use assumptions that are weighted to reflect the impact on the System's liability.

The first step described above develops a generational mortality assumption. Historically, pension plans used a static mortality assumption. That is, the same mortality rates were used for all members regardless of their year of birth. With mortality improvements, however, we expect that the mortality rate at age 70, for example, will be different for someone who is currently age 40 than it is for someone who is age 70 today.

In contrast, a generational mortality assumption uses a separate mortality table for each birth year so that the mortality rate at age 70 of someone 40 today reflects 30 years of expected mortality improvement, while the rate for someone currently age 70 does not. A generational assumption more accurately measures the liability associated with each individual. And, when each future experience study is performed, there will be an equal chance that mortality rates need to be adjusted up or down. Consequently, the Society of Actuaries and others strongly recommend using generational mortality assumptions. SFERS first adopted a generational mortality assumption in 2015.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Mortality Projection Scale

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 Society of Actuaries publishes a mortality improvement scale based on three key concepts:

- Recently observed experience is the best predictor of future near-term mortality improvement rates.
- Long-term mortality improvement rates should be based on "expert opinion" and analysis of longer-term mortality patterns.
- Near-term rates should transition smoothly into the assumed long-term mortality improvement rates over appropriately selected convergence periods.

The current assumption uses Scale MP-2019, which is based on Social Security data from 1950 through 2016 and estimated 2017 experience based on data from the CDC, Census Bureau, and CMS. We propose to update the mortality projection scale to MP-2021, which adds two more years of data. After MP-2021, the Society of Actuaries suspended releases of mortality improvement scales due to the influence of COVID on the projections.

The current mortality assumptions use the Pub 2010 mortality tables for all groups. Since the prior study, the Society of Actuaries Research Institute's Retirement Plans Experience Committee (RPEC) released the Pub-2016 Public Retirement Plans Mortality Tables. This analysis will use the amount-weighted General and Public Safety Pub-2016 Above-Median tables for healthy lives, and the Pub-2016 Disabled Retiree tables for disabled lives.

Our analysis is based on the System's experience from 2014 through 2024, producing a central year for the study of 2019. Since the central year of the Pub-2016 tables is 2016, our analysis adjusts those tables for mortality improvement to 2019 using scale MP-2021 to compare to the System's experience.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Healthy Retiree Mortality

Table 3-M1 summarizes our analysis and development of the base mortality table for Miscellaneous healthy male retirees. The total actual-to-expected ratios are shown on the lower right side of the table. The ratio for the current assumption is 99.6 percent. Since this is a benefit-weighted analysis, this means that $99.60 of benefits ceased due to actual deaths for every $100 of benefits expected to cease based on the current assumption. Ideally, this ratio would be 100 percent.

We propose to update the base table to the general healthy retiree table "PubG-2016(A)," for males multiplied by 1.11. With 3,318 deaths, the System's experience is fully credible, so the published table is fully adjusted for the System's experience. The adjusted table produces an actual-to-expected ratio of 100 percent.

Table 3-M1

Healthy Annuitant Mortality - Base Table for Miscellaneous Males								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Proposed	Current	Proposed
50 - 54	1,575	11	2,618,359	21,268	9,443	8,311	225%	256%
55 - 59	4,329	37	9,880,270	67,967	53,555	48,260	127%	141%
60 - 64	12,764	114	49,020,375	356,971	391,607	356,705	91%	100%
65 - 69	22,908	286	95,884,400	1,029,162	1,092,846	992,003	94%	104%
70 - 74	21,875	408	96,612,270	1,526,032	1,761,970	1,611,851	87%	95%
75 - 79	15,328	535	66,093,585	2,303,177	2,092,827	1,984,269	110%	116%
80 - 84	10,235	603	40,849,018	2,288,828	2,345,786	2,297,702	98%	100%
85 - 89	5,953	628	22,315,238	2,251,027	2,276,677	2,350,298	99%	96%
90 - 94	2,738	471	9,604,781	1,651,625	1,614,903	1,831,601	102%	90%
95 +	779	225	2,380,139	695,043	606,466	723,547	115%	96%
Total	**98,484**	**3,318**	**395,258,435**	**12,191,100**	**12,246,081**	**12,204,548**	**100%**	**100%**

The chart on the next page shows the actual mortality rates for five-year age bands from age 50 to age 94 plus all experience for ages 95 and older, the 90 percent confidence interval for each age band, the current assumption, and the proposed base table assumption.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Chart 3-M1

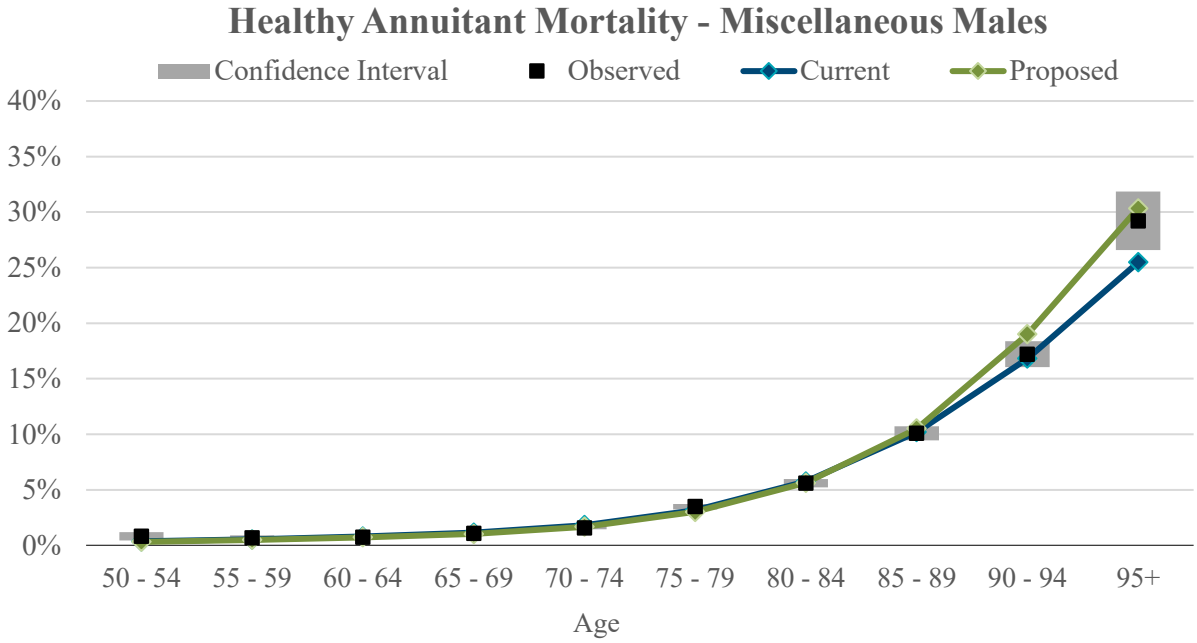


Table 3-M2 on the following page summarizes our analysis and development of the base mortality table for Miscellaneous healthy female retirees. The total actual-to-expected ratios are shown on the lower right side of the table. The ratio for the current assumption is 93.3 percent. Since this is a benefit-weighted analysis, this means that there were $93.30 of benefits that ceased due to actual deaths for every $100.00 of benefits expected to cease based on the current assumption. Ideally, this ratio would be 100 percent.

We propose to update the base table to the general healthy retiree table "PubG-2016(A)," for females multiplied by 0.93. With 2,169 deaths, the actual experience of the System is fully credible, so the published table is fully adjusted for the System's experience. The adjusted table produces an actual-to-expected ratio of 100 percent.

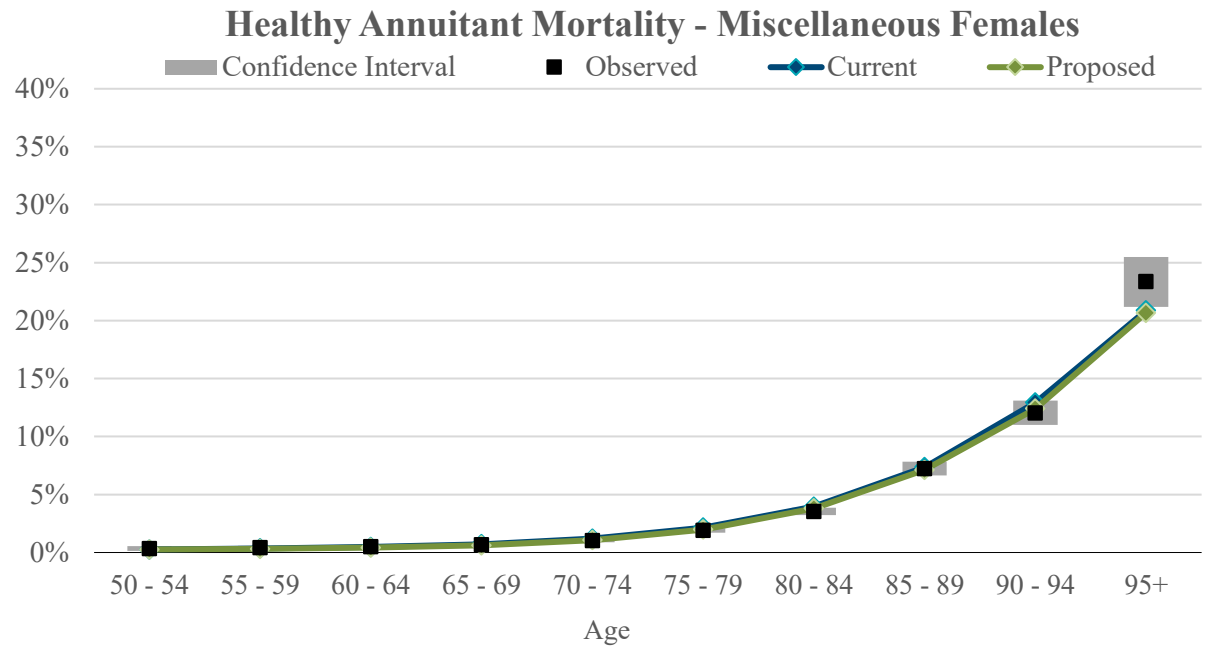
SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Table 3-M2

Healthy Annuitant Mortality - Base Table for Miscellaneous Females								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Proposed	Current	Proposed
50 - 54	2,167	9	3,464,490	11,227	8,685	8,329	129%	135%
55 - 59	5,520	22	11,808,099	48,277	40,494	35,468	119%	136%
60 - 64	13,879	86	51,168,072	246,256	243,932	209,884	101%	117%
65 - 69	21,953	161	87,217,969	570,812	615,598	524,509	93%	109%
70 - 74	19,551	233	76,164,984	767,612	906,252	798,677	85%	96%
75 - 79	13,648	308	50,172,813	947,160	1,071,152	981,119	88%	97%
80 - 84	8,790	349	28,952,643	1,023,684	1,142,067	1,093,674	90%	94%
85 - 89	5,207	402	14,804,973	1,070,234	1,087,981	1,053,743	98%	102%
90 - 94	2,674	337	6,821,150	820,586	881,217	848,784	93%	97%
95 +	1,044	262	2,378,070	555,346	496,273	491,666	112%	113%
Total	**94,433**	**2,169**	**332,953,263**	**6,061,194**	**6,493,651**	**6,045,854**	**93%**	**100%**

Chart 3-M2 shows the actual mortality rates for five-year age bands from age 50 to age 94, plus all experience for ages 95 and older, the 90 percent confidence interval for each age band, the current assumption, and the proposed base table assumption.

Chart 3-M2



SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Table 3-M3 summarizes our analysis and development of the base mortality table for Safety healthy male retirees. The total actual-to-expected ratios are shown on the lower right side of the table. The ratio for the current assumption is 86 percent.

We propose to update the base table to the safety healthy retiree table "PubS-2016(A)," for males multiplied by 0.98. With 483 deaths, the actual experience of the System is only 67 percent credible, so the published table is partially adjusted for the System's experience. The adjusted table produces an actual-to-expected ratio of 99 percent.

Table 3-M3

Healthy Annuitant Mortality - Base Table for Safety Males								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Proposed	Current	Proposed
50 - 54	586	3	4,286,706	19,751	10,012	9,384	197%	210%
55 - 59	2,775	15	28,619,579	122,393	107,542	88,854	114%	138%
60 - 64	4,250	16	46,295,853	164,528	294,065	208,066	56%	79%
65 - 69	4,416	40	48,606,362	423,214	500,938	363,482	84%	116%
70 - 74	3,766	62	38,469,467	592,574	666,251	544,985	89%	109%
75 - 79	2,543	61	23,019,734	504,851	707,162	602,411	71%	84%
80 - 84	1,487	69	12,472,354	562,791	699,505	620,415	80%	91%
85 - 89	917	89	7,553,766	697,081	763,745	690,494	91%	101%
90 - 94	508	87	4,107,752	637,322	684,877	645,217	93%	99%
95 +	157	41	1,210,841	330,013	289,853	318,518	114%	104%
Total	**21,405**	**483**	**214,642,414**	**4,054,518**	**4,723,950**	**4,091,825**	**86%**	**99%**

Chart 3-M3 on the next page shows the actual mortality rates for five-year age bands from age 50 to age 94 plus all experience for ages 95 and older, the 90 percent confidence interval for each age band, the current assumption, and the proposed base table assumption.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Chart 3-M3

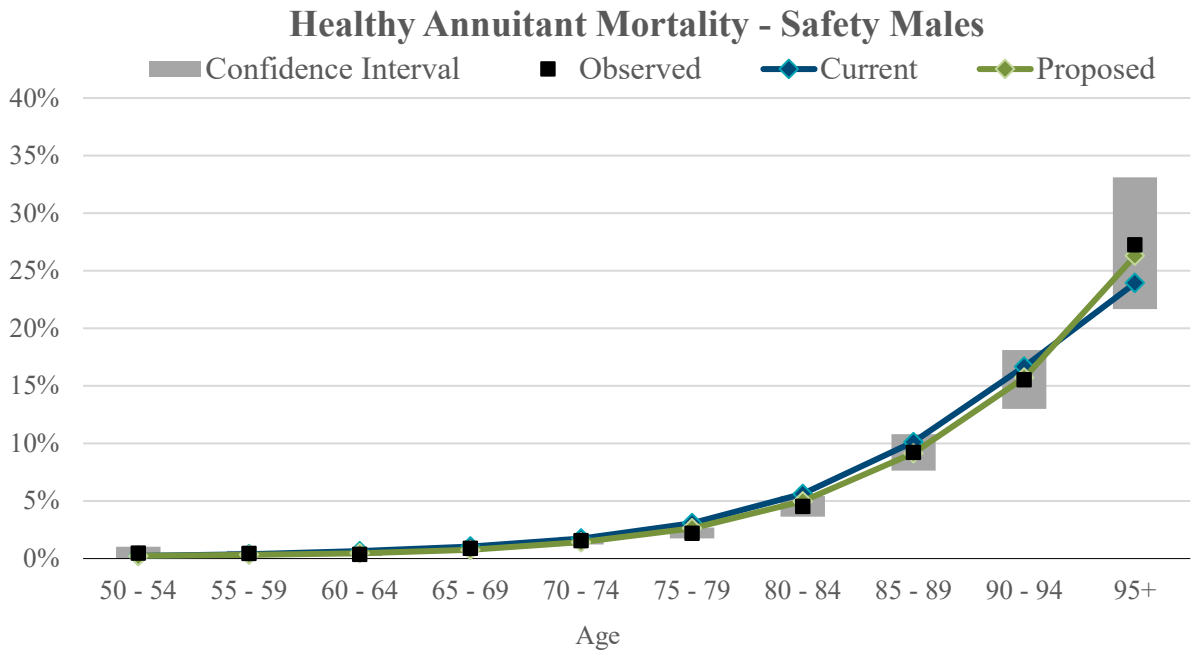


Table 3-M4 on the following page summarizes our analysis and development of the base mortality table for Safety healthy female retirees. The total actual-to-expected ratios are shown on the lower right side of the table. The ratio for the current assumption is 87 percent.

We propose to update the base table to the safety healthy retiree table "PubS-2016(A)," for females multiplied by 1.001. With 50 deaths, the actual experience of the System is only 21 percent credible, so the published table is only partially adjusted for the System's experience. The adjusted table produces an actual-to-expected ratio of 102 percent.

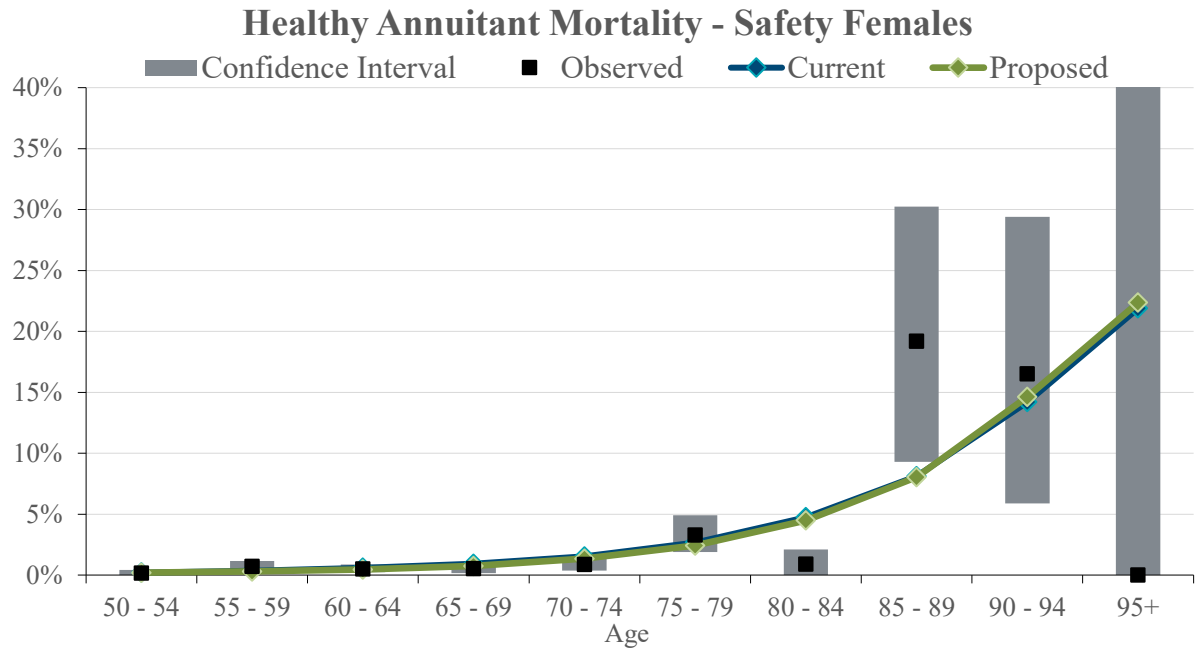
SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Table 3-M4

Healthy Annuitant Mortality - Base Table for Safety Females								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Proposed	Current	Proposed
50 - 54	455	2	2,059,961	3,550	4,379	3,996	81%	89%
55 - 59	1,039	5	7,060,041	50,894	26,096	21,424	195%	238%
60 - 64	1,252	10	8,809,637	44,662	52,792	40,462	85%	110%
65 - 69	1,151	5	7,125,487	37,641	66,070	52,911	57%	71%
70 - 74	782	6	3,749,511	32,809	57,654	50,594	57%	65%
75 - 79	367	13	1,432,510	47,138	38,359	34,825	123%	135%
80 - 84	143	3	514,473	4,594	24,432	23,063	19%	20%
85 - 89	43	4	123,847	23,764	10,065	9,956	236%	239%
90 - 94	17	2	31,442	5,192	4,463	4,599	116%	113%
95 +	8	0	16,205	0	3,546	3,624	0%	0%
Total	**5,257**	**50**	**30,923,114**	**250,244**	**287,856**	**245,454**	**87%**	**102%**

Chart 3-M4 shows the actual mortality rates for five-year age bands from age 50 to age 94, the 90 percent confidence interval for each age band, the current assumption, and the proposed base table assumption.

Chart 3-M4



SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Disabled Retiree Mortality

Table 3-M5 summarizes our analysis and development of the base mortality table for Miscellaneous disabled male retirees. The total actual-to-expected ratios are shown on the lower right side of the table. The ratio for the current assumption is 98 percent.

We propose to update the base table to the non-safety disabled retiree table "PubNS-2016," for males multiplied by 1.12. With 316 deaths, the system's actual experience is only 54 percent credible, so the published table is partially adjusted for the System's experience. The adjusted table produces an actual-to-expected ratio of 107 percent.

Table 3-M5

Disabled Annuitant Mortality - Base Table for Miscellaneous Males								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Proposed	Current	Proposed
50 - 54	387	3	895,792	5,164	16,648	10,586	31%	49%
55 - 59	928	23	2,474,617	71,860	60,415	44,571	119%	161%
60 - 64	1,268	24	3,359,623	58,567	98,216	83,571	60%	70%
65 - 69	1,314	39	3,363,451	98,598	115,389	96,076	85%	103%
70 - 74	1,130	60	2,950,907	159,859	124,280	104,688	129%	153%
75 - 79	858	52	2,189,378	135,909	123,789	116,087	110%	117%
80 - 84	572	34	1,380,186	72,820	113,641	113,737	64%	64%
85 - 89	308	47	651,538	107,594	80,088	85,515	134%	126%
90 - 94	110	21	241,886	43,139	44,171	50,737	98%	85%
95 +	42	13	81,204	27,888	21,326	25,349	131%	110%
Total	**6,917**	**316**	**17,588,582**	**781,398**	**797,963**	**730,917**	**98%**	**107%**

Chart 3-M5 on the following page shows the actual mortality rates for five-year age bands from age 50 to age 94, plus all experience for ages 95 and older, the 90 percent confidence interval for each age band, the current assumption, and the proposed base table assumption.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Chart 3-M5

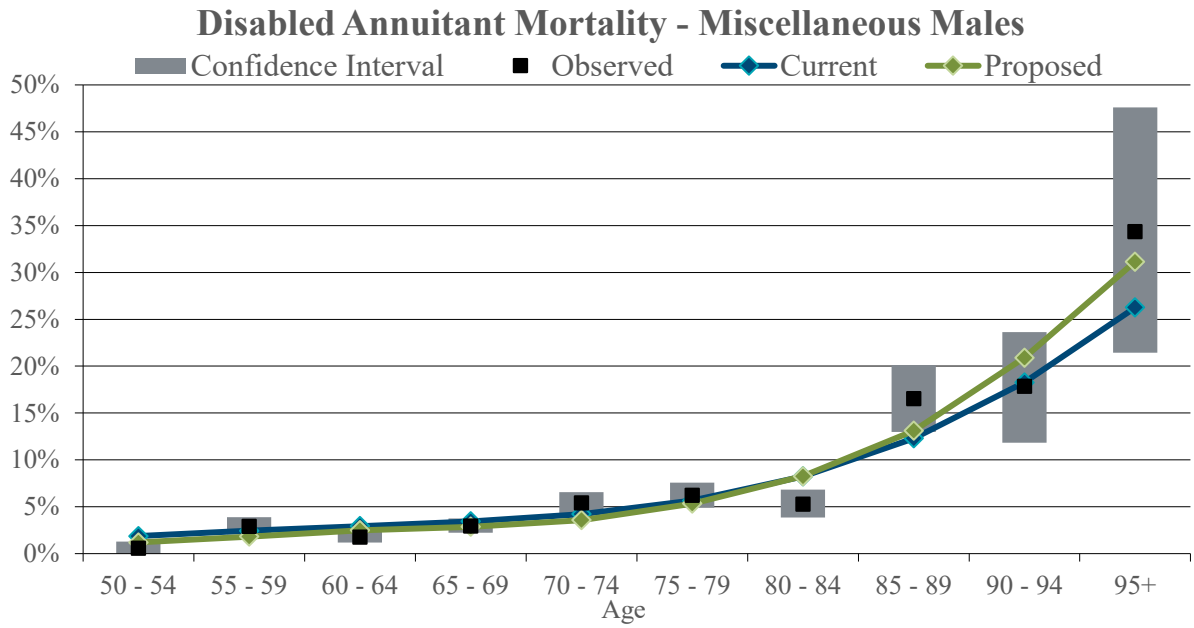


Table 3-M6 on the following page summarizes our analysis and development of the base mortality table for Miscellaneous disabled female retirees. The total actual-to-expected ratios are shown on the lower right side of the table. The ratio for the current assumption is 89 percent.

We propose to update the base table to the non-safety disabled retiree table "PubNS-2010," for females multiplied by 1.02. With 203 deaths, the system's actual experience is only 44 percent credible, so the published table is partially adjusted for the System's experience. The adjusted table produces an actual-to-expected ratio of 102 percent.

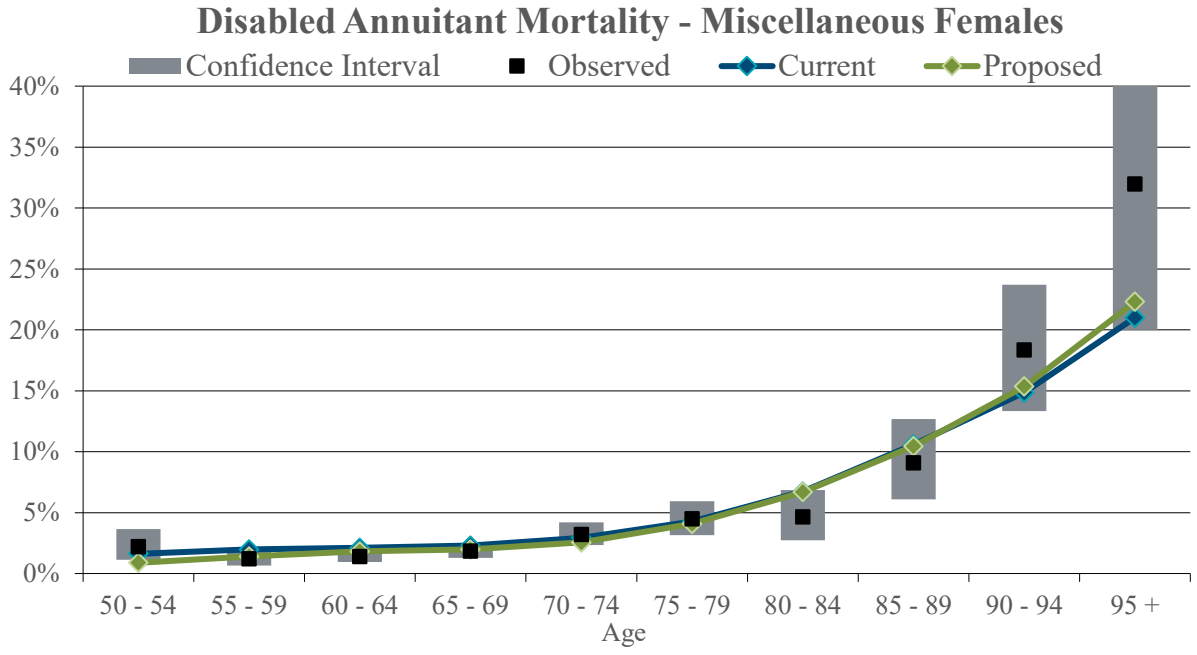
SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Table 3-M6

Disabled Annuitant Mortality - Base Table for Miscellaneous Females								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Proposed	Current	Proposed
<50	121	2	306,948	6,023	3,462	1,740	174%	346%
50 - 54	355	7	964,272	21,282	15,719	8,652	135%	246%
55 - 59	1,056	12	2,861,050	34,886	56,692	39,935	62%	87%
60 - 64	1,577	26	4,555,668	63,956	96,476	82,806	66%	77%
65 - 69	1,385	25	4,058,202	75,503	93,539	80,513	81%	94%
70 - 74	976	32	2,568,539	82,796	75,720	65,509	109%	126%
75 - 79	538	29	1,247,103	56,125	53,402	50,752	105%	111%
80 - 84	291	16	566,751	26,345	38,164	37,773	69%	70%
85 - 89	197	18	341,688	31,036	36,214	35,595	86%	87%
90 - 94	135	25	219,596	40,311	32,668	33,595	123%	120%
95 +	45	13	80,764	25,824	16,968	17,955	152%	144%
Total	**6,676**	**205**	**17,770,581**	**464,087**	**519,024**	**454,825**	**89%**	**102%**

The chart below shows the actual mortality rates for five-year age bands from age 50 to age 94, plus all experience for ages 95 and older, the 90 percent confidence interval for each age band, the current assumption, and the proposed base table assumption.

Chart 3-M6



SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Table 3-M7 summarizes our analysis and development of the base mortality table for Safety disabled male retirees. The total actual-to-expected ratios are shown on the lower right side of the table. The ratio for the current assumption is 99 percent.

We propose to update the base table to the safety disabled retiree table "PubS-2016," for males multiplied by 0.94. With 385 deaths, the actual experience of the System is only 60 percent credible, so the published table is partially adjusted for the System's experience. The adjusted table produces an actual-to-expected ratio of 95 percent.

Table 3-M7

Disabled Annuitant Mortality - Base Table for Safety Males								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Proposed	Current	Proposed
<50	319	1	1,817,834	5,364	4,125	4,878	130%	110%
50 - 54	302	1	1,966,592	5,118	7,037	8,154	73%	63%
55 - 59	773	2	6,976,889	22,468	38,366	39,246	59%	57%
60 - 64	1,472	10	14,941,394	96,370	130,257	120,133	74%	80%
65 - 69	2,216	30	22,028,037	262,866	286,343	276,754	92%	95%
70 - 74	2,429	44	22,628,653	392,930	450,752	460,709	87%	85%
75 - 79	1,876	70	15,965,641	523,309	539,393	546,662	97%	96%
80 - 84	1,100	63	8,528,297	467,591	487,934	527,407	96%	89%
85 - 89	626	66	4,302,179	433,006	420,918	464,910	103%	93%
90 - 94	320	67	2,183,785	434,951	350,244	372,375	124%	117%
95 +	115	31	749,181	215,794	175,625	196,653	123%	110%
Total	**11,548**	**385**	**102,088,482**	**2,859,767**	**2,890,993**	**3,017,881**	**99%**	**95%**

Chart 3-M7 on the next page shows the actual mortality rates for five-year age bands from age 50 to age 94, plus all experience for ages 95 and older, the 90 percent confidence interval for each age band, the current assumption, and the proposed base table assumption.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Chart 3-M7

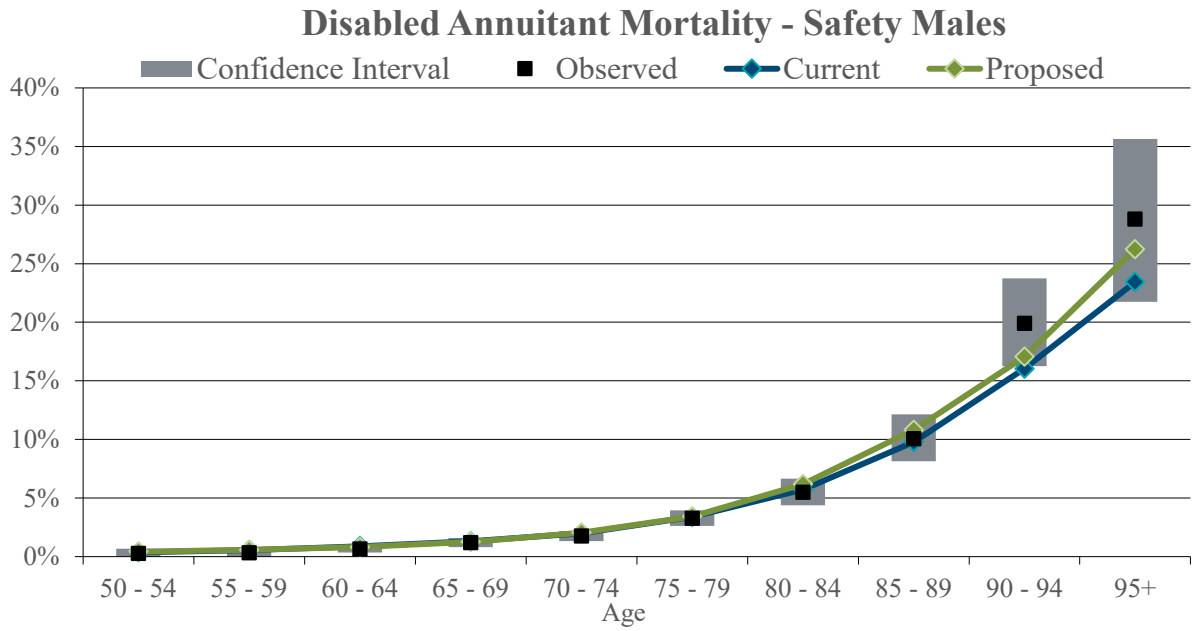


Table 3-M8 on the following page summarizes our analysis and development of the base mortality table for Safety disabled female retirees. The total actual-to-expected ratios are shown on the lower right side of the table. The ratio for the current assumption is 67 percent.

We propose to update the base table to the safety disabled retiree table "PubS-2016," for females multiplied by 0.96. With 10 deaths, the actual experience of the System is only 10 percent credible, so the published table is partially adjusted for the System's experience. The adjusted table produces an actual-to-expected ratio of 65 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

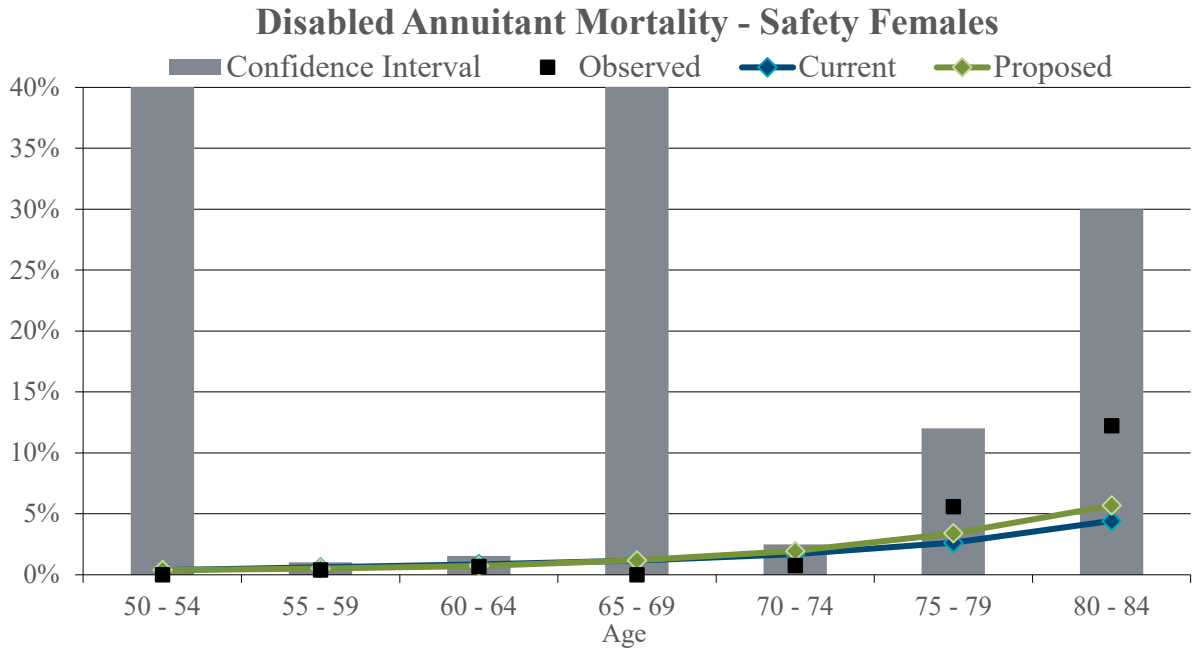
Table 3-M8

Disabled Annuitant Mortality - Base Table for Safety Females								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Proposed	Current	Proposed
< 50	142	0	791,671	-	1,735	1,837	0%	0%
50 - 54	182	0	1,114,847	-	4,128	4,196	0%	0%
55 - 59	297	2	2,392,131	8,827	14,228	12,030	62%	73%
60 - 64	324	3	2,824,177	19,126	23,780	20,151	80%	95%
65 - 69	227	0	2,191,729	-	25,373	25,718	0%	0%
70 - 74	121	1	1,153,035	8,774	19,331	22,418	45%	39%
75 - 79	50	3	403,506	22,481	10,567	13,755	213%	163%
80 - 84	10	1	73,399	8,962	3,235	4,183	277%	214%
85 - 89	0	0	0	-	0	-	0%	0%
90 - 94	0	0	0	0	0	0	0%	0%
95 +	0	0	0	-	0	-	0%	0%
Total	**1,353**	**10**	**10,944,495**	**68,170**	**102,376**	**104,286**	**67%**	**65%**

Chart 3-M8 on the following page shows the actual mortality rates for five-year age bands from age 50 to age 89, the 90 percent confidence interval for each age band, the current assumption, and the proposed base table assumption.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Chart 3-M8



Non-Annuitant (Employee) Mortality

Table 3-M9 on the following page summarizes our analysis and development of the base mortality table for Miscellaneous male non-annuitants. The total actual-to-expected ratios are shown on the lower right side of the table. For the current assumption for males, the actual-to-expected ratio is 60 percent.

We propose to update the base table to the general employee table "PubG-2016(A)" for males multiplied by 0.84. With 151 deaths, the System's experience is only 37 percent credible, so the published table is partially adjusted for the System's experience. The adjusted table produces an actual-to-expected ratio of 67 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Table 3-M9

Non-Annuitant Mortality - Base Table for Miscellanous Males								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratio	
				Actual	Current	Proposed	Current	Proposed
20 - 29	7,173	1	511,047,797	90,202	168,730	147,909	53%	61%
30 - 39	29,626	5	2,648,370,305	359,011	1,433,046	1,062,301	25%	34%
40 - 49	38,155	14	3,730,700,521	1,215,342	3,127,794	2,800,422	39%	43%
50 - 59	48,838	58	4,870,773,322	5,302,802	8,734,084	7,803,683	61%	68%
60 - 69	23,646	62	2,333,969,767	5,253,119	8,078,333	7,546,033	65%	70%
70 +	1,783	11	180,947,274	1,365,312	995,210	1,023,130	137%	133%
Total	**149,221**	**151**	**14,275,808,986**	**13,585,788**	**22,537,196**	**20,383,478**	**60%**	**67%**

Chart 3-M9 shows the actual mortality rates for 10-year age bands from age 20 to age 69, the 90 percent confidence interval for each age band, the current assumption, and the proposed base table assumption.

Chart 3-M9

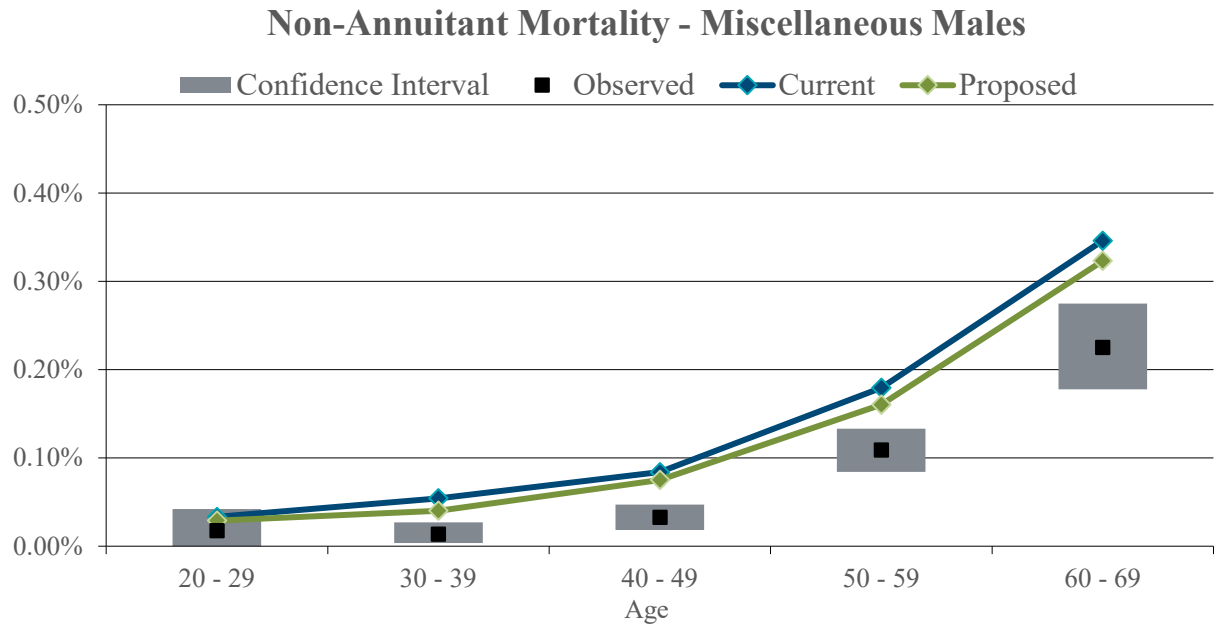


Table 3-M10 on the next page summarizes our analysis and development of the base mortality table for Miscellaneous female non-annuitants. The total actual-to-expected ratios are shown on the lower right side of the table. The actual-to-expected ratio is 49 percent for the current assumption.

We propose to update the base table to the general employee table "PubG-2016(A)," for females multiplied by 0.86. With 66 deaths, the System's experience is only 25 percent credible, so the

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

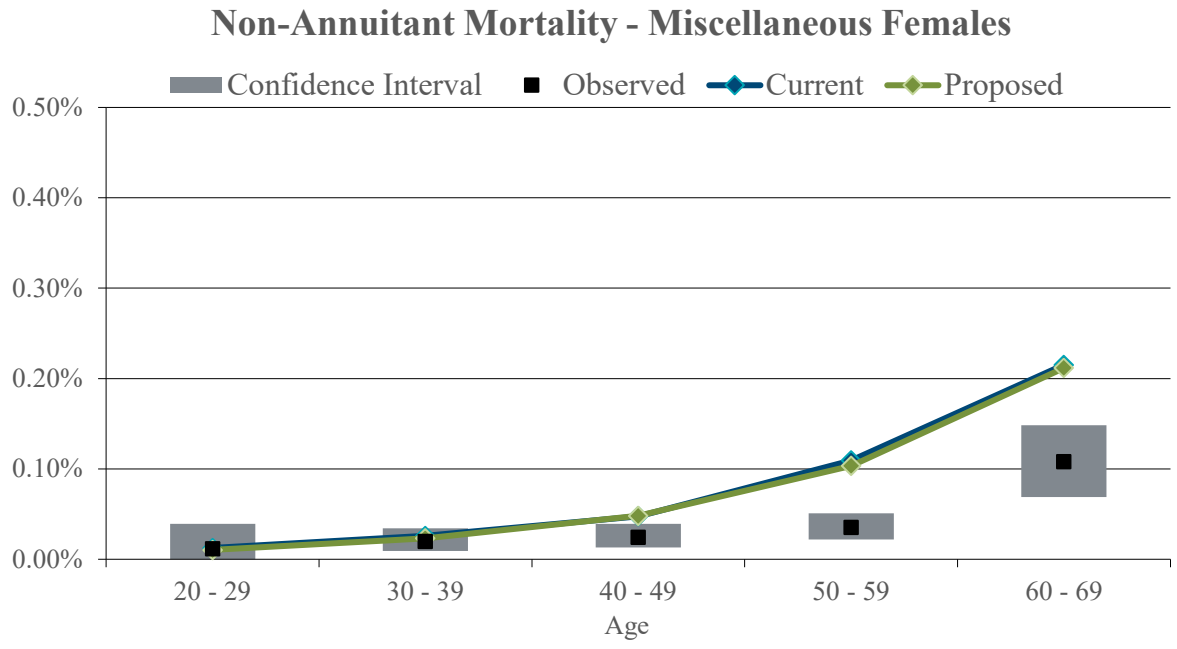
published table is partially adjusted for the System's experience. The adjusted table produces an actual-to-expected ratio of 51 percent.

Table 3-M10

Non-Annuitant Mortality - Base Table for Miscellaneous Females								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratio	
				Actual	Current	Proposed	Current	Proposed
20 - 29	7,670	1	561,661,156	65,957	69,537	58,509	95%	113%
30 - 39	32,280	5	2,951,552,357	584,600	765,632	682,834	76%	86%
40 - 49	38,388	12	3,792,438,467	920,468	1,807,338	1,822,488	51%	51%
50 - 59	41,409	14	3,994,383,007	1,412,419	4,367,433	4,128,350	32%	34%
60 - 69	18,883	25	1,798,666,454	1,940,495	3,867,769	3,809,098	50%	51%
70 +	1,422	9	126,302,599	627,980	487,149	479,578	129%	131%
Total	**140,052**	**66**	**13,225,004,040**	**5,551,919**	**11,364,858**	**10,980,858**	**49%**	**51%**

Chart 3-M10 shows the actual mortality rates for 10-year age bands from age 20 to age 69, the 90 percent confidence interval for each age band, the current assumption, and the proposed base table assumption.

Chart 3-M10



SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Table 3-M11 summarizes our analysis and development of the base mortality table for Safety male non-annuitants. The total actual-to-expected ratios are shown on the lower right side of the table. For the current assumption for males, the actual-to-expected ratio is 36 percent.

We propose to update the base table to the safety employee table "PubS-2016," for males multiplied by 0.94. With 12 deaths, the System's experience is only 11 percent credible, so the published table is partially adjusted for the System's experience. The adjusted table produces an actual-to-expected ratio of 44 percent.

Table 3-M11

Non-Annuitant Mortality - Base Table for Safety Males								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratio	
				Actual	Current	Proposed	Current	Proposed
20 - 29	3,289	0	306,333,477	-	152,938	106,381	0%	0%
30 - 39	10,888	1	1,271,323,977	77,554	819,811	577,474	9%	13%
40 - 49	10,558	2	1,465,683,543	269,336	1,247,906	1,007,166	22%	27%
50 - 59	8,162	7	1,251,008,982	1,067,923	1,956,030	1,683,159	55%	63%
60 - 69	738	2	110,788,481	241,392	380,903	368,352	63%	66%
70 +	27	0	4,143,052	0	30,099	32,182	0%	0%
Total	**33,662**	**12**	**4,409,281,512**	**1,656,205**	**4,587,686**	**3,774,713**	**36%**	**44%**

Chart 3-M11 on the next page shows the actual mortality rates for 10-year age bands from age 20 to age 69, the 90 percent confidence interval for each age band, the current assumption, and the proposed base table assumption.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Chart 3-M11

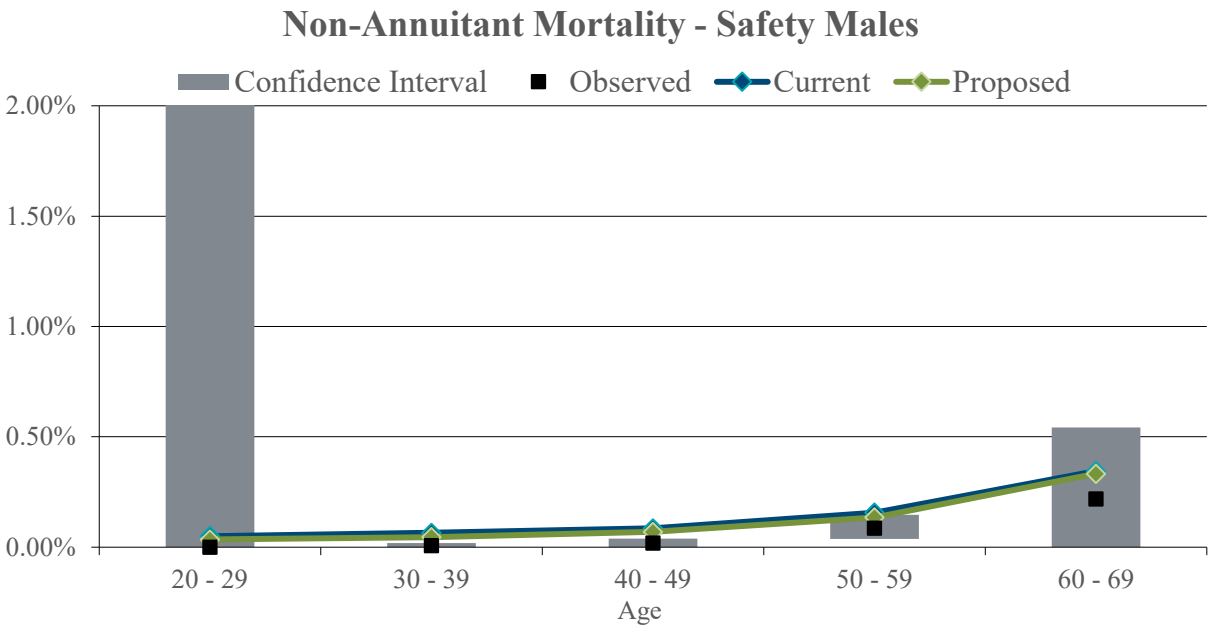


Table 3-M12 summarizes our analysis and development of the base mortality table for Safety female non-annuitants. The total actual-to-expected ratios are shown on the lower right side of the table. The actual-to-expected ratio is 59 percent for the current assumption.

We propose to update the base table to the safety employee table "PubS-2016(A)," for females multiplied by 0.98. With only 3 deaths, the System's experience is only 5 percent credible, so the published table is only partially adjusted for the System's experience. The adjusted table produces an actual-to-expected ratio of 64 percent.

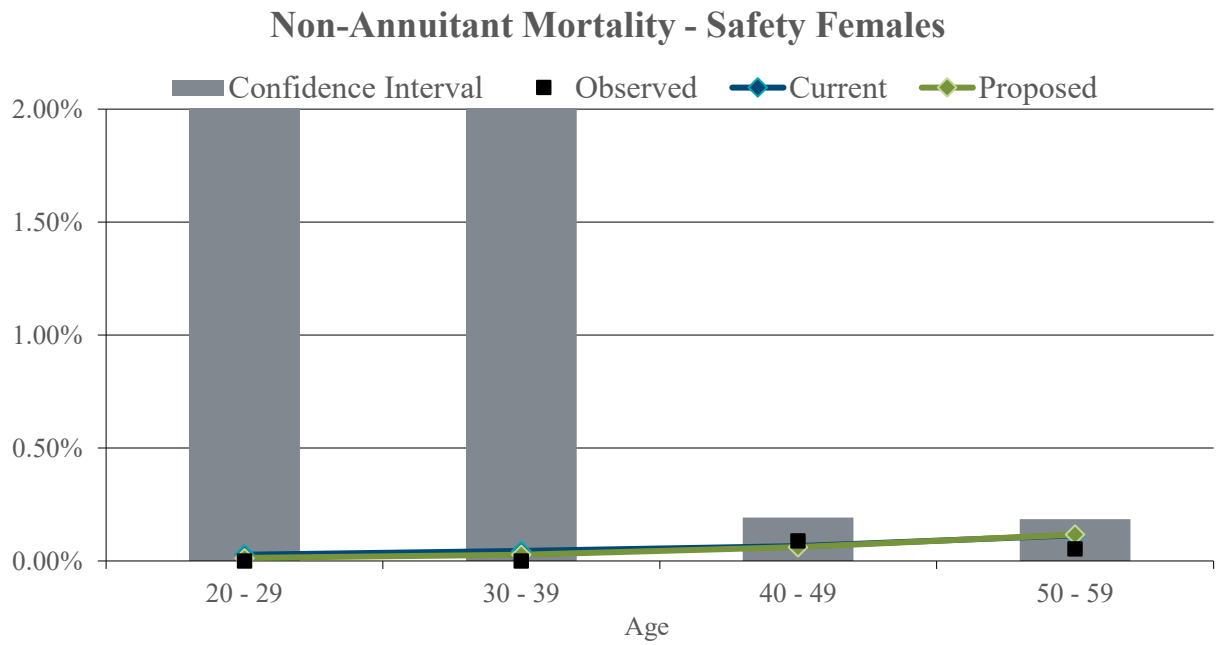
Table 3-M12

Non-Annuitant Mortality - Base Table for Safety Females								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratio	
				Actual	Current	Proposed	Current	Proposed
20 - 29	771	0	69,984,688	-	19,416	9,202	0%	0%
30 - 39	2,189	0	244,123,024	-	108,622	68,372	0%	0%
40 - 49	2,076	2	278,111,302	246,041	182,641	170,837	135%	144%
50 - 59	1,624	1	252,743,373	133,974	286,642	294,941	47%	45%
60 - 69	135	0	21,242,905	-	41,710	53,042	0%	0%
70 +	0	0	0	0	0	-	0%	0%
Total	**6,795**	**3**	**866,205,292**	**380,015**	**639,031**	**596,394**	**59%**	**64%**

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES

Chart 3-M12 shows the actual mortality rates for 10-year age bands from age 20 to age 59, the 90 percent confidence interval for each age band, the current assumption, and the proposed base table assumption.

Chart 3-M12



TERMINATION RATES

This section analyzes rates of termination of active employment. It also includes the analysis of the probability of electing to receive a refund of contributions upon termination instead of a deferred vested benefit and the probability of a terminating employee working for a reciprocal employer.

TERMINATION FROM ACTIVE EMPLOYMENT

Termination rates apply from the date of hire until a member is eligible to retire, at which point no terminations are assumed.

Miscellaneous Employees

For Miscellaneous members, the data represents the experience of the System from July 1, 2019 through June 30, 2024. The current assumption is based on service with separate assumptions for members with less than 10 years of service for three distinct age groups:

- Under age 30,
- Ages 30 through 39, and
- Ages 40 and older.

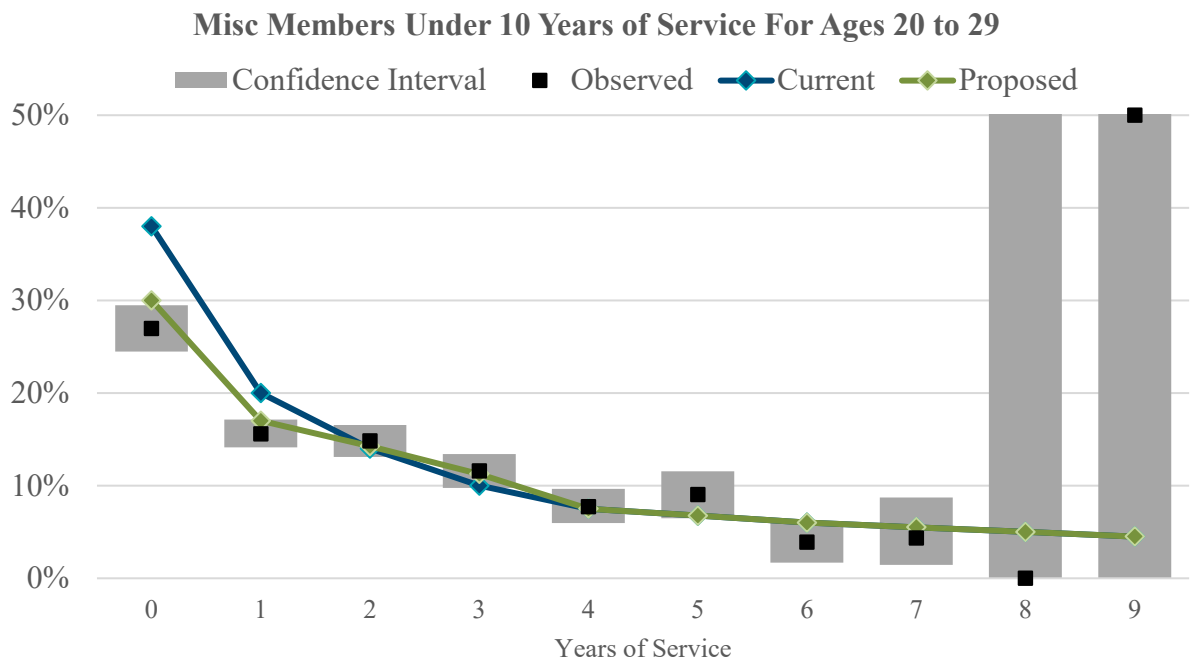
Table 3-T1 on the following page compares the termination experience for Miscellaneous members with less than 10 years of service who are under age 30 to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-T1 shows the information graphically.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Table 3-T1

Misc Members Under 10 Years of Service For Ages 20 to 29									
		Terminations			Termination Rates			A/E Ratios	
Service	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
0	879	237	334	264	26.96%	38.00%	30.00%	71%	90%
1	1,559	243	312	265	15.59%	20.00%	17.00%	78%	92%
2	1,160	172	162	165	14.83%	14.00%	14.25%	106%	104%
3	820	95	82	92	11.59%	10.00%	11.25%	116%	103%
4	570	44	43	43	7.72%	7.50%	7.50%	103%	103%
5	355	32	24	24	9.01%	6.75%	6.75%	134%	134%
6	180	7	11	11	3.89%	6.00%	6.00%	65%	65%
7	69	3	4	4	4.35%	5.50%	5.50%	79%	79%
8	19	0	1	1	0.00%	5.00%	5.00%	0%	0%
9	2	1	0	0	50.00%	4.50%	4.50%	1111%	1111%
TOTAL	**5,613**	**834**	**973**	**869**	**14.86%**	**17.33%**	**15.48%**	**86%**	**96%**
Confidence Interval %			**80%**	**90%**					
R-squared			**97%**	**100%**					

Chart 3-T1



The data shows slightly lower actual termination rates than expected under the current assumptions. The proposed assumptions increase the aggregate A/E ratio from 86 to 100 percent, the percentage of rates within the confidence interval from 80 to 100 percent, and the R-squared from 97 percent to 100 percent.

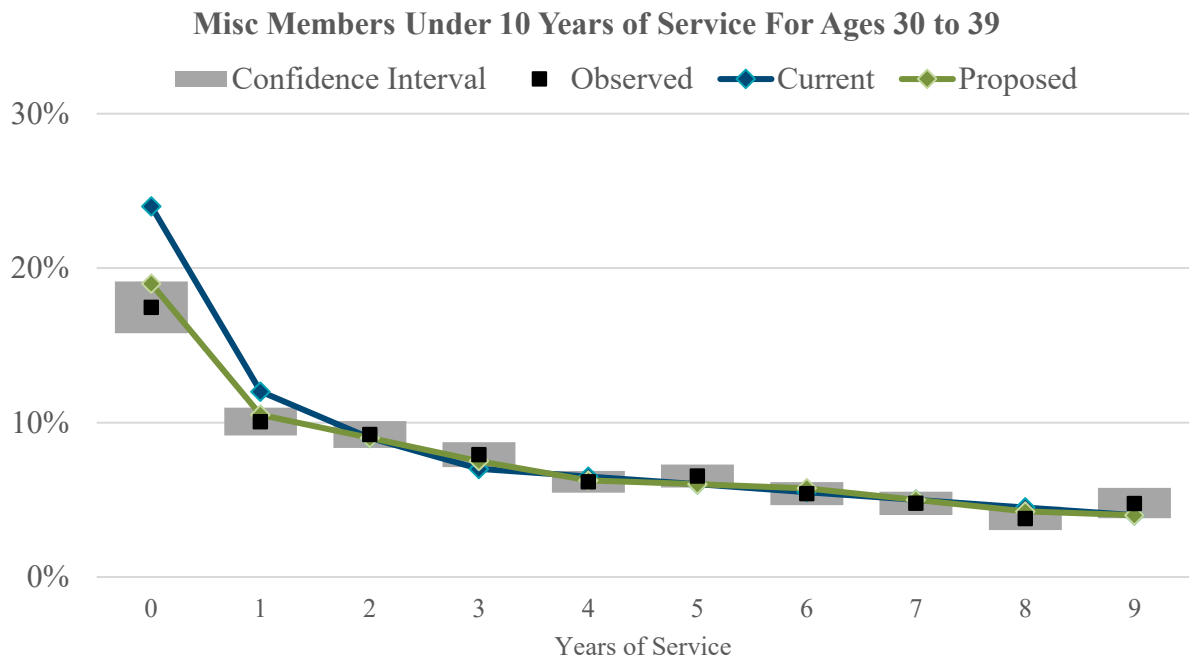
SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Table 3-T2 compares the termination experience for Miscellaneous members with less than 10 years of service who are ages 30 -39 to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-T2 shows the information graphically.

Table 3-T2

Misc Members Under 10 Years of Service For Ages 30 to 39									
		Terminations			Termination Rates			A/E Ratios	
Service	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
0	1,374	240	330	261	17.47%	24.00%	19.00%	73%	92%
1	2,993	301	359	314	10.06%	12.00%	10.50%	84%	96%
2	2,980	275	268	268	9.23%	9.00%	9.00%	103%	103%
3	3,119	247	218	234	7.92%	7.00%	7.50%	113%	106%
4	3,149	194	205	197	6.16%	6.50%	6.25%	95%	99%
5	2,956	193	177	177	6.53%	6.00%	6.00%	109%	109%
6	2,559	138	141	147	5.39%	5.50%	5.75%	98%	94%
7	2,118	101	106	106	4.77%	5.00%	5.00%	95%	95%
8	1,716	65	77	73	3.79%	4.50%	4.25%	84%	89%
9	1,263	60	51	51	4.75%	4.00%	4.00%	119%	119%
TOTAL	**24,227**	**1,814**	**1,932**	**1,828**	**7.49%**	**7.97%**	**7.55%**	**94%**	**99%**
Confidence Interval %			**70%**	**100%**					
R-squared			**89%**	**98%**					

Chart 3-T2



SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

The data shows slightly lower termination rates than expected under the current assumptions. The proposed assumptions increase the aggregate A/E ratio from 94 to 99 percent, the percentage of rates within the confidence interval from 70 to 100 percent, and the R-squared from 89 to 98 percent.

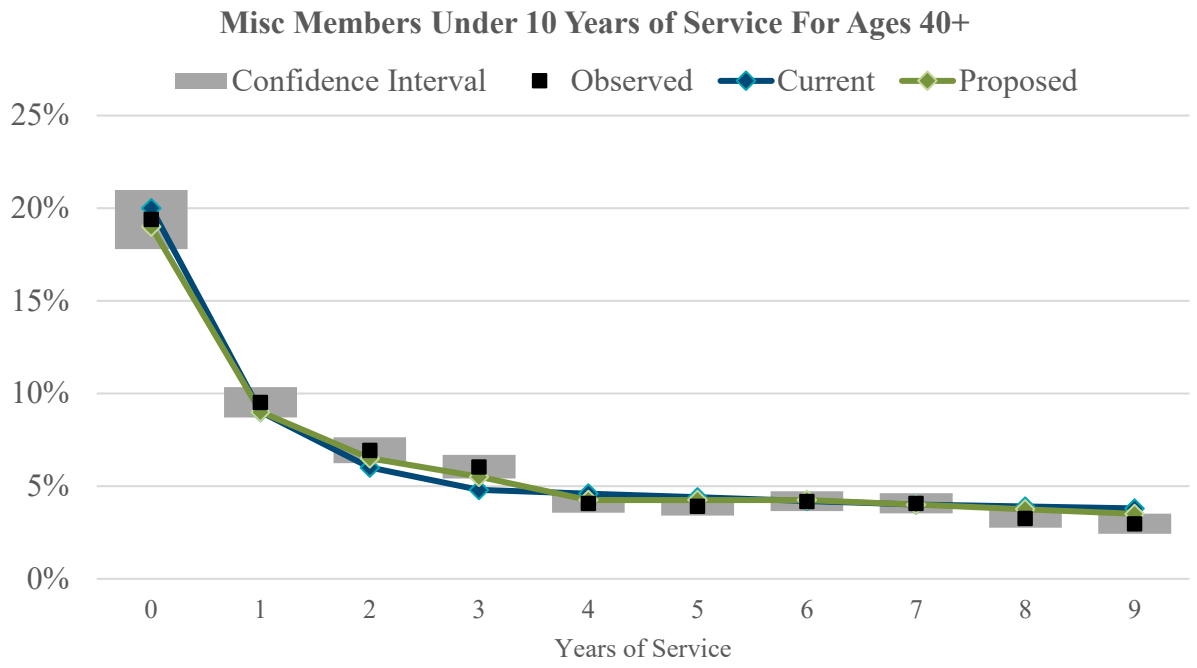
Table 3-T3 compares the termination experience for Miscellaneous members with less than 10 years of service who are ages 40 or older to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-T3 on the following page shows the information graphically.

Table 3-T3

Misc Members Under 10 Years of Service For Ages 40+									
		Terminations			Termination Rates			A/E Ratios	
Service	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
0	1,635	317	327	311	19.39%	20.00%	19.00%	97%	102%
1	3,481	331	313	313	9.51%	9.00%	9.00%	106%	106%
2	3,480	241	209	226	6.93%	6.00%	6.50%	115%	107%
3	3,663	221	176	201	6.03%	4.80%	5.50%	126%	110%
4	3,928	160	181	167	4.07%	4.60%	4.25%	89%	96%
5	3,931	154	173	167	3.92%	4.40%	4.25%	89%	92%
6	3,852	161	162	164	4.18%	4.20%	4.25%	100%	98%
7	3,643	148	146	146	4.06%	4.00%	4.00%	102%	102%
8	3,380	110	132	127	3.25%	3.90%	3.75%	83%	87%
9	2,558	76	97	90	2.97%	3.80%	3.50%	78%	85%
TOTAL	**33,551**	**1,919**	**1,915**	**1,911**	**5.72%**	**5.71%**	**5.70%**	**100%**	**100%**
Confidence Interval %			**60%**	**100%**					
R-squared			**92%**	**99%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Chart 3-T3



The data shows termination rates very close to the current assumptions. The proposed assumptions maintain the aggregate A/E ratio at 100 percent, increase the percentage of rates within the confidence interval from 60 to 100 percent, and increase the R-squared from 92 to 99 percent.

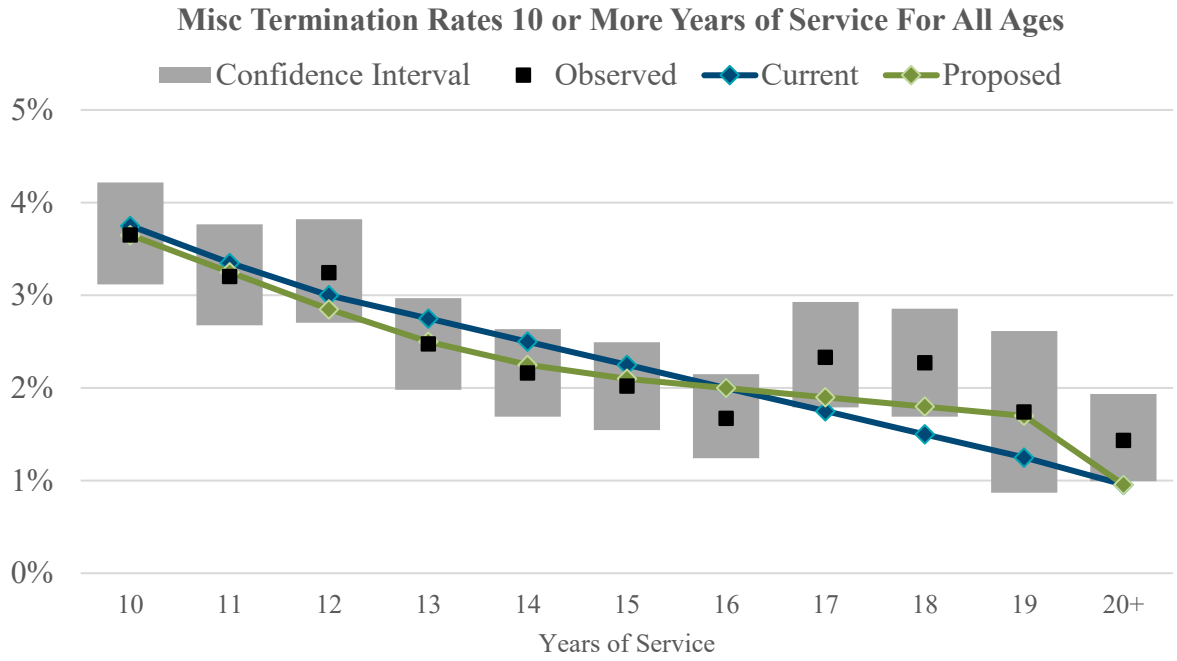
Table 3-T4 on the following page compares the termination experience for Miscellaneous members with 10 or more years of service to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-T4 on the next page shows the information graphically.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Table 3-T4

Misc Termination Rates 10 or More Years of Service For All Ages									
		Terminations			Termination Rates			A/E Ratios	
Service	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
10	3,176	116	119	116	3.65%	3.75%	3.65%	97%	100%
11	2,840	91	95	92	3.20%	3.35%	3.25%	96%	99%
12	2,773	90	83	79	3.25%	3.00%	2.85%	108%	114%
13	2,626	65	72	66	2.48%	2.75%	2.50%	90%	99%
14	2,542	55	64	57	2.16%	2.50%	2.25%	87%	96%
15	2,327	47	52	49	2.02%	2.25%	2.10%	90%	96%
16	2,094	35	42	42	1.67%	2.00%	2.00%	84%	84%
17	1,844	43	32	35	2.33%	1.75%	1.90%	133%	123%
18	1,715	39	26	31	2.27%	1.50%	1.80%	152%	126%
19	574	10	7	10	1.74%	1.25%	1.70%	139%	102%
Subtotal	**22,511**	**591**	**593**	**577**	**2.63%**	**2.63%**	**2.56%**	**100%**	**103%**
20+	1,810	26	17	17	1.44%	0.96%	0.96%	150%	150%
Total	**24,321**	**617**	**610**	**594**	**2.54%**	**2.51%**	**2.44%**	**101%**	**104%**
Confidence Interval %			**73%**	**91%**					
R-squared			**100%**	**100%**					

Chart 3-T4



The data shows slightly lower termination rates for members with less than 17 years of service, and slightly higher termination rates for members with greater than 16 years of service. The proposed assumptions increase the aggregate A/E ratio from 101 to 107 percent, increase the percentage of rates within the confidence interval from 73 to 100 percent, and maintain the R-squared at 100 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Muni Drivers and Craft Employees

For Muni Drivers and Craft members, the analysis is based on the experience of the System from July 1, 2014 through June 30, 2024. The current and proposed assumptions are based on years of service.

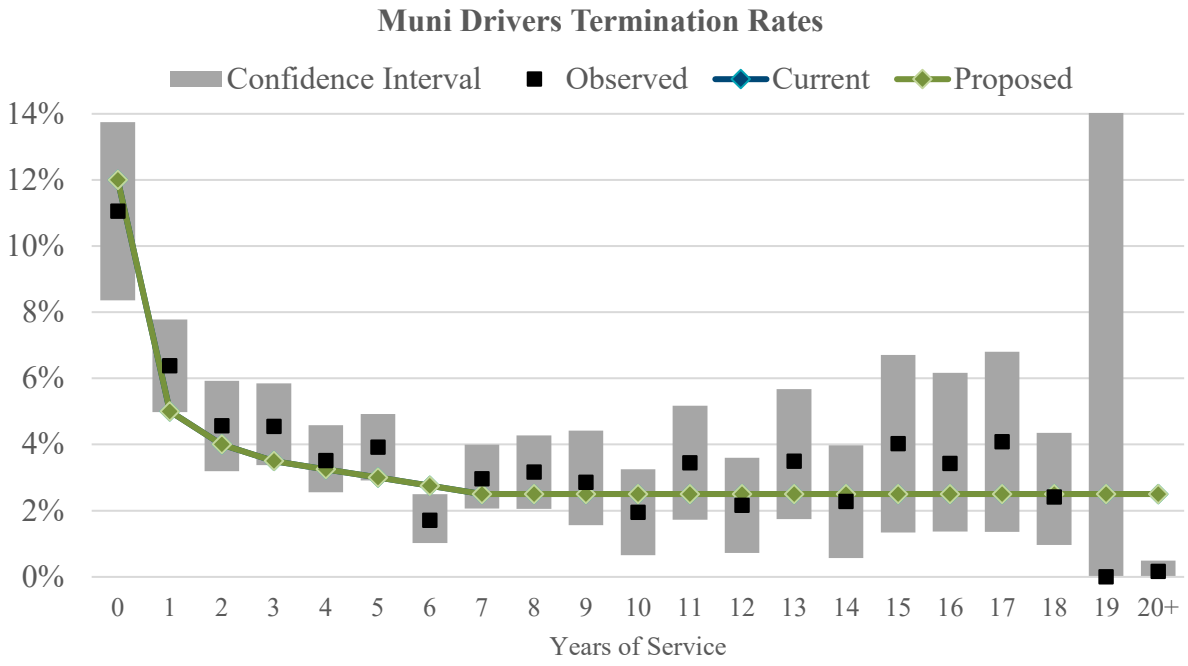
Table 3-T5 compares the termination experience for Muni Drivers to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-T5 on the following page shows the information graphically.

Table 3-T5

Muni Drivers Termination Rates									
		Terminations			Termination Rates			A/E Ratios	
Service	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
0	371	41	45	45	11.05%	12.00%	12.00%	92%	92%
1	784	50	39	39	6.38%	5.00%	5.00%	128%	128%
2	658	30	26	26	4.56%	4.00%	4.00%	114%	114%
3	770	35	27	27	4.55%	3.50%	3.50%	130%	130%
4	939	33	31	31	3.51%	3.25%	3.25%	108%	108%
5	995	39	30	30	3.92%	3.00%	3.00%	131%	131%
6	880	15	24	24	1.70%	2.75%	2.75%	62%	62%
7	776	23	19	19	2.96%	2.50%	2.50%	119%	119%
8	632	20	16	16	3.16%	2.50%	2.50%	127%	127%
9	385	11	10	10	2.86%	2.50%	2.50%	114%	114%
10	308	6	8	8	1.95%	2.50%	2.50%	78%	78%
11	290	10	7	7	3.45%	2.50%	2.50%	138%	138%
12	278	6	7	7	2.16%	2.50%	2.50%	86%	86%
13	229	8	6	6	3.49%	2.50%	2.50%	140%	140%
14	176	4	4	4	2.27%	2.50%	2.50%	91%	91%
15	149	6	4	4	4.03%	2.50%	2.50%	161%	161%
16	146	5	4	4	3.42%	2.50%	2.50%	137%	137%
17	147	6	4	4	4.08%	2.50%	2.50%	163%	163%
18	207	5	5	5	2.42%	2.50%	2.50%	97%	97%
19	35	0	1	1	0.00%	2.50%	2.50%	0%	0%
20+	614	1	15	15	0.16%	2.50%	2.50%	7%	7%
TOTAL	**9,769**	**354**	**331**	**331**	**3.62%**	**3.39%**	**3.39%**	**107%**	**107%**
Confidence Interval %			**90%**	**90%**					
R-squared			**87%**	**87%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Chart 3-T5



The data shows actual termination rates that are close to the current assumptions. There are no proposed changes.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

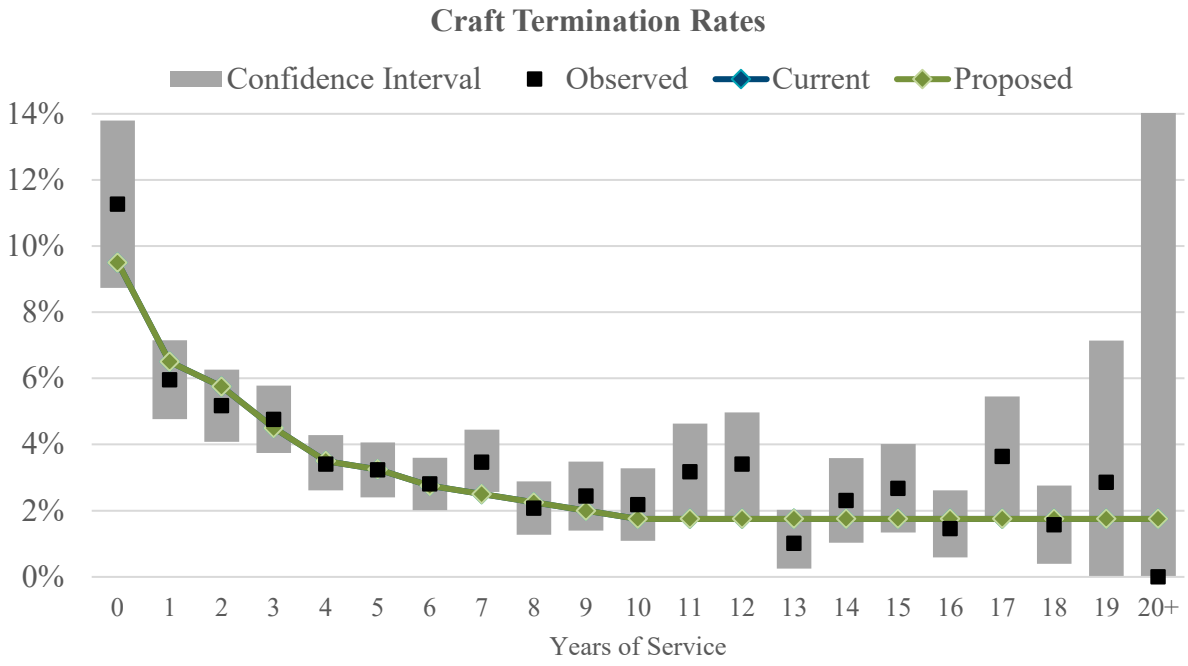
Table 3-T6 compares the termination experience for Craft members to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-T6 shows the information graphically.

Table 3-T6

Craft Termination Rates									
		Terminations			Termination Rates			A/E Ratios	
Service	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
0	435	49	41	41	11.26%	9.50%	9.50%	119%	119%
1	1,091	65	71	71	5.96%	6.50%	6.50%	92%	92%
2	1,102	57	63	63	5.17%	5.75%	5.75%	90%	90%
3	1,177	56	53	53	4.76%	4.50%	4.50%	106%	106%
4	1,262	43	44	44	3.41%	3.50%	3.50%	97%	97%
5	1,207	39	39	39	3.23%	3.25%	3.25%	99%	99%
6	1,141	32	31	31	2.80%	2.75%	2.75%	102%	102%
7	1,012	35	25	25	3.46%	2.50%	2.50%	138%	138%
8	867	18	20	20	2.08%	2.25%	2.25%	92%	92%
9	574	14	11	11	2.44%	2.00%	2.00%	122%	122%
10	458	10	8	8	2.18%	1.75%	1.75%	125%	125%
11	410	13	7	7	3.17%	1.75%	1.75%	181%	181%
12	382	13	7	7	3.40%	1.75%	1.75%	194%	194%
13	396	4	7	7	1.01%	1.75%	1.75%	58%	58%
14	390	9	7	7	2.31%	1.75%	1.75%	132%	132%
15	374	10	7	7	2.67%	1.75%	1.75%	153%	153%
16	344	5	6	6	1.45%	1.75%	1.75%	83%	83%
17	275	10	5	5	3.64%	1.75%	1.75%	208%	208%
18	254	4	4	4	1.57%	1.75%	1.75%	90%	90%
19	70	2	1	1	2.86%	1.75%	1.75%	163%	163%
20+	245	0	4	4	0.00%	1.75%	1.75%	0%	0%
TOTAL	**13,466**	**488**	**463**	**463**	**3.62%**	**3.44%**	**3.44%**	**105%**	**105%**
Confidence Interval %			**86%**	**86%**					
R-squared			**96%**	**96%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Chart 3-T6



The data shows actual termination rates that are close to the current assumptions. There are no proposed changes.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Safety Employees

The analysis for Safety members was based on experience from July 1, 2014 through June 30, 2024; however, the data shown excludes the experience from FYE 2022. The experience for this year was significantly higher than the rest of the experience and is not expected to be indicative of future experience. For Fire and Police members, the current and proposed assumptions are based on years of service.

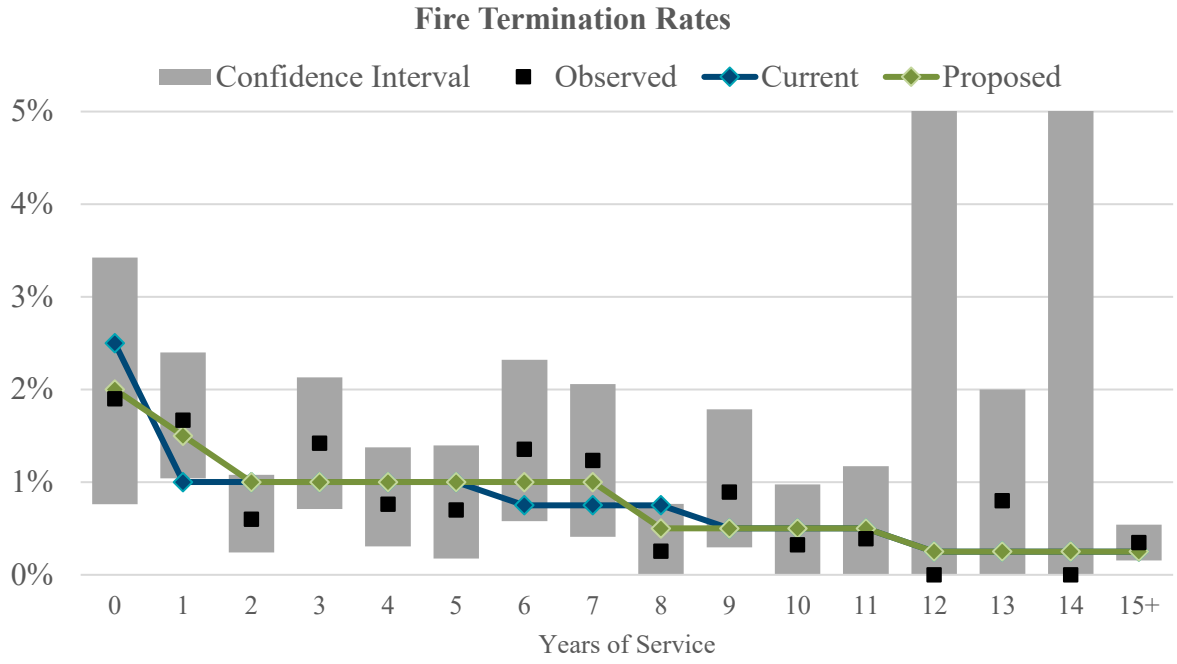
Table 3-T7 below compares the termination experience for Fire members to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-T7 on the following page shows the information graphically.

Table 3-T7

Fire Termination Rates									
		Terminations			Termination Rates			A/E Ratios	
Service	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
0	263	5	7	5	1.90%	2.50%	2.00%	76%	95%
1	959	16	10	14	1.67%	1.00%	1.50%	167%	111%
2	834	5	8	8	0.60%	1.00%	1.00%	60%	60%
3	704	10	7	7	1.42%	1.00%	1.00%	142%	142%
4	655	5	7	7	0.76%	1.00%	1.00%	76%	76%
5	573	4	6	6	0.70%	1.00%	1.00%	70%	70%
6	517	7	4	5	1.35%	0.75%	1.00%	181%	135%
7	486	6	4	5	1.23%	0.75%	1.00%	165%	123%
8	392	1	3	2	0.26%	0.75%	0.50%	34%	51%
9	336	3	2	2	0.89%	0.50%	0.50%	179%	179%
10	308	1	2	2	0.32%	0.50%	0.50%	65%	65%
11	256	1	1	1	0.39%	0.50%	0.50%	78%	78%
12	269	0	1	1	0.00%	0.25%	0.25%	0%	0%
13	250	2	1	1	0.80%	0.25%	0.25%	320%	320%
14	302	0	1	1	0.00%	0.25%	0.25%	0%	0%
15+	2,579	9	6	6	0.35%	0.25%	0.25%	140%	140%
TOTAL	**9,683**	**75**	**67**	**72**	**0.77%**	**0.69%**	**0.75%**	**111%**	**104%**
Confidence Interval %			**94%**	**100%**					
R-squared			**67%**	**84%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Chart 3-T7



The data shows slightly higher termination rates than the current assumption. The proposed assumptions decrease the aggregate A/E ratio from 111 to 104 percent, increase the percentage of rates within the confidence interval from 94 to 100 percent, and increase the R-squared from 67 to 84 percent.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

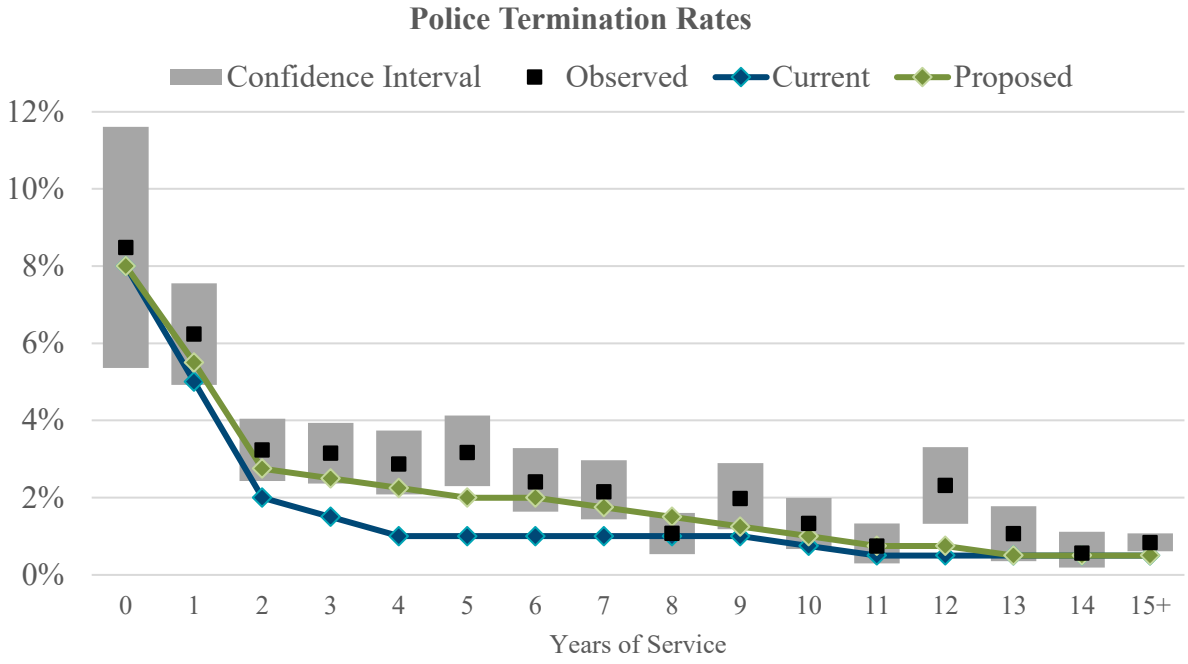
Table 3-T8 compares the termination experience for Police members to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-T8 on the next page shows the information graphically.

Table 3-T8

Police Termination Rates									
		Terminations			Termination Rates			A/E Ratios	
Service	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
0	224	19	18	18	8.48%	8.00%	8.00%	106%	106%
1	914	57	46	50	6.24%	5.00%	5.50%	125%	113%
2	1,236	40	25	34	3.24%	2.00%	2.75%	162%	118%
3	1,269	40	19	32	3.15%	1.50%	2.50%	210%	126%
4	1,151	33	12	26	2.87%	1.00%	2.25%	287%	127%
5	1,043	33	10	21	3.16%	1.00%	2.00%	316%	158%
6	915	22	9	18	2.40%	1.00%	2.00%	240%	120%
7	976	21	10	17	2.15%	1.00%	1.75%	215%	123%
8	935	10	9	14	1.07%	1.00%	1.50%	107%	71%
9	761	15	8	10	1.97%	1.00%	1.25%	197%	158%
10	752	10	6	8	1.33%	0.75%	1.00%	177%	133%
11	675	5	3	5	0.74%	0.50%	0.75%	148%	99%
12	605	14	3	5	2.31%	0.50%	0.75%	463%	309%
13	564	6	3	3	1.06%	0.50%	0.50%	213%	213%
14	537	3	3	3	0.56%	0.50%	0.50%	112%	112%
15+	4,085	34	20	20	0.83%	0.50%	0.50%	166%	166%
TOTAL	**16,642**	**362**	**203**	**283**	**2.18%**	**1.22%**	**1.70%**	**178%**	**128%**
Confidence Interval %			**44%**	**81%**					
R-squared			**78%**	**92%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Chart 3-T8



The data shows generally higher termination rates than the current assumption. The proposed assumptions reduce the aggregate A/E ratio from 178 to 128 percent, increase the percentage of rates within the confidence interval from 44 to 81 percent, and increase the R-squared from 78 to 92 percent.

REFUND RATES

When a vested member terminates employment, they have the option of receiving a refund of contributions with interest immediately or a deferred annuity at retirement. The current and proposed assumptions are based on service. Members with less than five years of service are assumed to take a refund since they are not vested in the retirement benefit. Members who have attained age 50 are assumed to elect the annuity since they are eligible to commence it immediately.

The analysis was based on refund experience from July 1, 2014 through June 30, 2024.

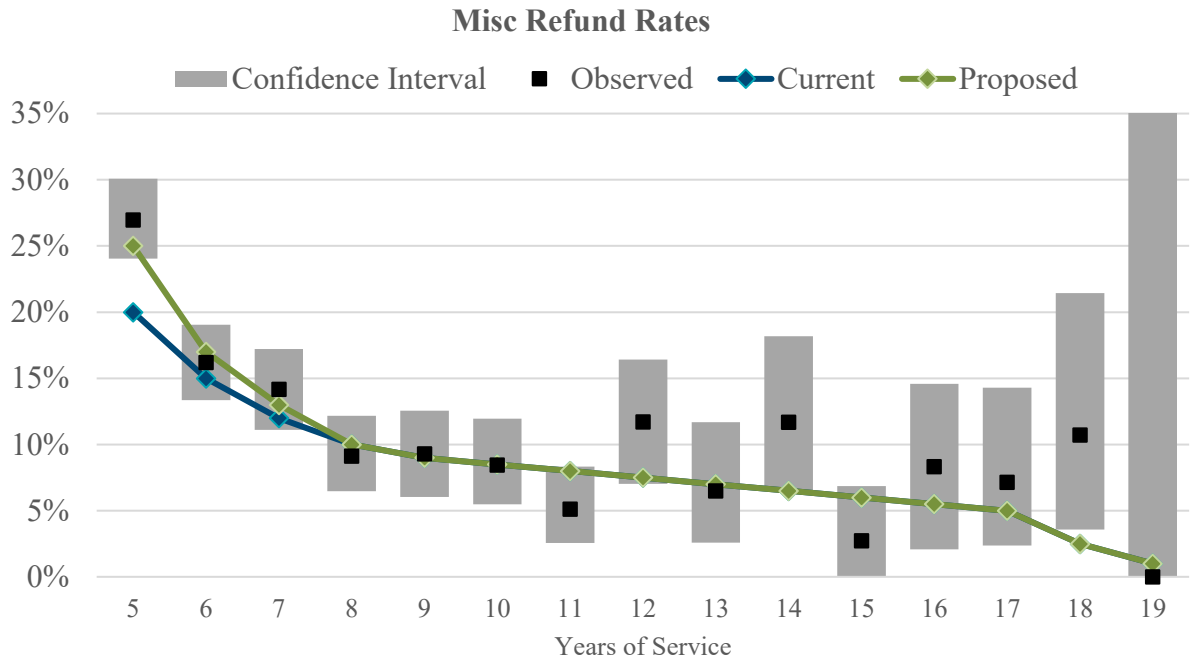
Table 3-T9 compares the refund experience for all Miscellaneous members to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-T9 shows the information graphically.

Table 3-T9

Misc Refund Rates									
		Refund			Refund Rates			A/E Ratios	
Service	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
5	582	157	116	146	26.98%	20.00%	25.00%	135%	108%
6	457	74	69	78	16.19%	15.00%	17.00%	108%	95%
7	360	51	43	47	14.17%	12.00%	13.00%	118%	109%
8	263	24	26	26	9.13%	10.00%	10.00%	91%	91%
9	215	20	19	19	9.30%	9.00%	9.00%	103%	103%
10	201	17	17	17	8.46%	8.50%	8.50%	100%	100%
11	156	8	12	12	5.13%	8.00%	8.00%	64%	64%
12	128	15	10	10	11.72%	7.50%	7.50%	156%	156%
13	77	5	5	5	6.49%	7.00%	7.00%	93%	93%
14	77	9	5	5	11.69%	6.50%	6.50%	180%	180%
15	73	2	4	4	2.74%	6.00%	6.00%	46%	46%
16	48	4	3	3	8.33%	5.50%	5.50%	152%	152%
17	42	3	2	2	7.14%	5.00%	5.00%	143%	143%
18	28	3	1	1	10.71%	2.50%	2.50%	429%	429%
19	28	0	0	0	0.00%	1.00%	1.00%	0%	0%
Subtotal	**2,735**	**392**	**333**	**375**	**14.33%**	**12.19%**	**13.72%**	**118%**	**104%**
20 +	12	0	0	0	0.00%	0.00%	0.00%	0%	0%
Total	**2,747**	**392**	**333**	**375**	**14.27%**	**12.14%**	**13.66%**	**118%**	**104%**
Confidence Interval %			**87%**	**93%**					
R-squared			**98%**	**99%**					

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
REFUND RATES

Chart 3-T9



The data shows slightly higher refund rates than the current assumption for members with less than 8 years of service. The proposed assumptions decrease the aggregate A/E ratio from 118 to 104 percent, increase the percentage of rates within the confidence interval from 87 to 93 percent, and increase the R-squared from 98 to 99 percent.

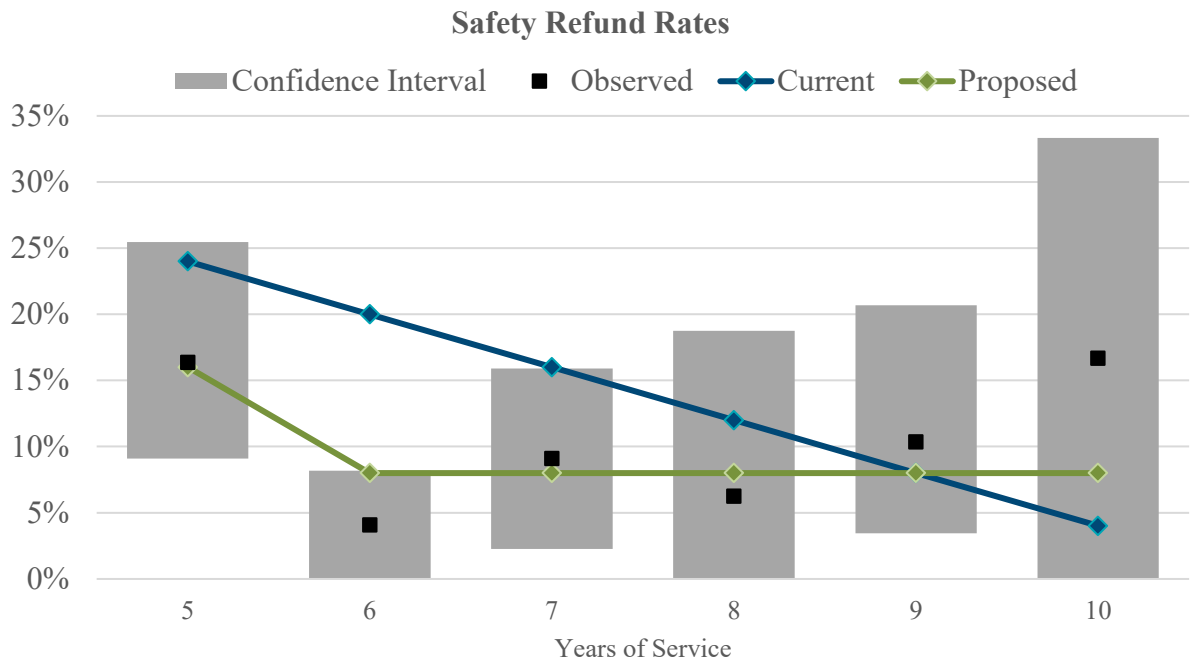
Table 3-T10 on the next page compares the refund experience for all Safety members to the current and proposed assumptions. It displays the actual-to-expected ratios, the percentage of rates within the 90 percent confidence interval, and the R-squared statistic. Chart 3-T10 shows the information graphically.

SECTION 3 – DEMOGRAPHIC ASSUMPTIONS
REFUND RATES

Table 3-T10

Safety Refund Rates									
		Refund			Refund Rates			A/E Ratios	
Service	Exposures	Actual	Current	Proposed	Actual	Current	Proposed	Current	Proposed
5	55	9	13	9	16.4%	24.0%	16.0%	68%	102%
6	49	2	10	4	4.1%	20.0%	8.0%	20%	51%
7	44	4	7	4	9.1%	16.0%	8.0%	57%	114%
8	16	1	2	1	6.3%	12.0%	8.0%	52%	78%
9	29	3	2	2	10.3%	8.0%	8.0%	129%	129%
10	12	2	0	1	16.7%	4.0%	8.0%	417%	208%
Subtotal	**205**	**21**	**35**	**21**	**10.2%**	**17.0%**	**10.1%**	**60%**	**101%**
11 +	87	2	0	0	2.3%	0.0%	0.0%	0%	0%
Total	**292**	**23**	**35**	**21**	**7.9%**	**11.9%**	**7.1%**	**66%**	**111%**
Confidence Interval %			**67%**	**100%**					
R-squared			**78%**	**93%**					

Chart 3-T10



The data shows generally lower refund rates than the current assumption. The proposed assumptions prior to 11 years of service increase the aggregate A/E ratio from 60 to 101 percent, the percentage of rates that are within the confidence interval from 67 to 100 percent, and the R-squared from 78 to 93 percent.

RECIPROCITY

If an employee terminates employment and works for a reciprocal employer, the employee's retirement benefit is ultimately based on the employee's service with the City and County of San Francisco and Final Compensation earned with the reciprocal employer. The current assumption is that 20% of terminating Miscellaneous and 40% of terminating Safety employees work for reciprocal employers and receive salary increases equal to the payroll growth assumption. We propose no change to the current assumptions

Those receiving reciprocal benefits are difficult to identify in the data. For the current study, we examined new retirees since July 1, 2019, coded as Vested Retirements, and compared the Final Average Salary used to calculate retirement benefits with the active salary in the valuation data file. Those who worked for a reciprocal employer would see an increase from the active salary to the Final Average Salary. However, not all such increases are indicative of work at a reciprocal employer. Other explanations for such an increase include inaccurate data and a higher salary during an earlier year of employment. As such, we considered different increase thresholds of 5% or 10% which are reasonable to assume are a result of reciprocity. The tables below show the implied reciprocity percentage for the current and prior experience studies based on each of the pay increase thresholds for Miscellaneous and Safety members.

Table 3-O1

Miscellaneous Members				
Ratio of Retirement Final Average Salary to Active Valuation Salary Threshold	Vested Retirement Count	Vested Retirements with Reciprocal Benefit Count	Percent Reciprocal from Current Study	Percent Reciprocal from Prior Study
5%	254	34	13%	14%
10%	254	24	9%	8%

Table 3-O2

Safety Members				
Ratio of Retirement Final Average Salary to Active Valuation Salary Threshold	Vested Retirement Count	Vested Retirements with Reciprocal Benefit Count	Percent Reciprocal from Current Study	Percent Reciprocal from Prior Study
5%	33	16	48%	50%
10%	33	11	33%	43%

FAMILY COMPOSITION

Members who are married or have a domestic partner at the time of retirement are entitled to an unreduced 50% joint and survivor annuity. This analysis examines the data for all retirements since July 1, 2014. As shown in the table below, we propose no change to the current assumptions.

Table 3-O3

Group	Spouse/ Domestic Partner Count	Total Retiree Count	Spouse/ Domestic Partner Percent	Current Assumption	Proposed Assumption
Misc Females	1,468	2,513	58.4%	55%	55%
Misc Males	2,158	2,859	75.5%	75%	75%
Safety Females	101	174	58.0%	60%	60%
Safety Males	606	733	82.7%	80%	80%

In addition, spouses/domestic partners of male retirees are assumed to be 4 years younger than the retiree, and spouses/domestic partners of female retirees are assumed to be 2 years older than the retiree. Spouses/domestic partners are assumed to be the opposite sex of the retiree. The family composition analyses examined the data for all retirements since July 1, 2014. Based on recent experience, we propose no change to the current assumptions.

Table 3-O4

ıp	Average Spouse/ Domestic Partner Age Difference	Current Assumption	Proposed Assumption
Misc Females	2.4	2	2
Misc Males	(3.1)	(3)	(3)
Safety Females	1.9	2	2
Safety Males	(3.1)	(3)	(3)

MINIMUM VALUATION PAY

A minimum of $45,000 annual pay is used for all full-time active members not hired in the previous year. This minimum pay reduces the impact of short-term reductions in active pay that understate a member's future benefit. The data shows that, on average, the minimum pay is applied to around 3% of active members each year. These active members work an average of 766 covered hours in the year the minimum pay is applied, and an average of 1,412 covered hours in the following year, indicating that the low pay is generally short-lived.

The minimum of $45,000 has been in place since 2008. At the assumed price inflation rate of 2.5%, that would be equivalent to $68,473 in 2025. We propose increasing the minimum annual pay to $60,000 for actives whose annualized pay rate is more than $60,000, with annual increases at the assumed wage inflation of 3.25%.

LOAD FOR RECENT RETIREE BENEFITS

A pattern of actuarial losses has been identified over the last few valuations attributable to higher-than-expected increases in retiree benefits. These increases are due to members who commence benefits shortly before the valuation date, and when their benefit calculation is finalized, are reported with a higher benefit in the following year's census data.

The data shows that on average, members who retire in June or on July 1 see an average increase in their Pension Amount of 6.2%. The data also shows notable increases for March-May retirements, but these averages are heavily influenced by large increases for retirements in 2020 that appear to be isolated to that year. We propose applying a load of 6% to newly retired members who commence benefits in June or on July 1.

Table 3-O5

Benefit Change in the Following Year[1] Month of Retirement						
Year	**January**	**February**	**March**	**April**	**May**	**June[2]**
2023	0.4%	1.0%	0.3%	0.8%	2.8%	8.9%
2022	-0.1%	1.1%	1.6%	1.5%	1.6%	5.8%
2021	0.0%	0.0%	0.3%	0.0%	1.1%	4.7%
2020	0.2%	2.8%	12.7%	5.5%	12.4%	6.7%
2019	0.0%	0.0%	0.0%	0.0%	-0.5%	5.0%
Average	0.1%	1.0%	3.0%	1.6%	3.5%	6.2%

[1] Net of any COLA increases

[2] Includes retirements on July 1

ADMINISTRATIVE EXPENSES

Administrative expenses are added to the normal cost of the system. The current assumption is 0.60% of payroll. Since the actual administrative expenses from the past five years were 0.58%, we propose no change in this assumption.

The table below shows the administrative expenses for the last five years and the total covered payroll to determine the administrative expense as a percent of payroll.

Table 3-A1

	Fiscal Year End Amounts shown in 000's				
	2020	2021	2022	2023	2024
Administrative Expenses	20,270	20,249	21,174	22,964	26,544
Actual Covered Payroll	3,566,991	3,623,898	3,742,459	3,994,117	4,319,733
Percent of Payroll	0.57%	0.56%	0.57%	0.57%	0.61%

APPENDIX A – SUMMARY OF CURRENT ASSUMPTIONS

Actuarial Assumptions

1. Salary Merit Increases

Salary Merit Increases					
Years of Service	Police	Fire	Muni Drivers	Craft	Misc
0	7.50%	14.00%	16.00%	3.75%	5.50%
1	6.75	10.00	11.00	3.00	4.50
2	6.00	8.00	6.50	2.40	3.75
3	5.25	6.00	3.50	1.80	3.25
4	4.50	5.00	1.75	1.50	2.75
5	3.75	4.00	1.25	1.20	2.25
6	3.00	3.00	1.00	1.00	2.00
7	2.50	2.50	0.75	0.80	1.75
8	2.00	2.00	0.50	0.70	1.50
9	1.75	1.75	0.40	0.60	1.25
10	1.50	1.50	0.30	0.50	1.10
11	1.25	1.25	0.20	0.50	0.95
12	1.00	1.00	0.15	0.50	0.80
13	0.75	0.75	0.10	0.50	0.70
14	0.50	0.50	0.05	0.50	0.60
15	0.50	0.50	0.00	0.50	0.55
16	0.50	0.50	0.00	0.50	0.50
17	0.50	0.50	0.00	0.50	0.45
18	0.50	0.50	0.00	0.50	0.40
19	0.50	0.50	0.00	0.50	0.35
20 & over	0.50	0.50	0.00	0.50	0.30

Extra covered wages in the last year before service retirement are assumed to be as follows:

Safety	3.0%
Muni Drivers	4.5%
Craft Workers	3.0%
Miscellaneous	2.0%

APPENDIX A – SUMMARY OF CURRENT ASSUMPTIONS

2. Old Police and Fire Cost-of-Living Adjustments

Basic COLA

Old Plans – Miscellaneous	2.0% per year
New Plans – Safety and Miscellaneous	2.0% per year
Old Plans – Police and Fire, Charters 8.559 and 8.585	3.6% per year
Old Plans – Police and Fire, Charters 8.595 and 8.596	2.5% per year
Old Plans – Police and Fire, pre-7/1/75 dates of retirement	1.9% per year

Old Safety COLA assumptions are based on the following formula:

(Wage Inflation + Ultimate Merit) ÷ 2 x Factor

For retirements after 6/30/75, the Factor represents the ratio of the average salary for the last position held to the average pension benefit.

For Charters 8.559 and 8.585, the factor is 1.9
For Charters 8.595 and 8.596, the factor is 1.3
For pre-7/1/75 dates of retirement, the factor is 1.0

APPENDIX A – SUMMARY OF CURRENT ASSUMPTIONS

3. Rates of Retirement

Rates of retirement are based on age and service according to the tables on the following pages. Separate rates are used for members hired on or after January 7, 2012, under Charter Sections A8.603 and above (Prop C). Miscellaneous Safety and the Sheriff's Department are included with Police Prop C members.

Police Rates of Retirement

	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 25	25 - 29	30 +	< 25	25 - 29	30 +
50	1.50%	5.00%	5.00%	1.50%	5.00%	5.00%
51	1.50	5.00	15.00	1.50	5.00	10.00
52	2.00	7.50	20.00	2.00	7.50	20.00
53	5.00	20.00	40.00	5.00	15.00	25.00
54	7.50	22.00	50.00	7.50	17.50	30.00
55	7.50	35.00	50.00	7.50	20.00	35.00
56	7.50	26.00	40.00	7.50	24.00	35.00
57	10.00	28.00	45.00	10.00	26.00	40.00
58	10.00	30.00	45.00	10.00	35.00	60.00
59	15.00	25.00	45.00	15.00	25.00	45.00
60	20.00	34.00	45.00	20.00	34.00	45.00
61	10.00	36.00	40.00	10.00	36.00	40.00
62	15.00	36.00	40.00	15.00	36.00	40.00
63	12.50	36.00	40.00	12.50	36.00	40.00
64	12.50	36.00	40.00	12.50	36.00	40.00
65 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX A – SUMMARY OF CURRENT ASSUMPTIONS

Fire Rates of Retirement			
	All Tiers		
	Years of Service		
Age	< 25	25 - 29	30 +
50	2.00%	5.00%	5.00%
51	1.00	5.00	5.00
52	2.00	5.00	5.00
53	3.00	5.00	15.00
54	7.50	20.00	35.00
55	7.50	25.00	35.00
56	7.50	20.00	35.00
57	12.50	20.00	35.00
58	12.50	20.00	25.00
59	12.50	25.00	25.00
60	15.00	25.00	35.00
61	15.00	40.00	40.00
62	15.00	40.00	40.00
63	15.00	20.00	25.00
64	20.00	20.00	25.00
65 & over	100.00	100.00	100.00

APPENDIX A – SUMMARY OF CURRENT ASSUMPTIONS

Muni Drivers Rates of Retirement						
	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 20	20 - 29	30 +	< 20	20 - 29	30 +
50	0.00%	1.00%	1.50%	0.00%	0.00%	0.00%
51	0.00	1.00	1.50	0.00	0.00	0.00
52	0.00	1.00	1.50	0.00	0.00	0.00
53	0.00	1.00	1.50	0.00	1.00	1.50
54	0.00	1.00	1.50	0.00	1.00	1.50
55	0.00	4.00	5.00	0.00	1.00	5.00
56	0.00	4.00	5.00	0.00	1.00	5.00
57	0.00	4.00	5.00	0.00	2.00	5.00
58	0.00	4.00	5.00	0.00	2.00	5.00
59	0.00	4.00	5.00	0.00	2.00	5.00
60	10.00	10.00	20.00	5.00	10.00	15.00
61	12.50	25.00	30.00	7.50	12.50	20.00
62	20.00	32.50	35.00	10.00	15.00	30.00
63	15.00	30.00	30.00	10.00	20.00	25.00
64	15.00	30.00	30.00	10.00	25.00	25.00
65	27.50	30.00	35.00	27.50	30.00	40.00
66	27.50	30.00	35.00	27.50	30.00	35.00
67	27.50	30.00	35.00	27.50	30.00	35.00
68	27.50	30.00	35.00	27.50	30.00	35.00
69	27.50	30.00	35.00	27.50	30.00	35.00
70 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX A – SUMMARY OF CURRENT ASSUMPTIONS

Craft Rates of Retirement						
	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 20	20 - 29	30 +	< 20	20 - 29	30 +
50	0.00%	1.50%	1.50%	0.00%	0.00%	0.00%
51	0.00	1.50	1.50	0.00	0.00	0.00
52	0.00	1.50	1.50	0.00	0.00	0.00
53	0.00	2.50	4.00	0.00	1.50	1.50
54	0.00	2.50	4.00	0.00	1.50	1.50
55	0.00	2.50	5.00	0.00	1.50	2.50
56	0.00	3.00	5.00	0.00	1.50	2.50
57	0.00	3.00	5.00	0.00	2.00	2.50
58	0.00	3.00	5.00	0.00	2.00	5.00
59	0.00	8.00	20.00	0.00	2.00	10.00
60	7.50	12.00	32.50	5.00	7.50	15.00
61	10.00	20.00	35.00	7.50	12.50	20.00
62	20.00	30.00	37.50	17.50	25.00	30.00
63	10.00	25.00	30.00	10.00	17.50	25.00
64	17.50	25.00	30.00	10.00	17.50	25.00
65	25.00	27.50	30.00	25.00	30.00	40.00
66	27.50	30.00	32.50	27.50	30.00	32.50
67	27.50	30.00	32.50	27.50	30.00	32.50
68	15.00	25.00	30.00	15.00	25.00	30.00
69	15.00	25.00	30.00	15.00	25.00	30.00
70 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX A – SUMMARY OF CURRENT ASSUMPTIONS

Miscellaneous Rates of Retirement						
	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 20	20 - 29	30 +	< 20	20 - 29	30 +
50	0.00%	2.75%	3.50%	0.00%	0.00%	0.00%
51	0.00	2.50	3.50	0.00	0.00	0.00
52	0.00	2.50	3.50	0.00	0.00	0.00
53	0.00	3.25	3.50	0.00	3.25	3.25
54	0.00	4.00	4.00	0.00	4.00	4.00
55	0.00	4.00	5.50	0.00	4.00	4.00
56	0.00	4.25	6.75	0.00	4.25	4.25
57	0.00	4.50	8.75	0.00	4.50	4.50
58	0.00	5.00	10.00	0.00	5.00	7.50
59	0.00	8.75	20.00	0.00	8.75	10.00
60	9.00	11.50	30.00	7.50	10.00	12.50
61	13.25	20.00	35.00	10.00	15.00	15.00
62	20.00	30.00	35.00	17.50	25.00	25.00
63	16.00	22.50	30.00	12.50	17.50	20.00
64	16.00	22.50	30.00	12.50	17.50	20.00
65	20.00	30.00	30.00	25.00	40.00	40.00
66	25.00	30.00	35.00	25.00	30.00	35.00
67	25.00	30.00	35.00	25.00	30.00	35.00
68	20.00	30.00	30.00	20.00	30.00	30.00
69	20.00	30.00	30.00	20.00	30.00	30.00
70	25.00	25.00	30.00	25.00	25.00	30.00
71	25.00	25.00	30.00	25.00	25.00	30.00
72	25.00	25.00	30.00	25.00	25.00	30.00
73	25.00	25.00	30.00	25.00	25.00	30.00
74	25.00	25.00	30.00	25.00	25.00	30.00
75 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX A – SUMMARY OF CURRENT ASSUMPTIONS

The assumed retirement age for inactive terminated vested members and actives who are expected to terminate is shown below. Miscellaneous Safety and the Sheriff's Department are included with Safety Prop C members, and Muni Drivers and Craft members are included with Miscellaneous members.

Deferred Retirement Age		
	Non-Prop C	Prop C
Safety	51	55
	Non-Reciprocal	Reciprocal
Miscellaneous	55	60

4. Rates of Termination of Employment

Sample rates of termination by age and service for Miscellaneous members are shown below.

Misc. Rates of Termination by Age and Service Years			
	Age		
Service	Under 30	30 to 39	40 & over
0	38.00%	24.00%	20.00%
1	20.00	12.00	9.00
2	14.00	9.00	6.00
3	10.00	7.00	4.80
4	7.50	6.50	4.60
5	6.75	6.00	4.40
10	3.75	3.75	3.75
15	2.25	2.25	2.25
20+	1.00	1.00	1.00

Sample rates of termination by service for Police, Fire, Muni Drivers, and Craft members are shown on the following page. Miscellaneous Safety and the Sheriff's Department are included with Police members.

APPENDIX A – SUMMARY OF CURRENT ASSUMPTIONS

Rates of Termination				
Service	Police	Fire	Muni Drivers	Craft
0	8.00%	2.50%	12.00%	9.50%
1	5.00	1.00	5.00	6.50
2	2.00	1.00	4.00	5.75
3	1.50	1.00	3.50	4.50
4	1.00	1.00	3.25	3.50
5	1.00	1.00	3.00	3.25
10	0.75	0.50	2.50	1.75
15	0.50	0.25	2.50	1.75
20+	0.50	0.25	2.50	1.75

When members are eligible to retire, their termination rates are assumed to be zero. 20 percent of Miscellaneous, Muni Drivers, and Craft and 40 percent of Safety terminating employees are assumed to subsequently work for a reciprocal employer and receive pay increases equal to the wage inflation assumption.

In estimating termination benefits for Miscellaneous members, it is assumed that employee contribution rates are, on average, not changed by the floating contribution rate provisions of Proposition C.

APPENDIX A – SUMMARY OF CURRENT ASSUMPTIONS

5. Member Refunds

Non-vested terminated members are assumed to receive a refund of their contributions with interest. Sample rates of refund for terminated vested members are shown below. Miscellaneous Safety and the Sheriff's Department are included with Safety members, and Muni Drivers and Craft members are included with Miscellaneous members.

Vested Terminated Rates of Refund

Service	Police & Fire	Miscellaneous
5	24.0%	20.0%
6	20.0	15.0
7	16.0	12.0
8	12.0	10.0
9	8.0	9.0
10	4.0	8.5
15	0.0	6.0
20	0.0	0.0

In estimating refund amounts, it is assumed that future employee contribution rates are, on average, not changed by the floating contribution rate provisions of Proposition C.

APPENDIX A – SUMMARY OF CURRENT ASSUMPTIONS

6. Rates of Disability

Sample disability rates of active members are provided below. 100% of safety and 0% of Muni Driver, Craft, and Miscellaneous disabilities are assumed to be duty related. Miscellaneous Safety and the Sheriff's Department are included with Police members.

Rates of Disability at Selected Ages

Age	Police	Fire	Muni Drivers	Craft	Misc Females	Misc Males
30	0.05%	0.04%	0.01%	0.01%	0.01%	0.01%
35	0.14	0.09	0.06	0.06	0.04	0.04
40	0.35	0.24	0.11	0.11	0.07	0.08
45	0.44	0.42	0.17	0.20	0.15	0.11
50	0.90	0.84	0.45	0.40	0.40	0.28
55	3.30	3.50	1.35	0.75	0.55	0.45
60	5.75	7.30	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00	0.00

Level of duty disability benefits (if projected to be disabled before service retirement eligibility)	
Police	55% of pay
Fire	55% of pay

7. Base Rates of Mortality for Healthy Lives

The mortality rates used in the valuation are developed from a base table that is projected generationally from the base year of that table using the mortality projection scale described on the following page. Base mortality tables are developed by multiplying a published table by an adjustment factor that was developed in the experience study for the period ending June 30, 2019. The base mortality tables for healthy lives are described on the following page.

APPENDIX A – SUMMARY OF CURRENT ASSUMPTIONS

	Published Table	Adjustment Factor Male	Adjustment Factor Female
Non-Annuitants			
Miscellaneous	PubG-2010 Employee	0.834	0.866
Safety	PubS-2010 Employee	1.011	0.979
Retirees			
Miscellaneous	PubG-2010 Retiree	1.031	0.977
Safety	PubS-2010 Retiree	0.947	1.044
Beneficiaries			
Miscellaneous	PubG-2010 Retiree	1.031	0.977
Safety	PubG-2010 Retiree	1.031	0.977

Muni Drivers and Craft members are included with Miscellaneous members for mortality assumptions. For active members, 25% of Safety deaths and 0% of Miscellaneous (including Muni Drivers and Craft) deaths are assumed to be duty related.

8. Base Rates of Mortality for Retired Disabled Lives

For disabled annuitant mortality, separate base tables are developed for males and females and for Miscellaneous (including Muni Drivers and Craft) and Safety members by multiplying a published table by an adjustment factor that was developed in the experience study for the period ending June 30, 2019. The base mortality tables for disabled annuitant lives are described below.

	Published Table	Adjustment Factor Male	Adjustment Factor Female
Disabled Annuitants			
Miscellaneous	PubG-2010 Disabled	1.045	1.003
Safety	PubS-2010 Disabled	0.916	0.995

APPENDIX A – SUMMARY OF CURRENT ASSUMPTIONS

9. Mortality Projection Scale

The mortality rates shown in the base tables above are projected generationally from the base year using the MP-2019 projection scale.

10. Family Composition

The percentage assumed to be married (including assumption for Domestic Partners, 1994 Proposition H) is shown below. Spouses of male members are assumed to be three years younger than the member and spouses of female members are assumed to be two years older than the member. Miscellaneous Safety and the Sheriff's Department are included with Safety members, and Muni Drivers and Craft members are included with Miscellaneous members.

Percentage Married	
Safety Males	80%
Safety Females	60
Miscellaneous Males	75
Miscellaneous Females	55

11. Administrative Expenses

There is a 0.60% of Payroll assumption included in the normal cost rates for administrative expenses.

12. Deferred Member Benefit

The benefit was estimated based on information provided by SFERS staff. The data used to estimate the deferred benefit were date of birth, date of hire, date of termination, and last pay. Based on the data provided, service credit, highest average salary, and deferred retirement age were estimated. The estimates were used to compute the retirement benefit, upon which the liabilities are based. For those members without sufficient data or service, accumulated member contribution balances, with interest, were used as the Actuarial Liability.

APPENDIX B – SUMMARY OF PROPOSED ASSUMPTIONS

Actuarial Assumptions

1. Salary Merit Increases

Salary Merit Increases					
Years of Service	Police	Fire	Muni Drivers	Craft	Misc
0	7.70%	12.65%	14.45%	4.05%	5.50%
1	6.90	9.75	10.75	3.35	4.65
2	6.20	8.15	7.45	2.80	3.95
3	5.50	6.60	5.05	2.25	3.45
4	4.80	5.70	3.40	1.95	3.00
5	4.10	4.85	2.55	1.65	2.55
6	3.45	4.00	1.90	1.40	2.25
7	2.90	3.50	1.35	1.20	2.00
8	2.40	3.00	0.90	1.10	1.75
9	2.05	2.70	0.60	1.00	1.55
10	1.70	2.35	0.40	0.90	1.40
11	1.40	2.00	0.30	0.80	1.25
12	1.10	1.70	0.20	0.70	1.10
13	0.85	1.40	0.20	0.60	1.00
14	0.60	1.20	0.20	0.55	0.90
15	0.50	1.00	0.20	0.50	0.80
16	0.50	0.85	0.20	0.50	0.70
17	0.50	0.70	0.20	0.50	0.65
18	0.50	0.60	0.20	0.50	0.60
19	0.50	0.55	0.20	0.50	0.55
20 & over	0.50	0.50	0.20	0.50	0.50

Extra covered wages in the last year before service retirement are assumed to be as follows:

Safety	3.00%
Muni Drivers	4.25%
Craft Workers	2.75%
Miscellaneous	2.00%

APPENDIX B – SUMMARY OF PROPOSED ASSUMPTIONS

2. Old Police and Fire Cost-of-Living Adjustments

Basic COLA

Old Plans – Police and Fire, Charters 8.559 and 8.585	3.20% per year
Old Plans – Police and Fire, Charters 8.595 and 8.596	2.40% per year
Old Plans – Police and Fire, pre-7/1/75 dates of retirement	2.00% per year

Old Safety COLA assumptions are based on the following formula:

(Wage Inflation + Ultimate Merit) ÷ 2 x Factor

For retirements after 6/30/75, the Factor represents the ratio of the average salary for the last position held to the average pension benefit.

For Charters 8.559 and 8.585, the factor is 1.9
For Charters 8.595 and 8.596, the factor is 1.3
For pre-7/1/75 dates of retirement, the factor is 1.0

APPENDIX B – SUMMARY OF PROPOSED ASSUMPTIONS

3. Rates of Retirement

Rates of retirement are based on age and service according to the tables on the following pages. For members hired on or after January 7, 2012 under that Charter Sections A8.603 and above (Prop C), the ultimate retirement age when the highest benefit multiplier is reached is at a later age. Thus, separate retirement rates are used for Prop C members.

Police Rates of Retirement						
	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 25	25 - 29	30 +	< 25	25 - 29	30 +
50	3.00%	6.00%	5.00%	3.00%	6.00%	5.00%
51	3.00	6.00	15.00	3.00	6.00	10.00
52	3.50	10.00	30.00	3.50	10.00	20.00
53	6.00	15.00	30.00	6.00	15.00	25.00
54	7.50	20.00	50.00	7.50	17.50	30.00
55	7.50	35.00	40.00	7.50	20.00	30.00
56	7.50	27.50	35.00	7.50	24.00	30.00
57	10.00	27.50	35.00	10.00	26.00	30.00
58	12.50	27.50	35.00	12.50	35.00	50.00
59	17.50	20.00	35.00	17.50	20.00	35.00
60	17.50	27.50	35.00	17.50	27.50	35.00
61	22.50	27.50	35.00	22.50	27.50	35.00
62	22.50	27.50	35.00	22.50	27.50	35.00
63	22.50	27.50	35.00	22.50	27.50	35.00
64	22.50	27.50	35.00	22.50	27.50	35.00
65 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX B – SUMMARY OF PROPOSED ASSUMPTIONS

Fire Rates of Retirement			
	All Tiers		
	Years of Service		
Age	< 25	25 - 29	30 +
50	2.00%	5.00%	5.00%
51	2.00	5.00	5.00
52	3.00	5.00	20.00
53	5.00	10.00	35.00
54	7.50	20.00	35.00
55	7.50	25.00	35.00
56	10.00	20.00	35.00
57	12.50	20.00	35.00
58	12.50	25.00	27.50
59	15.00	27.50	27.50
60	15.00	27.50	40.00
61	20.00	40.00	40.00
62	20.00	40.00	30.00
63	20.00	25.00	30.00
64	25.00	25.00	25.00
65 & over	100.00	100.00	100.00

APPENDIX B – SUMMARY OF PROPOSED ASSUMPTIONS

Muni Drivers Rates of Retirement						
	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 20	20 - 29	30 +	< 20	20 - 29	30 +
50	0.00%	2.00%	2.00%	0.00%	0.00%	0.00%
51	0.00	1.00	1.50	0.00	0.00	0.00
52	0.00	1.00	1.50	0.00	0.00	0.00
53	0.00	1.00	1.50	0.00	1.00	1.50
54	0.00	1.00	1.50	0.00	1.00	1.50
55	0.00	3.00	4.00	0.00	1.00	4.00
56	0.00	3.00	4.00	0.00	1.00	4.00
57	0.00	3.00	4.00	0.00	2.00	4.00
58	0.00	3.00	4.00	0.00	2.00	4.00
59	0.00	3.00	4.00	0.00	2.00	4.00
60	9.00	10.00	20.00	5.00	10.00	15.00
61	11.00	25.00	30.00	7.50	12.50	20.00
62	18.00	27.50	30.00	10.00	15.00	30.00
63	13.00	27.50	30.00	10.00	20.00	25.00
64	15.00	27.50	30.00	10.00	25.00	25.00
65	25.00	27.50	30.00	25.00	27.50	35.00
66	25.00	27.50	30.00	25.00	27.50	30.00
67	25.00	27.50	30.00	25.00	27.50	30.00
68	25.00	27.50	30.00	25.00	27.50	30.00
69	25.00	27.50	30.00	25.00	27.50	30.00
70 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX B – SUMMARY OF PROPOSED ASSUMPTIONS

Craft Rates of Retirement						
	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 20	20 - 29	30 +	< 20	20 - 29	30 +
50	0.00%	1.50%	1.50%	0.00%	0.00%	0.00%
51	0.00	1.50	1.50	0.00	0.00	0.00
52	0.00	1.50	1.50	0.00	0.00	0.00
53	0.00	2.50	4.00	0.00	1.50	1.50
54	0.00	2.50	4.00	0.00	1.50	1.50
55	0.00	2.50	5.00	0.00	1.50	2.50
56	0.00	3.00	5.00	0.00	1.50	2.50
57	0.00	3.00	5.00	0.00	2.00	2.50
58	0.00	3.00	7.50	0.00	2.00	7.50
59	0.00	8.00	20.00	0.00	2.00	10.00
60	6.00	12.00	35.00	5.00	7.50	15.00
61	10.00	20.00	40.00	7.50	12.50	25.00
62	15.00	30.00	40.00	10.00	25.00	30.00
63	15.00	20.00	27.50	10.00	15.00	25.00
64	20.00	25.00	27.50	10.00	17.50	25.00
65	22.50	27.50	27.50	22.50	27.50	40.00
66	27.50	27.50	27.50	27.50	27.50	27.50
67	20.00	27.50	27.50	20.00	27.50	27.50
68	20.00	27.50	27.50	15.00	27.50	27.50
69	20.00	27.50	40.00	15.00	27.50	40.00
70 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX B – SUMMARY OF PROPOSED ASSUMPTIONS

Miscellaneous Rates of Retirement						
	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 20	20 - 29	30 +	< 20	20 - 29	30 +
50	0.00%	3.00%	7.00%	0.00%	0.00%	0.00%
51	0.00	2.50	7.00	0.00	0.00	0.00
52	0.00	2.50	7.00	0.00	0.00	0.00
53	0.00	2.50	5.00	0.00	2.50	3.25
54	0.00	3.00	5.00	0.00	3.00	4.00
55	0.00	4.00	5.00	0.00	4.00	4.00
56	0.00	4.00	6.75	0.00	4.00	4.25
57	0.00	4.50	8.00	0.00	4.50	4.50
58	0.00	5.00	8.00	0.00	5.00	7.50
59	0.00	8.00	20.00	0.00	8.00	10.00
60	8.00	12.50	30.00	7.50	10.00	12.50
61	12.00	20.00	35.00	10.00	15.00	15.00
62	17.50	25.00	35.00	10.00	20.00	25.00
63	12.50	22.50	27.50	12.50	17.50	20.00
64	16.00	22.50	27.50	16.00	17.50	20.00
65	20.00	25.00	27.50	20.00	35.00	40.00
66	25.00	30.00	30.00	25.00	30.00	30.00
67	20.00	30.00	30.00	20.00	30.00	30.00
68	20.00	30.00	30.00	20.00	30.00	30.00
69	20.00	30.00	30.00	20.00	30.00	30.00
70	22.50	25.00	25.00	22.50	25.00	25.00
71	22.50	25.00	25.00	22.50	25.00	25.00
72	22.50	25.00	25.00	22.50	25.00	25.00
73	22.50	25.00	25.00	22.50	25.00	25.00
74	22.50	25.00	25.00	22.50	25.00	25.00
75 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX B – SUMMARY OF PROPOSED ASSUMPTIONS

The assumed retirement age for inactive terminated vested members and actives who are expected to terminate is shown below.

Deferred Retirement Age		
	Non-Prop C	**Prop C**
Safety	51	55
	Non-Reciprocal	**Reciprocal**
Miscellaneous	55	60

APPENDIX B – SUMMARY OF PROPOSED ASSUMPTIONS

4. Rates of Termination of Employment

Sample rates of termination by age and service for Miscellaneous members are shown below.

Misc. Rates of Termination by Age and Service Years			
	Age		
Service	Under 30	30 to 39	40 & over
0	30.00%	19.00%	19.00%
1	17.00	10.50	9.00
2	14.25	9.00	6.50
3	11.25	7.50	5.50
4	7.50	6.25	4.25
5	6.75	6.00	4.25
6	6.00	5.75	4.25
7	5.50	5.00	4.00
8	5.00	4.25	3.75
9	4.50	4.00	3.50
10	3.65	3.65	3.65
11	3.25	3.25	3.25
12	2.85	2.85	2.85
13	2.50	2.50	2.50
14	2.25	2.25	2.25
15	2.10	2.10	2.10
16	2.00	2.00	2.00
17	1.90	1.90	1.90
18	1.80	1.80	1.80
19	1.70	1.70	1.70
20	1.00	1.00	1.00
25	1.00	1.00	1.00
26+	0.00	0.00	0.00

Sample rates of termination by service for Police, Fire, Muni Drivers, and Craft members are shown on the next page. When members are eligible to retire, it is assumed that their termination rates are zero.

APPENDIX B – SUMMARY OF PROPOSED ASSUMPTIONS

Rates of Termination				
Service	Police	Fire	Muni Drivers	Craft
0	8.00%	2.00%	12.00%	9.50%
1	5.50	1.50	5.00	6.50
2	2.75	1.00	4.00	5.75
3	2.50	1.00	3.50	4.50
4	2.25	1.00	3.25	3.50
5	2.00	1.00	3.00	3.25
6	2.00	1.00	2.75	2.75
7	1.75	1.00	2.50	2.50
8	1.50	0.50	2.50	2.25
9	1.25	0.50	2.50	2.00
10	1.00	0.50	2.50	1.75
11	0.75	0.50	2.50	1.75
12	0.75	0.25	2.50	1.75
13	0.50	0.25	2.50	1.75
14	0.50	0.25	2.50	1.75
15	0.50	0.25	2.50	1.75
16	0.50	0.25	2.50	1.75
17	0.50	0.25	2.50	1.75
18	0.50	0.25	2.50	1.75
19	0.50	0.25	2.50	1.75
20	0.50	0.25	2.50	1.75
21	0.00	0.00	0.00	1.75
25	0.00	0.00	0.00	0.00
26+	0.00	0.00	0.00	0.00

20% of Miscellaneous and 40% of Safety terminating employees are assumed to subsequently work for a reciprocal employer and receive pay increases equal to the wage inflation assumption.

In estimating termination benefits for Miscellaneous members, it is assumed that employee contribution rates are, on average, not changed by the floating contribution rate provisions of Proposition C.

APPENDIX B – SUMMARY OF PROPOSED ASSUMPTIONS

5. Member Refunds

Non-vested terminated members are assumed to receive a refund of their contributions with interest. The rates of refund for terminated vested members are shown below. Miscellaneous members who have attained age 50 are not assumed to receive a refund.

Vested Terminated Rates of Refund		
Service	Safety	Miscellaneous
5	16.0%	25.0%
6	8.0	17.0
7	8.0	13.0
8	8.0	10.0
9	8.0	9.0
10	8.0	8.5
11	0.0	8.0
12	0.0	7.5
13	0.0	7.0
14	0.0	6.5
15	0.0	6.0
16	0.0	5.5
17	0.0	5.0
18	0.0	2.5
19	0.0	1.0
20	0.0	0.0

In estimating refund amounts, it is assumed that employee contribution rates are, on average, not changed by the floating contribution rate provisions of Proposition C.

APPENDIX B – SUMMARY OF PROPOSED ASSUMPTIONS

6. Rates of Disability

Sample disability rates of active members are provided below. 100% of safety and 0% of Miscellaneous disabilities are assumed to be duty related.

Rates of Disability at Selected Ages						
Age	Police	Fire	Muni Drivers	Craft	Misc Females	Misc Males
30	0.35%	0.04%	0.01%	0.01%	0.01%	0.01%
35	0.44	0.09	0.05	0.05	0.01	0.01
40	0.65	0.24	0.10	0.09	0.04	0.03
45	0.74	0.42	0.14	0.17	0.10	0.08
50	1.20	0.70	0.25	0.34	0.23	0.19
55	3.60	3.00	1.20	0.64	0.35	0.28
60	6.05	8.00	0.00	0.00	0.00	0.00
65	6.55	8.00	0.00	0.00	0.00	0.00
70	0.00	0.00	0.00	0.00	0.00	0.00

Level of duty disability benefits (if projected to be disabled before service retirement eligibility)	
Police	55% of pay
Fire	55% of pay

APPENDIX B – SUMMARY OF PROPOSED ASSUMPTIONS

7. Base Rates of Mortality for Healthy Lives

The mortality rates used in the valuation are developed from a base table that is projected generationally from the base year of that table using the mortality projection scale described below. Base mortality tables are developed by multiplying a published table by an adjustment factor developed in this experience study. The base mortality tables for healthy lives are described below.

	Published Table	Adjustment Factor Male	Adjustment Factor Female
Non-Annuitants			
Miscellaneous	PubG-2016(A) Employee	0.84	0.86
Safety	PubS-2016(A) Employee	1.11	0.93
Retirees			
Miscellaneous	PubG-2016(A) Retiree	0.94	0.98
Safety	PubS-2016(A) Retiree	0.98	1.01
Beneficiaries			
Miscellaneous	PubG-2016(A) Retiree	0.94	0.98
Safety	PubG-2016(A) Retiree	0.94	0.98

For active members, 25% of Safety deaths and 0% of Miscellaneous deaths are assumed to be duty related.

8. Base Rates of Mortality for Retired Disabled Lives

For disabled annuitant mortality, separate base tables are developed for males and females and for Miscellaneous and Safety members by multiplying a published table by an adjustment factor that was developed in this experience study. The base mortality tables for disabled annuitant lives are described below.

	Published Table	Adjustment Factor Male	Adjustment Factor Female
Disabled Annuitants			
Miscellaneous	PubNS-2016 Disabled	1.12	1.02
Safety	PubS-2016 Disabled	0.94	0.96

APPENDIX B – SUMMARY OF PROPOSED ASSUMPTIONS

9. Mortality Projection Scale

The mortality rates shown in the base tables above are projected generationally from the base year using the MP-2021 projection scale.

10. Family Composition

The percentage assumed to be married (including assumption for Domestic Partners, 1994 Proposition H) is shown below. Spouses of male members are assumed to be three years younger than the member and spouses of female members are assumed to be two years older than the member.

Percentage Married	
Safety Males	80%
Safety Females	60
Miscellaneous Males	75
Miscellaneous Females	55

11. Administrative Expenses

There is a 0.60% of Payroll assumption included in the normal cost rates for administrative expenses.

12. Deferred Member Benefit Amount

The benefit was estimated based on information provided by SFERS staff. The data used to estimate the deferred benefit were date of birth, date of hire, date of termination, and last pay. Based on the data provided, service credit, highest average salary, and deferred retirement age were estimated. The estimates were used to compute the retirement benefit, upon which the liabilities are based. For those members without sufficient data or service, accumulated member contribution balances, with interest, were used as the Actuarial Liability.

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