CURRAN ACTUARIAL
CONSULTING, LTD.

Experience Study
2025

Firefighters' Retirement System

CURRAN ACTUARIAL
CONSULTING, LTD.

August 9, 2025

Board of Trustees
Firefighters' Retirement System
3100 Brentwood Drive
Baton Rouge, Louisiana 70809

Ladies and Gentlemen:

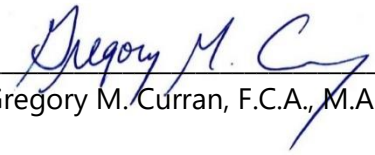
We are pleased to present our report on the actuarial experience study of the Firefighters' Retirement System. This study of assumptions has been performed pursuant to R.S. 11:2260(C)(3) which stipulates that a study of plan assumptions should be made at least once in each five year period. The last experience study was completed in 2020. Unless otherwise stated, this study was performed based on the actuarial data for the Fiscal 2019 through Fiscal 2024 valuations and based on the statutes applicable to the system as of June 30, 2024. This report was prepared for the purpose of setting appropriate assumptions for use in the actuarial funding and financial reporting valuations beginning in Fiscal 2025.

This report was prepared exclusively for the Firefighters' Retirement System for a specific limited purpose. It is not for the use or benefit of any third party for any purpose.

The undersigned actuary is a member of the American Academy of Actuaries and has met the qualification standards for the American Academy of Actuaries to render the actuarial opinions incorporated in this report and is available to provide further information or answer any questions with respect to this study.

Sincerely,

Curran Actuarial Consulting, Ltd.

By: 
Gregory M. Curran, F.C.A., M.A.A.A., A.S.A.

PHONE NUMBER: (225) 769-4825
FAX NUMBER: (225) 769-4925

CURRAN ACTUARIAL CONSULTING, LTD.
10555 N. GLENSTONE PLACE
BATON ROUGE, LOUISIANA 70810

WWW.CURRANACTUARIAL.COM
ACTUARY@CURRANACTUARIAL.COM

TABLE OF CONTENTS

Introduction

Periodic studies of plan experience are a necessary part of the process used in determining the actuarially required contributions for a retirement system. Since future costs are based on the amount and timing of future benefits, it is essential that estimates reflect (to the extent possible) the future experience of the plan. It is improbable that future experience will exactly mirror past experience for the plan, but the first step in estimating the future is to know the past and understand those factors which may cause future experience to be different from the past. Hence, in setting actuarial assumptions, it is often necessary to adjust raw past experience to account for factors which will have an impact on the future, such as expected changes in economic conditions or new benefit structures. Also, past experience may be of limited value where the size of the group or frequency of events is relatively small. In these cases, judgment is called for to separate out random fluctuations from trends.

This study was conducted prior to the June 30, 2025 actuarial valuation and includes an analysis of various components of the plan's experience over the course of the last several years. In particular, demographic experience was examined over the period from July 1, 2019 through June 30, 2024. In some areas a longer period was reviewed to extend the study period to incorporate cyclical fluctuations or to limit the impact of COVID-19 on the recommended assumptions. The scope of the study included economic statistics such as the rate of inflation, the expected long-term rate of return for the Firefighters' Retirement System (FRS) target allocation portfolio, and the rate of salary increase. In addition, this study includes a review of plan utilization factors, such as decrements including withdrawal, retirement, DROP entry, post-DROP retirement, and disability rates. Also, a plan mortality study was conducted. Other factors, such as vesting election percentage, DROP participation period, percent retiring at end of DROP, average post-DROP period, family statistics, and actuarial equivalence factors were also reviewed.

The corrected valuation databases utilized to perform each annual actuarial valuation during the study period were used as source data. An important step in each annual valuation is the validation of data provided by the system. This includes checking for reasonableness and consistency with prior year data. Items such as dates of birth, service credit, compensation, benefit amounts, beneficiary information, and other factors are subjected to various screening criteria. In cases where unusual or inconsistent data are detected, the data is returned to the system's staff for correction or verification. For this study, the corrected databases from the valuations for each year from June 30, 2019 through June 30, 2024, were used, unless noted within this report.

For most of the studies, raw rates were developed for each year and then averaged either arithmetically or geometrically. Where appropriate, the results were then smoothed using Whitaker-Henderson Type B methods and/or ad hoc grouping of cells to reduce random fluctuations. The smoothed data was reviewed and adjusted, if necessary, to account for short-term effects, such as the economic conditions during the study period. Some assumptions were also adjusted to preserve internal consistency in the assumption set.

Economic Assumptions

Inflation

The Curran Actuarial Consulting reasonable range for long-term inflation was set at 2.10% to 2.60% in February 2020 before the COVID-19 pandemic and the spike in inflation that came in the years following the government shutdowns. Attempting to set a long-term inflation rate can be tricky when short-term inflation measurements are so volatile. During the decade before COVID-19, there were many who argued that actuaries using long-term inflation rates above the Federal Reserve's target level of 2% were overly optimistic. This criticism arose out of one of the key uses of the inflation assumption in actuarial assumption setting – as a building block of the system's assumed rate of return on investments.

The basic premise contained in our February 2020 memorandum on the inflation assumption is summed up by the following excerpt, "Since every firm and individual who is projecting future long-term inflation starts with recent history, we maintain some concern that the financial community projections might be overly biased based on recent historical data." A look at CPI-U over the period since 1960 finds that the lowest geometric average 30-year inflation rate was 2.25% in 2020, and the highest geometric average 30-year inflation rate was 5.39% in 1995. A look at 10-year geometric averages finds a low of 1.61% in 2017 and a high of 8.67% in 1982.

A survey of current opinions on future inflation shows that the prevailing opinion is that over the next decade average inflation will not return to the recent higher rates but will also not decrease to the Federal Reserve target of 2%. The following are four such data points:

1. The Federal Reserve Bank of Cleveland produces a 10-Year Expected Inflation figure. The value as of February 12, 2025 was 2.46198%.
2. The Aruoba Term Structure of Inflation Expectations from February 28, 2025 shows a February 2025 inflation expectations curve for the next 120 months. This begins at 2.68% in month 1 and ends with 2.33% in month 120.
3. Surveys of Consumers – University of Michigan – As of February 2025 the median long-run inflation expectation was 3.5%.
4. Survey of Professional Forecasters – Federal Reserve Bank Philadelphia – over the next 10 years, the forecasters predict annual headline CPI inflation will average 2.30%

As we consider setting an appropriate long-term inflation assumption, it is important to remember that although all projections are partly built based on historical values, we seek a reasonable forward looking assumption. We believe that our current reasonable range for long-term inflation of 2.10% to 2.60% incorporates the Federal Reserve target of 2.0% and the long-term history that shows how difficult it is for central banks to avoid periods of higher inflation. We also believe that our long-term range is consistent with the projections shown earlier for the next 10 years. For this reason, we have elected to make no change in this reasonable range and recommend no change in the 2.5% inflation assumption used within the Firefighters' Retirement System actuarial valuation.

Valuation Interest Rate

Background:

The current rate of interest at which all future payments from the plan are discounted is 6.90%. This means that all invested funds are assumed to earn an average compounded rate of return of 6.90% over a long-term period. If the system's assets earn less than 6.90%, contributions will rise to cover the shortfall. Conversely, if the system's assets earn more than 6.90%, contributions will decrease. In the long run, a failure to earn the assumed rate of return could jeopardize the ability of the fund to pay promised benefits.

Any assumption is subject to error, but the results of the actuarial valuation are more sensitive to the rate of return assumption than any other single assumption. Hence, great care is required in choosing the proper assumed rate of return. Several inputs may be considered in setting an appropriate rate. First, inputs from the system's asset consultants and the system's asset allocation can be used to develop future return expectations. Because not all investment professionals agree on expected returns and return variability measures, it is useful to consider the expectations of other investment professionals. The system's historical returns are generally not useful as a basis for setting forward looking expected rates of return. The selection of an assumed rate of return must also comply with the relevant standards set by the actuarial and accounting professions.

Process:

To determine future expected returns, we have gathered information from the system's investment consultant, NEPC. The information collected includes the expected rate of return, standard deviation, and correlations for 30 preselected asset classes. The system's investment consultant then provides our office with a breakdown of the system's target asset allocation. If an asset class within the system's target allocations does not directly align with one of the 30 preselected asset classes, we work with the system's investment consultant to find the most appropriate mix of asset classes to reasonably model expected future returns. In addition, we have gathered similar information from numerous other consultants and investment firms to produce average values for each of the 30 preselected asset classes. We have focused our consultant average assumptions on investment consultants and management firms with at least 20-year forward looking capital market assumptions to best model expected long-term returns.

In our opinion, the use of long-term investment return assumptions is most appropriate for the valuation of the liabilities of an open group retirement system like FRS. By using the results of our consultant average capital market assumptions and the information collected on the system's target asset allocation, we were able to produce average estimates for the long-term expected geometric portfolio rate of return. In our opinion, using long-term capital market assumptions helps avoid "timing the market" where expectations are heavily influenced by recent investment events.

In making our calculations, we recognize that in addition to investment management fees there are certain investment related expenses that the system must bear. Such costs reduce system earnings and therefore should offset the expected net rate of return. We have developed our reasonable range for the assumed rate of return after adjusting expected returns for the impact of investment costs not related to the active management of the portfolio. We do not adjust expected returns for the fees charged by active money managers based on our assumption that active investment vehicles selected by the Board are expected to earn a rate of return greater than a similar passive investment by an amount at least equal to their fees. This assumption aligns with an expectation that the Board of Trustees will not continue to actively manage the portfolio unless such investment managers, in the aggregate, produce sufficient alpha to offset their investment management fees.

Based upon the amounts budgeted for investment consulting and custodial fees, we have adjusted the expected returns by 0.04% of assets.

Past Fund Performance:

The retirement system's geometric average market rates of return through June 30, 2024 for various periods are given below.

Geometric Average Market Rates of Return		
5-year average	(Fiscal 2020 – 2024)	6.8%
10-year average	(Fiscal 2015 – 2024)	5.5%
15-year average	(Fiscal 2010 – 2024)	6.8%
20-year average	(Fiscal 2005 – 2024)	5.5%
25-year average	(Fiscal 2000 – 2024)	4.9%
30-year average	(Fiscal 1995 – 2024)	6.0%

What other funds are doing:

During any review of the long-term expected rate of return assumption, questions inevitably arise regarding the assumptions of other similarly situated public plans. Although our process of setting a reasonable range for the long-term expected rate of return assumption is not influenced by assumptions set by other retirement systems, we have included some such information for comparison purposes. We have found the following surveys which may provide comparative information related to other public retirement systems:

The National Conference on Public Employee Retirement Systems (NCPERS) published a Public Retirement Systems Study – Trends in Fiscal, Operational, and Business Practices in 2025. Within this report, 201 retirement systems responded within the period between September and November 2024. This included 179 defined benefit pension plans. The average investment assumption for the NCPERS survey was 6.67% (down from 7.24% in 2019). Also, the aggregated inflation assumption in 2024 was 2.52% (in 2019 the average inflation assumption was 2.8%).

The National Association of State Retirement Administrators (NASRA) website contains a survey of Investment Return Assumptions by Plan as of March 2024 which includes assumptions for 131 public retirement systems. Within this survey, the average assumed rate of return was 6.91% and the average assumed rate of inflation was 2.47%.

It is clear from such surveys that reductions in the long-term expected rate of return assumption were common in the public defined benefit plan community. Because each system has its own unique investment portfolio and funding situation, we recommend that the Board not put too much emphasis on these specific rates in making decisions regarding the future valuation of the Firefighters' Retirement System.

Future Performance:

We believe that the information given above related to the past performance of this fund should not be used in setting expectations for future performance. This is even more pronounced because of the impact of write downs related to previous investments along with significant shifts in the plan's target asset allocation. Although they are not used in setting future expectations for this system, the expectations of future performance expressed by other funds can give insight and context to the decisions on assumed rate of return made by other public retirement systems. In comparing assumed rates for various funds, a variety of factors can lead to significantly different results. These factors include the asset allocations of the funds, the use of passive versus active management, the selection of individual managers, and the appetite of the system for investment risk.

When reviewing the past performance of the system, it is important to note that future performance may be quite unlike the past. In attempting to forecast future performance, some view of the past is indispensable, but future conditions may vary significantly from those of the past. In addition, the current and future target asset allocation policy may vary significantly with that of the past. Among the factors which may change over time are things such as GDP growth, government debt and borrowing, Federal Reserve Policy, government spending, changes in productivity, trade imbalances, economic recessions, and governmental policies on a range of issues. To the extent that macroeconomic factors change, both real rates of return and inflation can vary from past trends. Typical inputs used in forecasting future performance include expected real rates of return by asset class and expected inflation. Estimates for these factors are made by investment consultants, investment management firms, and governmental entities.

Data Inputs:

The data inputs we have collected as part of our process in determining recommendations for the assumed rate of return included the target asset allocation given in the system's investment policy statement, the expected rates of return and standard deviation for each asset class together with correlation coefficients for each asset class. We have used our 2024 consultant average information to model future returns based upon the Fund's 2025 updated policy targets.

Although we review the assumed rate of return based upon the projections provided by the system's investment consultant, we have built a set of average values by averaging inputs from a total of seven different investment consultants and investment management firms where information on long-term expected returns was available. Using the consultant average assumptions, we produced our reasonable range for the long-term expected rate of return. The inputs of our study are shown below.

	FRS Policy Target
US TIPS	2.0%
US Core Fixed Income	22.0%
Emerging Market Fixed Income	1.0%
Emerging Market Fixed Income – Local Currency	1.0%
Global Multi-Sector Fixed Income	4.0%
Private Credit	2.0%
US Large Cap Equities	22.0%
US Small/Mid Cap Equities	6.5%
Global Equity	10.0%
International Developed Equities	11.0%
Emerging Market Equities	4.5%
Private Equities	7.0%
U.S. Core Real Estate	4.0%
Infrastructure	3.0%

Consultant Average Estimated Long-Term Real Rates of Return are as follows:

	Est. Real Return
US TIPS	2.00%
US Core Fixed Income	2.09%
Emerging Market Fixed Income	4.36%
Emerging Market Fixed Income – Local Currency	3.73%
Global Multi-Sector Fixed Income	2.34%
Private Credit	7.39%
US Large Cap Equities	5.90%
US Small/Mid Cap Equities	7.46%
Global Equity	6.50%
International Developed Equities	6.36%
Emerging Market Equities	8.26%
Private Equities	9.77%
U.S. Core Real Estate	4.85%
Infrastructure	5.93%

Consultant Average Estimated Long-Term Standard Deviations are as follows:

	Standard Deviations
US TIPS	5.71%
US Core Fixed Income	5.18%
Emerging Market Fixed Income	9.60%
Emerging Market Fixed Income – Local Currency	11.67%
Global Multi-Sector Fixed Income	6.18%
Private Credit	11.99%
US Large Cap Equities	17.14%
US Small/Mid Cap Equities	20.77%
Global Equity	17.29%
International Developed Equities	18.40%
Emerging Market Equities	23.42%
Private Equities	23.83%
U.S. Core Real Estate	13.73%
Infrastructure	14.15%

Asset Class	US TIPS	US Core Fixed Income	Emerging Market Fixed	Emerging Market Fixed – Local Curr.	Global Multi-Sector Fixed	Private Credit	US Large Cap Equities	US Small/ Mid Cap Equities	Int'l Developed Equities	Emerging Market Equities	Global Equity	Private Equities	US Core Real Estate	Infra-structure
US TIPS	1.00													
US Core Fixed	0.83	1.00												
EM Fixed	0.61	0.71	1.00											
EM Fixed – Local Curr.	0.36	0.42	0.77	1.00										
Global Multi-Sector Fixed	0.61	0.76	0.66	0.88	1.00									
Private Credit	0.14	0.30	0.58	0.59	0.30	1.00								
US Large Cap Equities	0.27	0.26	0.58	0.61	0.41	0.62	1.00							
US Small/Mid Cap Eq.	-0.17	0.06	0.41	0.68	0.62	0.69	0.87	1.00						
Int'l Developed Equities	0.28	0.26	0.61	0.76	0.48	0.59	0.87	0.80	1.00					
EM Equities	0.29	0.28	0.65	0.85	0.48	0.59	0.74	0.72	0.82	1.00				
Global Equity	0.31	0.24	0.65	0.75	0.46	0.70	0.97	0.90	0.94	0.83	1.00			
Private Equities	0.15	0.01	0.38	0.53	0.22	0.56	0.68	0.97	0.64	0.60	0.72	1.00		
U.S. Core Real Estate	0.11	0.17	0.31	0.36	0.07	0.33	0.42	0.53	0.35	0.33	0.33	0.46	1.00	
Infrastructure	0.34	0.34	0.54	0.63	0.53	0.52	0.69	0.53	0.71	0.65	0.70	0.55	0.50	1.00

Correlation coefficients from 2024 consultant average assumptions. Consultant average inflation assumption is 2.46%.

Results of the Review of the Valuation Interest Rate Assumption:

To forecast future nominal rates of return, an assumption must be made about the future rate of inflation. The nominal rates of return have been modeled based on the sum of the expected long-term inflation assumption discussed above and the expected long-term real rates of return for each asset class. In our opinion, retirement systems like the Firefighters' Retirement System are best served by consistently setting their return expectations based on a long-term time horizon. This reduces recency bias and volatility in the median assumption. For FRS we have used 2.50% as the assumed long term rate of inflation in developing the assumed rate of return.

A simple sum of the cross-products of consultant average nominal arithmetic rates of return for each asset class multiplied by the 2025 target asset allocation for those asset classes, reduced by 0.04% to account for non-manager investment expenses, produces a rate of return of 7.84%. This assumes annual rebalancing and no return volatility. Including the effect of volatility and annual, efficient rebalancing, we have determined that the expected rate of return on the fund's 2025 target investment portfolio based on our 2024 consultant average real rates of return, standard deviations, and correlation coefficients and using an assumed rate of inflation of 2.50% is 7.17%.

To better understand how the system's investment portfolio might perform under a variety of investment scenarios, we have performed a series of 10,000 stochastic trials. These simulations are based on the inputs contained within our 2024 consultant average long-term projections of rates of return, standard deviations, and correlation coefficients for each asset class. All of these were input into our model assuming a normal distribution of annual returns, and then ten thousand trial simulations were run over a 30-year investment horizon. The results of these trials are as follows:

Average Arithmetic Rate of Return:	7.84%
Average Geometric Rate of Return:	7.17%
Standard Deviation of the Long term rate of Return:	12.08%
Range of the 40th through 60th Percentile:	6.64% to 7.76%
Probability of exceeding 6.90% geometric rate of return over 30 years:	55%

Recommendations Regarding the Valuation Interest Rate Assumption:

In formulating our recommended reasonable range for the assumed rate of return, we have focused on the 10,000 stochastic trials developed using the 2024 consultant average forecasts. Within that range the selection of the assumed rate of return is somewhat subjective, but there are several factors that may be considered. These include the desire to protect the benefit security of the participants, the recognition of the effect of costs on sponsors' budgets, the recognition that asset allocations can and frequently are changed to respond to different market conditions and plan sponsor cost levels. In addition, the setting of the assumed rate of return involves an element of risk for the plan, and it may be advisable to consider how much risk the plan is exposed to in other areas related to funding. It would also be advisable to set the assumed rate at such a level that costs are more likely to decrease due to gains than increase due to losses. Based upon a reasonable range of 6.64% to 7.76% the current 6.90% assumed rate of return is reasonable. Therefore, we do not recommend any change to this assumption.

Rates of Salary Increase

The rate at which the pay for individuals increases each year is a significant factor in determining normal costs and accrued liabilities for a "final average compensation" defined benefit pension plan. Pay increases for members contain several components. First, the general level of inflation in the economy will put upward pressure on wages. Secondly, members usually receive some merit increase in most, if not, every year. Finally, a certain segment of the population will receive promotions or advances in pay grades each year. An analysis of the valuation data will not be sufficient to identify each of these individual factors but will give information about the aggregate amount of pay increase for each member in each year. The rate of pay increase varies each fiscal year, but a trend can be derived by combining several years. Some plans exhibit a tendency toward higher percentage increases in pay in the earlier years of employment. If the trend is pronounced, a salary scale which varies by employment duration can be developed.

The table below gives the existing assumed salary increase rates together with the raw rates developed in the experience study and the draft rates recommended for use in the June 30, 2025 valuation. For this study, we elected to extend the study period to the most recent 10 years to reduce its reliance on data since the COVID-19 pandemic. The review of average salary increases included rates of salary increases during the extended 10 year study period (2015 – 2024). The weighted average geometric mean rate at each service duration was reviewed. Often, we elect to adjust the resulting nominal salary increase rates for the difference between the system's inflation assumption and the actual inflation during a comparison period. Instead of simply comparing the current assumption with the inflation that occurred during the testing period, we have elected to use a 2-year setback for the inflation comparison period. This was done because of the recent volatility in inflation and the time it takes for pay to react to inflationary pressures. In this case, we found that the average rate of inflation during the comparison period was not materially different from the system's assumed rate. Therefore, we made no such adjustment.

A review of the raw rates demonstrates that during the study period the rate of salary increase was higher for new hires but lower at most other durations. In setting the final assumed rates, consideration was given to the economic circumstances of the study period and projected future rates of inflation embedded in the valuation interest rate used for the 2024 actuarial valuation. Based on the pattern of salary increase rates, it was determined that a two stage assumption continues to be most appropriate. The draft assumption was based on average rates in durations 1-2 and average rates at durations above 2 years.

Rates of Salary Increase:

Completed Service Years	Existing Rates	Raw Rates	Draft Assumption Rates for Fiscal 2025
1	14.10%	13.95%	14.50%
2	14.10%	14.81%	14.50%
3	5.20%	5.82%	5.00%
4	5.20%	5.63%	5.00%
5	5.20%	5.46%	5.00%
6	5.20%	5.44%	5.00%
7	5.20%	4.94%	5.00%
8	5.20%	5.23%	5.00%
9	5.20%	4.87%	5.00%
10	5.20%	5.14%	5.00%
11	5.20%	5.68%	5.00%
12	5.20%	5.40%	5.00%
13	5.20%	4.91%	5.00%
14	5.20%	5.51%	5.00%
15	5.20%	5.15%	5.00%
16	5.20%	4.57%	5.00%
17	5.20%	4.96%	5.00%
18	5.20%	5.12%	5.00%
19	5.20%	4.32%	5.00%
20	5.20%	4.47%	5.00%
21	5.20%	4.81%	5.00%
22	5.20%	4.66%	5.00%
23	5.20%	4.58%	5.00%
24	5.20%	4.28%	5.00%
25	5.20%	4.20%	5.00%
26	5.20%	4.42%	5.00%
27	5.20%	4.49%	5.00%
28	5.20%	5.28%	5.00%
29	5.20%	5.25%	5.00%
30	5.20%	5.24%	5.00%
Above 30	5.20%	Varies *	5.00%

* Actual rates for durations above 30 are unstable due to minimal exposures with such service credit.

Decrement Assumptions

Rates of Withdrawal

The cost structure of a retirement system is a function of many factors. Included in these factors is the rate at which members withdraw from service. Members may withdraw for many reasons including death, retirement, disability, or simply to leave employment for a host of other reasons. Generally, when the term "withdrawal" is used in the context of a retirement system it refers to terminating covered employment for reasons other than death, retirement, or disability. Nevertheless, when a member terminates, he/she may otherwise be entitled to deferred or early retirement benefits. Typically, increases in rates of termination or withdrawal reduce plan costs although this may depend on the particulars of which age or service categories are involved. The withdrawal decrement is usually expressed as rates which apply to either age or service groups. If sufficient data is available, rates may be developed for combinations of age and service groups. The rates used in the June 30, 2024 valuation were based solely on service. After a review of withdrawal patterns, we chose to continue to base recommended withdrawal rates on service categories adjusted to account for members rejoining the system after a previous termination. An analysis of the current rates for the system produced the following results:

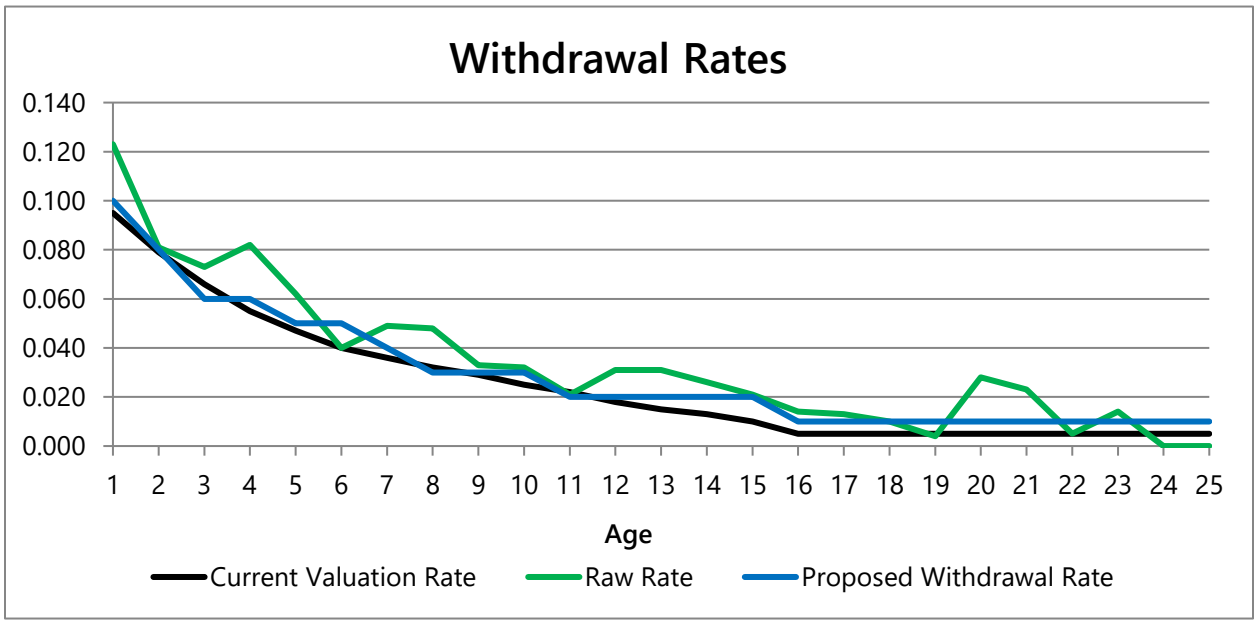
Exposures	Actual Net Withdrawals	Expected Net Withdrawals (prior Assumption)	Ratio of Actual to Expected Net Withdrawals
18,806	880	670	131%

The existing rates produced total expected withdrawals that were much lower than those measured in the study period. This is in part due to a spike in withdrawals during Fiscal 2022 and 2023. A look at longer term trends suggests that this spike in withdrawals may not be expected to recur under normal circumstances. Therefore, we have elected to apply a multiplier of 85% to the rounded smoothed rates produced from the 5-year study period to adjust toward longer term trends. This increased expected levels toward recent experience but maintained some conservatism. In setting the final recommended rates, the raw data was smoothed based on a Whittaker-Henderson graduation method.

Exposures	Actual Net Withdrawals	Expected Net Withdrawals (proposed assumption)	Ratio of Actual to Expected Net Withdrawals
18,806	880	735	120%

Net Withdrawal Rates:

Service Duration (≤)	Existing Rates	Experience Study Raw Rates	Draft Assumption Rates for Fiscal 2025
1	0.095	0.123	0.100
2	0.079	0.081	0.080
3	0.066	0.073	0.060
4	0.055	0.082	0.060
5	0.047	0.062	0.050
6	0.040	0.040	0.050
7	0.036	0.049	0.040
8	0.032	0.048	0.030
9	0.029	0.033	0.030
10	0.025	0.032	0.030
11	0.022	0.021	0.020
12	0.018	0.031	0.020
13	0.015	0.031	0.020
14	0.013	0.026	0.020
15	0.010	0.021	0.020
16	0.005	0.014	0.010
17	0.005	0.013	0.010
18	0.005	0.010	0.010
19	0.005	0.004	0.010
20	0.005	0.028	0.010
21	0.005	0.023	0.010
22	0.005	0.005	0.010
23	0.005	0.014	0.010
24	0.005	0.000	0.010
25 & Over	0.005	N/A	0.010



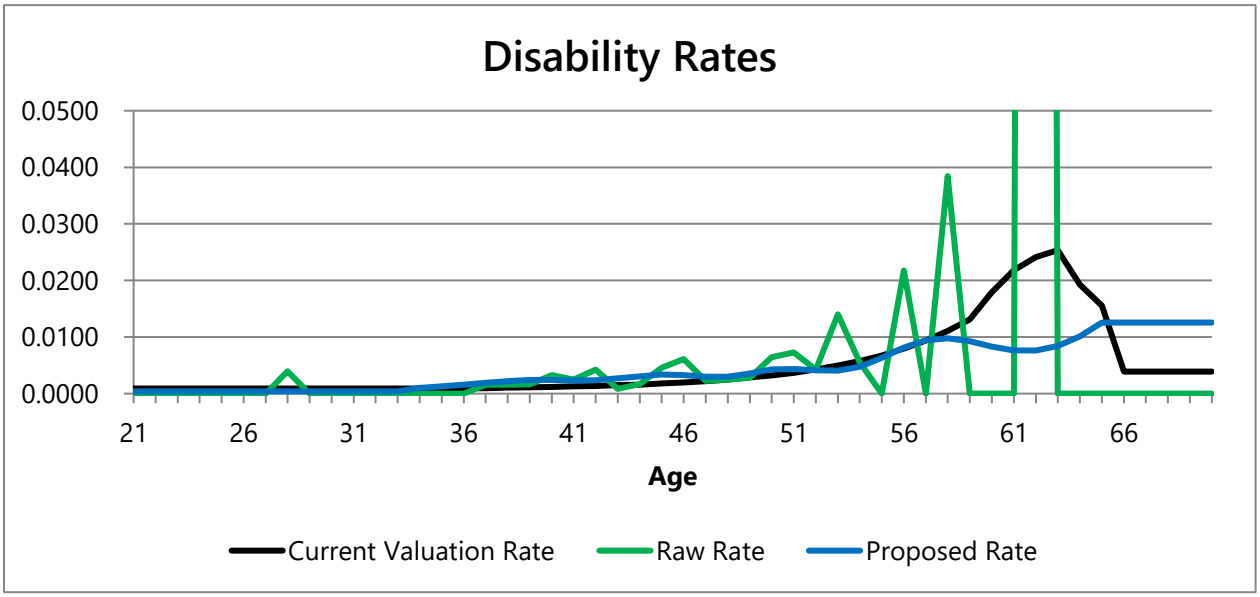
Rates of Disability

Analysis of disability experience presents special problems. Relative to the general population of a retirement system, disability claims are relatively rare. As a result, for most plans there is insufficient data to construct a disability table or even make a comparison of rates for individual ages. The more practical solution to the problem is to compare the overall actual incidence of disability to the expected claims according to a standard table during the study period. Unfortunately, there aren't many public plan standard tables to consider. The past few experience studies have utilized the rates of immediate disability retirement tables published by one of the nation's largest public retirement systems – the Railroad Retirement System – as the base table. Because the Railroad Retirement System tables project significantly greater expected disabilities at ages from 56 to 65 than have been experienced in the past, we have elected to produce a Louisiana Public Safety Disability Table based upon combined actual experience from the Firefighters' Retirement System, the Municipal Police Employees' Retirement System, the Louisiana State Police Retirement System, and the Sheriffs' Pension & Relief Fund over the past 10 year period.

Exposures	Actual	Expected Current Table	Ratio of Actual to Expected
27,027	53	39.4	135%

To scale the experience found within the Louisiana Public Safety Disability Table to the average rate of disabilities within the Firefighters' Retirement System over the past ten years, we propose a multiplier of 1.45. The final recommended rates are based on the new updated standard table, they bring the assumed rates closer to recent experience, and they still leave some margin for adverse deviation.

Exposures	Actual	Expected Proposed Table	Ratio of Actual to Expected
27,027	53	53	100%



Rates of Disability:

Age	Existing Base Rates	Experience Study Raw Rates	Proposed Assumption Rates for Fiscal 2025
Below 34	0.00090	Varies	0.00039
34	0.00090	0.00000	0.00099
35	0.00098	0.00000	0.00128
36	0.00098	0.00000	0.00157
37	0.00098	0.00160	0.00191
38	0.00105	0.00160	0.00222
39	0.00113	0.00162	0.00242
40	0.00120	0.00325	0.00242
41	0.00128	0.00248	0.00233
42	0.00135	0.00423	0.00239
43	0.00150	0.00083	0.00268
44	0.00158	0.00171	0.00303
45	0.00180	0.00459	0.00336
46	0.00195	0.00609	0.00328
47	0.00218	0.00226	0.00297
48	0.00248	0.00249	0.00297
49	0.00285	0.00283	0.00355
50	0.00323	0.00645	0.00428
51	0.00368	0.00730	0.00435
52	0.00428	0.00422	0.00413
53	0.00495	0.01402	0.00409
54	0.00578	0.00556	0.00476
55	0.00675	0.00000	0.00634
56	0.00795	0.02174	0.00813
57	0.00938	0.00000	0.00943
58	0.01110	0.03846	0.00977
59	0.01313	0.00000	0.00924
60	0.01793	0.00000	0.00829
61	0.02183	0.00000	0.00763
62	0.02415	1.00000	0.00763
63 & Over	Varies	N/A	Varies

Rates of Retirement

The rates at which members retire can have a significant impact on pension costs. A frequent misunderstanding of pension cost accruals is that the full value of every individual member's pension is accrued at the time the member is first eligible for retirement. In reality, many members, if not the majority, work past first eligibility and that reality is built into the structure of plan costs.

Under most circumstances, higher rates of retirement lead to higher plan costs since members have more years to receive benefits and the plan sponsor has fewer years to fund those benefits. Rates of retirement are generally set based on age. Additionally, if the data shows that members are significantly more likely to retire in the year of first eligibility, rates can include a modifier of the age specific rate applied in the year in which the member first reaches retirement eligibility.

A comparison of projected to actual retirement rates indicated actual rates of retirement during the study period exceeded current assumptions.

Exposures	Actual	Expected	Ratio of Actual to Expected
3,071	188	155	121%

The proposed retirement rates exceeded the expected level using current assumptions but given the increase in retirement rates since COVID-19 and considering longer term trends, a multiplier of 95% was applied to the rounded, smoothed rates to produce updated assumptions.

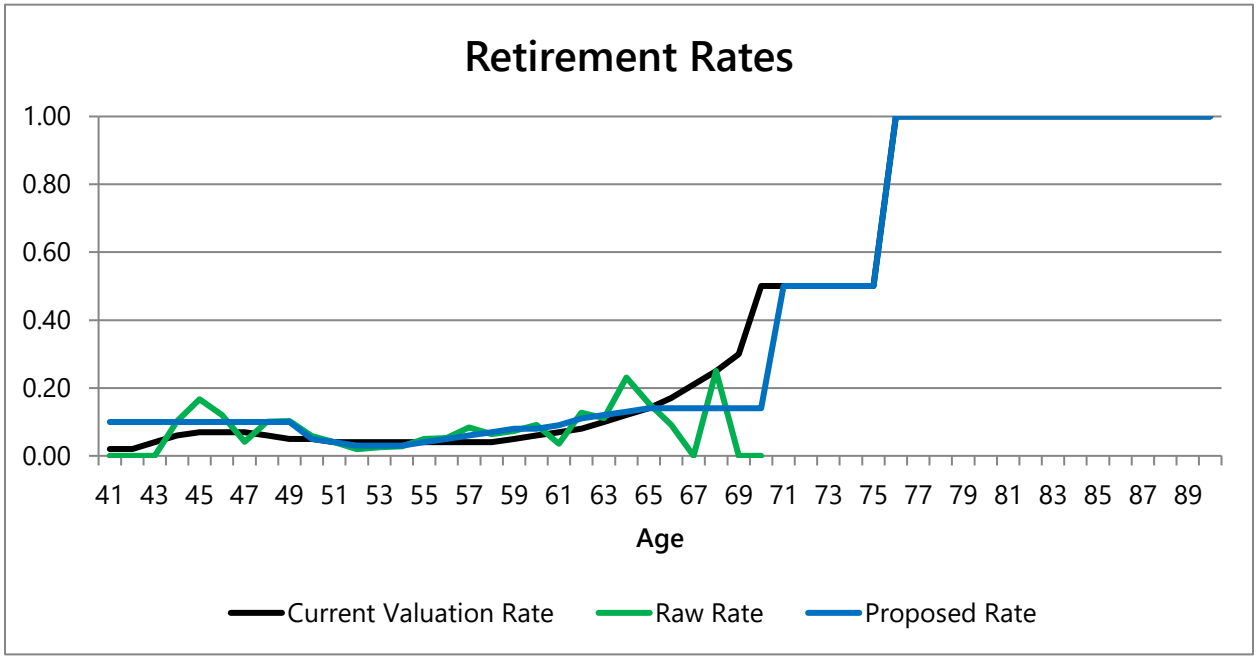
Exposures	Actual	Proposed	Ratio of Actual to Expected
3,071	188	186	101%

For the valuation assumptions, the existing rates are listed below. These rates apply only to those individuals eligible to retire. In reviewing data related to actual retirements during the study period, we did not find that retirement at first eligibility showed a material difference with the general age based rates. Hence, we have not elected to apply a multiplier to the rates of retirement at first eligibility.

The retirement decrement analysis excluded those who retired during the study period who had returned to employment following a previous retirement. The raw data was smoothed based on a Whittaker-Henderson graduation method. Due to a lack of exposures, ad hoc adjustments were made to the smoothed experience data at ages below 50 and above 65.

Rates of Retirement:

Age	Existing Base Rates	Experience Study Raw Rates	Proposed Assumption Rates for Fiscal 2025
41	0.02	N/A	0.10
42	0.02	N/A	0.10
43	0.04	0.000	0.10
44	0.06	0.103	0.10
45	0.07	0.167	0.10
46	0.07	0.120	0.10
47	0.07	0.041	0.10
48	0.06	0.101	0.10
49	0.05	0.103	0.10
50	0.05	0.058	0.05
51	0.04	0.040	0.04
52	0.04	0.020	0.03
53	0.04	0.025	0.03
54	0.04	0.028	0.03
55	0.04	0.050	0.04
56	0.04	0.053	0.05
57	0.04	0.084	0.06
58	0.04	0.064	0.07
59	0.05	0.073	0.08
60	0.06	0.091	0.08
61	0.07	0.036	0.09
62	0.08	0.127	0.11
63	0.10	0.111	0.12
64	0.12	0.231	0.13
65	0.14	0.154	0.14
66	0.17	0.091	0.14
67	0.21	0.000	0.14
68	0.25	0.250	0.14
69	0.30	0.000	0.14
70	0.50	0.000	0.14
71	0.50	N/A	0.50
72	0.50	N/A	0.50
73	0.50	N/A	0.50
74	0.50	N/A	0.50
75	0.50	N/A	0.50
76 & Over	1.00	N/A	1.00



Rates of DROP Entry

The actuarial valuation utilizes a specific set of rates of DROP entry which are applied independent of the rates of retirement. The rates at which members enter the DROP affect overall plan costs in a similar way to the rates of retirement. Generally, higher DROP entry rates will increase plan costs for the same reason that higher retirement rates will increase costs. As with retirement rates, these rates are generally set to vary by age with the possible application of a multiplier at the point of first eligibility if the data suggests that members have a propensity to enter the DROP with greater frequency at the age at which they first become eligible.

The number of DROP entries has increased since the previous experience study. Given the potential impact of COVID-19 and government policies surrounding the pandemic on member decisions, we elected to extend the study period to include the most recent 10 fiscal years. During this extended study period, the number of actual DROP entries in the study period was slightly below projected levels based on current DROP entry rates.

Exposures	Actual	Expected	Ratio of Actual to Expected
5,154	746	760	98%

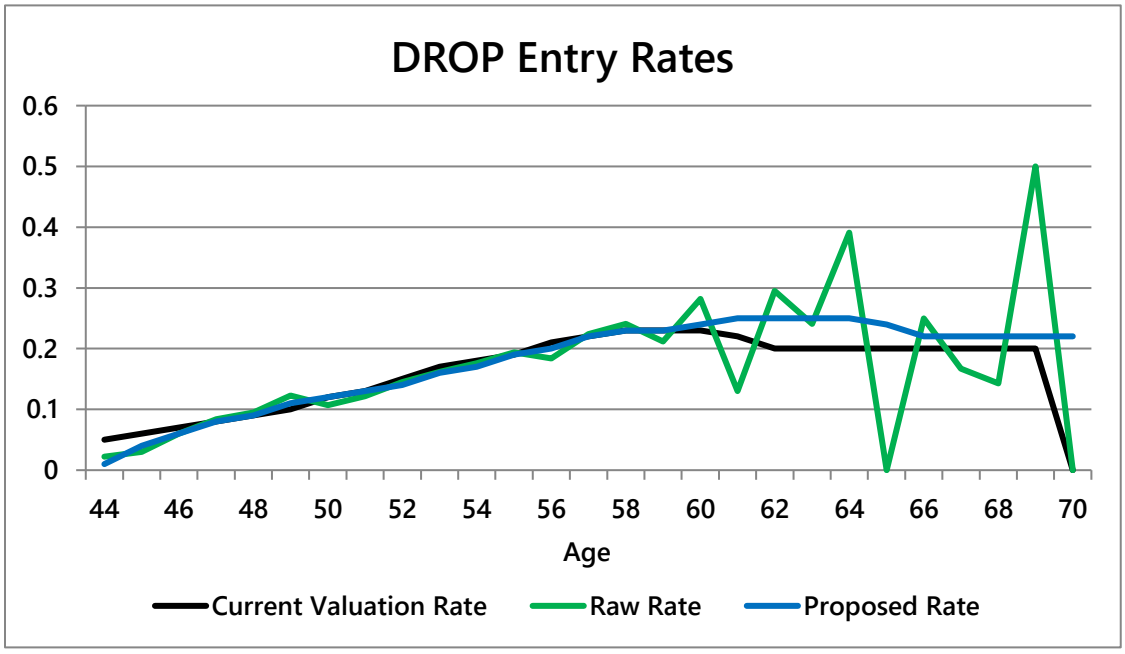
Updated rates of DROP entry were developed based on raw rates based on age

Exposures	Actual	Proposed	Ratio of Actual to Proposed
5,154	746	750	99%

The raw data on DROP entries was smoothed based on a Whittaker-Henderson graduation method. Ad hoc rates were set at ages below 44 and above 66 where there were very few exposures available for study. Our analysis did not find that members exhibit larger rates of DROP entry at their age of first eligibility. Therefore, no multiplier at first eligibility is recommended.

DROP Entry Rates:

Age	Existing Rates	Experience Study Raw Rates	Draft Assumption Rates for Fiscal 2025
41 - 43	0.00	0.000	0.00
44	0.05	0.022	0.01
45	0.06	0.030	0.04
46	0.07	0.060	0.06
47	0.08	0.084	0.08
48	0.09	0.095	0.09
49	0.10	0.123	0.11
50	0.12	0.107	0.12
51	0.13	0.122	0.13
52	0.15	0.145	0.14
53	0.17	0.162	0.16
54	0.18	0.176	0.17
55	0.19	0.194	0.19
56	0.21	0.184	0.20
57	0.22	0.224	0.22
58	0.23	0.241	0.23
59	0.23	0.212	0.23
60	0.23	0.282	0.24
61	0.22	0.130	0.25
62	0.20	0.295	0.25
63	0.20	0.241	0.25
64	0.20	0.391	0.25
65	0.20	0.000	0.24
66	0.20	0.000	0.22
67	0.20	0.000	0.22
68	0.20	0.143	0.22
69	0.20	0.500	0.22
70	0.00	0.000	0.22
71 & Over	0.00	N/A	0.00



Rates of Post-DROP Retirement

The rates at which members retire after they have completed DROP can have a somewhat significant impact on pension costs. Under most circumstances, higher rates of retirement lead to higher plan costs since members have more years to receive benefits and the plan sponsor has fewer years to fund those benefits. Rates of retirement are generally age specific.

Exposures	Actual	Expected	Ratio of Actual to Expected
288	73	76	96%

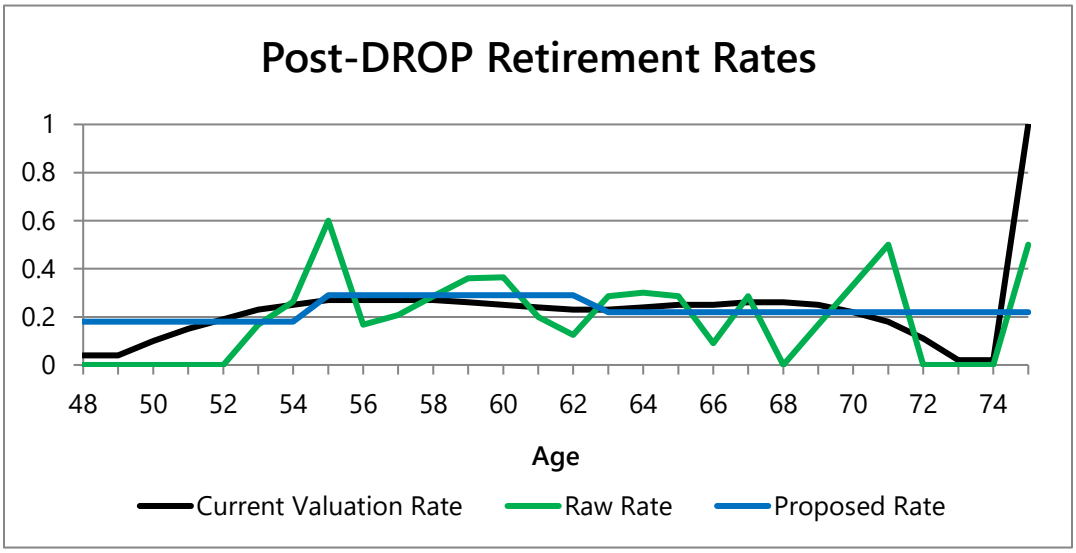
A comparison of projected to actual post-DROP retirement rates indicated that actual rates are slightly below projected levels. Like the current rates, the proposed rates vary by age according to the experience gathered. Please note these rates only apply to members who remain employed after completing the DROP participation period and then subsequently retire.

Exposures	Actual	Projected	Ratio of Actual to Projected
288	73	74	99%

For the valuation assumptions, the base rates are listed below. Proposed rates were calculated by amalgamating all actual retirements and dividing by all exposures in three age ranges – below age 55, age 55 through age 62, and above age 62. Beginning with age 80, all members who remain employed after completing DROP are assumed to retire.

Post-DROP Retirement Rates:

Age	Existing Rates	Experience Study Raw Rates	Draft Assumption Rates for Fiscal 2025
44 - 47	N/A	N/A	0.18
48	0.04	0.000	0.18
49	0.04	0.000	0.18
50	0.10	0.000	0.18
51	0.15	0.000	0.18
52	0.19	0.000	0.18
53	0.23	0.167	0.18
54	0.25	0.263	0.18
55	0.27	0.600	0.29
56	0.27	0.167	0.29
57	0.27	0.208	0.29
58	0.27	0.286	0.29
59	0.26	0.360	0.29
60	0.25	0.364	0.29
61	0.24	0.200	0.29
62	0.23	0.125	0.29
63	0.23	0.286	0.22
64	0.24	0.300	0.22
65	0.25	0.286	0.22
66	0.25	0.091	0.22
67	0.26	0.286	0.22
68	0.26	0.000	0.22
69	0.25	0.167	0.22
70	0.22	0.333	0.22
71	0.18	0.500	0.22
72	0.11	0.000	0.22
73	0.02	0.000	0.22
74	0.02	0.000	0.22
75 - 79	1.00	Varies	0.22
80 & Above	1.00	N/A	1.00



Mortality Rates

The determination of the appropriate rates of mortality to be utilized for the assessment of costs and liabilities of a retirement system is a complex process. It is important to remember that a retirement system is composed of several unique subgroups which may have mortality characteristics which differ significantly from each other. Obviously, mortality rates for regular retirees are of primary importance since the longevity of pensioners determines how long benefits will be paid to these members. In addition to this group, mortality of disability retirees, employees, and beneficiaries must also be considered. Furthermore, the active group may itself be composed of subgroups which will differ in their mortality characteristics. Mortality will vary between males and females and among various categories of employees such as blue vs. white collar or safety vs. non-safety. There are several other factors which may be considered which will affect the actual mortality rates observed for each subgroup. Gathering data for mortality analysis can present several challenges. Since mortality rates are expressed as the probability of death at each age, a large amount of data is required to have credible experience for each age group. For a very large retirement system such as the Social Security System, with millions of participants, enough data is available to construct a complete table at those ages that members receive retirement benefits. For retirement systems with only a few thousand participants, the construction of a complete table solely from plan data is not possible. Hence, there is typically some reliance on standard tables to aid in assessing the proper mortality rates to utilize for a plan valuation or for other purposes such as determining actuarial equivalence for option factors or early retirement.

An additional complexity in determining mortality rates is the nature of the rates themselves, which have experienced a secular reduction due to the impact of mortality improvement as medical advancements and lifestyle changes have combined to increase life expectancy over the last two centuries. This trend must be incorporated into the mortality assumptions utilized if sufficient assets are to be accumulated to fund future retirements and to properly value the costs of those currently retired. As a result, it has been common practice to modify mortality

tables by projecting the existing mortality rates forward for future improvement. The latest advancement in the modeling of future mortality improvement is called generational mortality. Generational mortality determines the appropriate rate of mortality in each year for each individual by utilizing age based mortality rates from a base mortality table and age and birth year based mortality improvement scales. This develops mortality that varies both by the age and year of birth of the member, essentially developing an appropriate mortality table for each member.

The appropriate mortality rates for regular retirees were determined by comparing the experience of the plan to that of a standard table. To mitigate the problems associated with the relatively small size of the data set, data was combined into five-year age groups and a comparison was made between the actual deaths and associated benefit payments and the projected deaths and associated benefit payments based on a selected standard table.

The standard tables selected for comparison to raw data were developed using the sex-distinct 2016 Public Retirement Plans Mortality Tables (Pub-2016) for Safety Healthy Retirees. For this study, these base mortality values were projected to 2019 using full generational mortality based on the sex-distinct MP-2021 mortality improvement scales. The projection of the base tables to 2019 is necessary to account for mortality improvement through the central year of the study period, which was July 1, 2014 through June 30, 2024. Both the standard tables and the mortality improvement scales published by the Society of Actuaries (SOA) were used without adjustment. Because of concerns related to the effects of the COVID-19 pandemic on mortality, the SOA's Retirement Plans Experience Committee has elected to not update the mortality improvement scales during the last 3 years. The MP-2021 mortality improvement scales are the latest mortality improvement scales developed by the Society of Actuaries. These scales were released in October 2021 using data from public pension systems across the United States. In addition to publishing tables based upon the total dataset, the Society of Actuaries provided below and above median income tables for groups whose average income levels are better aligned with the 25th or 75th percentile of safety retirees included in the development of these tables. A review of the average salary of active members in the 2016 valuation (which aligns with the year of published income levels in the Pub-2016 study) finds that the median active member of this system had an annual salary of $48,350 in fiscal 2016. This most closely aligns with the below median experience within the Pub-2016 mortality tables. Therefore, we selected the below median mortality tables for use as the base tables in the mortality study.

Although there are valid reasons to believe that beneficiary mortality will not exactly match retiree mortality, developing separate tables for beneficiaries would prove difficult due to a lack of data. Furthermore, the socio-economic group from which the beneficiaries are drawn should closely match that of the retirees. Therefore, the rates of mortality developed for the retirees were also applied to beneficiaries. There is a Pub-2016 mortality table with specific mortality rates for contingent beneficiaries who are in payment status. Since the present value of benefits for this group is relatively small compared to the complete retired lives group and the values in the retiree table are conservative compared to the contingent beneficiary table, we have elected to apply retiree mortality to contingent beneficiaries in payment as well.

To determine the proper multiplier for use with system mortality tables, we reviewed the rate of Louisiana mortality as compared to the national mortality rate reported by the National Institutes of Health on their website. The reported deaths per 100,000 based on all causes of death for all races and both sexes for the years 2018 to 2022 shows Louisiana mortality exceeding the national average by just over 20%. Since the pension plan's population may not reflect all the population elements measured in the statewide population statistics used in the CDC's mortality and morbidity report (infant mortality, for example), we have limited the adjustment for Louisiana mortality to 15% greater than the standard table.

Due to the size of the plan, it is not possible to construct a mortality table directly from the plan experience. Hence a process known as "credibility weighting" is used to develop mortality probabilities based on both the plan experience and that given in standard tables. The greater the number of deaths during the experience period, the greater the credibility and the more the actuary can rely on the plan's experience in developing mortality probabilities. If the plan has 1,082 or more deaths during a study period, then it is deemed to have full credibility insofar as the number of expected deaths. However, this number must be further adjusted for benefit dispersion, or the level of variation in benefits. If a plan has less than full credibility, mortality is based on a weighted average of the plan's mortality experience and the standard table utilized.

To limit the impact of COVID-19 on mortality rates, we extended the study period to cover a 10 year period. We measured the number of deaths as 375 for males and 128 for females during the 10-year study period. After adjusting for the benefit dispersion, the required number of deaths for full credibility is 1,330 for males and 1,622 for females. Given this methodology, we found that the data exhibited 53% credibility for males and 28% credibility for females. The final mortality draft assumptions were developed by credibility weighting these results with 115% of the Pub-2016 Safety Below-Median mortality tables.

In the final analysis, we elected to use the Pub-2016 Safety Below-Median Healthy Retiree Table adjusted to take into account a portion of the increased mortality in Louisiana and to account for the credibility of the plan's own mortality data. As a result, male mortality was set equal to 110% of the Pub-2016 Safety Below-Median Healthy Retiree Table for males and female mortality was set equal to 110% of the Pub-2016 Safety Below-Median Healthy Retiree Table for females, each adjusted for full generational mortality using the appropriate MP2021 scales.

Below is a comparison of the total dollar-weighted exposures and deaths, along with the total monthly dollar-weighted and credibility-adjusted deaths, and the dollar-weighted deaths from the proposed mortality table for males and females in the study period. (Figures shown are based on monthly benefit amounts)

Males:

Total Exposures	Total Actual Deaths	Total Credibility Weighted Deaths	Total Deaths Based on Proposed Table
$5,220,005	$1,066,813	$1,084,933	$1,070,164

Females:

Total Exposures	Total Actual Deaths	Total Credibility Weighted Deaths	Total Deaths Based on Proposed Table
$604,504	$174,295	$181,729	$180,617

Given the way data is collected and stored on the system's database, there may be no reliable way to track active employee mortality for the plan. Members who are unmarried or who have no children or who have low levels of service credit may not be eligible for survivor benefits beyond a refund of employee contributions. As a result, some deaths may not be recorded as such on the system's database. In addition, some employees may simply withdraw contributions if they are in the midst of a final illness and are unable to work and not eligible for disability benefits. Hence, in the absence of evidence to the contrary, the use of standard tables for active employee mortality may be the only practical alternative. Therefore, the Pub-2016 Safety Below-Median Employee Tables for males and females were selected for employee mortality with the same full generational MP2021 scale for mortality improvement and the same multipliers as the annuitant mortality tables (i.e., 110% for males and 110% for females).

Since we have minimal experience for disabled lives mortality, the standard Pub-2016 Safety Total Dataset Disabled Retiree Tables for males and females were selected for disabled lives mortality with the same full generational MP2021 scale for mortality improvement as the annuitant mortality tables and the same multipliers as the annuitant mortality tables (i.e., 110% for males and 110% for females). The total dataset is used because there are no Below-Median or Above-Median tables for disabled retirees.

Other Assumptions

In addition to the above-mentioned assumptions, we have studied the following: vesting election percentage, DROP participation period, percent retiring at end of DROP, average post-DROP period, and family statistics.

Vesting Election Percentage

Members with twelve or more years of service are vested and are entitled to a deferred retirement benefit if they don't meet the age requirements to begin receiving a retirement benefit. However, in our experience not all members who become vested elect to receive a deferred benefit. Instead, some terminated vested members elect to receive a refund of contributions and forego all rights to a future benefit. We currently assume that 70% of terminated vested members will leave their employee contributions on deposit until reaching their vesting payment age to receive their lifetime vested benefit.

Recent experience has shown that the number of participants electing to receive a deferred benefit significantly differs based on the participant's amount of service credit at the time of their termination from membership service. Those with higher levels of service credit are closer to normal retirement eligibility and have less time to wait for their vested benefit. This means that at higher levels of service, most participants that leave employment elect to leave their employee contributions on deposit and wait until their earliest retirement age to receive their vested benefit. Based on the data collected during the study period, we recommend adjusting the assumption to recognize that 65% of members with less than 20 years of service credit and 90% of members with at least 20 years of service credit are expected to leave their contributions on deposit and await their vested benefit.

Drop and Post-DROP Participation

There are three assumptions that we reviewed that affect DROP participants as they reach the end of their DROP participation period. These factors can have a significant impact on plan costs. Under current assumptions, all DROP participants are assumed to participate in the DROP for 3 years and 75% are assumed to retire at the end of this participation period with 25% assumed to remain employed at the completion of DROP participation and work 2 years (on average) post-DROP and then retire.

DROP Participation Period

The first DROP related assumption is the participation period. The maximum DROP participation period is three years for FRS. We did not find significant evidence to change the current assumption that members who participate in DROP will remain for the full three years.

Number of Participants Exiting DROP (5 year study period)	Existing DROP Participation Assumption	Experience Study Average DROP Participation	Proposed DROP Participation Assumption
411	3 years	2.78 years	3 years

Percent retiring at end of DROP

The second DROP related assumption pertains to the percentage of DROP participants who elect to retire at the end of their DROP participation period. We find that over the most recent five year period 83% of DROP participants in the plan retired at the end of the DROP period. Over the most recent ten year period 79% of DROP participants in the plan retired at the end of the DROP period. Therefore, we recommend a slight change in this assumption from 75% of DROP participants expected to retire at the end of DROP participation to 80%.

Number of Participants Exiting DROP (10 year study period)	Existing Percent Retiring Assumption	Experience Study Percent Retiring	Proposed Percent Retiring Assumption
663	75%	79%	80%

Average Post-DROP Period:

The third DROP related assumption pertains to the assumed number of years that a member who does not elect to retire at the end of the DROP participation continues to work after exiting DROP. The current assumption is that the 25% of DROP participants who elect to remain employed at the end of the DROP participation period will remain employed for an average of 2 years post-DROP.

A review of the most recent five-year period finds that those who remain employed after completing DROP participation have worked an additional 3 years on average. Despite this, we recommend no change in the current 2-year assumption to maintain a level of conservatism.

Number of Post-DROP Retirements	Existing Average Post-DROP Period Assumption	Experience Study Average Post-DROP Period	Proposed Average Post-DROP Period Assumption
94	2 years	2.91 years	2 years

To summarize, we recommend the following assumptions - All members who enter DROP are assumed to participate for 3 years and 80% are assumed to retire at the end of DROP participation with 20% assumed to work 2 years (on average) post-DROP and then retire.

Family Statistics

The value of plan survivor benefits varies according to certain family statistics. Because the system does not maintain consistently updated information on members' marital status and beneficiary information, to determine the actuarial value of certain survivor benefits owed at the death of an active member, assumptions must be made regarding the composition of the family. These characteristics include the percentage of members who are married, the percentage of members with children, and the average number and ages of the children. Also, since benefit values are dependent upon the age of the recipient, it is important to know the average age difference between husbands and wives. System data rarely includes sufficient information regarding most of the above factors. As a result, outside sources of information are often used to set assumptions related to family composition. These sources include information published by the United States Census Bureau or information from large pension plans like the Social Security System or Railroad Retirement System.

Since there was no practical way to determine system specific assumptions for these statistics, valuation assumptions were selected from information obtained from reports published by such outside sources. Regarding the percentage of members assumed to be married, in the 2023 Table A1: Marital Status of People 15 Years and Over, by Age and Sex produced by the U.S. Census Bureau indicated that the percentage of the population which is married has continued to decline. The current assumption is that 70% of members are married. A review of population statistics for common retirement ages (ages 50 through 70) shows probabilities of marriage around 65%. To account for added conservatism, we believe that maintaining the current assumption is warranted. Therefore, we recommend no change in the assumption related to the percentage of members assumed to be married.

Information related to the average age of children, the percentage of families with children, and the average number of children was obtained from the 2023 Table F1: Family Households, by Age of Own Children, Age of Family Members, and Age of Householder produced by the U.S. Census Bureau. The table below gives a sample of the existing and proposed values recommended for the following family statistics: percentage of families with children, average number of children per family, and average age of children per family.

Family Statistics

Member's Age	Existing Assumption % with Children	Proposed Assumption % with Children	Existing Assumption Number of Children	Proposed Assumption Number of Children	Existing Assumption Average Age	Proposed Assumption Average Age
25	60%	56%	1.77	1.89	4	3
35	82%	80%	2.11	2.11	8	6
45	63%	63%	1.75	1.76	11	12
55	11%	11%	1.42	1.55	14	16
65	2%	2%	1.50	1.60	14	16

An additional family statistic that we studied is the assumed age difference between husbands and wives. Currently we assume that husbands are three years older than their wives if the age of a member's spouse is unknown. A review of age differences between retirees and their optional beneficiaries supports the continued use of this assumption. Therefore, we recommend no change in the spousal age difference.

Actuarial Equivalence Factors

The proper administration of a governmental pension plan requires the use of certain actuarial equivalence calculations (which are performed outside of the annual actuarial valuation process). Since assumptions are inherent in any actuarial equivalence calculation, the assumptions required for such calculations have been studied as a part of this plan experience study. Although the mortality and interest assumptions adopted for use in the actuarial valuation may be found to be appropriate for determining actuarial equivalence, there are circumstances where such assumptions are modified for both practical and theoretical reasons. Valuation assumptions are developed to be used for the general population of the retirement system. However, actuarial equivalence factors are frequently used for specific subgroups of the plan where members are allowed the option of selecting from various forms of payment. Under such circumstances, the retirement system will frequently experience anti-selection. Anti-selection refers to the potential for a plan member to use information unknown to the retirement system related to their own personal situation that leads to higher costs than the actuarial modeling would expect. Anti-selection is a larger actuarial concern in cases where the system is making calculations that only affect a small group of members or a single member.

Federal court rulings have required the use of unisex mortality in making certain calculations related to benefit form, despite the actual difference between mortality experienced by males and females. To produce a unisex mortality assumption for certain actuarial equivalence calculations, male and female mortality may be blended. This allows the system to determine actuarial equivalence in the same way for male and female members while protecting the system by recognizing that the expected mortality impact on the plan will lie between the male and female tables. Where applicable, we have included a description of the recommended assumptions as to the male and female percentage used to determine the unisex mortality assumption. Also, in determining actuarial equivalence factors we have made all calculations based upon the fact that benefits are paid at the beginning of each month for that month. We have identified the following areas where actuarial equivalence assumptions are used to make calculations related to plan members and retirees:

1. Single Life and Joint & Survivor Option Equivalence
2. Disability award lifetime equivalence
3. Sick and Annual Leave Conversion
4. DROP Lump Sum Conversion into a Cash Refund Lifetime Annuity
5. Initial Benefit Option (IBO) Reduction Factors
6. Individual cost calculations related to actuarial transfers or purchases of service credit or accrual rate upgrade

Single Life and Joint & Survivor Option Equivalence

The basic retirement, DROP, and disability benefit provisions within the FRS statutes describe the benefit payable to a member for his or her lifetime with no provision for any beneficiary to receive benefits after their death. R.S. 11:2259 describes certain alternative payment options available to retirees and DROP participants. These alternate forms of benefit payment provide benefits payable after the member's death and for the lifetime of his/her spouse or named beneficiary. The statutes state that a member may elect, at the time of retirement, to receive reduced retirement benefits based upon an approved optional form which is the actuarial equivalent of his/her retirement allowance. To facilitate the calculation of benefits upon the retirement of members, a set of option reduction factors is prepared by the actuary for the system's staff. These factors are determined based upon appropriate mortality and interest assumptions. Based upon the results of the system's mortality and interest rate studies contained within this experience study, these factors will need to be updated. To allow the system's staff the ability to continue offering benefits and to provide estimates of future benefits in a timely fashion, we recommend that the updated factors be approved for retirement dates beginning on or after July 1, 2026.

To provide a single set of reduction factors for each option provided within the statutes that can be applied to all members (male and female), option factors have been determined based upon unisex mortality tables which are created by weighting male and female mortality. The recommended weights for determining the unisex mortality table to be used in single life option factors were set based upon the gender mix in the population of active members aged 50 and above. A review of the 2024 valuation database finds that 89% of active members within this group were male. Therefore, we believe that a blend of 90% male and 10% female mortality remains appropriate.

The recommended weights for determining the unisex mortality tables to be used in joint & survivor option factors have been set based upon a weighted average portion of benefits being paid under Options 2 and 3 to males and females. A review of the 2024 valuation database finds that based on this analysis, members choosing optional forms of benefit are male 98% of the time. Therefore, we believe that the current blend of 100% male and 0% female mortality remains appropriate. This review indicates that even though the system has a population that is 7% female, the population of retirees who have elected reduced benefits to provide lifetime coverage to a designated beneficiary are primarily male.

Although this experience study recommends that the plan's annual actuarial valuation be run based upon fully generational mortality assumptions which incorporate mortality improvement scales, we recommend the use of static mortality tables for option reduction. The use of fully generational mortality tables for option calculation purposes would require a different set of option factors for every birth year. Additionally, each set of tables would have to be updated every year. With static tables, a single set of factors is produced for each member and beneficiary age combination. Although including mortality improvement in an actuarial valuation of liabilities generally results in larger liabilities, the opposite is generally true for optional reductions since the reduction factor is largely tied to the expected period over which

the average member will receive benefits before requiring payment to a contingent beneficiary. Therefore, to offset potential anti-selection in option selections, we have only included mortality improvement to the midpoint of the next experience study five year period. We recommend that option factors be based upon the Pub-2016 Safety Below-Median Healthy Retiree Mortality Tables projected with mortality improvement using the MP2021 mortality improvement scales to 2027 multiplied by the same multipliers as discussed in the mortality section.

Disability Award Lifetime Equivalences

R.S. 11:221 describes the Board's authority to modify disability benefits based on certain outside earnings. The system considers the "whole life annuity equivalent" of any qualifying financial award (such as a lump sum settlement paid to the disabled retiree in conjunction with a work related injury from employer-provided workers' compensation coverage) to be outside earnings when determining the relevant benefit offset.

To determine the "whole life annuity equivalent" of any financial award, the system must adopt appropriate mortality, interest, and unisex assumptions.

Based upon the recommended change to disabled lives mortality within this experience study, we recommend the use of the base disabled mortality table (the Pub-2016 Safety Below-Median Disabled Retiree Tables for males and females) projected with mortality improvement using the MP2021 mortality improvement scale to 2027 and multiplied by the same multipliers as discussed in the mortality section.

Finally, we based our recommendation related to the appropriate unisex assumptions on the retirement benefits of disabled retirees who retired during the most recent ten-year period. Our review of the 2024 valuation database confirms that the current blend of 85% male and 15% female remains appropriate.

Sick and Annual Leave Conversion

R.S. 11:2254.1 stipulates that employers may elect to allow its employees to convert unused earned leave to service credit. For members who convert unused sick and annual leave into additional membership service when computing their retirement or DROP benefits, their employer is responsible for paying into the system an amount which, on an actuarial basis, totally offsets the increase in accrued liability of the system resulting from the conversion.

To properly charge employers for the actuarial cost of such leave, the system must stipulate the mortality and interest assumptions for determining such actuarial equivalence. Since these payments are made by employers, the costs are determined without the use of unisex mortality.

We recommend that the sick and annual leave factors be based upon the Pub-2016 Safety Below-Median Healthy Retiree Mortality Tables (multiplied by the same multipliers as discussed in the mortality section) projected forward with mortality improvement using the appropriate

MP2021 mortality improvement scale from 2016 through 2038 (the midpoint of the next experience study plus the plan's liability duration of 11 years).

DROP Lump Sum Conversion into a Cash Refund Lifetime Annuity

For members who complete their DROP participation period and terminate the employment that makes them eligible for membership in FRS, instead of receiving a lump sum payment from their DROP account balance, they may elect to receive a lifetime annuity payment equal in actuarial value to the lump sum.

We recommend that factors be based upon the Pub-2016 Safety Below-Median Healthy Retiree Mortality Tables (multiplied by the same multipliers as discussed in the mortality section) and projected with mortality improvement using the MP2021 mortality improvement scales to 2038 (the midpoint of the next experience study plus the plan's liability duration of eleven years). The additional projection for mortality improvement helps offset potential anti-selection risks. We recommend continuing to use a unisex mortality assumption of 90% male for these calculations based on a review of the members at least age 50.

Should the Board wish to further protect from the impact of anti-selection related to the conversion of DROP lump sum balances into cash refund lifetime annuities, the interest rate used to determine the lifetime annuity equivalent payments could be lowered below the valuation interest rate.

Initial Benefit Option (IBO) Reduction Factors

Members who do not participate in DROP may elect to receive an initial benefit plus a reduced monthly retirement allowance, provided the initial benefit together with the reduced monthly retirement allowance shall equal the actuarially equivalent amount of his maximum retirement allowance. The factors utilized for determining the appropriate reduction to the member's benefit when electing IBO are based on mortality and interest assumptions.

To provide a single set of factors for IBO that can be applied to all members (male and female), the reduction factors have been determined based upon unisex mortality tables which are created by weighting male and female mortality. The recommended weights for determining the unisex mortality table to be used in calculating IBO factors were set based upon the gender mix in the population of active members aged 50 and above. A review of the 2024 valuation database finds that 89% of active members within this group were male. Therefore, we believe that a blend of 90% male and 10% female mortality remains appropriate.

Individual Cost Calculations Related to Transfers or Purchases of Service Credit or Accrual Rate Upgrades

Since the actuarial cost of transfers of service credit, purchases of service credit, purchases of military service credit, and upgrades of accrual rates associated with transferred service involve the use of the actuarial valuation of a member's liability before and after the transaction, a set of

valuation parameters is needed to make the calculation. Finalized parameters are not known until a valuation is complete and the Board of Trustees has accepted the funding valuation report. Therefore, to avoid delays in calculating the actuarial cost of transfers or purchases, we recommend that the Board recognize that such calculations performed during any fiscal year will be made based upon the valuation parameters described in the actuarial valuation report last approved as of the beginning of the fiscal year. For example, for calculations made between July 1, 2026, and June 30, 2027, the parameters (including mortality and interest assumptions) contained in the 2025 actuarial valuation report would be used.

The Fund's practice has been to make such calculations on a sex distinct basis. Since we are aware of no guidance as to a requirement to run transfers and purchases on a unisex basis, we intend to continue the historical practice, unless the Board votes otherwise.

Estimated Cost Impact

The following are estimated impact to the system's normal cost accrual rate based upon applying the recommended assumptions to the 2024 actuarial valuation data. The final impact will differ when applied to the 2025 actuarial valuation data. These changes do not account for changes related to 2025 legislation.

Assumption	Impact on Normal Cost Accrual Rate
Valuation Interest Rate	No change
Salary Scale	- 0.849%
Mortality Decrement	+ 0.105%
Retirement Decrement	+ 0.640%
DROP Entry Decrement	- 0.063%
Post-DROP Retirement Decrement	- 0.008%
Withdrawal Decrement	- 0.712%
Disability Decrement	+ 0.005%
Vesting Election Percentage	+ 0.171%
DROP Participation Period	No change
Post-DROP Employment Elections	+ 0.311%
Family Statistics	+ 0.001%
Net Change	**+ 0.399%**

A couple of bills approved by the legislature during the 2025 Regular Session of the Louisiana Legislature will have an impact on plan costs. House Bill 19 makes a few key changes to the system's Deferred Retirement Option Plan (DROP). The following section discusses the possible changes required within the 2025 actuarial valuation related to legislation.

Possible changes related to 2025 legislation

This experience study has been performed based on the laws in effect as of June 30, 2024. The bulk of the study was completed prior to the end of the 2025 Regular Session of the Louisiana Legislature. There are a few bills that will have an impact on plan assumptions. Further changes in assumptions required due to 2025 legislation are outside the scope of this study, but the following describes the possible changes:

A review of proposed legislation finds that two bills could have some impact on plan assumptions:

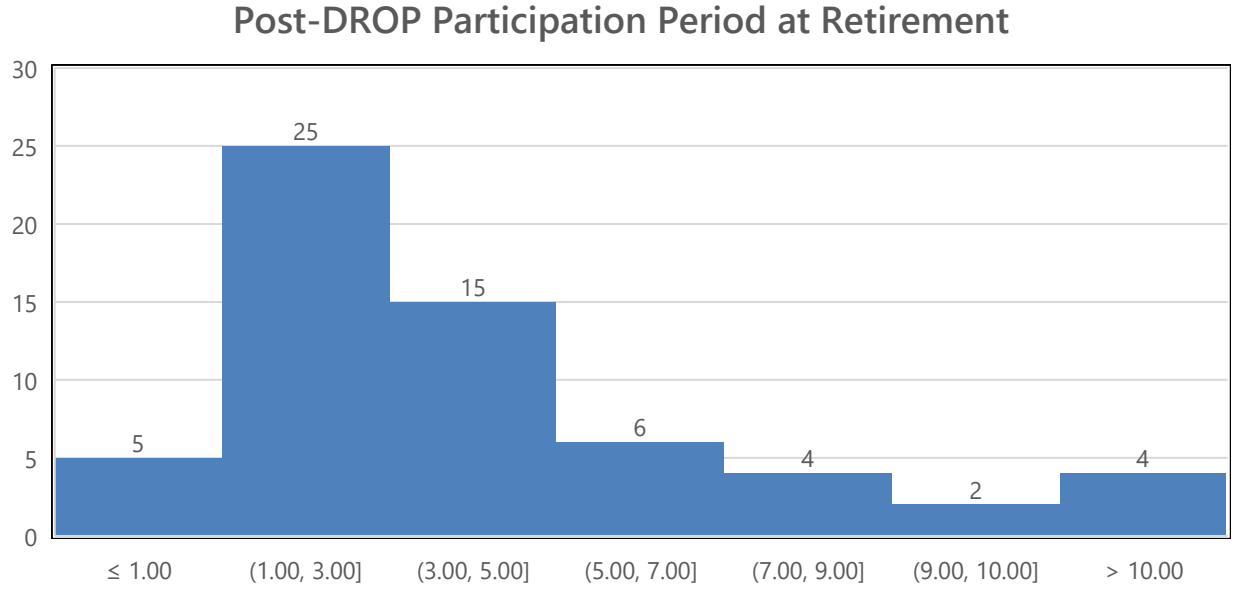
House Bill 18 (Act 122) includes changes related to the future use of the Funding Deposit Account for prefunding COLAs. Although the bill will not directly impact plan assumptions, it may help avoid a future change in plan assumptions. The current valuation model does not directly account for additional liabilities related to future COLAs. This means that unless future COLAs are prefunded, each ad hoc COLA will cause an "unexpected" increase in plan liabilities. House Bill 18's proposed change to allow proper prefunding is supportive of current assumptions and will reduce the likelihood that a change in plan assumptions and modeling of future COLAs will be required in the future.

House Bill 19 (Act 344) includes several changes to plan statutes. The changes related to the system's Deferred Retirement Option Plan (DROP) will have an impact on plan assumptions. The bill provides that members who have earned at least 28 years of service credit and elect to enter DROP on or after April 1, 2026 may elect a participation period of up to 60 months. The bill further provides that any person who earned at least 28 years of service credit prior to DROP entry who is participating in DROP on April 1, 2026 may elect to extend DROP participation to a total period of up to 60 months.

The extension of the maximum DROP participation period from 36 months to 60 months for members who earn 28 years of service credit will likely eventually have an impact on the retirement decisions of members, but without data to support changes in the basic DROP entry and retirement rates we do not recommend changes in these assumptions at this time. Despite this, other DROP related assumptions will require adjustment. These assumptions include the average DROP participation period, the percent retiring at the end of DROP, and the average post-DROP period.

Recommended assumptions state that DROP participants will participate for a full 36 month period. Upon completion of the DROP participation period, 80% of participants are assumed to retire while the other 20% are assumed to remain employed an additional 2 years after completing DROP. These assumptions recognize that although the vast majority of DROP participants complete the maximum participation period, some currently remain employed beyond the 36 months.

The following histogram shows the length of post-DROP participation experienced for those who retired with post-DROP service during the study period:



The largest single group shown above retired with between 1 and 3 years of post-DROP service, but there are members who remain employed for a significant number of years after completing DROP.

As a part of the 2025 actuarial valuation, we will recommend assumption changes to account for House Bill 19. At this time, one possible approach may be the following:

Assume the DROP participation period for members who enter DROP with less than 28 years of service credit will be 36 months and for those who enter DROP with at least 28 years of service credit will be 60 months since most participants have historically completed the maximum DROP participation period.

Further assume that 80% of DROP participants who entered DROP with less than 28 years of service credit will retire at the end of DROP participation and that the other 20% will remain employed on average for a two-year period.

Additionally assume that DROP participants who entered DROP with at least 28 years of service credit will retire at the end of the maximum 60 month DROP participation period.

Currently, no employee or employer contributions are payable on the salaries of participants in the DROP. House Bill 19 requires employers to begin paying employer contributions on DROP participants beginning April 1, 2026. This change is expected to significantly lower the employer contribution rate as the accumulation of normal costs will be spread over the full career of members who utilize DROP instead of only through DROP entry.

Glossary

Credibility Weighted Experience: Process by which the experience of a group is averaged with a standard table by weighting each of the two inputs. The larger the group from which the experience is drawn, the greater the weight assigned to its results. In cases where the group is relatively small, greater weight is given to the standard table.

Decrement: A factor reducing the population of a retirement system such as death, retirement, disability, or withdrawal from service.

Duration: The number of years of service a member has, rounded up to the next whole number (e.g. a member with 5.2 years of service is in the 6^{th} duration).

Exposure: The number of persons multiplied by the number of years such persons are subject to a rate of decrement

Whitaker-Henderson Method: Mathematical process by which data is smoothed in order to remove random fluctuations from the underlying trend. Thus, individual data points are converted to a smooth curve by a mathematical formula.