North Carolina Retirement Systems

Overview of Experience Study for Five-Year Period from January 1, 2020 to December 31, 2024

Michael Ribble, FSA, EA, MAAA, FCA
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January 29, 2026
Board of Trustees Meeting

Gallagher

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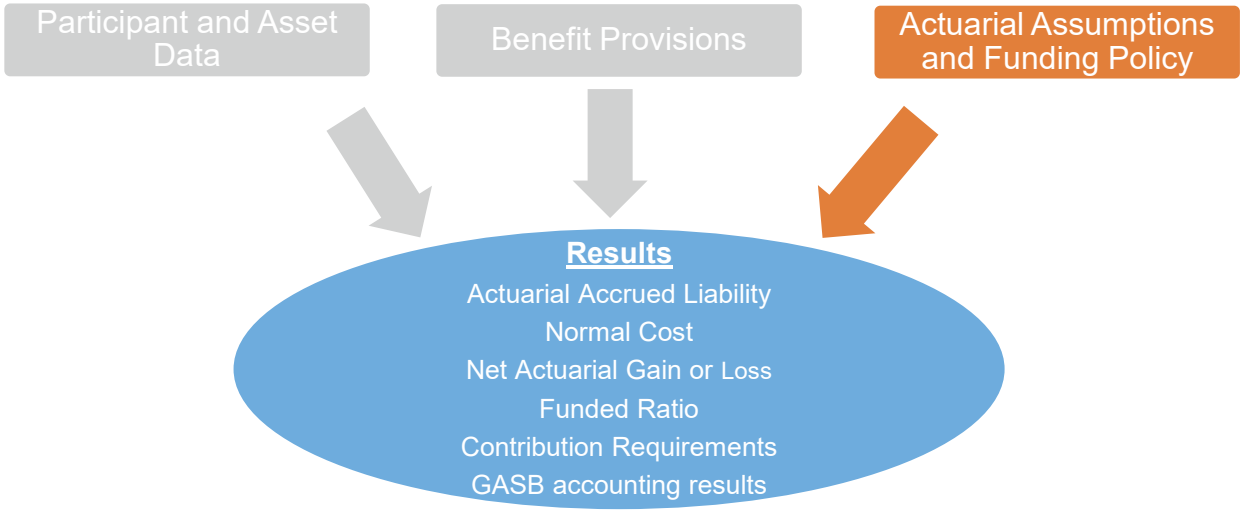
Experience Review Process

Actuarial valuation process



The actuarial assumptions are typically reviewed as part of an experience study. This experience study is conducted to determine the assumptions that will serve as the basis for valuations from December 31, 2025, through December 31, 2029, which calculate the Actuarially Determined Employer Contributions for FYE June 30, 2028, through June 30, 2032.

Experience Study Process

- **Based on five-year period from January 1, 2020 through December 31, 2024**
  - Compares experience (“Actual”) with Assumptions (“Expected”)
  - Consider trends observed during the previous experience study which covered the period January 1, 2015 through December 31, 2019
- **Make judgments about future trends**
  - Plan-specific experience vs. national trends
  - Long-term vs. short-term factors
- **Propose changes in assumptions (“Proposed”) and funding methods as needed based on the Actuarial Standards of Practice (ASOPs)**
  - ASOP 4 – Measuring Pension Obligations and Determining Pension Plan Costs or Contributions
  - ASOP 27 - Selection of Assumptions for Measuring Pension Obligations
- **Implement effective with the December 31, 2025, actuarial valuation which determines actuarially determined employer contributions (ADECs) effective July 1, 2027**
  - Next experience review is scheduled to be implemented effective with the December 31, 2030, actuarial valuation.

Key Takeaways for TSERS and LGERS

Key Takeaways

Teachers' and State Employees' Retirement System

Valuation Component Reviewed	Observation	Recommendation	Financial Impact
Demographic Assumptions			
1. Post-Decrement Mortality Rate	Experience varies by group	Update to latest tables – Pub-2016 with adjustments based on plan experience	Decrease
2. Active Mortality	Limited exposures	Update to latest tables – Pub-2016	Decrease
3. Mortality Improvement	Updated SOA improvement scale since last study	Update to latest scale – MP-2021	Decrease
4. Service Retirement	Fewer retirements than expected, except LEOs had more retirements than expected	Slightly adjust rates to better align with experience	Decrease
5. Disability Retirement	Limited exposures	No change	None
6. Termination from Active Employment	Fewer terminations than expected, except LEOs had more terminations than expected	Slightly adjust rates to better align with experience	Increase
Economic Assumptions			
7. Investment Return	Current assumption reasonable	No change	None
8. Inflation	Current assumption reasonable	No change	None
9. Merit Increases	Higher increases over the study period than expected	Increase rates	Increase
10. Real Wage Growth	Current assumption reasonable	No change	None
Funding Method			
11. Amortization Method	Current 12-year period is prudent and reflects a conservative approach	Proposed 15-year period balances prudence with generational equity	Decrease
12. Actuarial Cost Method	Current method reasonable	No change	None
13. Asset Valuation Method	Current method reasonable	No change	None
14. Administrative Expenses	Current assumption reasonable	No change	None

Key Takeaways

Local Governmental Employees Retirement System – General Employees and Firefighters

Valuation Component Reviewed	Observation	Recommendation	Financial Impact
Demographic Assumptions			
1. Post-Decrement Mortality Rate	More deaths overall	Update to latest tables – Pub-2016 with adjustments based on plan experience	Decrease
2. Active Mortality	Limited exposures	Update to latest tables – Pub-2016	Increase
3. Mortality Improvement	Updated SOA improvement scale since last study	Update to latest scale – MP-2021	Decrease
4. Service Retirement	Fewer retirements over study period than expected	Adjust rates to better align with experience	Decrease
5. Termination from Active Employment	Fewer terminations over study period than expected	Decrease rates	Increase
Economic Assumptions			
7. Investment Return	Current assumption reasonable	No change	None
8. Inflation	Current assumption reasonable	No change	None
9. Merit Increases	Higher increases over the study period than expected	Increase rates	Increase
10. Real Wage Growth	Current assumption reasonable	No change	None
Funding Method			
11. Amortization Method	Current 12-year period is prudent and reflects a conservative approach	Proposed 15-year period balances prudence with generational equity	Decrease
12. Actuarial Cost Method	Current method reasonable	No change	None
13. Asset Valuation Method	Current method reasonable	No change	None
14. Administrative Expenses	Actual expenses lower than assumption	Decrease to 0.10% of payroll	Decrease

Key Takeaways

Local Governmental Employees Retirement System – Law Enforcement Officers

Valuation Component Reviewed	Observation	Recommendation	Financial Impact
Demographic Assumptions			
1. Post-Decrement Mortality Rate	Fewer deaths than expected	Update to latest tables – Pub-2016, as adjusted based on experience of all Safety workers	Increase
2. Active Mortality	Limited exposures	Update to latest tables – Pub-2016	Increase
3. Mortality Improvement	Updated SOA improvement scale since last study	Update to latest scale – MP-2021	Decrease
4. Service Retirement	More retirements over study period than expected, mostly at reduced retirement ages	Increase rates	Decrease, due to more than expected reduced retirements
5. Termination from Active Employment	More terminations in 0-4 years. Fewer in 4+ years than expected	Adjust rates to better match experience	Increase
Economic Assumptions			
7. Investment Return	Current assumption reasonable	No change	None
8. Inflation	Current assumption reasonable	No change	None
9. Merit Increases	Higher increases over the study period than expected	Increase rates	Increase
10. Real Wage Growth	Current assumption reasonable	No change	None
Funding Method			
11. Amortization Method	Current 12-year period is prudent and reflects a conservative approach	Proposed 15-year period balances prudence with generational equity	Decrease
12. Actuarial Cost Method	Current method reasonable	No change	None
13. Asset Valuation Method	Current method reasonable	No change	None
14. Administrative Expenses	Current assumption reasonable	No change	None

Funding Methodology

Amortization Method – Key Considerations Behind Recommendation

- Key information sources:
  - Guidance under ASOP 4 - Actuarial Standard of Practice No. 4
  - Non-binding guidance under Actuarial Funding Policies and Practices for Public Pension Plans paper second edition issued by the Conference of Consulting Actuaries Public Plans Community in August 2024 (CCA White Paper 2.0)
  - GFOA's "Core Elements of a Funding Policy for Governmental Pension and OPEB Plans"
- Key considerations:
  - Whether the amortization is open or closed
  - The source of the amortization base (e.g., plan experience, method or assumption changes, or plan provision changes)
  - Pattern of amortization payments, including any period of negative amortization payments (i.e., when the amortization payment for the period is less than the interest accrued)
  - Whether the amortization is positive (losses) or negative (gains)
  - The duration of the actuarial accrued liability
  - The average remaining service lifetime of active members
  - The funded status of the plans

Actuarial Certification

The information and cost estimates in this presentation were developed for the North Carolina Retirement Systems Division by Gallagher Benefit Services (Gallagher) using generally accepted actuarial principles and techniques in accordance with all applicable Actuarial Standards of Practice (ASOPs) for the purpose of assisting the Board in setting actuarial assumptions and methods to be used in future actuarial valuations. The presentation contains key results of the January 1, 2020 to December 31, 2024 experience study. All recommendations contained in this report are consistent with each other, as appropriate. Interested parties should refer to the December 31, 2024 Actuarial Valuation Reports for each system, for a detailed explanation regarding data, assumptions, methods, plan provisions, applicable ASOPs and disclosures, as well as the "Experience Study for Five-Year Period from January 1, 2020 to December 31, 2024 ("2025 Experience Study") presented at the October 30, 2025, Board of Trustees Meeting. This presentation should be considered part of the 2025 Experience Study services and recommendations.

Unless otherwise noted, the data, assumptions, methods, plan provisions, and model associated with the development of these results are the same as those described in the December 31, 2024 valuation report prepared October 2025. Risks inherent in the measurements herein are also the same as those described in that report.

Use of these results for any other purpose or by anyone other than the Board may not be appropriate and may result in mistaken conclusions due to failure to understand applicable assumptions, methodologies, or inapplicability of the results for that purpose. Because of the risk of misinterpretation of actuarial results, Gallagher should be asked to review any statement to be made on the basis of the results contained in this presentation. Gallagher will not accept any liability for any such statement made without such prior review.

Future actuarial results may differ significantly from current measurements due to such factors as the following: fund experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law. Such changes in law may include additional costs resulting from future legislated benefit improvements or cost-of-living pension increases or supplements, which are not anticipated in the actuarial valuation. Because of limited scope, Gallagher performed no analysis of the potential range of such future differences, except for some limited analysis in financial projections or required disclosure information.

Michael Ribble and Elizabeth Hoalt are members of the American Academy of Actuaries and met the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States of the American Academy of Actuaries to render the actuarial opinions contained in this presentation. We are available to answer any questions on the material contained in the presentation, or to provide explanations or further details as needed.

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North Carolina Retirement Systems

Experience Study for Five-Year Period from January 1, 2020 to December 31, 2024

Michael Ribble, FSA, EA, MAAA, FCA
Elizabeth Wiley, FSA, EA, MAAA, FCA

October 30, 2025,
Board of Trustees Meeting

Gallagher

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Agenda

1 Discuss the Experience Review Process

2 Review Key Takeaways/ Cost Impact of Proposed Assumption Changes

3 Review Recommendations for:

- Economic Assumptions
- Demographic Assumptions
- Funding Methods
- Administrative Factors

4 No Board Decisions Today

- Boards to review today
- Provide direction on additional analysis if needed
- Board scheduled to adopt recommendations at the January Board meeting

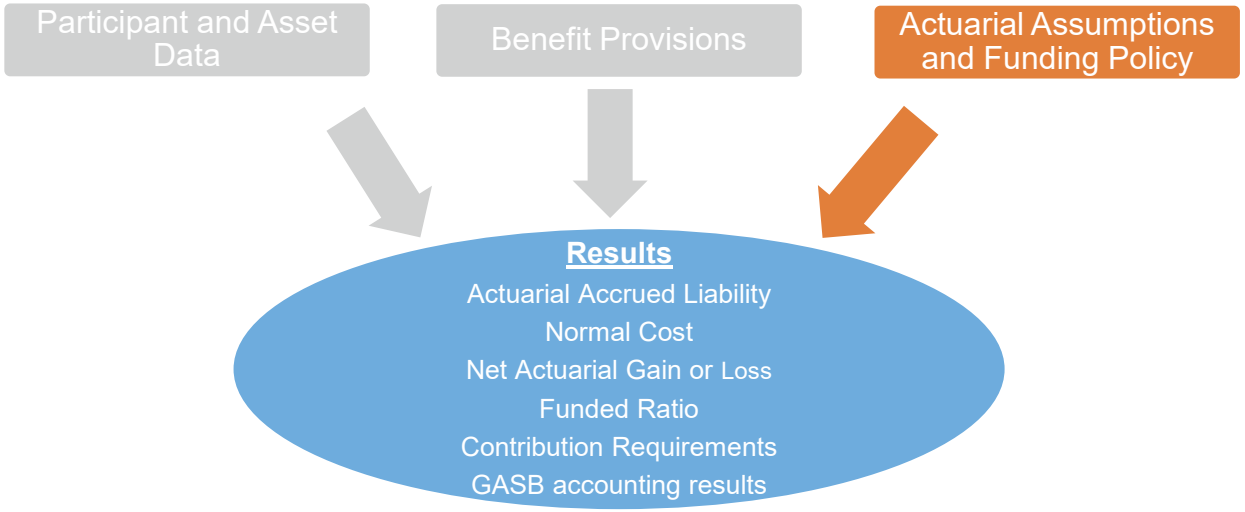
Experience Review Process

Actuarial valuation process

Each year the actuary performs an actuarial valuation for the North Carolina Retirement Systems and provides the results in an annual actuarial valuation report

- Snapshot measurement of the actuarial position of the pension plan at a given point in time, based on a set of actuarial methods and assumptions
- Measures benefit obligation (liabilities) and compares it to financial resources (assets)
- Determines annual contribution sufficiency and provides warnings of potential funding problems
- Does not reflect the impact of future participants or future plan provision changes
- Detects changes and trends through annual experience and gain/loss analysis

Actuarial valuation process



The actuarial assumptions are typically reviewed as part of an experience study. This experience study is conducted to determine the assumptions that will serve as the basis for valuations from December 31, 2025, through December 31, 2029, which calculate the Actuarially Determined Employer Contributions for FYE June 30, 2028, through June 30, 2032.

Purpose of the Experience Study

- Determine how actual experience or frequency of events (such as retirements, terminations, etc.) differs from expectations using current assumptions
  - This experience study covers the five-year period from December 31, 2019 through December 31, 2024
- Develop recommendations for changes in actuarial assumptions, if needed
  - The robustness of recent plan experience data is considered when analyzing potential updates to current assumptions
- When selecting the final assumptions, it is important to account for a plan sponsor's expectations and capital market outlooks for future years that may differ from past experience
- Estimate the impact of proposed changes based on the December 31, 2024 actuarial valuation results
  - Actual change would first be effective for the December 31, 2025 actuarial valuation
  - **Contributions would first be impacted for the fiscal year ending 2028**
  - **The cost impacts estimated in this presentation are only illustrative and are intended to give an idea of the direction and magnitude of changes**
  - **The ultimate cost impacts will differ, in part because they will be measured as of a different date**

Experience Study Process

- **Based on five-year period from January 1, 2020 through December 31, 2024**
  - Compares experience (“Actual”) with Assumptions (“Expected”)
  - Consider trends observed during the previous experience study which covered the period January 1, 2015 through December 31, 2019
- **Make judgments about future trends**
  - Plan-specific experience vs. national trends
  - Long-term vs. short-term factors
- **Propose changes in assumptions (“Proposed”) and funding methods as needed based on the Actuarial Standards of Practice (ASOPs)**
  - ASOP 4 – Measuring Pension Obligations and Determining Pension Plan Costs or Contributions
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  - Next experience review is scheduled to be implemented effective with the December 31, 2030, actuarial valuation.

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Key Takeaways/Financial Impact

Gallagher

Key Takeaways

Teachers' and State Employees' Retirement System

Valuation Component Reviewed	Observation	Recommendation	Financial Impact
Demographic Assumptions			
1. Post-Decrement Mortality Rate	Experience varies by group	Update to latest tables – Pub-2016 with adjustments based on plan experience	Decrease
2. Active Mortality	Limited exposures	Update to latest tables – Pub-2016	Decrease
3. Mortality Improvement	Updated SOA improvement scale since last study	Update to latest scale – MP-2021	Decrease
4. Service Retirement	Fewer retirements than expected, except LEOs had more retirements than expected	Slightly adjust rates to better align with experience	Decrease
5. Disability Retirement	Limited exposures	No change	None
6. Termination from Active Employment	Fewer terminations than expected, except LEOs had more terminations than expected	Slightly adjust rates to better align with experience	Increase
Economic Assumptions			
7. Investment Return	Current assumption reasonable	No change	None
8. Inflation	Current assumption reasonable	No change	None
9. Merit Increases	Higher increases over the study period than expected	Increase rates	Increase
10. Real Wage Growth	Current assumption reasonable	No change	None
Funding Method			
11. Amortization Method	Current 12-year period is prudent and reflects a conservative approach	Proposed 15-year period balances prudence with generational equity	Decrease
12. Actuarial Cost Method	Current method reasonable	No change	None
13. Asset Valuation Method	Current method reasonable	No change	None
14. Administrative Expenses	Current assumption reasonable	No change	None

Financial Impact

Teachers' and State Employees' Retirement System

Had the proposed assumptions and methods been reflected for the December 31, 2024 valuation, the financial impact would have been as follows:

- AAL would decrease by 0.4% from $103.6B to $103.2B
- Preliminary ADEC (prior to direct-rate smoothing) would decrease by 2.32% of payroll from 16.07% to 13.75%
- ADEC Prior to Application of Funding Policy would decrease by 0.46% of payroll from 16.07% to 15.61%
- BOT Recommended Contribution under ECRSP would remain unchanged at 17.49%

	Current Valuation	Reflect Salary Merit Increases	Reflect Mortality Assumptions	Reflect Other Assumptions	Reflect Funding Method	Direct Rate Smoothing
Employer Contribution						
Employer Normal Cost	6.24%	6.67%	6.65%	6.87%	6.87%	6.87%
Payment for UAAL	9.83%	10.11%	9.72%	9.54%	6.88%	6.88%
Preliminary ADEC	16.07%	16.78%	16.37%	16.41%	13.75%	13.75%
Impact of Direct Rate Smoothing	0.00%	0.00%	0.00%	0.00%	0.00%	1.86%
ADEC Prior to Application of Funding Policy	16.07%	16.78%	16.37%	16.41%	13.75%	15.61%
Cumulative impact on ADEC Prior to Application of Funding Policy		0.71%	0.30%	0.34%	-2.32%	-0.46%
BOT Recommended Contribution under ECRSP	17.49%	17.49%	17.49%	17.49%	17.49%	17.49%
Actuarial Accrued Liability (AAL)	$ 103,626,727,675	$ 104,055,417,423	$ 103,463,895,011	$ 103,186,526,571	$ 103,186,526,571	$ 103,186,526,571
Actuarial Value of Assets (AVA)	91,620,727,745	91,620,727,745	91,620,727,745	91,620,727,745	91,620,727,745	91,620,727,745
Unfunded Accrued Liability (UAAL)	12,005,999,930	12,434,689,678	11,843,167,266	11,565,798,826	11,565,798,826	11,565,798,826
Funded Ratio (AVA / AAL)	88.41%	88.05%	88.55%	88.79%	88.79%	88.79%
Cumulative change in UAAL		428,689,748	(162,832,664)	(440,201,104)	(440,201,104)	(440,201,104)

Projections

TSERS

- Projections of contribution requirements and funded status into the future can be helpful planning tools for stakeholders. This section provides such projections. The projections of the actuarial valuation are known as deterministic projections. Deterministic projections are based on one scenario in the future. The baseline deterministic projection is based on December 31, 2024 valuation results and assumptions.
- Key Projection Assumptions
  - Valuation interest rate of 6.50%
  - Actuarial assumptions and methods as described in Appendix C of the 12/31/2024 valuation report for current assumptions. Proposed assumptions and methods as described in this experience study from 12/31/2025 forward. All future demographic experience is assumed to be exactly realized.
  - Direct-rate smoothing of the employer contribution rate due to the changes in assumptions and methods over a 5-year period starting with fiscal year ending 2028
  - 6.50% investment return on market value of assets
  - The contribution rate under the Employer Contribution Rate Stabilization Policy (ECRSP) is contributed until fiscal year ending 2027
  - The actuarially determined employer contribution rate is contributed for fiscal years ending 2028 and beyond.
  - The employer contribution shall not be less than the employee contribution, which is currently 6%

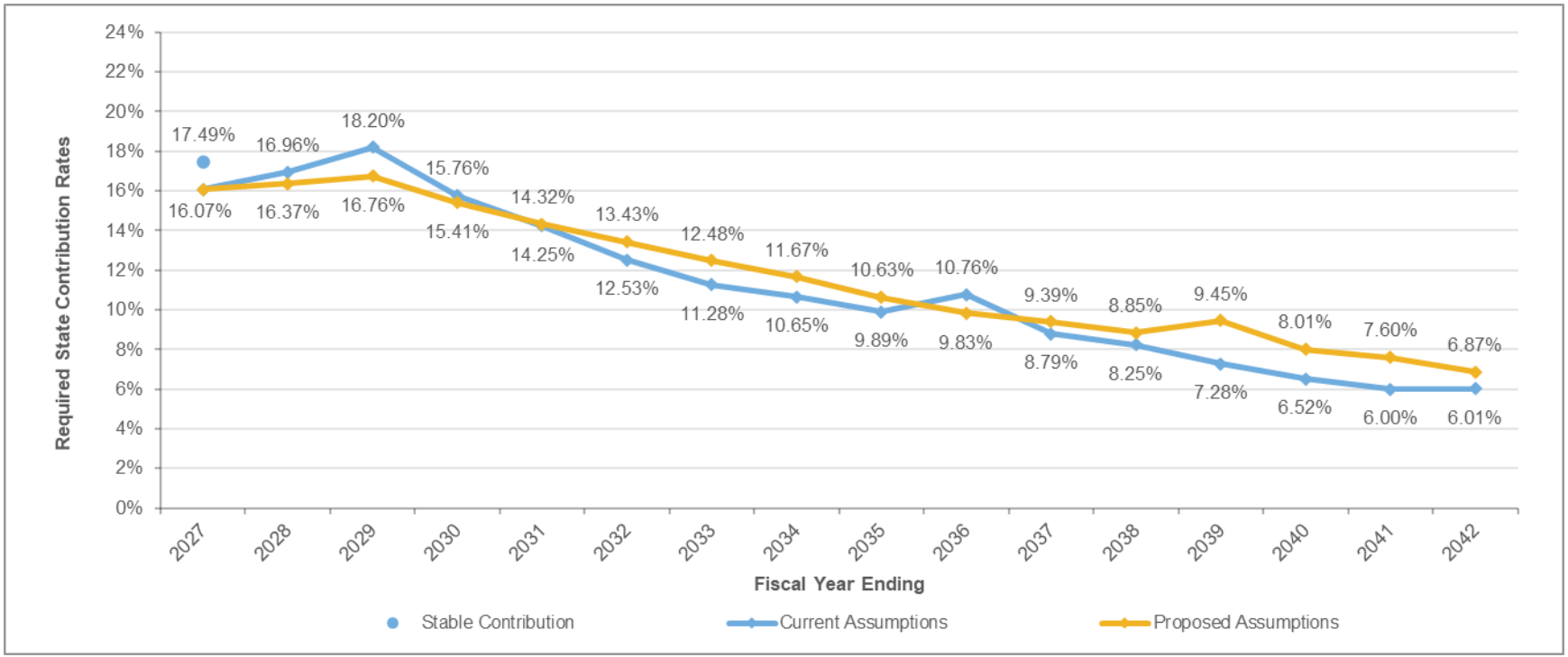
Projections

TSERS

- Key Projection Assumptions (continued)
  - 0% increase in both the active population of TSERS and its subgroups: Teachers, Other Education, General Employees, and Law Enforcement Officers, except that no new hires of UNC Health Care System (UNC HC) will participate in TSERS
  - To replace those assumed to leave active service, the age, gender and salary of future members assumed to be hired into TSERS are based on the demographic information of new TSERS hires over the past three (3) valuations
  - Demographic profiles of new entrants for each subgroup are based on new hires specific to that subgroup over the past three (3) valuations
  - 75% of new entrants are assumed to have rounded service of 0 when first valued, and 25% are assumed to have rounded service of 1 when first valued
  - No cost-of-living adjustments granted
  - Future pay increases based on long-term salary increase assumptions
- The ECRSP contribution rate is the Stable Contribution rate shown in the projections. See Appendix F of the 12/31/2024 valuation report for more detail on the ECRSP.
- In addition, we have provided two alternate deterministic projections. The first alternate deterministic projection is based on the same assumptions as the baseline deterministic projection except that it assumes a 0.0% asset return for calendar year 2025. The second alternate deterministic projection is based on the same assumptions as the baseline deterministic projection except that it assumes a 13.0% asset return for calendar year 2025.

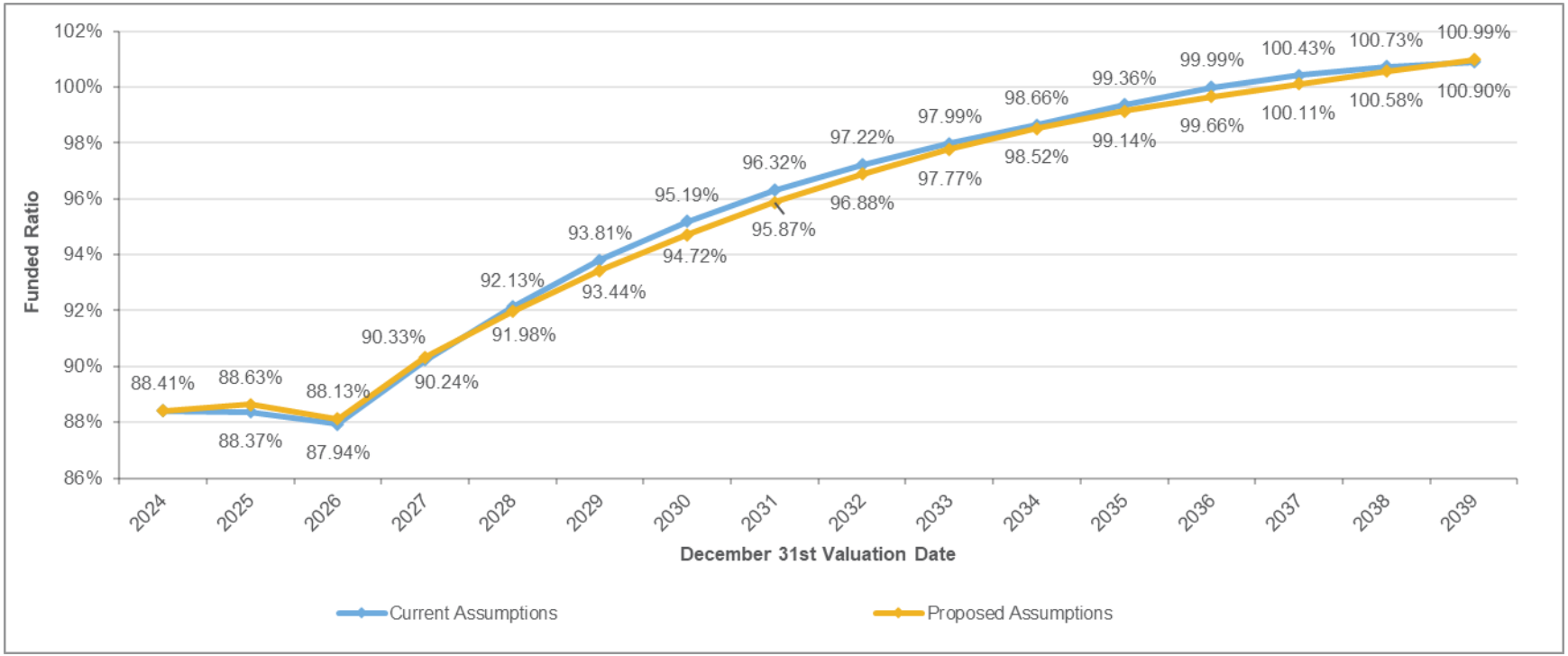
Contribution Rate Projection

TSERS - Current Assumptions vs Proposed Assumptions



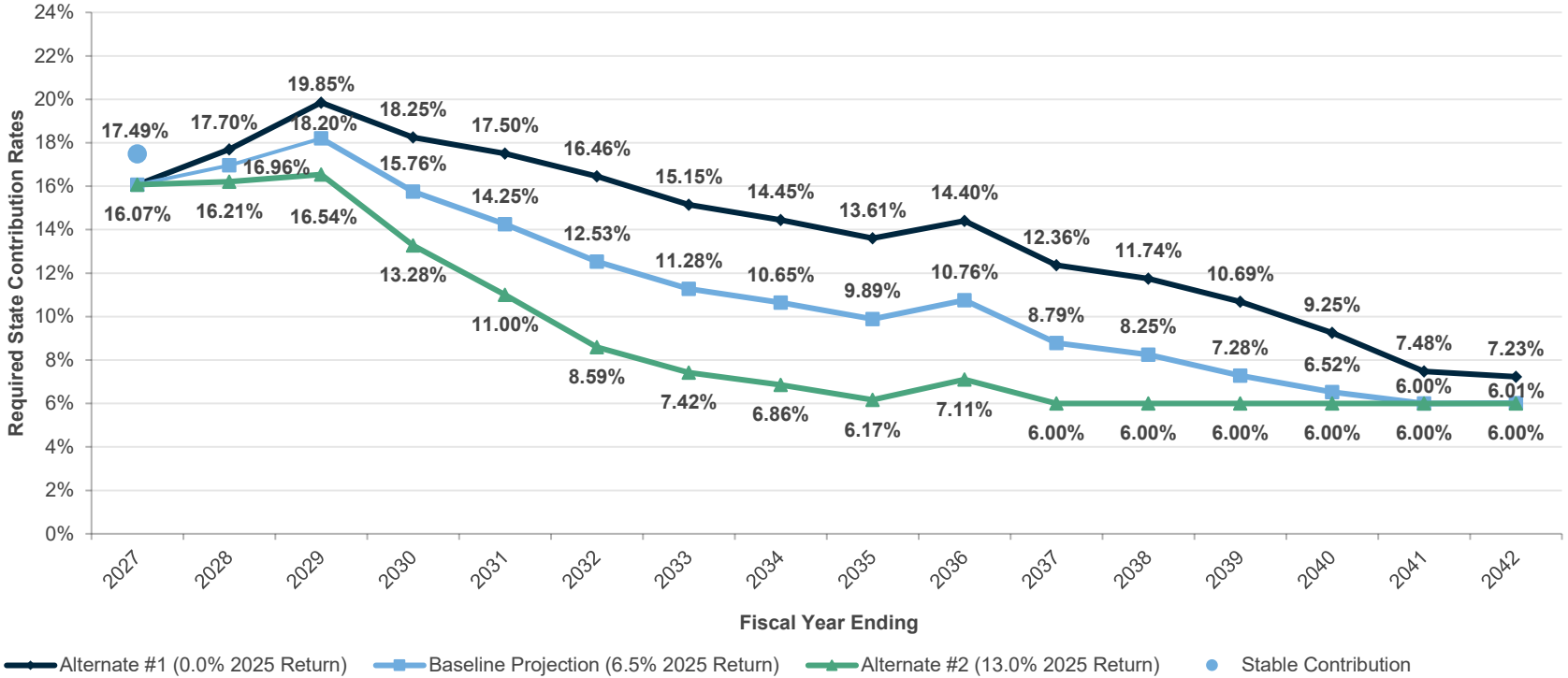
Contribution Rate Projection

TSERS - Current Assumptions vs Proposed Assumptions



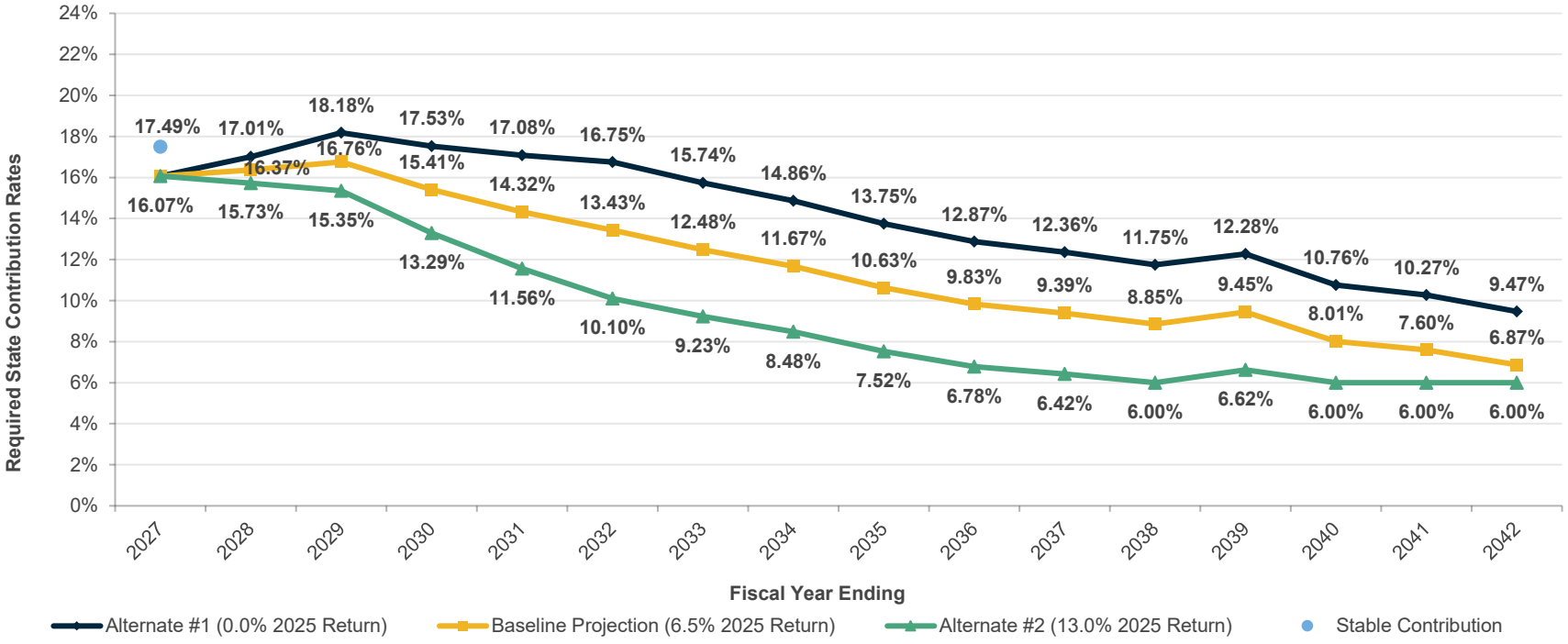
Contribution Rate Projection

TSERS - Current Assumptions



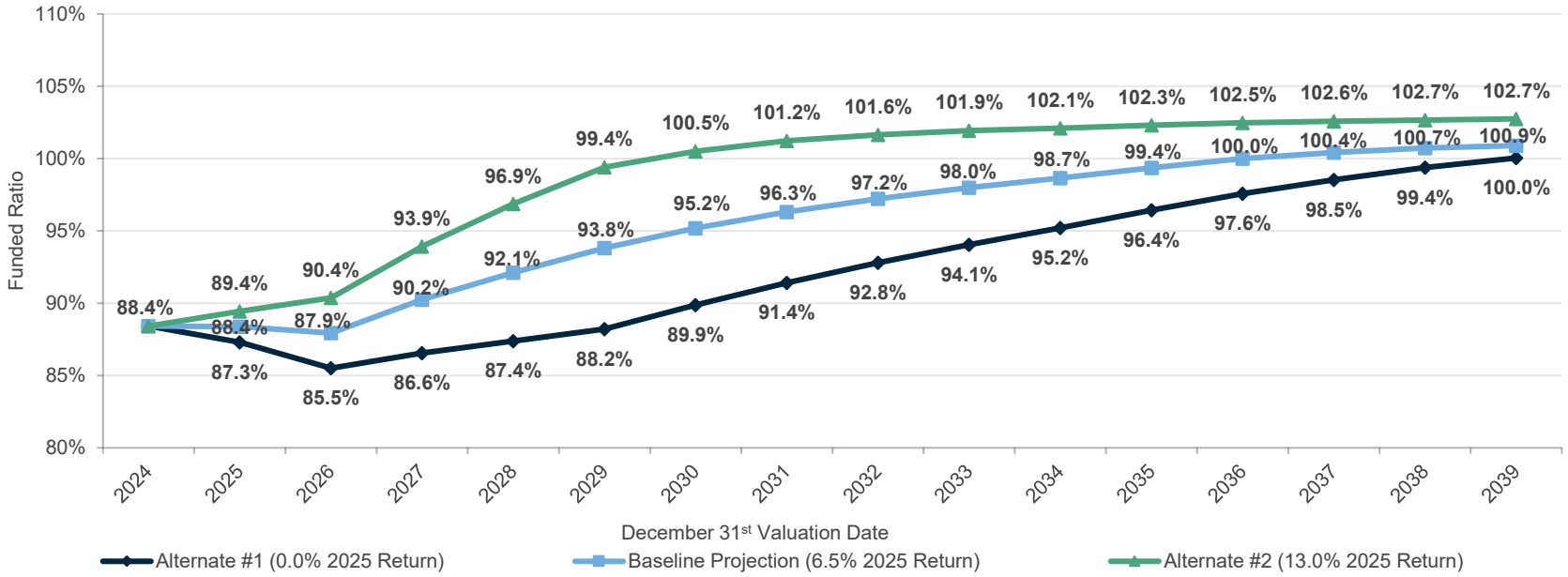
Contribution Rate Projection

TSERS - Proposed Assumptions



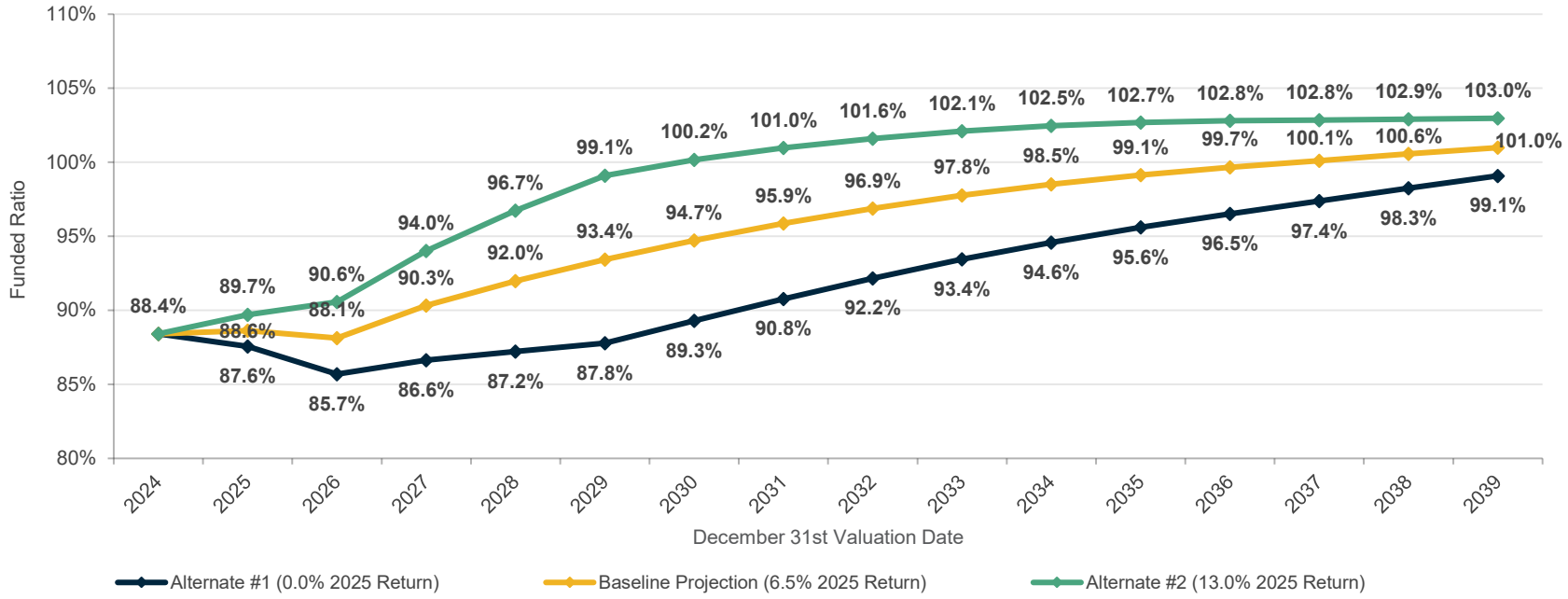
Funded Ratio Projection

TSERS - Current Assumptions



Funded Ratio Projection

TSERS - Proposed Assumptions



Key Takeaways

Consolidated Judicial Retirement System

Valuation Component Reviewed	Observation	Recommendation	Financial Impact
Demographic Assumptions			
1. Post-Decrement Mortality Rate	Limited exposures	Update to latest tables – Pub-2016	Decrease
2. Active Mortality	Limited exposures	Update to latest tables – Pub-2016	Decrease
3. Mortality Improvement	Updated SOA improvement scale since last study	Update to latest scale – MP-2021	Decrease
4. Service Retirement	More retirements over study period than expected	Slightly adjust rates to better align with experience	Increase
5. Disability Retirement	Limited exposures	No change	None
6. Termination from Active Employment	More terminations over study period than expected	Increase rates	Decrease
Economic Assumptions			
7. Investment Return	Current assumption reasonable	No change	None
8. Inflation	Current assumption reasonable	No change	None
9. Merit Increases	Higher increases over the study period than expected	Increase rates	Increase
10. Real Wage Growth	Current assumption reasonable	No change	None
Funding Method			
11. Amortization Method	Current 12-year period is prudent and reflects a conservative approach	Proposed 15-year period balances prudence with generational equity	Decrease
12. Actuarial Cost Method	Current method reasonable	No change	None
13. Asset Valuation Method	Current method reasonable	No change	None
14. Administrative Expenses	Current assumption reasonable	No change	None

Financial Impact

Consolidated Judicial Retirement System

Had the proposed assumptions and methods been reflected for the December 31, 2024 valuation, the financial impact would have been as follows:

- AAL would decrease by 0.7% from $966.6M to $960.2M
- Preliminary ADEC prior to direct-rate smoothing would decrease by 6.74% of payroll from 40.68% to 33.94%
- Final ADEC (after direct-rate smoothing) would decrease by 1.35% of payroll from 40.68% to 39.33%

	Current Valuation	Reflect Salary Merit Increases	Reflect Mortality Assumptions	Reflect Other Assumptions	Reflect Funding Method	Direct Rate Smoothing
Employer Contribution						
Employer Normal Cost	13.21%	13.59%	13.47%	13.48%	13.48%	13.48%
Payment for UAAL	27.47%	27.60%	26.22%	26.71%	20.46%	20.46%
Preliminary ADEC	40.68%	41.19%	39.69%	40.19%	33.94%	33.94%
Impact of Direct Rate Smoothing	0.00%	0.00%	0.00%	0.00%	0.00%	5.39%
Final ADEC	40.68%	41.19%	39.69%	40.19%	33.94%	39.33%
Cumulative change in Final ADEC		0.51%	-0.99%	-0.49%	-6.74%	-1.35%
Actuarial Accrued Liability (AAL)	966,569,580	967,628,026	956,063,581	960,165,668	960,165,668	960,165,668
Actuarial Value of Assets (AVA)	762,876,839	762,876,839	762,876,839	762,876,839	762,876,839	762,876,839
Unfunded Accrued Liability (UAAL)	203,692,741	204,751,187	193,186,742	197,288,829	197,288,829	197,288,829
Funded Ratio (AVA / AAL)	78.93%	78.84%	79.79%	79.45%	79.45%	79.45%
Cumulative change in UAAL		1,058,446	(10,505,999)	(6,403,912)	(6,403,912)	(6,403,912)

Key Takeaways

Legislative Retirement System

Valuation Component Reviewed	Observation	Recommendation	Financial Impact
Demographic Assumptions			
1. Post-Decrement Mortality Rate	Limited exposures	Update to latest tables – Pub-2016	Decrease
2. Active Mortality	Limited exposures	Update to latest tables – Pub-2016	Decrease
3. Mortality Improvement	Updated SOA improvement scale since last study	Update to latest scale – MP-2021	Decrease
4. Service Retirement	Slight increase in retirement at earlier ages, slight decrease in retirement at later ages	Slightly adjust rates to better align with experience	Increase
5. Disability Retirement	Limited exposures	No change	None
6. Termination from Active Employment	Experience generally aligned with assumption	No change	None
Economic Assumptions			
7. Investment Return	Current assumption reasonable	No change	None
8. Inflation	Current assumption reasonable	No change	None
9. Merit Increases	Current assumption reasonable	No change	None
10. Real Wage Growth	Current assumption reasonable	No change	None
Funding Method			
11. Amortization Method	Current 12-year period is prudent and reflects a conservative approach	Proposed 15-year period balances prudence with generational equity	Decrease
12. Actuarial Cost Method	Current method reasonable	No change	None
13. Asset Valuation Method	Current method reasonable	No change	None
14. Administrative Expenses	Actual expenses a bit lower than assumption	Update to 0.50% of payroll from 1.00% of payroll	Decrease

Financial Impact

Legislative Retirement System

Had the proposed assumptions and methods been reflected for the December 31, 2024 valuation, the financial impact would have been as follows:

- AAL would decrease by 3.2% from $30.2M to $29.2M
- Preliminary ADEC prior to direct-rate smoothing would decrease by 0.80% of payroll from 17.87% to 17.07%
- Final ADEC (after direct-rate smoothing) would decrease by 0.16% of payroll from 17.87% to 17.71%

	Current Valuation	Reflect Salary Merit Increases	Reflect Mortality Assumptions	Reflect Other Assumptions	Reflect Funding Method	Direct Rate Smoothing
Employer Contribution						
Employer Normal Cost	17.43%	17.43%	17.35%	17.57%	17.07%	17.07%
Payment for UAL	0.44%	0.44%	-2.94%	-2.81%	0.00%	0.00%
Preliminary ADEC	17.87%	17.87%	14.41%	14.76%	17.07%	17.07%
Impact of Direct Rate Smoothing	0.00%	0.00%	0.00%	0.00%	0.00%	0.64%
Final ADEC	17.87%	17.87%	14.41%	14.76%	17.07%	17.71%
Cumulative Change in Final ADEC		0.00%	-3.47%	-3.11%	-0.80%	-0.16%
Actuarial Accrued Liability (AAL)	30,216,056	30,216,056	29,201,532	29,239,495	29,239,495	29,239,495
Actuarial Value of Assets (AVA)	30,763,448	30,763,448	30,763,448	30,763,448	30,763,448	30,763,448
Unfunded Accrued Liability (UAAL)	(547,392)	(547,392)	(1,561,916)	(1,523,953)	(1,523,953)	(1,523,953)
Funded Ratio (AVA / AAL)	101.81%	101.81%	105.35%	105.21%	105.21%	105.21%
Cumulative Change in UAAL		0	(1,014,524)	(976,561)	(976,561)	(976,561)

Key Takeaways

National Guard Pension Fund

Valuation Component Reviewed	Observation	Recommendation	Financial Impact
Demographic Assumptions			
1. Post-Decrement Mortality Rate	Fewer deaths for males and fewer death for females observed for TSERS General and Other Education	Update to latest tables – Pub-2016, as adjusted for TSERS General/Other Education	Increase
2. Active Mortality	Limited exposures	Update to latest tables – Pub-2016	Increase
3. Mortality Improvement	Updated SOA improvement scale since last study	Update to latest scale – MP-2021	Decrease
4. Service Retirement	Experience generally aligned with assumption	Maintain rates, but set to 100% at age 60	Increase
5. Disability Retirement	N/A	N/A	N/A
6. Termination from Active Employment	Fewer terminations than expected over study period	Decrease rates	Increase
Economic Assumptions			
7. Investment Return	Current assumption reasonable	No change	None
8. Inflation	Current assumption reasonable	No change	None
9. Merit Increases	N/A	N/A	N/A
10. Real Wage Growth	N/A	N/A	N/A
Funding Method			
11. Amortization Method	Current 12-year period is prudent and reflects a conservative approach	Proposed 15-year period balances prudence with generational equity; Apply surplus amortization policy	Effectively no impact
12. Actuarial Cost Method	Current method reasonable	No change	None
13. Asset Valuation Method	Current method reasonable	No change	None
14. Administrative Expenses	Actual expenses higher than assumption and volatile	Set equal to prior year administrative expense amount	Expected Increase

Financial Impact

National Guard Pension Fund

Had the proposed assumptions and methods been reflected for the December 31, 2024 valuation, the financial impact would have been as follows:

- AAL would increase by 1.6% from $153.8M to $156.3M
- Preliminary ADEC prior to direct-rate smoothing would remain unchanged at $0
- The additional contribution under SCRSP would decrease by $11,961

	Current Valuation	Reflect Salary Merit Increases	Reflect Mortality Assumptions	Reflect Other Assumptions	Reflect Funding Method	Direct Rate Smoothing
Employer Contribution						
Employer Normal Cost	$ 1,126,618	N/A	$ 1,128,765	$ 1,289,808	$ 1,114,657	$ 1,114,657
Payment for UAL	(2,760,268)	N/A	(2,690,305)	(2,444,728)	(1,173,378)	(1,173,378)
Preliminary ADEC (w/o $0 floor)	(1,633,650)	N/A	(1,561,540)	(1,154,920)	(58,721)	(58,721)
Impact of Direct Rate Smoothing	0	N/A	0	0	0	(1,259,943)
Total Based on Direct Rate Smoothing (w/ $0 floor)	0		0	0	0	0
Additional Contribution Under SCRSP	$ 1,126,618	N/A	$ 1,128,765	$ 1,289,808	$ 1,114,657	$ 1,114,657
Employer Contribution	$ 1,126,618	N/A	$ 1,128,765	$ 1,289,808	$ 1,114,657	$ 1,114,657
Cumulative Change in Employer Contribution		N/A	2,147	163,190	(11,961)	(11,961)
Actuarial Accrued Liability (AAL)	$ 153,844,144	N/A	$ 154,380,118	$ 156,261,447	$ 156,261,447	$ 156,261,447
Actuarial Value of Assets (AVA)	188,206,330	N/A	188,206,330	188,206,330	188,206,330	188,206,330
Unfunded Accrued Liability (UAAL)	(34,362,186)	N/A	(33,826,212)	(31,944,883)	(31,944,883)	(31,944,883)
Funded Ratio (AVA / AAL)	122.34%	N/A	121.91%	120.44%	120.44%	120.44%
Cumulative Change in UAAL		N/A	$ 535,974	$ 2,417,303	$ 2,417,303	$ 2,417,303

Key Takeaways

Disability Income Plan

Valuation Component Reviewed	Observation	Recommendation	Financial Impact
Demographic Assumptions			
1. Post-Decrement Mortality and Termination Rate	Limited exposures	Update to latest tables – 2019 GLTD table	Significant decrease
2. Active Mortality	Limited exposures	Update to latest tables – Pub-2016	Decrease
3. Mortality Improvement	Updated SOA improvement scale since last study	Update to latest scale – MP-2021	Decrease
4. Service Retirement	Fewer retirements than expected, except LEOs had more retirements than expected	Slightly adjust rates to better align with experience	Decrease
5. Disability Incidence Rates	Lower actual emerging liability than expected	Reduced to 80% of current rates	Significant decrease
6. Termination from Active Employment	Fewer terminations than expected, except LEOs had more terminations than expected	Slightly adjust rates to better align with experience	Increase
7. Social Security Approval	Higher Social Security approval rates than expected for active participants. Approval earlier than assumed for currently disabled participants.	Update to 60% approval for actives and begin disabled approval after one year in receipt of benefits.	Significant decrease
Economic Assumptions			
8. Investment Return	Current 3.00% rate lower than future expectations	Increase to 4.50% rate	Significant decrease
9. Inflation	Current assumption reasonable	No change	None
10. Merit Increases	Higher increases over the study period than expected	Increase rates	Increase
11. Real Wage Growth	Current assumption reasonable	No change	None
Funding Method			
12. Actuarial Cost Method	Current method reasonable	No change	None
13. Asset Valuation Method	Current method reasonable	No change	None
14. Administrative Expenses	Actual expenses slightly lower than assumption	No change	None

Financial Impact

Disability Income Plan

Had the proposed assumptions and methods been reflected for the December 31, 2024 valuation, the financial impact would have been as follows:

- The liability for currently disabled members would decrease by 25.8% from $125.3M to $93.0M
- Preliminary ADEC prior to direct-rate smoothing would decrease by 0.06% of payroll from 0.06% to 0.00%
- Final ADEC (after direct-rate smoothing) would decrease by 0.01% of payroll from 0.06% to 0.05%

	Current Valuation	Reflect Expected Return	Reflect Salary Merit Increases	Reflect Mortality Assumptions	Reflect Other Assumptions	Reflect DIPNC Assumptions	Direct Rate Smoothing
Assets and Liabilities as of 12/31/2024							
Liability for currently disabled members	$ 125,316,918	$ 119,753,384	$ 119,831,593	$ 119,831,593	$ 119,831,593	$ 93,012,618	
Assets - Actuarial Value	281,012,126	281,012,126	281,012,126	281,012,126	281,012,126	281,012,126	
Deficit/(Surplus) versus Actuarial Value	(155,695,208)	(161,258,742)	(161,180,533)	(161,180,533)	(161,180,533)	(187,999,508)	
Cumulative change in Deficit/(Surplus)		(5,563,534)	(5,485,325)	(5,485,325)	(5,485,325)	(32,304,300)	
Actuarially Determined Contribution (ADC) Rate	0.06%	0.05%	0.05%	0.05%	0.05%	0.00%	0.05%
Cumulative change in ADC Rate		-0.01%	-0.01%	-0.01%	-0.01%	-0.06%	-0.01%
Entry Age Actuarial Accrued Liability (AAL)	$ 203,945,694	$ 198,741,870	$ 195,251,121	$ 195,251,028	$ 194,789,729	$ 148,460,727	
Cumulative change in AAL		$ (5,203,824)	$ (8,694,573)	$ (8,694,666)	$ (9,155,965)	$ (55,484,967)	

Key Takeaways

Local Governmental Employees Retirement System – General Employees and Firefighters

Valuation Component Reviewed	Observation	Recommendation	Financial Impact
Demographic Assumptions			
1. Post-Decrement Mortality Rate	More deaths overall	Update to latest tables – Pub-2016 with adjustments based on plan experience	Decrease
2. Active Mortality	Limited exposures	Update to latest tables – Pub-2016	Increase
3. Mortality Improvement	Updated SOA improvement scale since last study	Update to latest scale – MP-2021	Decrease
4. Service Retirement	Fewer retirements over study period than expected	Adjust rates to better align with experience	Decrease
5. Termination from Active Employment	Fewer terminations over study period than expected	Decrease rates	Increase
Economic Assumptions			
7. Investment Return	Current assumption reasonable	No change	None
8. Inflation	Current assumption reasonable	No change	None
9. Merit Increases	Higher increases over the study period than expected	Increase rates	Increase
10. Real Wage Growth	Current assumption reasonable	No change	None
Funding Method			
11. Amortization Method	Current 12-year period is prudent and reflects a conservative approach	Proposed 15-year period balances prudence with generational equity	Decrease
12. Actuarial Cost Method	Current method reasonable	No change	None
13. Asset Valuation Method	Current method reasonable	No change	None
14. Administrative Expenses	Actual expenses lower than assumption	Decrease to 0.10% of payroll	Decrease

Financial Impact

Local Governmental Employees Retirement System – General Employees and Firefighters

Had the proposed assumptions and methods been reflected for the December 31, 2024 valuation, the financial impact would have been as follows:

- AAL would increase by 0.85% from $42.2B to $42.6B
- Preliminary ADEC (prior to direct-rate smoothing) would decrease by 0.79% of payroll from 15.37% to 14.58%
- Final ADEC (after direct-rate smoothing) would decrease by 0.16% of payroll from 15.37% to 15.21%

	Current Valuation	Reflect Salary Merit Increases	Reflect Mortality Assumptions	Reflect Other Assumptions	Reflect Funding Method	Direct Rate Smoothing
Employer Contribution						
Employer Normal Cost	6.31%	7.01%	7.04%	7.30%	7.27%	7.27%
Payment for UAAL	9.06%	9.59%	9.53%	9.52%	7.31%	7.31%
Preliminary ADEC	15.37%	16.60%	16.57%	16.82%	14.58%	14.58%
Impact of Direct Rate Smoothing	0.00%	0.00%	0.00%	0.00%	0.00%	0.63%
Final ADEC	15.37%	16.60%	16.57%	16.82%	14.58%	15.21%
Cumulative Change in Final ADEC		1.23%	1.20%	1.45%	-0.79%	-0.16%
Actuarial Accrued Liability (AAL)	$ 42,211,163,368	$ 42,624,937,393	$ 42,581,385,864	$ 42,570,419,819	$ 42,570,419,819	$ 42,570,419,819
Actuarial Value of Assets (AVA)	35,960,952,758	35,960,952,758	35,960,952,758	35,960,952,758	35,960,952,758	35,960,952,758
Unfunded Accrued Liability (UAAL)	6,250,210,610	6,663,984,635	6,620,433,106	6,609,467,061	6,609,467,061	6,609,467,061
Funded Ratio (AVA / AAL)	85.2%	84.4%	84.5%	84.5%	84.5%	84.5%
Cumulative Change in UAAL		$413,774,025	$370,222,496	$359,256,451	$359,256,451	$359,256,451

Key Takeaways

Local Governmental Employees Retirement System – Law Enforcement Officers

Valuation Component Reviewed	Observation	Recommendation	Financial Impact
Demographic Assumptions			
1. Post-Decrement Mortality Rate	Fewer deaths than expected	Update to latest tables – Pub-2016, as adjusted based on experience of all Safety workers	Increase
2. Active Mortality	Limited exposures	Update to latest tables – Pub-2016	Increase
3. Mortality Improvement	Updated SOA improvement scale since last study	Update to latest scale – MP-2021	Decrease
4. Service Retirement	More retirements over study period than expected, mostly at reduced retirement ages	Increase rates	Decrease, due to more than expected reduced retirements
5. Termination from Active Employment	More terminations in 0-4 years. Fewer in 4+ years than expected	Adjust rates to better match experience	Increase
Economic Assumptions			
7. Investment Return	Current assumption reasonable	No change	None
8. Inflation	Current assumption reasonable	No change	None
9. Merit Increases	Higher increases over the study period than expected	Increase rates	Increase
10. Real Wage Growth	Current assumption reasonable	No change	None
Funding Method			
11. Amortization Method	Current 12-year period is prudent and reflects a conservative approach	Proposed 15-year period balances prudence with generational equity	Decrease
12. Actuarial Cost Method	Current method reasonable	No change	None
13. Asset Valuation Method	Current method reasonable	No change	None
14. Administrative Expenses	Current assumption reasonable	No change	None

Financial Impact

Local Governmental Employees Retirement System – Law Enforcement Officers

Had the proposed assumptions and methods been reflected for the December 31, 2024 valuation, the financial impact would have been as follows:

- AAL would increase by 0.85% from $42.2B to $42.6B
- Preliminary ADEC (prior to direct-rate smoothing) would decrease by 0.64% of payroll from 17.61% to 16.97%
- Final ADEC (after direct-rate smoothing) would decrease by 0.13% of payroll from 17.61% to 17.48%

	Current Valuation	Reflect Salary Merit Increases	Reflect Mortality Assumptions	Reflect Other Assumptions	Reflect Funding Method	Direct Rate Smoothing
Employer Contribution						
Employer Normal Cost	8.55%	9.48%	9.64%	9.66%	9.66%	9.66%
Payment for UAAL	9.06%	9.59%	9.53%	9.52%	7.31%	7.31%
Preliminary ADEC	17.61%	19.07%	19.17%	19.18%	16.97%	16.97%
Impact of Direct Rate Smoothing	0.00%	0.00%	0.00%	0.00%	0.00%	0.51%
Final ADEC	17.61%	19.07%	19.17%	19.18%	16.97%	17.48%
Cumulative Change in Final ADEC		1.46%	1.56%	1.57%	-0.64%	-0.13%
Actuarial Accrued Liability (AAL)	$ 42,211,163,368	$ 42,624,937,393	$ 42,581,385,864	$ 42,570,419,819	$ 42,570,419,819	$ 42,570,419,819
Actuarial Value of Assets (AVA)	35,960,952,758	35,960,952,758	35,960,952,758	35,960,952,758	35,960,952,758	35,960,952,758
Unfunded Accrued Liability (UAAL)	6,250,210,610	6,663,984,635	6,620,433,106	6,609,467,061	6,609,467,061	6,609,467,061
Funded Ratio (AVA / AAL)	85.2%	84.4%	84.5%	84.5%	84.5%	84.5%
Cumulative Change in UAAL		$413,774,025	$370,222,496	$359,256,451	$359,256,451	$359,256,451

Projections

LGERS

- Projections of actuarially determined employer contribution (ADEC) rates and funded status into the future can be helpful planning tools for stakeholders.
- Projections of the actuarial valuation are known as deterministic projections. Deterministic projections are based on one scenario in the future.
- Baseline deterministic projection is based on:
  - The current assumptions scenario is based on December 31, 2024 valuation assumptions and methods to project future valuation results
  - Actuarial assumptions and methods as described in Appendix C of the 12/31/2024 valuation report for current assumptions. Proposed assumptions and methods as described in this experience study from 12/31/2025 forward. All future demographic experience is assumed to be exactly realized.
  - Direct-rate smoothing of the employer contribution rate due to the changes in assumptions and methods over a 5-year period starting with fiscal year ending 2028
  - The contribution rate under the Employer Contribution Rate Stabilization Policy (ECRSP) is contributed until fiscal year ending 2027.
- The ADEC is contributed for fiscal years ending 2028 and beyond.
- For fiscal years beginning subsequent to January 1, 2017, the sum of the "normal contribution" and the "accrued liability contribution" shall not be less than the employee contribution, which is currently 6%.

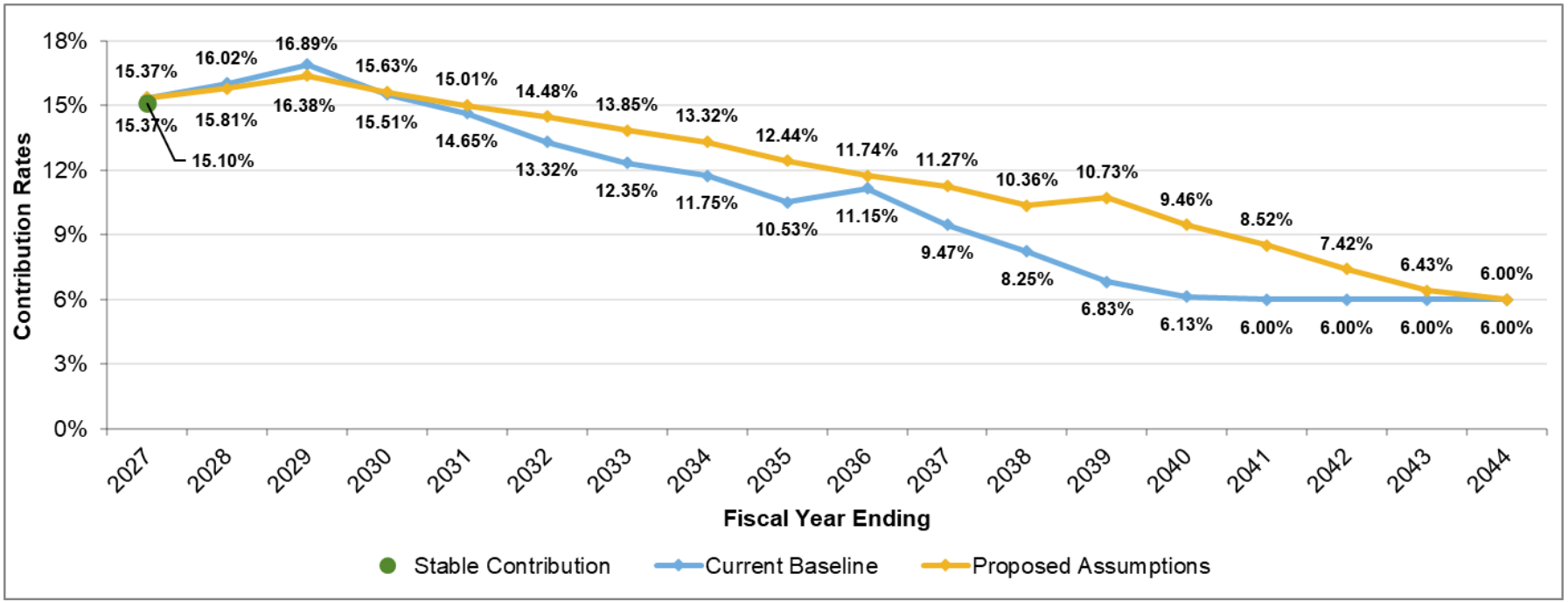
Projections

LGERS

- 0% increase in both the active population of LGERS and its subgroups
  - General Employees, Firefighters, Rescue Squad Workers, and Law Enforcement Officers
- To replace those assumed to leave active service, the age, gender and salary of future members assumed to be hired into LGERS are based on the demographic information of new LGERS hires over the past three (3) valuations
- Demographic profiles of new entrants for each subgroup are based on new hires specific to that subgroup over the past three (3) valuations
- 75% of new entrants are assumed to have rounded service of 0 when first valued, and 25% are assumed to have rounded service of 1 when first valued
- No cost-of-living adjustments granted
- Future pay increases based on long-term valuation
- Two alternate deterministic projections based on the same assumptions as the baseline deterministic projection, except
  - First alternate deterministic projection assumes a 0% asset return for calendar year 2025.
  - Second alternate deterministic projection assumes a 13% asset return for calendar year 2025.

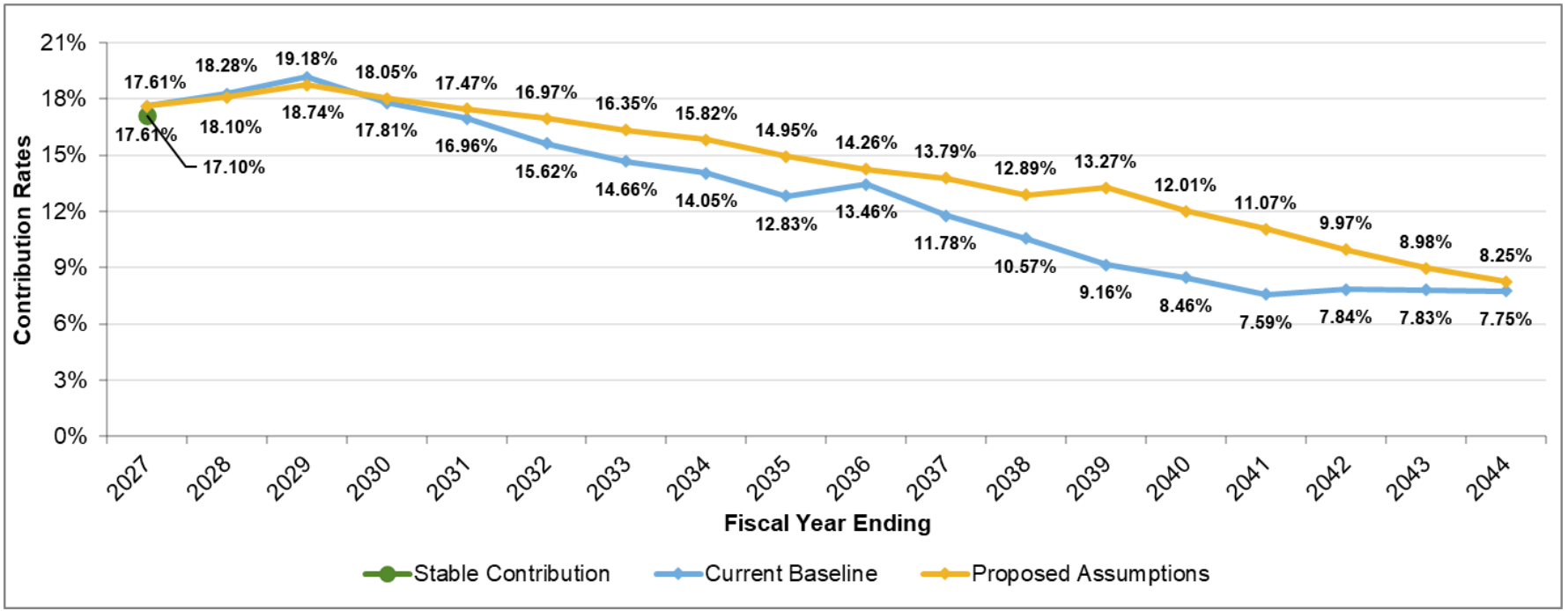
Contribution Rate Projection

LGERS General Employees and Firefighters - Current Assumptions vs Proposed Assumptions



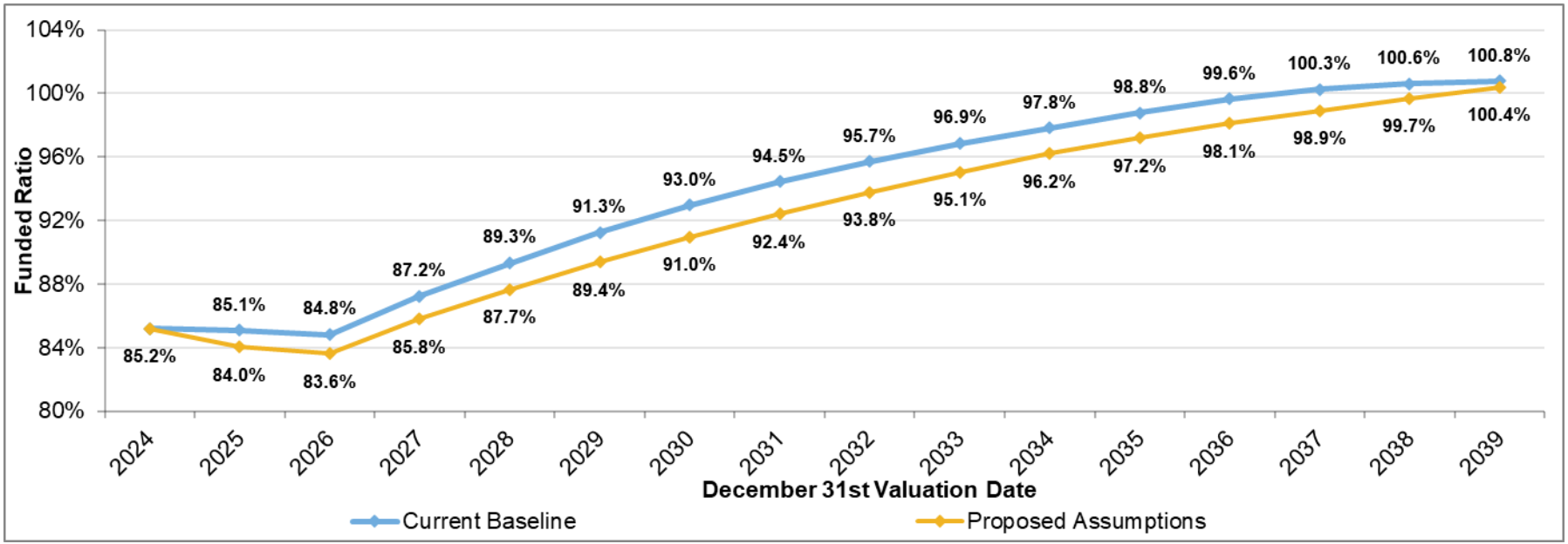
Contribution Rate Projection

LGERS Law Enforcement Officers - Current Assumptions vs Proposed Assumptions



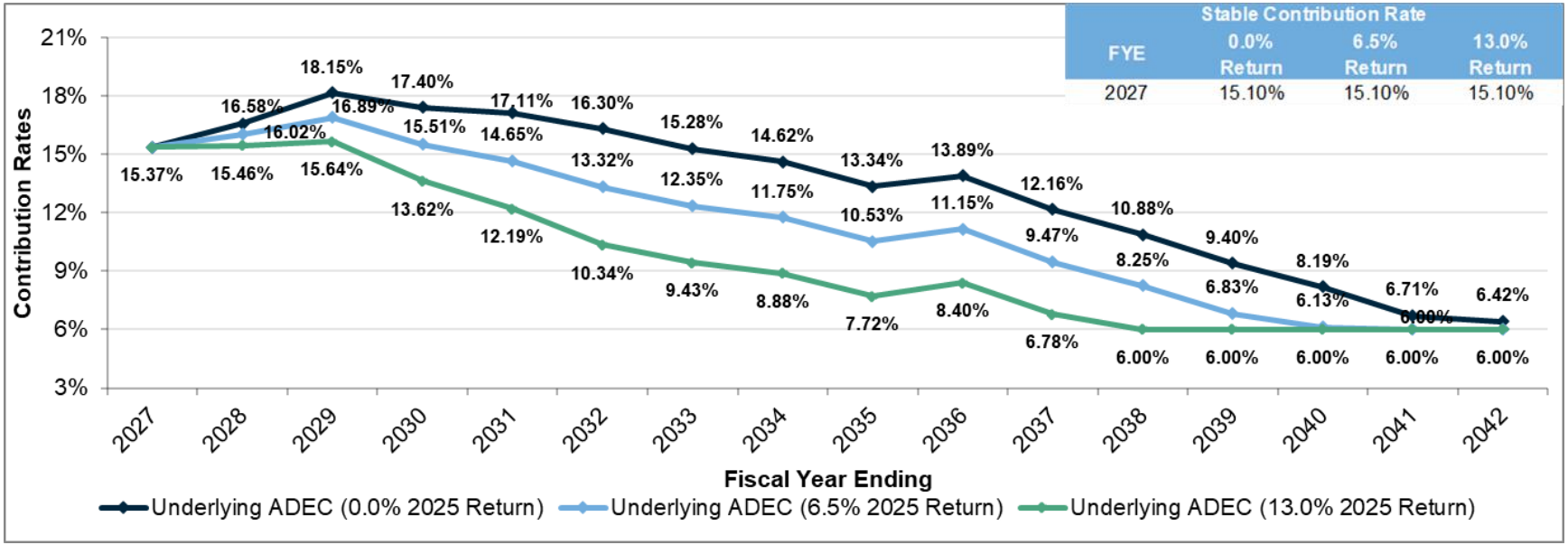
Funded Ratio Projection

LGERS - Current Assumptions vs Proposed Assumptions



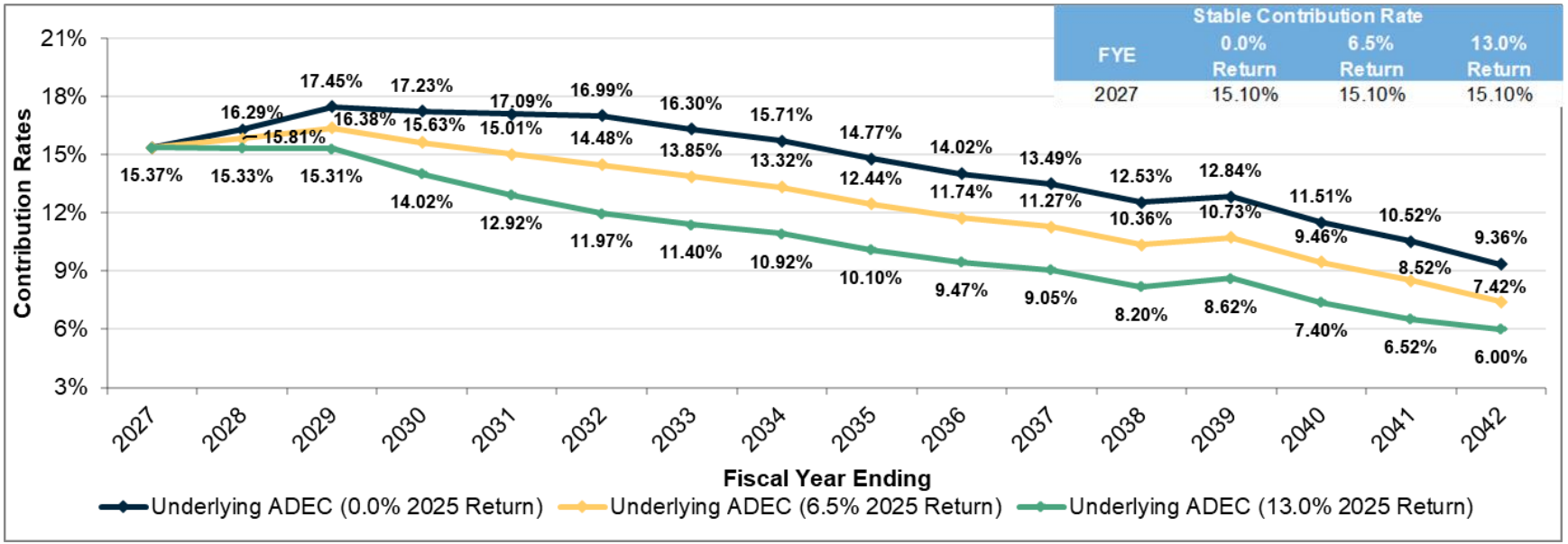
Contribution Rate Projection

LGERS General Employees and Firefighters – Current Assumptions



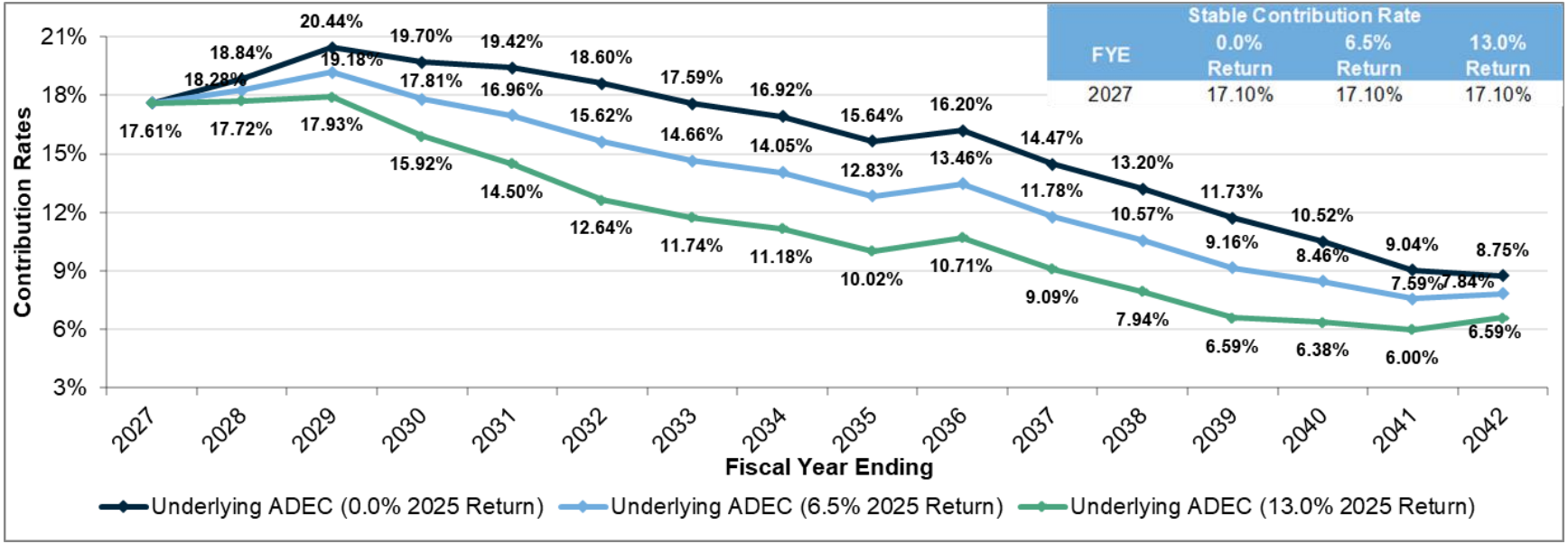
Contribution Rate Projection

LGERS General Employees and Firefighters – Proposed Assumptions



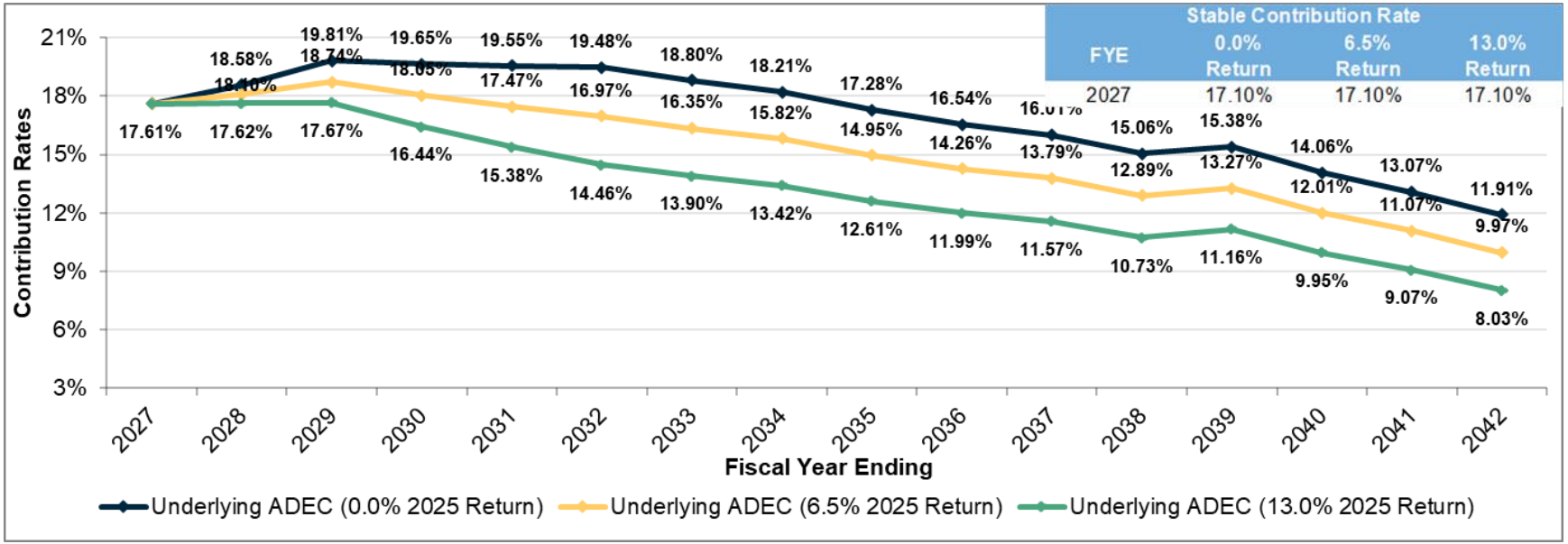
Contribution Rate Projection

LGERS Law Enforcement Officers – Current Assumptions



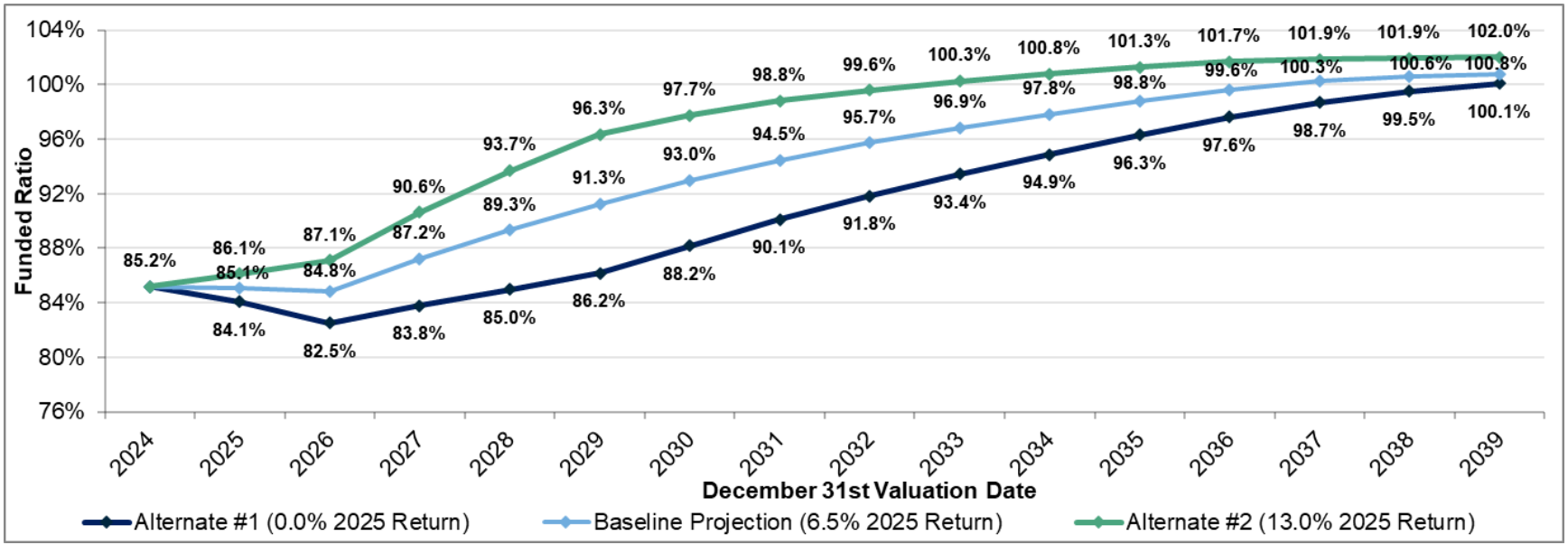
Contribution Rate Projection

LGERS Law Enforcement Officers – Proposed Assumptions



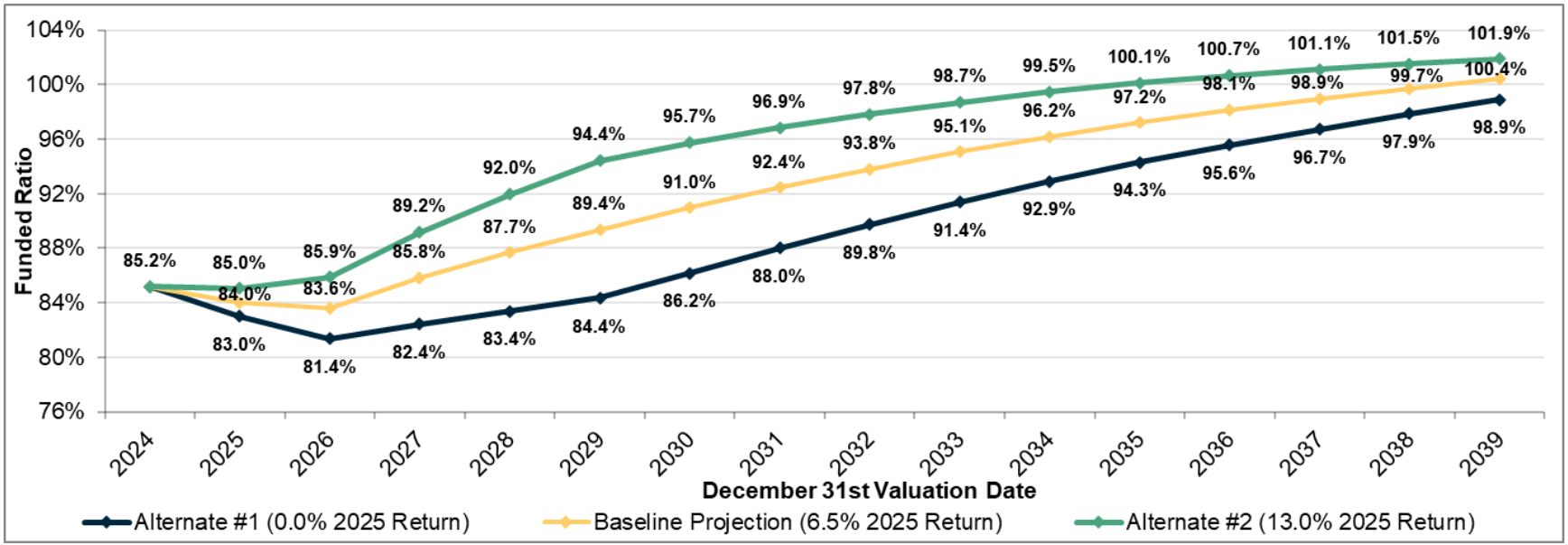
Funded Ratio Projection

LGERS - Current Assumptions



Funded Ratio Projection

LGERS - Proposed Assumptions



Key Takeaways

Firefighters' and Rescue Squad Workers' Pension Fund

Valuation Component Reviewed	Observation	Recommendation	Financial Impact
Demographic Assumptions			
1. Post-Decrement Mortality Rate	Fewer deaths overall	Update to latest tables – Pub-2016, as adjusted based on experience of all Safety workers	Increase
2. Active Mortality	Limited exposures	Update to latest tables – Pub-2016	Increase
3. Mortality Improvement	Updated SOA improvement scale since last study	Update to latest scale – MP-2021	Decrease
4. Service Retirement	Fewer retirements over study period than expected	Adjust rates to better align with experience	Decrease
5. Termination/Lapse and Return from Lapse	More terminations and fewer returns from lapse	Increase termination rates, decrease return to work rates	Decrease
Economic Assumptions			
7. Investment Return	Current assumption reasonable	No change	None
8. Inflation	Current assumption reasonable	No change	None
Funding Method			
11. Amortization Method	Current 12-year period is prudent and reflects a conservative approach	Proposed 15-year period balances prudence with generational equity; Apply surplus amortization policy	Decrease
12. Actuarial Cost Method	Current method reasonable	No change	None
13. Asset Valuation Method	Current method reasonable	No change	None
14. Administrative Expenses	Current assumption reasonable	No change	None

Financial Impact

Firefighters' and Rescue Squad Workers' Pension Fund

Had the proposed assumptions and methods been reflected for the December 31, 2024 valuation, the financial impact would have been as follows:

- AAL would increase by 0.2% from $528.3M to $529.2M
- Preliminary ADEC prior to direct-rate smoothing would increase by $0.1M. Applying five-year direct rate smoothing would recognize this over 5 years at $0.09 per year.
- Employer Contribution remains unchanged due to the SCRSP

	Current Valuation	Reflect Mortality Assumptions	Reflect Other Assumptions	Reflect Funding Method	Direct Rate Smoothing
Employer Contribution					
Employer Normal Cost	$ 4,476,390	$ 4,531,002	$ 3,415,456	$ 3,415,456	$ 3,415,456
Payment for UAAL	(4,122,846)	(3,456,593)	(4,004,144)	-	-
Preliminary ADEC	$ 353,544	$ 1,074,409	$ (588,688)	$ 3,415,456	$ 3,415,456
Impact of Direct Rate Smoothing	0	0	0	0	(2,449,530)
Impact of Rate Stabilization Policy	20,748,664	20,027,799	21,690,896	17,686,752	20,136,282
SCRSP Minimum Contribution Rate	$ 21,102,208	$ 21,102,208	$ 21,102,208	$ 21,102,208	$ 21,102,208
Cumulative Change in Employer Contribution		0	0	0	0
Actuarial Accrued Liability (AAL)	$ 528,294,472	$ 533,398,542	$ 529,203,829	$ 529,203,829	$ 529,203,829
Actuarial Value of Assets (AVA)	558,225,078	558,225,078	558,225,078	558,225,078	558,225,078
Unfunded Accrued Liability (UAAL)	(29,930,606)	(24,826,536)	(29,021,249)	(29,021,249)	(29,021,249)
Funded Ratio (AVA / AAL)	105.7%	104.7%	105.5%	105.5%	105.5%
Cumulative Change in UAAL		$ 5,104,070	$ 909,357	$ 909,357	$ 909,357

Key Takeaways

Registers of Deeds' Supplemental Pension Fund

Valuation Component Reviewed	Observation	Recommendation	Financial Impact
Demographic Assumptions			
1. Post-Decrement Mortality Rate	More deaths overall for LGERS general employees	Update to latest tables – Pub-2016, as adjusted for LGERS general employees	Decrease
2. Active Mortality	Limited exposures	Update to latest tables – Pub-2016	Decrease
3. Mortality Improvement	Updated SOA improvement scale since last study	Update to latest scale – MP-2021	Decrease
4. Service Retirement	More retirements over study period than expected	Increase	Increase
5. Termination from Active Employment	Fewer terminations over study period than expected	Decrease rates	Increase
Economic Assumptions			
7. Investment Return	Current 3.00% rate lower than future expectations	Increase to 4.50% rate	Significant decrease
8. Inflation	Current assumption reasonable	No change	None
9. Merit Increases	Higher increases over the study period than expected	Increase rates	Increase
10. Real Wage Growth	Current assumption reasonable	No change	None
Funding Method			
11. Amortization Method	Current 12-year period is prudent and reflects a conservative approach	Proposed 15-year period balances prudence with generational equity; Apply surplus amortization policy	Effectively, no impact
12. Actuarial Cost Method	Supplemental plan, effectively level-dollar benefits	Change entry age normal method to level dollar	Decrease normal cost, increase accrued liability
13. Asset Valuation Method	Current method reasonable	No change	None
14. Administrative Expenses	Actual expenses lower than assumption	Decrease to 0.30% of payroll	Decrease

Financial Impact

Registers of Deeds' Supplemental Pension Fund

Had the proposed assumptions and methods been reflected for the December 31, 2024 valuation, the financial impact would have been as follows:

- AAL would decrease by 12.0% from $34.5M to $30.3M
- Employer Normal Cost would decrease by 32% from $1.3M to $0.9M
- ADEC would remain at $0

	Current Valuation	Reflect Discount Rate	Reflect Salary Merit Increases	Reflect Mortality Assumptions	Reflect Other Assumptions	Reflect Expense Load	Reflect Funding Method	Direct Rate Smoothing
Employer Contribution								
Employer Normal Cost	$ 1,302,653	$ 991,654	$ 1,007,485	$ 996,832	$ 1,012,895	$ 1,003,599	$ 882,661	$ 882,661
Payment for UAL	(1,672,206)	(2,403,040)	(2,401,813)	(2,481,384)	(2,467,515)	(2,467,515)	(968,826)	(968,826)
Preliminary ADEC (w/o $0 floor)	(369,553)	(1,411,386)	(1,394,328)	(1,484,552)	(1,454,620)	(1,463,916)	(86,165)	(86,165)
Impact of Direct Rate Smoothing	0	0	0	0	0	0	0	(226,710)
Total with $0 floor	0	0	0	0	0	0	0	0
Cumulative Change in Employer Contribution		0	0	0	0	0	0	0
Actuarial Accrued Liability (AAL)	$ 34,488,158	$ 29,766,310	$ 29,675,596	$ 29,007,732	$ 29,079,195	$ 29,079,195	$ 30,345,137	$ 30,345,137
Actuarial Value of Assets (AVA)	49,870,906	49,870,906	49,870,906	49,870,906	49,870,906	49,870,906	49,870,906	49,870,906
Unfunded Accrued Liability (UAAL)	(15,382,748)	(20,104,596)	(20,195,310)	(20,863,174)	(20,791,711)	(20,791,711)	(19,525,769)	(19,525,769)
Funded Ratio (AVA / AAL)	144.6%	167.5%	168.1%	171.9%	171.5%	171.5%	164.3%	164.3%
Cumulative Change in UAAL		$ (4,721,848)	$ (4,812,562)	$ (5,480,426)	$ (5,408,963)	$ (5,408,963)	$ (4,143,021)	$ (4,143,021)

Key Takeaways

Death Benefit Plans

With the following exceptions, the assumptions used in the valuations of the Death Benefit Plans are consistent with the assumptions used for the retirement plans.

Valuation Component Reviewed	Observation	Recommendation	Financial Impact
Demographic Assumptions			
Contributory Death Benefit Plan Participation Rate	Lower participation rate over study period than expected	Decrease rates	Decrease in surplus
Economic Assumptions			
Investment Return	Current assumption relatively low in comparison to expected returns	Increase rates	Increase in surplus

Had the proposed assumptions and methods been reflected for the December 31, 2024 valuation, the financial impact would have been as follows:

- In aggregate, funded status would have changed from a deficit of $12.4M to a surplus of $159.2M

Note: This aggregate funded status combines the funded status of four separate death benefit plans (see next page), which must be considered and managed separately because the assets for one plan are not available to pay the benefits under another.

Financial Impact

Death Benefit Plans

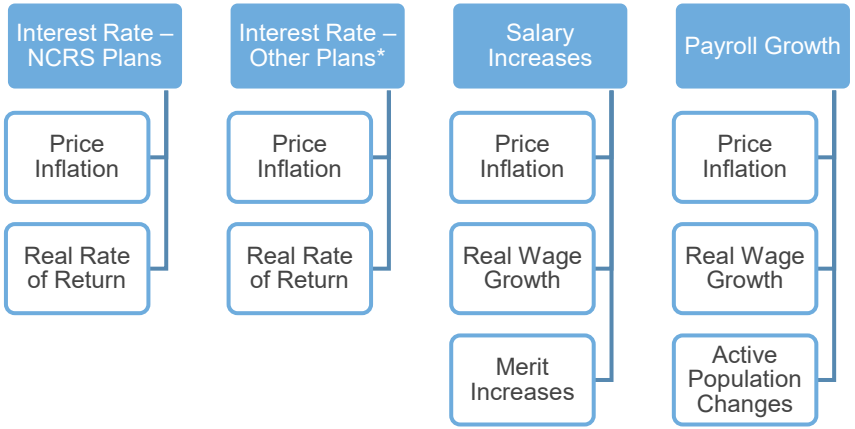
	Current Valuation	Reflect Discount Rate	Reflect Salary Merit Increases	Reflect Mortality Assumption	Reflect Other Assumptons
Teachers' and State Employees' Retirement System Death Benefit Plan					
Liabilities	$ 149,159,724	$ 135,421,299	$ 135,650,721	$ 133,200,404	$ 136,140,204
Current Assets	68,003,917	68,003,917	68,003,917	68,003,917	68,003,917
Present Value of Future Contributions	239,321,229	214,203,228	219,567,487	219,585,104	227,246,717
Surplus / (Deficit)	158,165,422	146,785,846	151,920,683	154,388,617	159,110,430
Cumulative Change in Surplus / (Deficit)		$ (11,379,576)	$ (6,244,739)	$ (3,776,805)	$ 945,008
Local Governmental Employees' Retirement System Death Benefit Plan					
Liabilities	$ 57,658,257	$ 51,930,483	$ 51,998,872	$ 53,238,151	$ 52,566,075
Current Assets	78,673,995	78,673,995	78,673,995	78,673,995	78,673,995
Present Value of Future Contributions	49,219,686	43,454,407	44,995,315	46,289,189	46,123,967
Surplus / (Deficit)	70,235,424	70,197,919	71,670,438	71,725,033	72,231,887
Cumulative Change in Surplus / (Deficit)		$ (37,505)	$ 1,435,014	$ 1,489,609	$ 1,996,463
Separate Insurance Benefits Plan for Law Enforcement Officers					
Liabilities	$ 52,240,561	$ 37,249,563	$ 37,249,563	$ 36,576,039	$ 36,516,175
Current Assets	53,884,270	53,884,270	53,884,270	53,884,270	53,884,270
Present Value of Future Contributions	0	0	0	0	0
Surplus / (Deficit)	1,643,709	16,634,707	16,634,707	17,308,231	17,368,095
Cumulative Change in Surplus / (Deficit)		$ 14,990,998	$ 14,990,998	$ 15,664,522	$ 15,724,386
Retirees' Contributory Death Benefit Plan					
Liabilities	$ 1,546,473,424	$ 1,126,768,414	$ 1,126,768,414	$ 1,135,316,510	$ 1,098,019,352
Current Assets	248,662,415	248,662,415	248,662,415	248,662,415	248,662,415
Present Value of Future Contributions	1,055,404,524	818,414,141	818,414,141	813,080,215	759,810,606
Surplus / (Deficit)	(242,406,485)	(59,691,858)	(59,691,858)	(73,573,880)	(89,546,331)
Cumulative Change in Surplus / (Deficit)		$ 182,714,627	$ 182,714,627	$ 168,832,605	$ 152,860,154

Review Recommendations for:

- Economic Assumptions
- Demographic Assumptions
- Funding Methods
- Administrative Factors

Economic Assumptions

Economic Assumptions



Economic assumptions are simplified predictions of the future labor and investment market conditions that will affect the Systems.

Key Considerations:

- **Use professional judgment to select reasonable assumptions**
  - Appropriate for valuation measurements
  - Reflects relevant current and historical data
  - Reflects actuaries' estimate of future experience
  - No significant bias
- **Consistency with other assumptions**

* "Other Plans" refers to RODSPF, DIPNC, and Death Benefit Plans

Economic Assumptions

Interest Rate

- Most important valuation assumption
- Current assumption (NCRS Plans) – 6.50% per annum, compounded annually
- Recommended assumption (NCRS Plans) – 6.50% per annum, compounded annually (no change)
- Current assumption (RODSPF, Death Benefit, DIPNC) – 3.00% per annum, compounded annually
- Recommended assumption (RODSPF, Death Benefit, DIPNC) – 4.50% per annum, compounded annually

Economic Assumptions

Interest Rate – Asset Allocations used in Gallagher's Analyses

NCRS – Current Asset Allocation

Asset Class	Allocation
Global Equity	44.33%
Private Equity	4.56%
Direct Real Estate	7.39%
Private Debt	4.67%
US High Yield	1.56%
Long Government	7.31%
Long Corporate	8.53%
Mortgage-Backed Securities	8.53%
Cash	6.13%
Hedge Funds	2.05%
Infrastructure	2.00%
REITs	0.94%
TIPS	2.00%

NCRS – Target Asset Allocation

Asset Class	Allocation
Global Equity	42.00%
Private Equity	6.00%
Direct Real Estate	9.00%
Private Debt	5.25%
US High Yield	1.75%
Long Government	7.56%
Long Corporate	8.82%
Mortgage-Backed Securities	8.82%
Cash	3.80%
Hedge Funds	2.00%
Infrastructure	2.00%
REITs	1.00%
TIPS	2.00%

Death Benefit Plans – Actual Asset Allocation

Asset Class	Allocation
Aggregate Bonds	95.95%
Cash	4.05%

DIPNC – Actual Asset Allocation

Asset Class	Allocation
Aggregate Bonds	89.74%
Cash	10.26%

RODSPF – Actual Asset Allocation

Asset Class	Allocation
Aggregate Bonds	99.71%
Cash	0.29%

Economic Assumptions

Interest Rate – NCRS Plans
Gallagher Capital Market Assumptions – 2024Q4

Current Asset Allocation (2024Q4 Capital Market Assumptions)
Nominal Return Results

	Time Horizon (Years)					
Expected Returns	**5**	**10**	**15**	**20**	**25**	**30**
Expected Return (Geometric)	6.86%	6.53%	6.74%	6.80%	6.89%	6.94%
Standard Deviation	9.09%	9.53%	9.77%	9.87%	9.90%	9.89%
Percentile (Geometric)						
75th	9.61%	8.52%	8.50%	8.34%	8.31%	8.28%
65th	8.60%	7.62%	7.77%	7.73%	7.80%	7.74%
50th	7.17%	6.66%	6.80%	6.90%	6.99%	6.99%
35th	5.63%	5.62%	5.91%	6.15%	6.21%	6.31%
25th	4.37%	4.94%	5.21%	5.45%	5.62%	5.70%

Target Asset Allocation (2024Q4 Capital Market Assumptions)
Nominal Return Results

	Time Horizon (Years)					
Expected Returns	**5**	**10**	**15**	**20**	**25**	**30**
Expected Return (Geometric)	6.98%	6.66%	6.86%	6.91%	7.00%	7.05%
Standard Deviation	9.15%	9.60%	9.84%	9.94%	9.96%	9.96%
Percentile (Geometric)						
75th	9.79%	8.67%	8.65%	8.47%	8.43%	8.39%
65th	8.73%	7.77%	7.91%	7.86%	7.92%	7.83%
50th	7.34%	6.77%	6.94%	6.99%	7.10%	7.10%
35th	5.66%	5.76%	6.06%	6.26%	6.33%	6.44%
25th	4.44%	5.06%	5.31%	5.55%	5.72%	5.79%

- Generally, look to the 35th to 65th percentile to be within tolerance of range we would consider reasonable
- Generally, look at a time horizon of 20 to 30 years
- The current assumption is 6.50%, falling between the 35th and 50th percentiles across all time horizons.

Economic Assumptions

Interest Rate – NCRS Plans
NASRA Public Fund Survey

Figure P

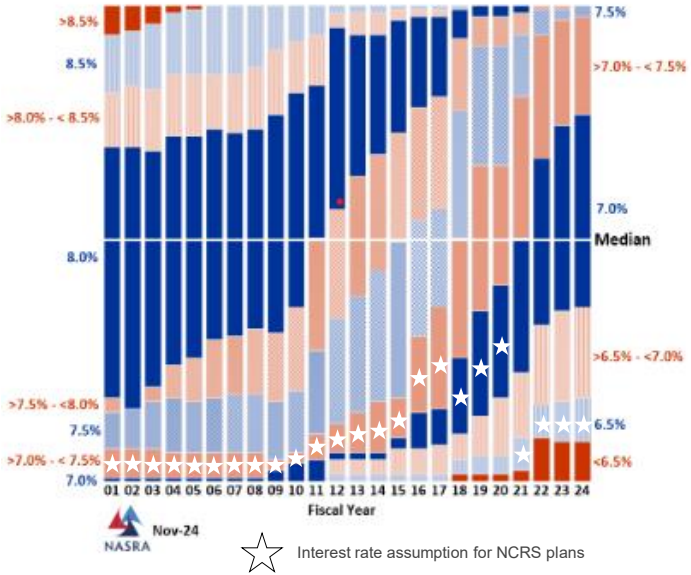
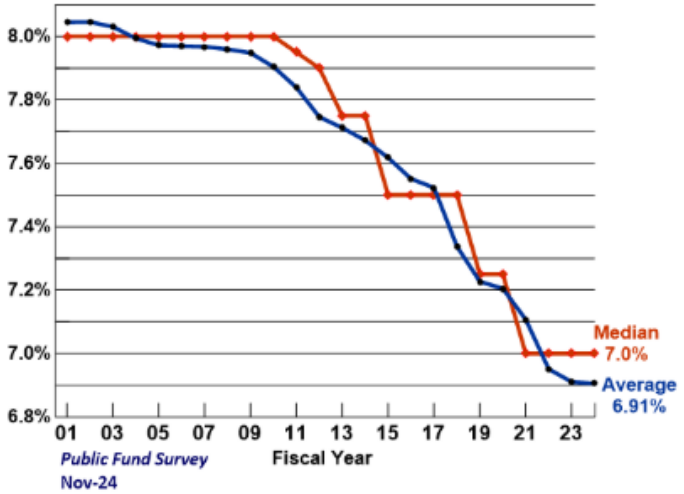


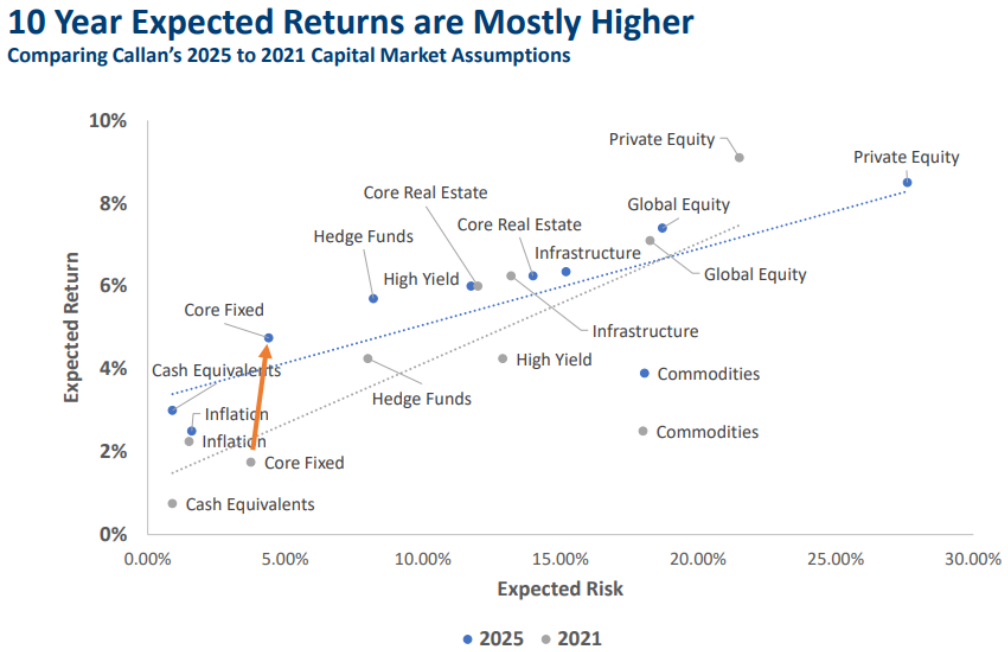
Figure Q



Source: https://www.nasra.org/publicfundsurvey

Economic Assumptions

Interest Rate – NCRS Plans
February 26, 2025 NCRS Investment Policy Statement Update from IMD

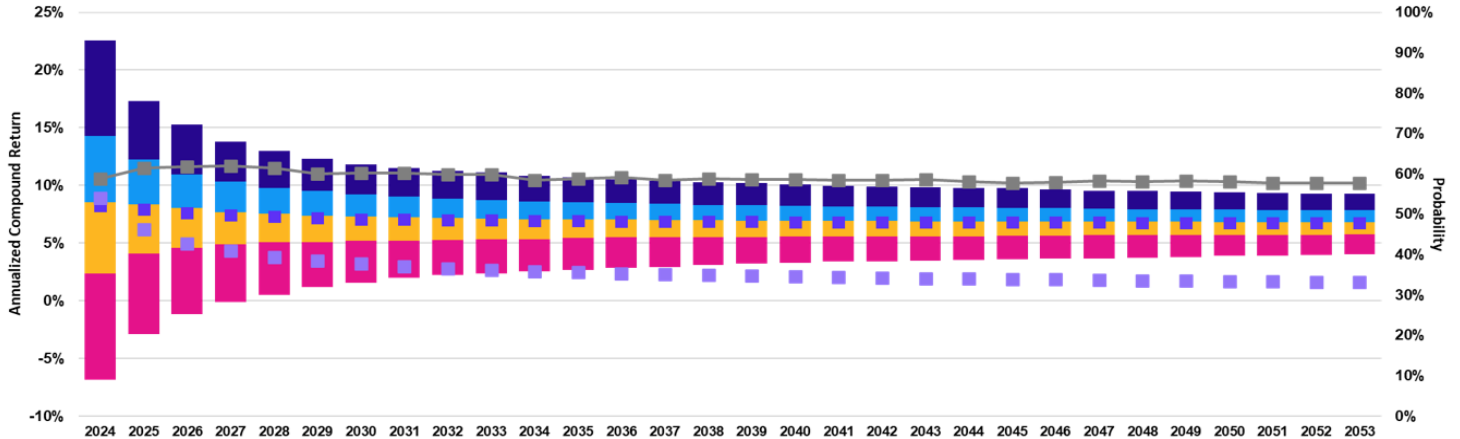


Source: https://www.nctreasurer.gov/documents/files/imdiac/ncrs-investment-policy-statement-02-26-25/open

Economic Assumptions

Interest Rate – NCRS Plans
TSERS Stress Testing – July 2024

Annualized Compound Return



	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053
Mean	8.2%	7.9%	7.6%	7.4%	7.3%	7.1%	7.1%	7.0%	7.0%	7.0%	6.9%	6.9%	6.9%	6.9%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.7%	6.7%	6.7%
Standard Dev	8.9%	6.2%	5.0%	4.3%	3.8%	3.5%	3.2%	3.0%	2.8%	2.7%	2.6%	2.5%	2.4%	2.3%	2.2%	2.1%	2.1%	2.0%	2.0%	1.9%	1.9%	1.9%	1.8%	1.8%	1.8%	1.7%	1.7%	1.7%	1.6%	1.6%
95th Percentile	22.5%	17.3%	15.2%	13.8%	13.0%	12.3%	11.8%	11.5%	11.3%	11.1%	10.8%	10.7%	10.5%	10.4%	10.3%	10.2%	10.1%	10.0%	9.9%	9.8%	9.8%	9.7%	9.6%	9.5%	9.5%	9.5%	9.4%	9.3%	9.3%	9.2%
75th Percentile	14.3%	12.2%	10.9%	10.3%	9.8%	9.5%	9.2%	9.0%	8.8%	8.7%	8.6%	8.5%	8.5%	8.4%	8.3%	8.3%	8.2%	8.2%	8.1%	8.1%	8.1%	8.0%	8.0%	8.0%	7.9%	7.9%	7.9%	7.9%	7.9%	7.8%
50th Percentile	8.6%	8.3%	8.1%	7.7%	7.5%	7.3%	7.3%	7.2%	7.2%	7.1%	7.0%	7.0%	7.0%	7.0%	7.0%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.8%	6.8%	6.9%	6.8%	6.9%	6.8%	6.8%	6.8%	6.8%
25th Percentile	2.4%	4.1%	4.6%	4.9%	5.0%	5.1%	5.2%	5.2%	5.3%	5.3%	5.3%	5.4%	5.5%	5.5%	5.5%	5.5%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%
5th Percentile	(6.9%)	(2.9%)	(1.1%)	(0.2%)	0.5%	1.2%	1.5%	2.0%	2.2%	2.3%	2.5%	2.6%	2.8%	2.9%	3.1%	3.2%	3.3%	3.4%	3.4%	3.5%	3.5%	3.6%	3.6%	3.7%	3.7%	3.8%	3.9%	3.9%	4.0%	4.0%
Prob > 6.5%	58.8%	61.5%	61.7%	62.0%	61.3%	60.1%	60.2%	60.3%	59.8%	59.7%	58.5%	58.7%	59.1%	58.4%	58.7%	58.5%	58.7%	58.5%	58.5%	58.5%	58.0%	57.7%	57.8%	58.2%	58.1%	58.2%	58.1%	57.7%	57.7%	57.7%

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Source: TSERS Stress Testing and Sensitivity Analysis Report – Prepared by Gallagher July 2024

Economic Assumptions

Interest Rate – Other Plans (Death Benefit Plans)
Gallagher Capital Market Assumptions – 2024Q4

Dth Benefit Plans (2024Q4 Capital Market Assumptions)
Nominal Return Results

	Time Horizon (Years)					
Expected Returns	**5**	**10**	**15**	**20**	**25**	**30**
Expected Return (Geometric)	4.79%	4.68%	4.67%	4.66%	4.68%	4.70%
Standard Deviation	4.02%	4.17%	4.22%	4.22%	4.24%	4.21%
Percentile (Geometric)						
75th	5.36%	5.10%	5.10%	5.04%	5.06%	5.08%
65th	5.15%	4.92%	4.91%	4.84%	4.87%	4.91%
50th	4.83%	4.67%	4.66%	4.63%	4.68%	4.67%
35th	4.47%	4.41%	4.39%	4.39%	4.45%	4.48%
25th	4.20%	4.24%	4.19%	4.26%	4.29%	4.34%

- Generally, look to the 35th to 65th percentile to be within tolerance of range we would consider reasonable
- Time horizon 20-30 years
- The current interest rate assumption is 3.00% “with a provision for adverse deviation” for RODSPF, DIPNC, and the Death Benefit Plans
- We recommend updating to an assumed interest rate assumption of 4.50%, which falls within the 35th and 50th percentile across all time horizons.

Economic Assumptions

Interest Rate – Other Plans (DIPNC)
Gallagher Capital Market Assumptions – 2024Q4

DIPNC (2024Q4 Capital Market Assumptions)
Nominal Return Results

	Time Horizon (Years)					
Expected Returns	**5**	**10**	**15**	**20**	**25**	**30**
Expected Return (Geometric)	4.71%	4.59%	4.57%	4.56%	4.58%	4.60%
Standard Deviation	3.78%	3.94%	3.99%	3.99%	4.01%	3.98%
Percentile (Geometric)						
75th	5.26%	5.00%	5.00%	4.95%	4.96%	4.97%
65th	5.04%	4.84%	4.83%	4.75%	4.78%	4.82%
50th	4.74%	4.58%	4.56%	4.53%	4.57%	4.58%
35th	4.40%	4.32%	4.29%	4.30%	4.35%	4.37%
25th	4.18%	4.14%	4.10%	4.14%	4.18%	4.22%

- Generally, look to the 35th to 65th percentile to be within tolerance of range we would consider reasonable
- Time horizon 20-30 years
- The current interest rate assumption is 3.00% “with a provision for adverse deviation” for RODSPF, DIPNC, and the Death Benefit Plans
- We recommend updating to an assumed interest rate assumption of 4.50%, which falls within the 35th and 50th percentile across all time horizons.

Economic Assumptions

Interest Rate – Other Plans (RODSPF)
Gallagher Capital Market Assumptions – 2024Q4

RODSPF (2024Q4 Capital Market Assumptions)
Nominal Return Results

	Time Horizon (Years)					
Expected Returns	**5**	**10**	**15**	**20**	**25**	**30**
Expected Return (Geometric)	4.84%	4.73%	4.73%	4.71%	4.74%	4.77%
Standard Deviation	4.17%	4.32%	4.37%	4.37%	4.39%	4.36%
Percentile (Geometric)						
75th	5.43%	5.15%	5.16%	5.10%	5.12%	5.13%
65th	5.21%	4.97%	4.97%	4.90%	4.93%	4.97%
50th	4.89%	4.73%	4.71%	4.68%	4.74%	4.73%
35th	4.51%	4.46%	4.44%	4.45%	4.51%	4.55%
25th	4.24%	4.30%	4.25%	4.31%	4.35%	4.40%

- Generally, look to the 35th to 65th percentile to be within tolerance of range we would consider reasonable
- Time horizon 20-30 years
- The current interest rate assumption is 3.00% “with a provision for adverse deviation” for RODSPF, DIPNC, and the Death Benefit Plans
- We recommend updating to an assumed interest rate assumption of 4.50% which falls within the 35th and 50th percentile across all time horizons greater than 5 years.

Economic Assumptions

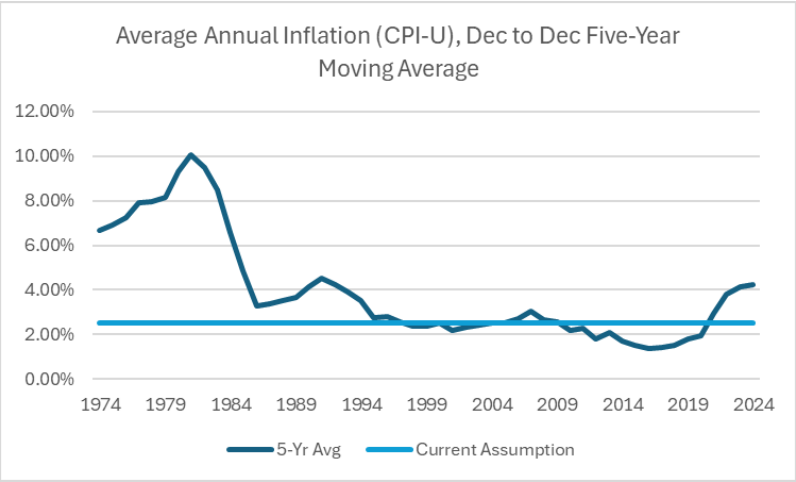
Price Inflation

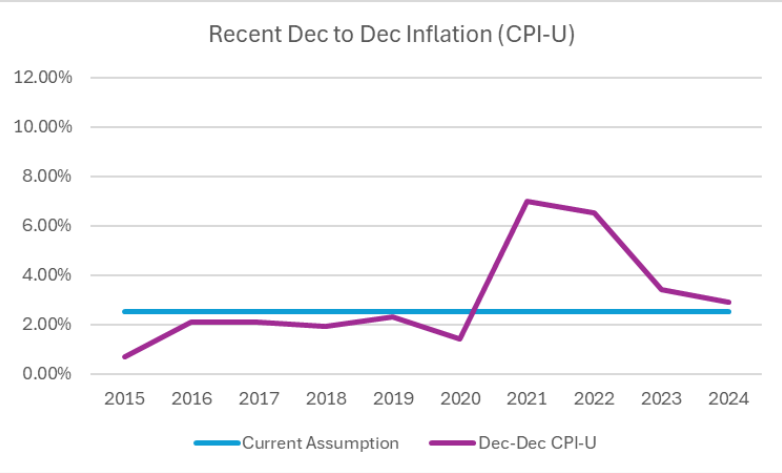
- Component of interest rate, salary increases, and payroll growth
- Current assumption – 2.50% per annum, compounded annually
- Recommended assumption – 2.50% per annum, compounded annually (no change)

Economic Assumptions

Price Inflation
Historical CPI-U – Period Ending December 31, 2024

	10-Year	20-Year	30-Year
Geometric Average	3.00%	2.56%	2.52%





Source: Bureau of Labor Statistics, CPI-U, all items (series ID: CUUR0000SA0)

Economic Assumptions

Price Inflation
Federal Reserve Bank of Philadelphia Survey of Professional Forecasters

Over the next 10 years, 2025 to 2034, the forecasters predict headline CPI inflation will be an annual-average rate of 2.31 percent, slightly lower than the estimate of 2.35 percent in the previous survey. The corresponding estimate for 10-year annual-average PCE inflation is 2.20 percent, unchanged from the previous estimate.

Median Short-Run and Long-Run Projections for Inflation (Annualized Percentage Points)

	HEADLINE CPI		CORE CPI		HEADLINE PCE		CORE PCE	
	PREVIOUS	CURRENT	PREVIOUS	CURRENT	PREVIOUS	CURRENT	PREVIOUS	CURRENT
Long-Term Annual Averages								
2025-2029	2.51	2.43	N.A.	N.A.	2.30	2.30	N.A.	N.A.
2025-2034	2.35	2.31	N.A.	N.A.	2.20	2.20	N.A.	N.A.

Source: https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/spf-q3-2025

Economic Assumptions

Price Inflation
Other Sources

Federal Reserve Bank of Cleveland - Expected Inflation as of 9/1/2025 Model Output Date	
10-Year	2.29%
20-Year	2.35%
30-Year	2.41%

Congressional Budget Office – Inflation Expectations in March 2025 Long-Term Budget Outlook (Growth of the CPI-U)	
2025 – 2035	2.30%
2025 – 2055	2.30%

Social Security Administration – 2025 OASDI Trustees Report	
Ultimate CPI-W – Low-cost Assumptions	3.00%
Ultimate CPI-W – Intermediate Assumptions	2.40%
Ultimate CPI-W – High-cost Assumptions	1.80%

Federal Reserve Economic Data – 2025 OASDI Trustees Report	
10-Year Breakeven Inflation Rate	2.38%
20-Year Breakeven Inflation Rate	2.50%
30-Year Breakeven Inflation Rate	2.31%

Source: https://www.clevelandfed.org/indicators-and-data/inflation-expectations, https://www.cbo.gov/publication/61270#_idTextAnchor036, https://www.ssa.gov/OACT/TR/2025/2025_Long-Range_Economic_Assumptions.pdf , https://fred.stlouisfed.org/categories/33446

Economic Assumptions

Price Inflation
Gallagher Capital Market Assumptions – 2024Q4

Inflation Results						
	Time Horizon (Years)					
Expected Returns	**5**	**10**	**15**	**20**	**25**	**30**
Expected Inflation (Geometric)	2.45%	2.44%	2.49%	2.48%	2.46%	2.44%
Standard Deviation	2.60%	2.96%	3.18%	3.21%	3.26%	3.30%
Percentile (Geometric)						
75th	3.63%	3.64%	3.57%	3.60%	3.48%	3.33%
65th	2.92%	2.80%	2.89%	2.82%	2.79%	2.74%
50th	2.08%	1.99%	2.01%	2.03%	2.04%	2.06%
35th	1.33%	1.22%	1.26%	1.41%	1.45%	1.47%
25th	0.85%	0.81%	0.87%	1.04%	1.07%	1.16%

Economic Assumptions

Real Wage Growth

- Component of assumed salary increases and total payroll growth
- Current assumption – 0.75% per annum, compounded annually
- Recommended assumption – 0.75% per annum, compounded annually (no change)

Economic Assumptions

Real Wage Growth
2025 OASDI Trustees Report

The 2025 OASDI Trustees Report notes that “for the period from 1969 to 2019…the annual real (i.e., inflation-adjusted) growth rate in the average covered wage averaged 0.77 percent.”

It further notes that “for the period 2034 to 2099, the projected average annual real wage growth rate in OASDI covered employment is 1.73, 1.13, and 0.53 percent for the low-cost, intermediate, and high-cost assumptions, respectively.”

Social Security Administration – 2025 OASDI Trustees Report	
Real Wage Growth – Low-cost Assumptions	1.73%
Real Wage Growth – Intermediate Assumptions	1.13%
Real Wage Growth – High-cost Assumptions	0.53%

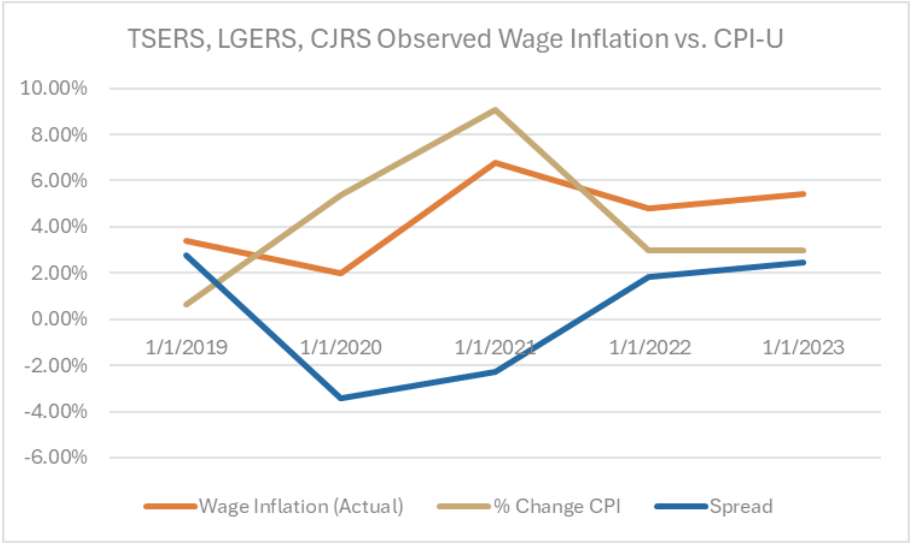
Source: https://www.ssa.gov/OACT/TR/2025/2025_Long-Range_Economic_Assumptions.pdf

Economic Assumptions

Real Wage Growth
System Experience

Year-to-year observed real wage growth has varied over the study period. Over the entire study period, however, 0.75% has been a reasonable assumption:

Year-Ending	Actual Annualized Compensation for TSERS, LGERS, CJRS	Expected Annualized Compensation (based on actual CPI-U and 0.75% Real Wage Growth)	Actual / Expected Ratio
12/31/2020	22,760,831,078	22,467,776,829	98.7%
12/31/2021	23,073,193,830	24,158,676,460	104.7%
12/31/2022	24,691,029,628	25,336,618,299	102.6%
12/31/2023	26,281,828,775	25,609,332,885	97.4%
12/31/2024	27,910,391,831	27,259,879,991	97.7%
Total	124,717,275,142	124,832,284,464	100.1%



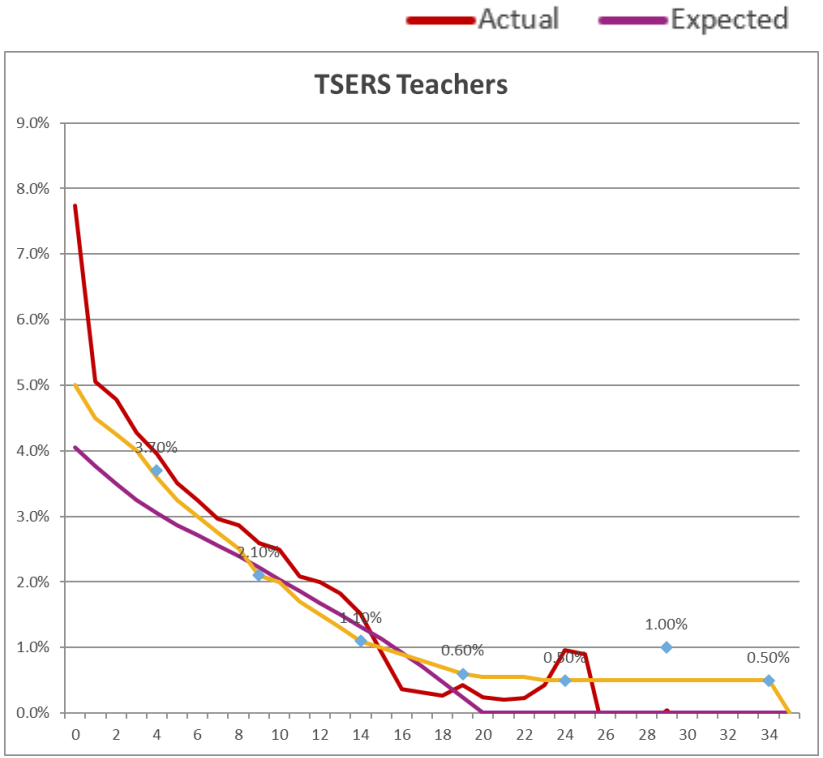
Economic Assumptions

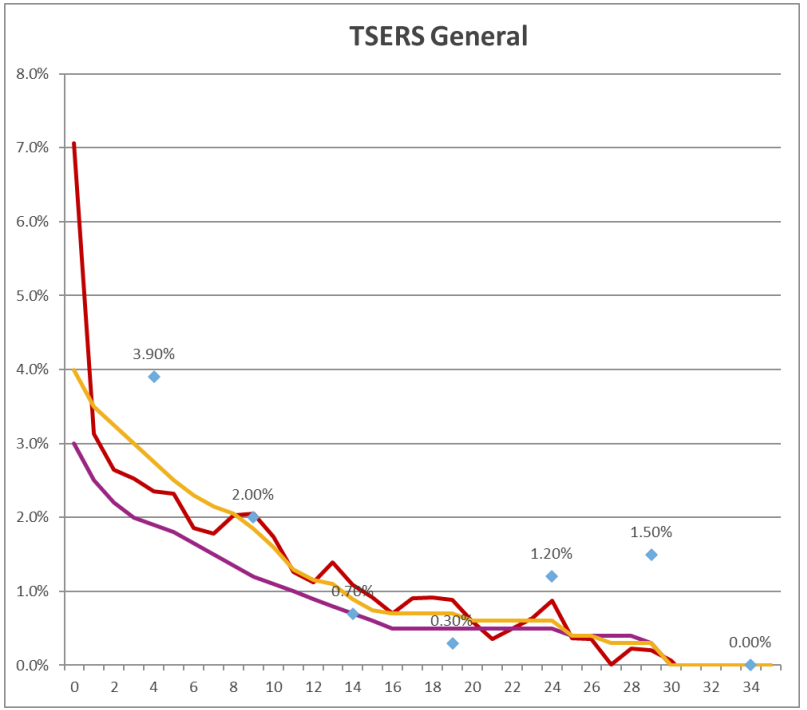
Merit Increases

- **Component of assumed salary increases**
- **Current assumption – Varies by group and years of service for TSERS, LGERS, CJRS, RODSPF (0% for LRS)**
- **Recommended assumption – Varies by group and years of service for TSERS, LGERS, CJRS, RODSPF, with adjustments from previous scales (0% for LRS)**
  - Note that assumed salary increases are not relevant to the calculation of benefits nor the actuarially determined contributions for FRSWPF and NGPF
- **We reviewed and proposed merit experience by:**
  - Comparing actual to expected experience by analyzing individual employees' annual pay growth year-over-year, adjusted to exclude the effects of overall wage inflation, and isolating merit- and service-related pay increases
  - Reviewing a “2024 Snapshot” that compares differences in average pay for all members based on service as of December 31, 2024
    - Provides correlation between pay and service, removing impact of historical wage inflation, which varied greatly over study period.
    - For example, a 2024 snapshot compares average 2024 compensation of employees with 5 years of service to the average 2024 compensation of employees with 4 years of service.
  - Considering trends in merit increases from the previous study

Economic Assumptions

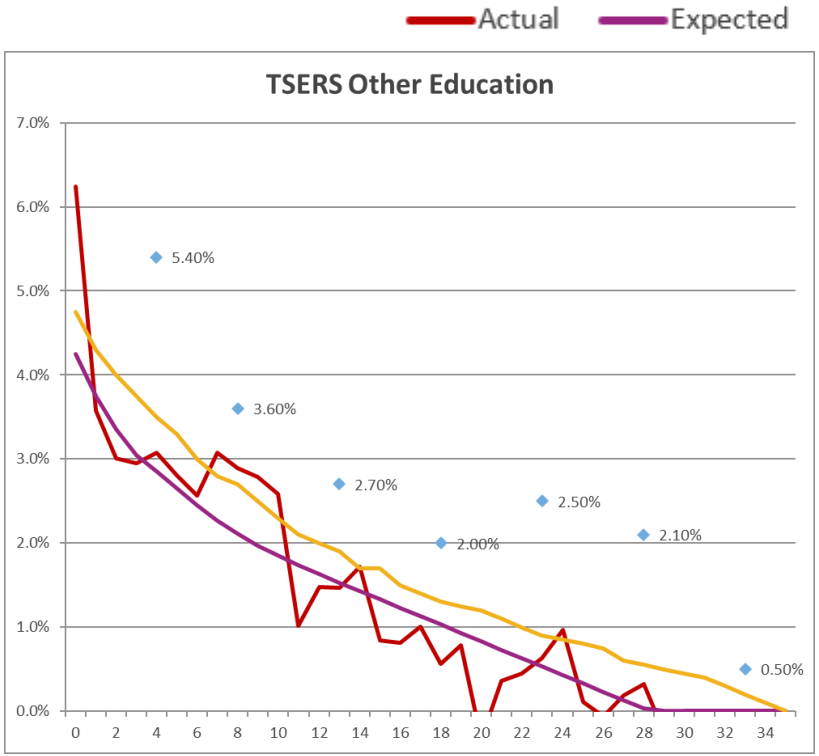
TSERS Merit Increases by Service

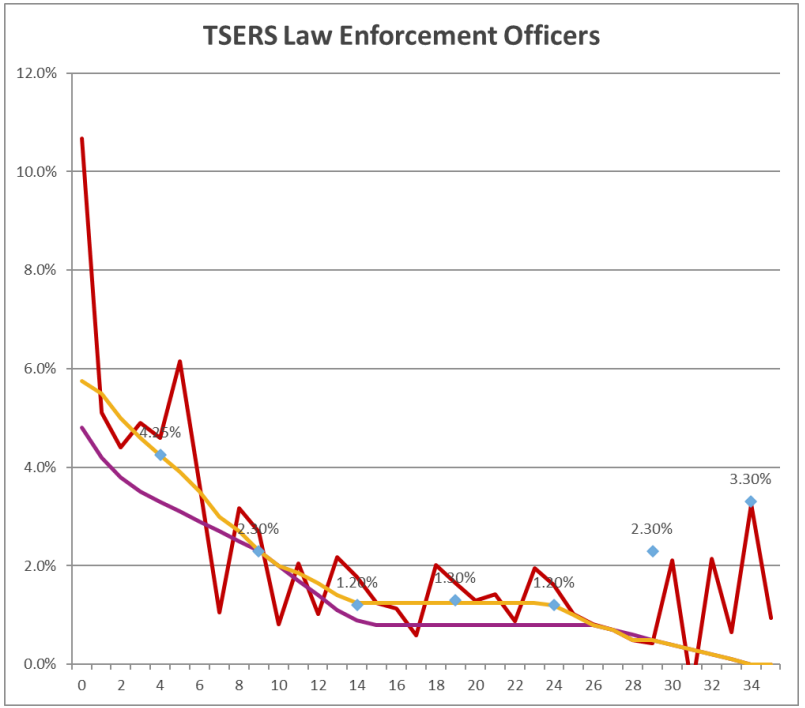




Economic Assumptions

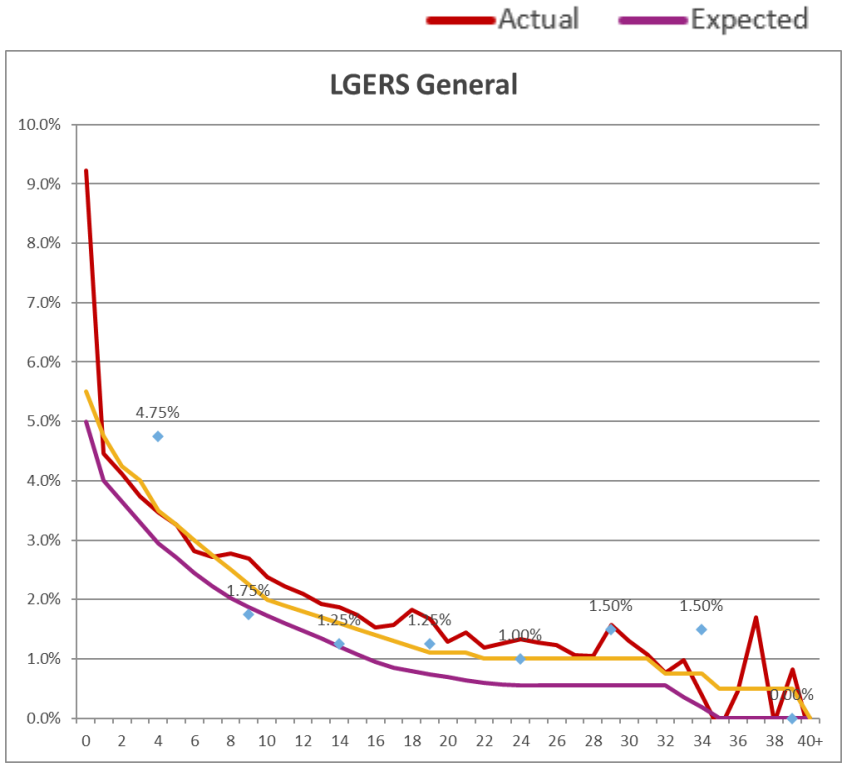
TSERS Merit Increases by Service

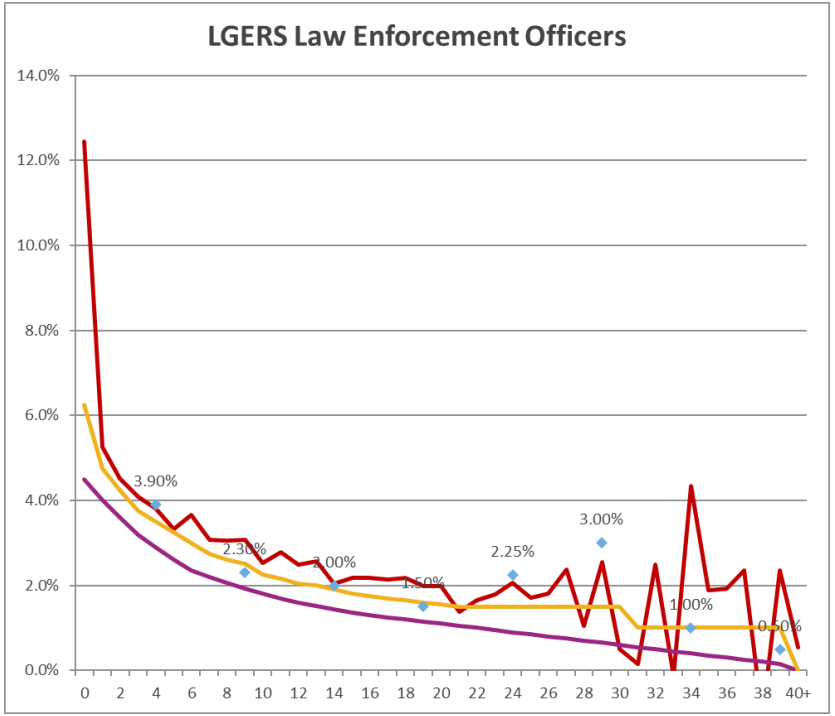




Economic Assumptions

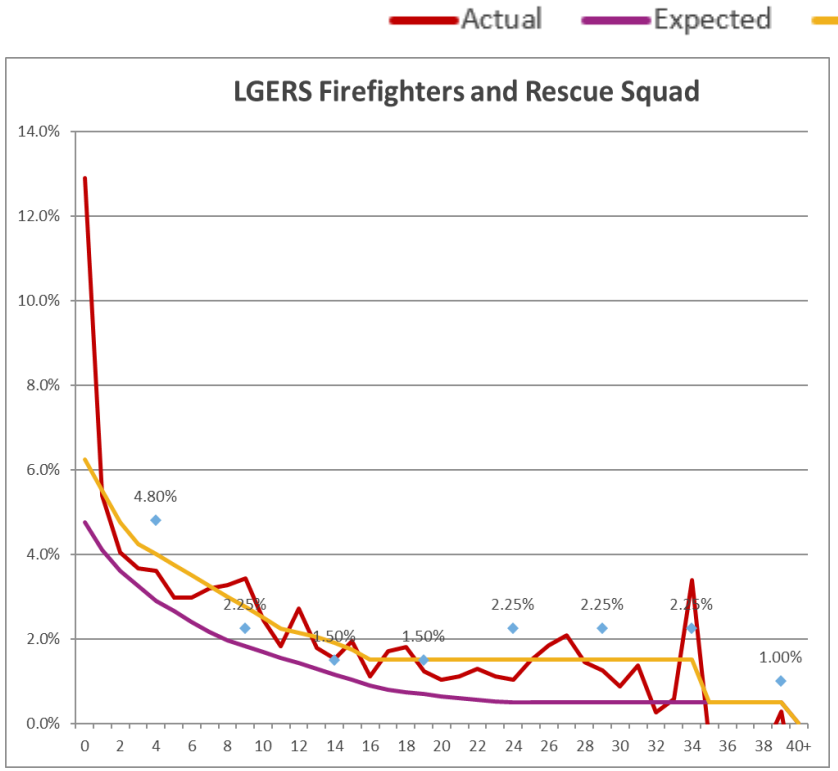
LGERS Merit Increases by Service





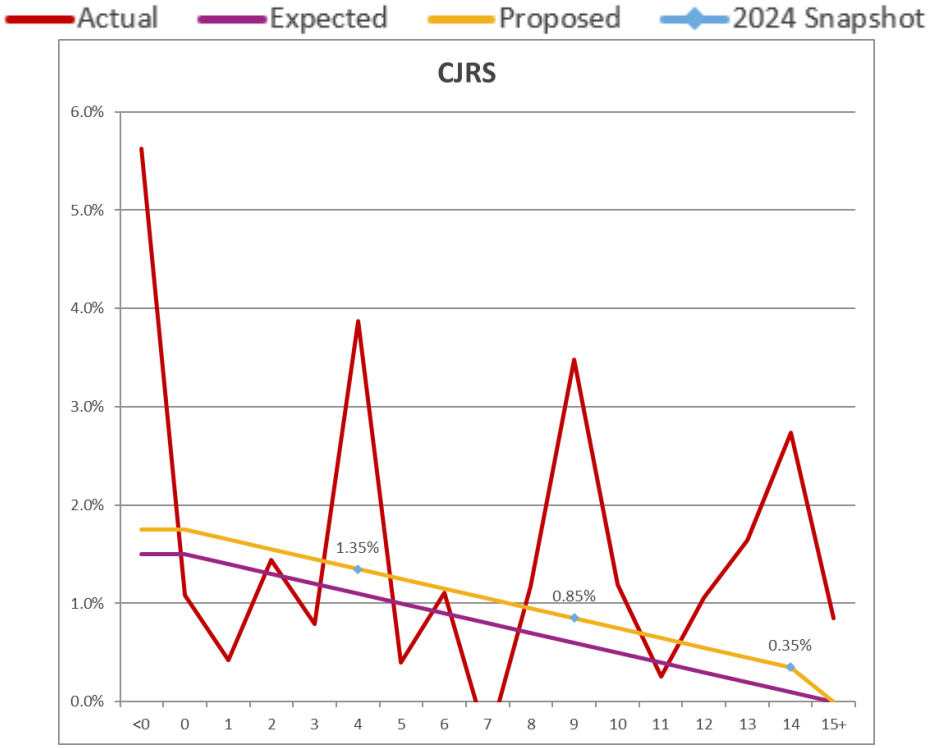
Economic Assumptions

LGERS Merit Increases by Service



Economic Assumptions

CJRS Merit Increases by Service



Economic Assumptions

Merit Increases

Group	Weighted Avg. Merit Increase Rate – Actual	Weighted Avg. Merit Increase Rate – Current Expected	Weighted Avg. Merit Increase Rate - Proposed	Actual / Expected*	Actual / Proposed**
TSERS - Teachers	2.40%	1.82%	2.13%	100.6%	100.3%
TSERS – General	1.86%	1.27%	1.77%	100.6%	100.1%
TSERS – Other Education	1.77%	1.72%	2.17%	100.3%	99.6%
TSERS – LEO	2.91%	2.07%	2.60%	100.8%	100.3%
LGERS - General	3.10%	2.20%	2.69%	100.9%	100.4%
LGERS – LEO	3.25%	2.02%	2.62%	101.2%	100.6%
LGERS – FRW	3.31%	2.05%	3.04%	101.2%	100.3%
CJRS	1.18%	0.66%	0.83%	100.5%	100.4%
LRS	0.11%	0.00%	0.00%	N/A	N/A

*The Actual/Expected ratio is based on a comparison of the total actual salaries to the expected salaries based on current actuarial assumptions.
**The Actual/Proposed ratio is based on a comparison of the total actual salaries to the expected salaries based on proposed actuarial assumptions.

Economic Assumptions

Active Population Growth

- Component of payroll growth
- Current assumption – 0.00% increase in populations of TSERS, LGERS, and subgroups (except no new hires of UNC HC will participate in TSERS)
- Recommended assumption – No change to current assumption

Economic Assumptions

Active Population Growth - TSERS

Based on 10 years of data, we have observed a slight decrease in the TSERS active population. We do not have any indication to believe that the population will significantly expand or contract in the future.

TSERS

Year	Active Count	% Change - Active Count
2024	298,000	-0.35%
2023	299,037	0.41%
2022	297,802	-0.84%
2021	300,310	-0.81%
2020	302,771	-1.04%
2019	305,962	0.46%
2018	304,575	0.01%
2017	304,554	-0.15%
2016	305,013	-0.09%
2015	305,291	

Geometric Avg. Change in Population	-0.27%

Economic Assumptions

Active Population Growth - LGERS

Based on 10 years of data, we have observed an increase in the LGERS active population. We do not have any indication to believe that the population will significantly expand or contract in the future.

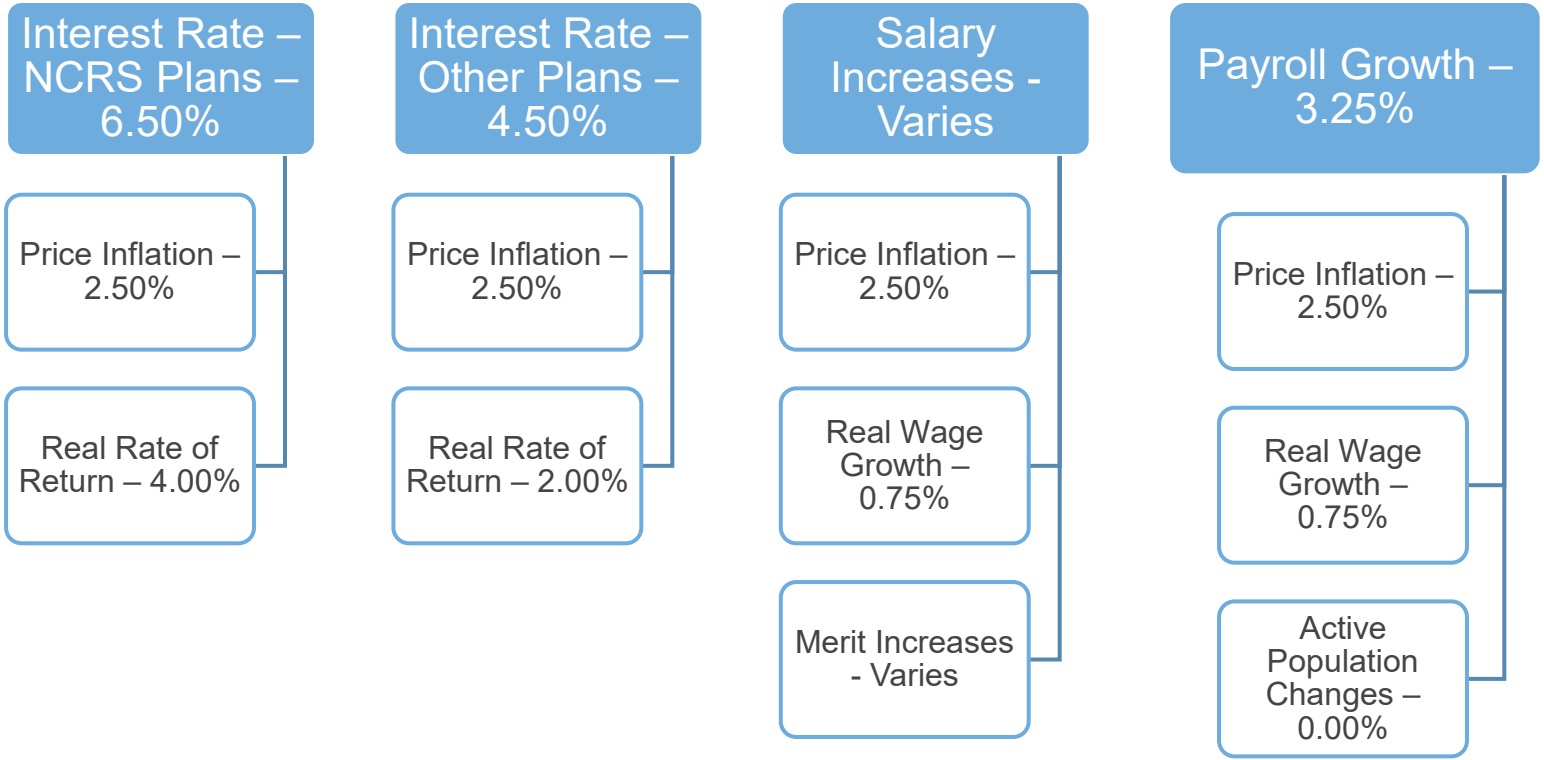
LGERS

Year	Active Count	% Change - Active Count
2024	145,531	3.02%
2023	141,269	4.10%
2022	135,706	2.62%
2021	132,235	-0.12%
2020	132,397	0.26%
2019	132,058	1.59%
2018	129,986	0.94%
2017	128,779	1.68%
2016	126,647	-2.56%
2015	129,974	

Geometric Avg. Change in Population	1.26%

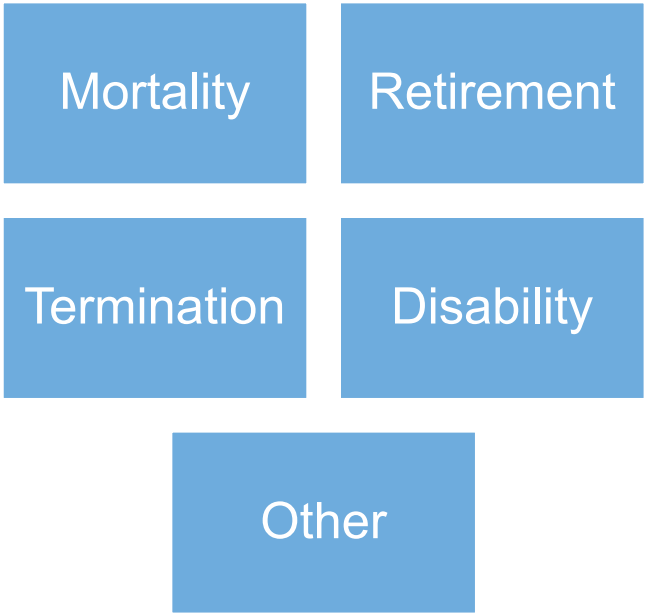
Economic Assumptions

Summary of Proposed Assumptions



Demographic Assumptions

Demographic Assumptions



Demographic assumptions are simplified predictions of the future participant behavior / life outcomes that will affect the Systems.

Key Considerations:

- **Use professional judgment to select reasonable assumptions**
  - Appropriate for valuation measurements
  - Reflects relevant current and historical data
  - Reflects actuaries estimate of future experience
  - No significant bias
- **Consistency with other assumptions**
- **Plan design considerations**
- **Employee and retiree characteristics**

Demographic Assumptions

Experience study method discussion

- There are a number of different ways to measure plan experience to review and serve as a basis for assumption setting
- We consider two different ways to measure plan experience: headcount-basis and liability-weighted basis
  - Headcount-based review uses the count of the expected decrement compared to the actual decrement (e.g., comparing the number of those who retire, who terminate, who become disabled, who die, etc. to the number we expected based on current assumptions)
  - Liability-weighted review weights each person by their liability. So, for example, a person with a $100,000 liability holds more weight in experience than someone with $100 in liability.
- Final analyses for demographic assumptions are based on primarily on liability-weighted experience
  - More accurately reflects the amount of liability affected by a given contingency like termination or retirement
  - Substitutes complex modeling of participant behavior that might require accounting for specific characteristics not available in census records

Demographic Assumptions

Experience study method discussion

- Key terms in graphs and tables in Mortality, Retirement, and Termination sections:
- **“Liability Rates”** refers to the actual, expected, or proposed results of the study measured on a liability-weighted basis
- **“Actual”** – liability for individuals over the study period who became deceased, retired, or terminated, divided by total liability over the study period associated with individuals subject to mortality, retirement, or termination benefits
- **“Adjusted Actual Liability Rates”** in the mortality graphs refer to adjusted mortality experience (adjustments based on the 2025 OASDI Trustees Report) for non-excluded years
- **“Expected”** – liability for individuals over the study period who were assumed to become deceased, retired, or terminated (based on current assumptions), divided by total liability over the study period associated with individuals subject to mortality, retirement, or termination benefits
- **“Proposed”** – liability for individuals over the study period who were assumed to become deceased, retired, or terminated (based on proposed assumptions), divided by total liability over the study period associated with individuals subject to mortality, retirement, or termination benefits

Demographic Assumptions

Mortality

Demographic Assumptions

Mortality

- **Mortality assumption estimates the probability that members or beneficiaries will die at different ages in the future, triggering expiration of pension benefits and/or survivor benefits**
- **Mortality tables vary by age, gender, employee group and health status**
  - Current mortality rates are based on the Society of Actuaries' Pub-2010 Public Retirement Plans Mortality Tables, which were developed based on public plan mortality experience collected from calendar years 2008-2013
  - In May 2025, the Society of Actuaries released the Pub-2016 Public Retirement Plans Mortality Tables, which were developed based on public plan mortality experience collected from 2013-2019
    - Calendar year 2020 was collected but ultimately excluded due to the COVID-19 pandemic
  - Proposed assumptions are based on the more recently released Pub-2016 tables
  - Prior to considering NCRS-specific adjustments, the change from Pub-2010 base tables to Pub-2016 base tables is expected to decrease liabilities (i.e., predict shorter expected lifetimes) for all groups except for male safety workers
    - Liabilities are expected to increase (i.e., predict longer expected lifetimes) for male safety workers (law enforcement officers, firefighters and rescue squad workers)

Demographic Assumptions

Mortality

- **Mortality assumption also includes a provision to reflect future mortality improvements**
  - Current mortality rates are based on the Society of Actuaries' Mortality Improvement Scale MP-2019, which was developed based on Social Security Administration data for calendar years 1950 through 2017 (2017 being estimated data)
  - In October 2021, the Society of Actuaries released the Mortality Improvement Scale MP-2021, which was developed based on Social Security Administration data (as well as data from the CDC, U.S. Census Bureau, and CMS) for calendar years 1950 through 2019 (2017-2019 being estimated data)
  - Proposed assumptions are based on the more recently released Mortality Improvement Scale MP-2021
  - Impact of change to MP-2021 expected to slightly decrease liabilities (i.e., lower future morality improvement expected)
- **Key factors to consider in selection of mortality assumption**
  a) Characteristics of employees and retirees (e.g., gender, healthy at retirement, disabled at retirement)
  b) The size of the covered population
  c) Characteristics of disabled lives (e.g., gender, historical job classification and definition of disability)
  d) Characteristics of different participant subgroups and beneficiaries (e.g., gender, historical job classification)
- **In setting the assumption, actual participant mortality data should be used to the extent that it is statistically credible, based on limited fluctuation credibility theory**

Demographic Assumptions

Mortality

- **Process for developing recommended mortality assumption for groups with credible experience**

1. Examined year-to-year mortality experience to determine what years, if any, exhibited extraordinary mortality experience due to the COVID-19 pandemic

2. Excluded experience for such years
   - For public safety groups, excluded mortality experience for calendar years 2020 through 2022
   - For all other groups, excluded mortality experience for calendar year 2021

3. For remaining years, we adjusted actual mortality experience consistent with the multiplicative factors applied to baseline death probabilities in the 2025 OASDI Trustees Report

   - For example, actual mortality rates measured for 2023 were divided by 1.01 for individuals 85 and older to arrive at an "adjusted actual rate"

The following table shows the factors used for the 2024 and 2025 Trustees Reports:

Multiplicative Factors Applied to Baseline Death Probabilities[a]

	2024 Trustees Report					2025 Trustees Report				
Year	Age 0	Ages 1-14	Ages 15-64	Ages 65-84	Ages 85+	Age 0	Ages 1-14	Ages 15-64	Ages 65-84	Ages 85+
2020	[b]0.99	[b]1.01	[b]1.19	[b]1.16	[b]1.14	[b]0.98	[b]1.03	[b]1.18	[b]1.16	[b]1.14
2021	[b]1.03	[b]1.11	[b]1.32	[b]1.18	[b]1.07	[b]1.01	[b]1.13	[b]1.32	[b]1.17	[b]1.07
2022	[b]1.03	[b]1.18	[b]1.16	[b]1.10	[b]1.07	[b]1.05	[b]1.22	[b]1.16	[b]1.10	[b]1.07
2023	1.01	1.22	1.08	1.06	1.04	[b]1.05	[b]1.20	[b]1.07	[b]1.03	[b]1.01
2024	1.00	1.06	1.02	1.02	1.01	1.01	1.17	0.99	1.02	0.98
2025	1.00	1.00	1.00	1.00	1.00	1.00	1.09	1.00	1.00	1.00

[a] Baseline death probabilities are the death probabilities that were estimated to have occurred in the absence of the pandemic, at the time assumptions were developed for each Trustees Report.
[b] Based on actual data.

Demographic Assumptions

Mortality

- **Process we took in developing recommended mortality assumption for groups with credible experience (continued)**

4. Identified Pub-2016 standard tables that best fit the adjusted mortality experience (considering group, income, etc.)
    - For each group, generally began with total dataset table corresponding to group (for example, we first compared Teacher mortality experience to the total dataset table for Teachers)
    - Adjusted to alternative standard table in cases where alternative table provided superior fit but also suited characteristics of the underlying population, for example:
        - For Teacher Retirees, used below-median table (A/E ratios of 97.5% for males and 103.8% for females) instead of total dataset table (A/E ratios of 107.4% for males and 107.0% for females)
        - For Public Safety Disabled Members, used General Disabled table (A/E ratio of 101.6%) instead of Safety Disabled table (A/E ratio of 172.7%)
        - For Beneficiaries, used below-median table (A/E ratios of 115.86%/120.46% for males/females) instead of total dataset table (A/E ratios of 128.5%/137.8% for males/females)

5. Identified appropriate age bands for adjustment factors and determined credibility (limited fluctuation credibility theory) of adjusted mortality experience by group and determined potential adjustment factors to apply to selected Pub-2016 standard tables.
    - Determined number of age bands and range of bands such that each band had a relatively significant level of credible experience
    - For example, female Teacher Retirees' experience was split into 4 age bands because the group had a significant number of deaths over the study period. Comparably, very few public safety disabled member deaths were observed over the study period, so males and females in that group were combined and not split into separate age bands.
    - See Appendix for additional detail regarding the different age band groupings used for the study.

Demographic Assumptions

Mortality

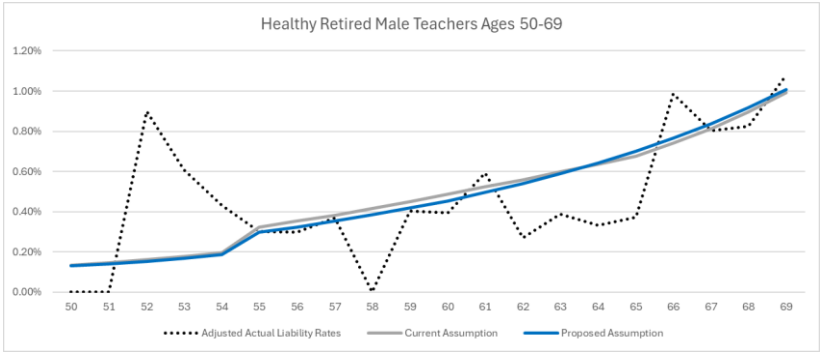
- **Process we took in developing recommended mortality assumption for groups with credible experience (continued**

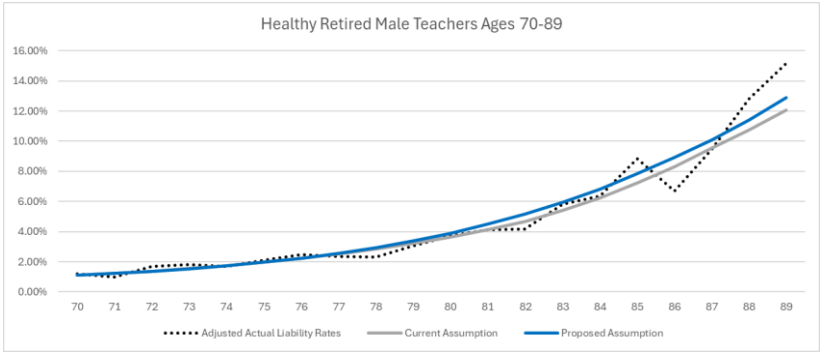
6. Considered further adjustment to standard table mortality rates when potential proposed rates were in substantial disagreement with current assumption
    - For example, original calculated adjustment factor of 100% for public safety retirees was significantly lower than implied by the current assumption (which was a 97% adjustment with a 1-year set forward), so set final adjustment factor to 106%

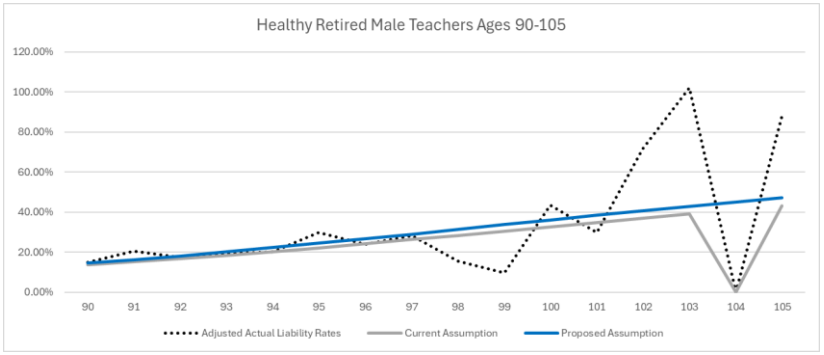
- **For graphs and tables in the remainder of this mortality section:**
    - "Cost Impact" is a high-level summary, which generally describes the impact of our proposed assumption compared to the current assumption
        - For example, "Cost Impact – Increase" is a general statement that our proposed base mortality rates were generally adjusted downwards
            - Lower mortality rates results in longer expected benefit payment periods and higher liabilities
            - Conversely, higher mortality rates result in shorter expected benefit payment periods and lower liabilities (i.e., a "decrease" in cost)

Demographic Assumptions

Mortality - TSERS Teachers – Male Retirees







Adj. Actual	Expected*	A / E	Proposed*	A / P
$496.4M	$484.9M	102.36%	$507.5M	97.81%

Observation: more deaths over the period than expected overall (after adjustments)

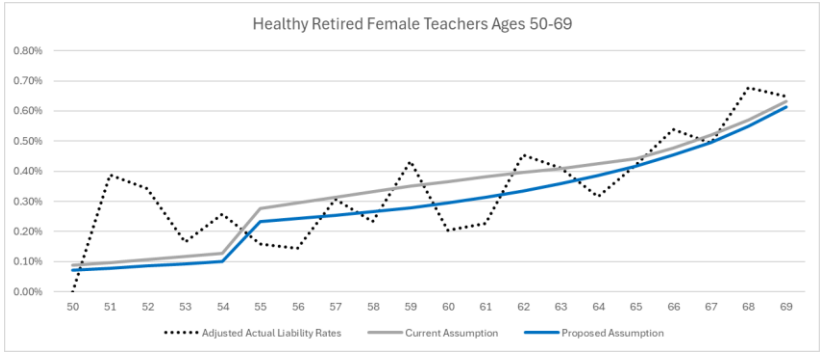
Recommendation: adjust rates, generally upwards to reflect actual experience

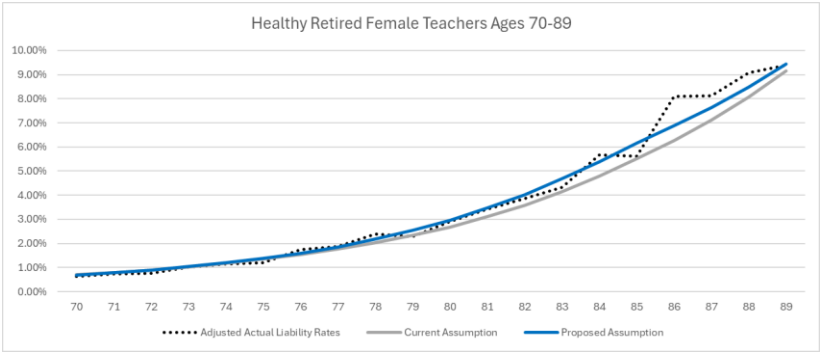
Cost Impact: decrease

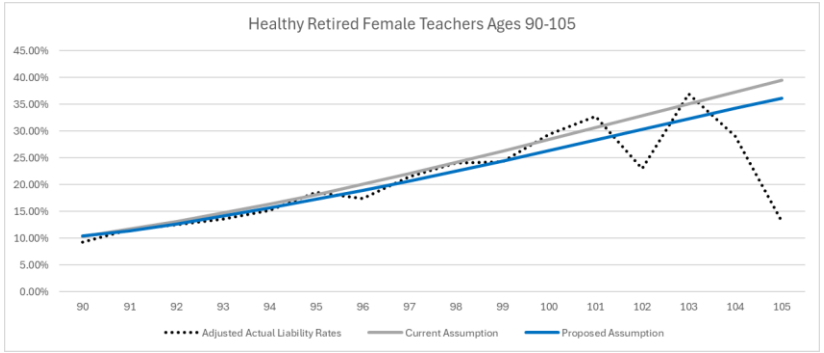
* See Appendix for additional details

Demographic Assumptions

Mortality - TSERS Teachers – Female Retirees







Adj. Actual	Expected*	A / E	Proposed*	A / P
$935.8M	$916.1M	102.15%	$935.7M	100.01%

Observation: more deaths over the period than expected overall (after adjustments)

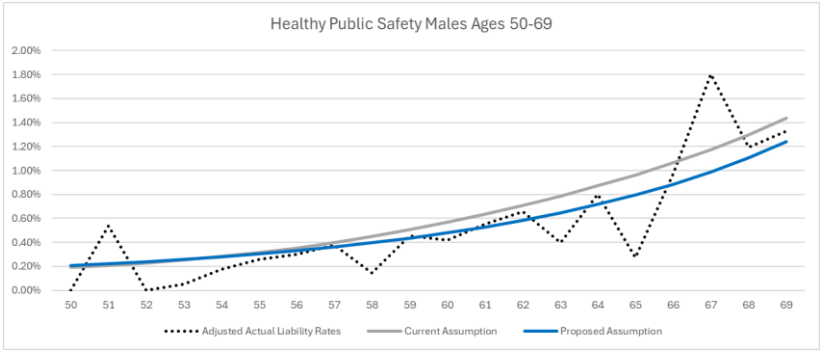
Recommendation: adjust rates, generally upwards after age 70 to reflect actual experience

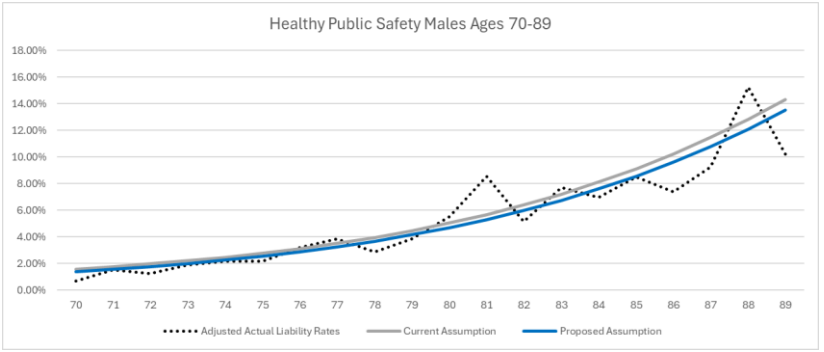
Cost Impact: decrease

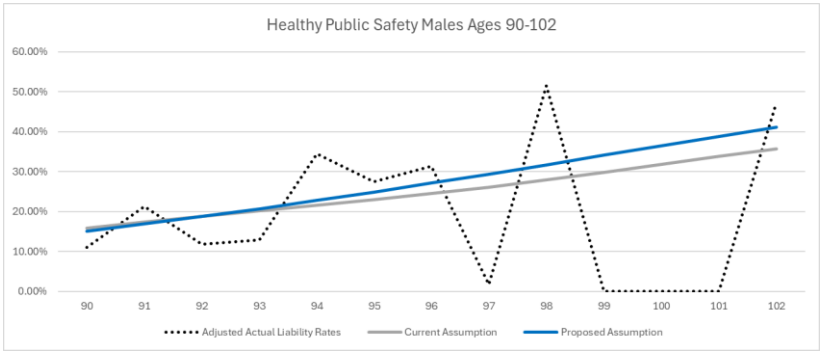
* See Appendix for additional details

Demographic Assumptions

Mortality – TSERS LGERS Public Safety – Male Retirees

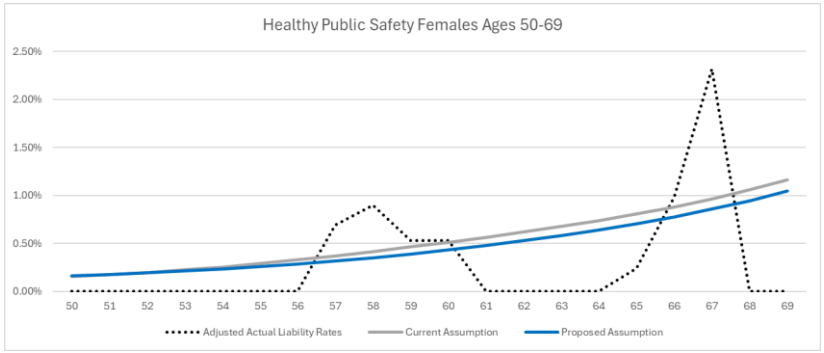


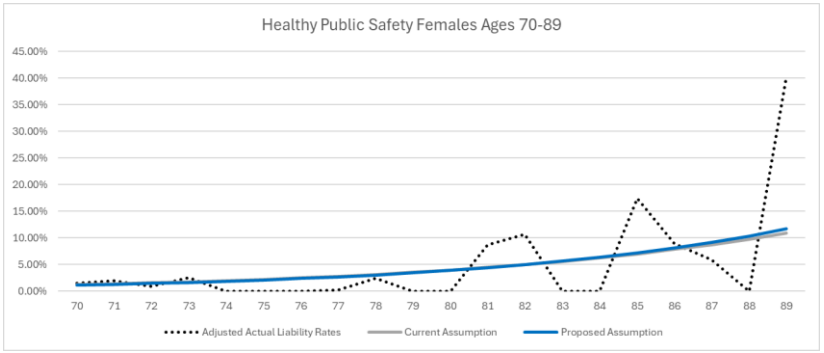




Demographic Assumptions

Mortality – TSERS LGERS Public Safety – Female Retirees





Demographic Assumptions

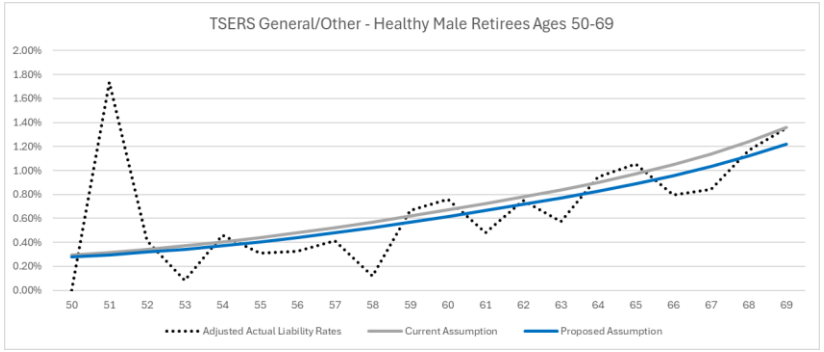
Mortality – TSERS LGERS Public Safety – Male/Female Retirees Combined

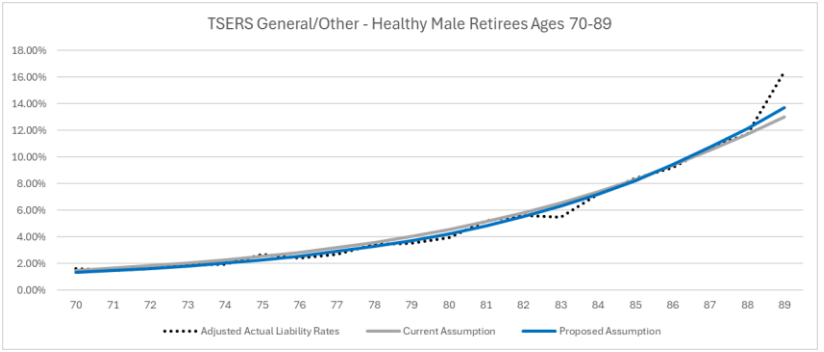
Adj. Actual	Expected*	A / E	Proposed*	A / P
$125.5M	$147.5M	85.12%	$132.9M	94.43%
Observation: fewer deaths over the period than expected overall (after adjustments)				
Recommendation: adjust rates, generally downwards to reflect actual experience				
Cost Impact: increase				

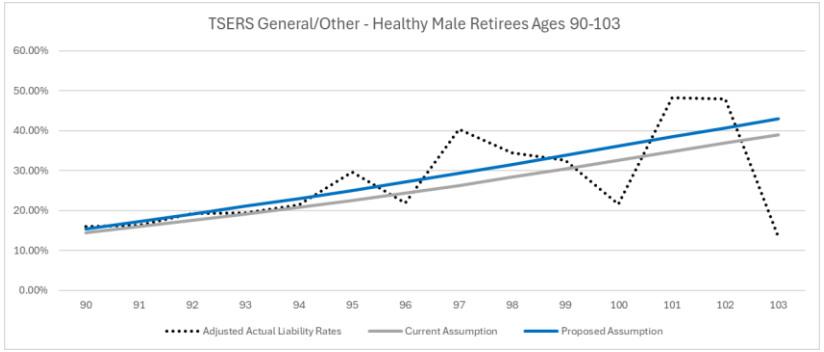
* See Appendix for additional details

Demographic Assumptions

Mortality - TSERS General/Other – Male Retirees







Adj. Actual	Expected*	A / E	Proposed*	A / P
$736.6M	$782.1M	94.19%	$734.7M	100.26%

Observation: fewer deaths over the period than expected overall (after adjustments)

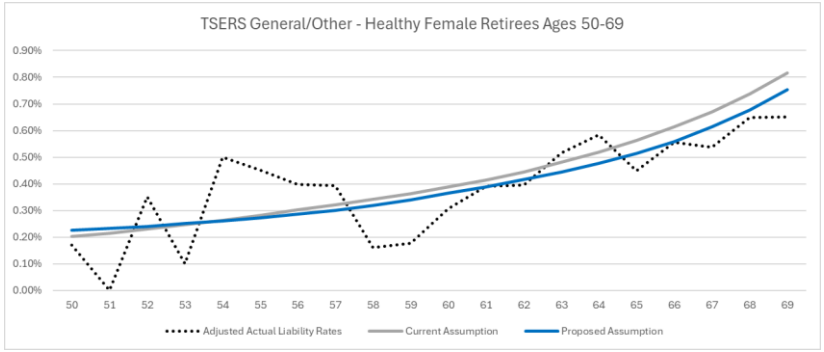
Recommendation: adjust rates, generally downwards to reflect actual experience

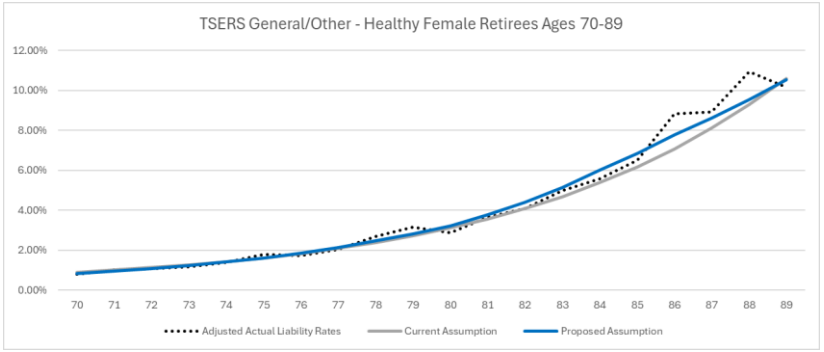
Cost Impact: increase

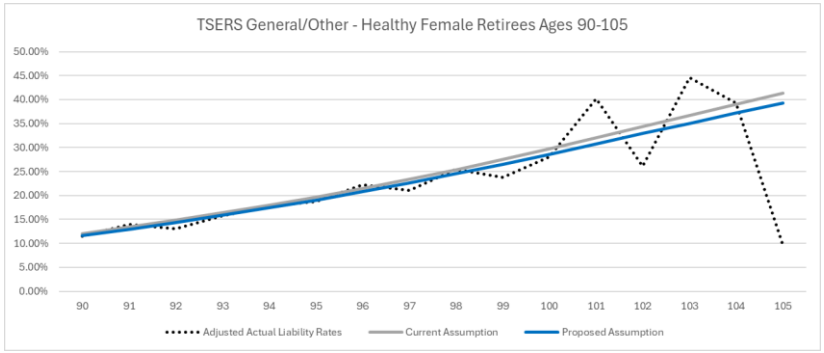
* See Appendix for additional details

Demographic Assumptions

Mortality - TSERS General/Other – Female Retirees







Adj. Actual	Expected*	A / E	Proposed*	A / P
$611.5M	$619.1M	98.77%	$615.4M	99.36%

Observation: fewer deaths over the period than expected overall (after adjustments)

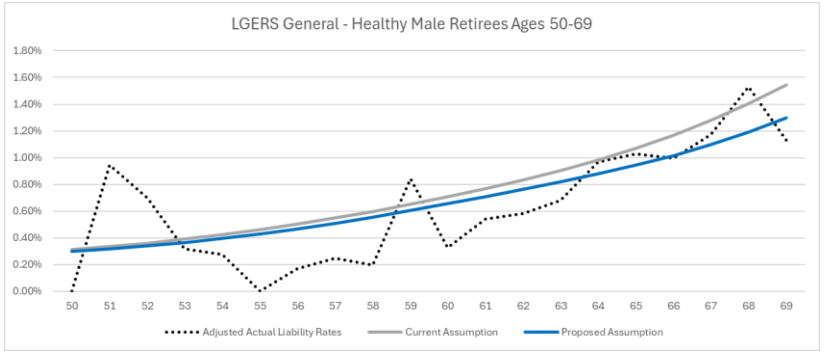
Recommendation: adjust rates, generally downwards to reflect actual experience

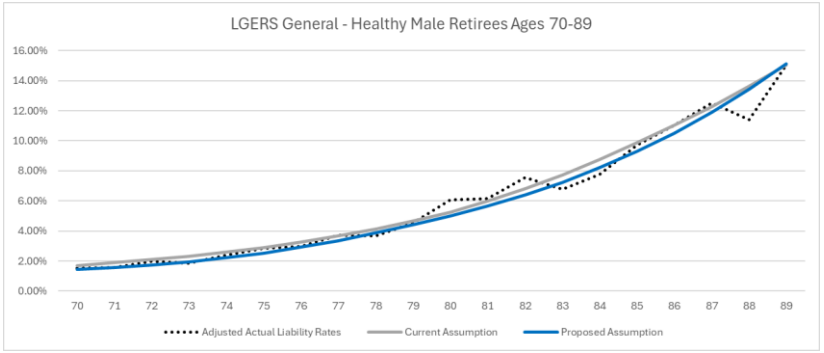
Cost Impact: increase

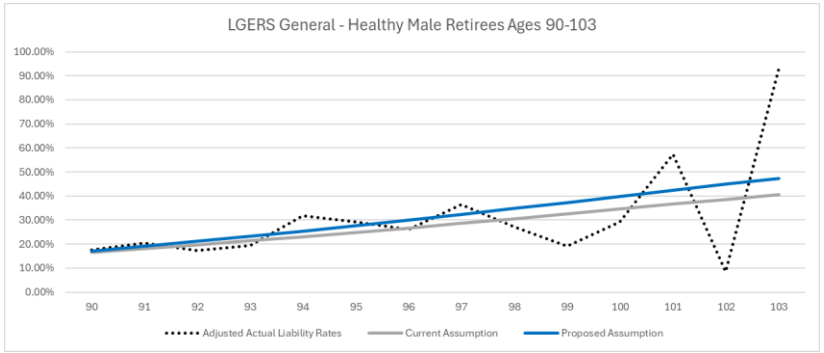
* See Appendix for additional details

Demographic Assumptions

Mortality - LGERS General – Male Retirees







Adj. Actual	Expected*	A / E	Proposed*	A / P
$352.4M	$384.9M	91.56%	$345.9M	101.88%

Observation: fewer deaths over the period than expected overall (after adjustments)

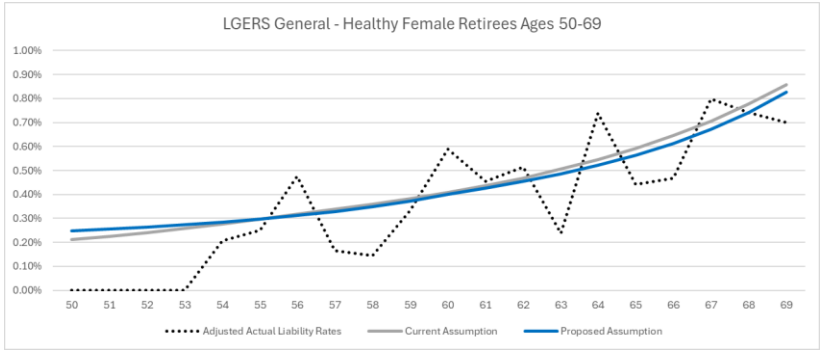
Recommendation: adjust rates, generally downwards to reflect actual experience

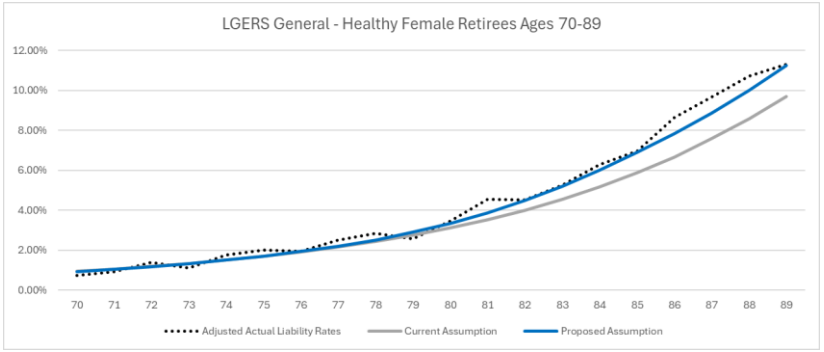
Cost Impact: increase

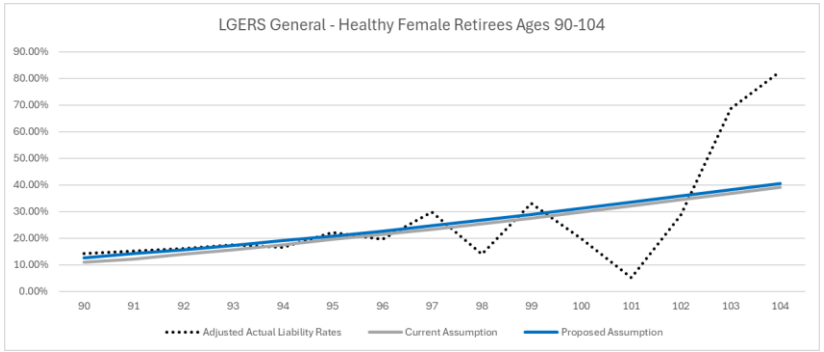
* See Appendix for additional details

Demographic Assumptions

Mortality – LGERS General – Female Retirees







Adj. Actual	Expected*	A / E	Proposed*	A / P
$280.5M	$268.0M	104.63%	$276.8M	101.32%

Observation: more deaths over the period than expected overall (after adjustments)

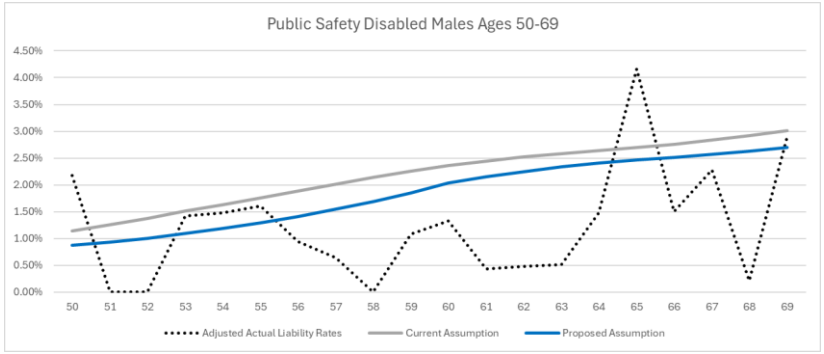
Recommendation: adjust rates, generally upwards to reflect actual experience

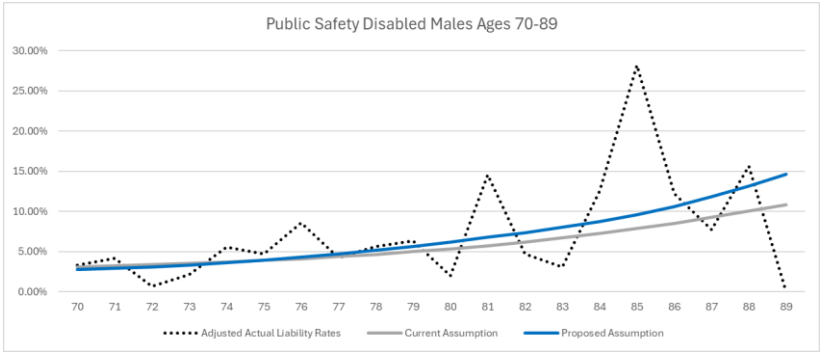
Cost Impact: decrease

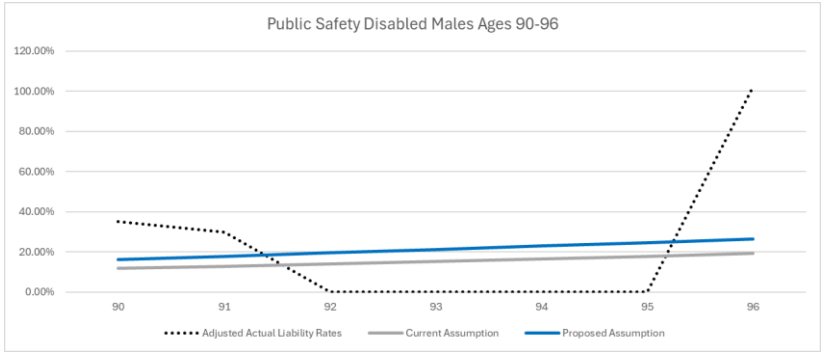
* See Appendix for additional details

Demographic Assumptions

Mortality – TSERS LGERS Public Safety – Male Disabled

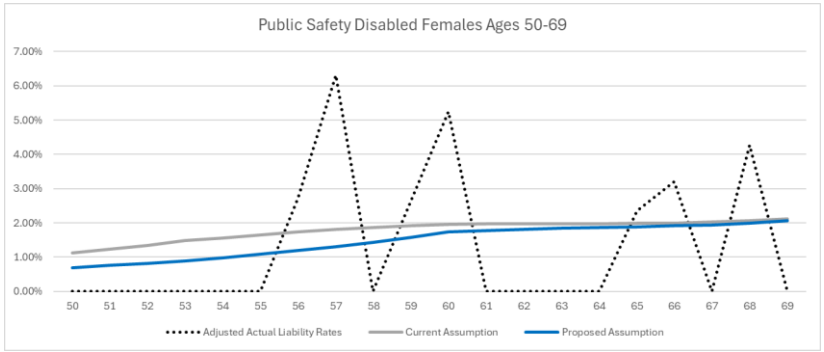


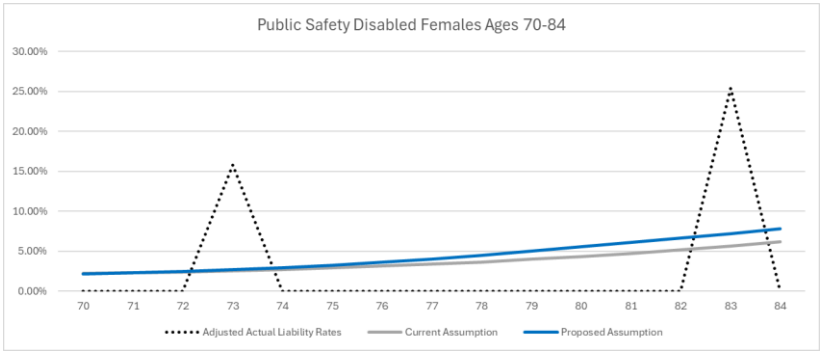




Demographic Assumptions

Mortality – TSERS LGERS Public Safety – Female Disabled





Demographic Assumptions

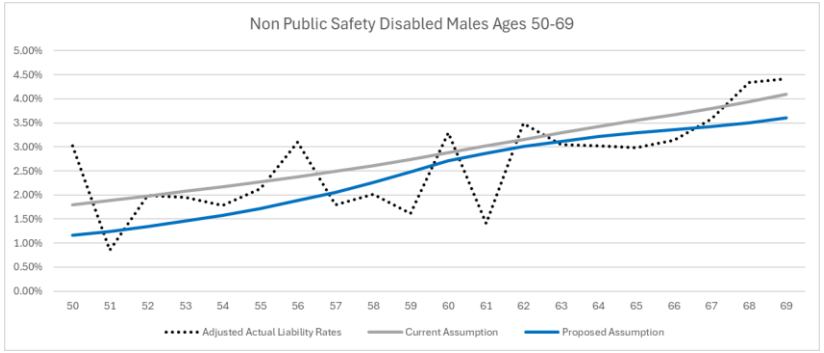
Mortality – TSERS LGERS Public Safety – Male/Female Disabled Combined

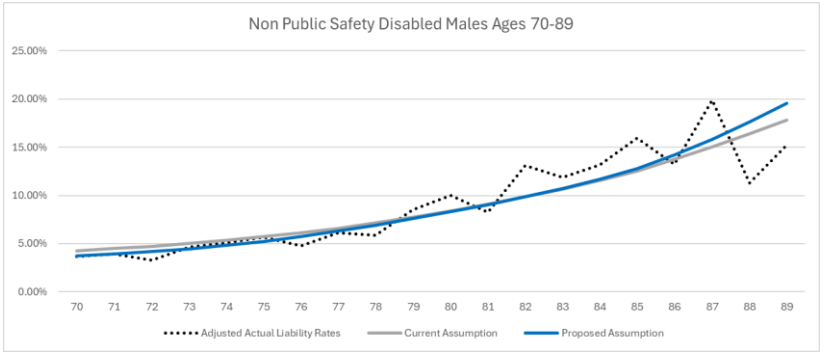
Adj. Actual	Expected*	A / E	Proposed*	A / P
$31.6M	$34.8M	90.74%	$31.4M	100.57%
Observation: fewer deaths over the period than expected overall (after adjustments)				
Recommendation: adjust rates, generally downwards to reflect actual experience				
Cost Impact: increase				

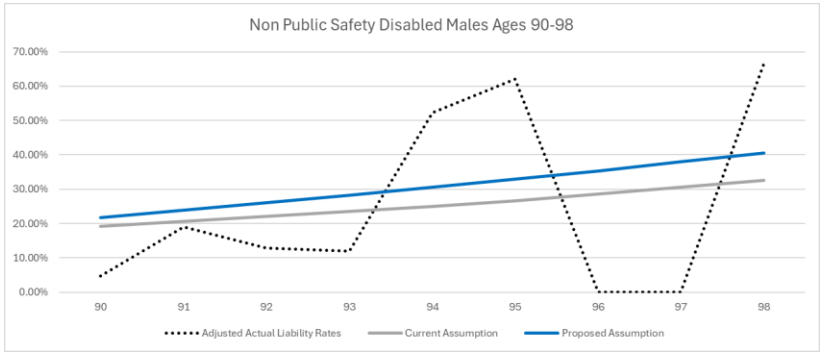
* See Appendix for additional details

Demographic Assumptions

Mortality – TSERS LGERS Non-Public Safety – Male Disabled







Adj. Actual	Expected*	A / E	Proposed*	A / P
$174.3M	$187.7M	92.89%	$170.1M	102.49%

Observation: fewer deaths over the period than expected overall (after adjustments)

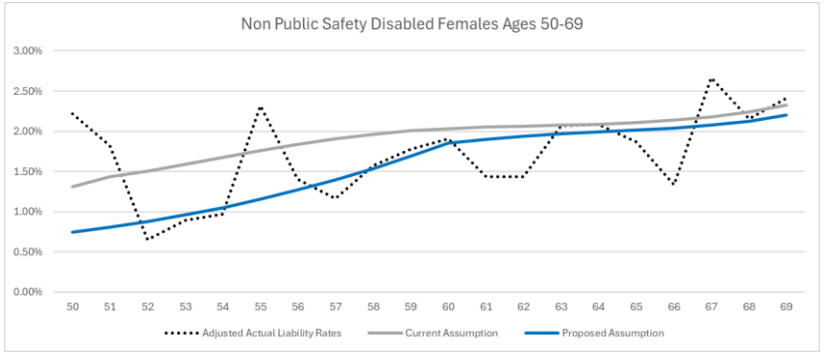
Recommendation: adjust rates, generally downwards to reflect actual experience

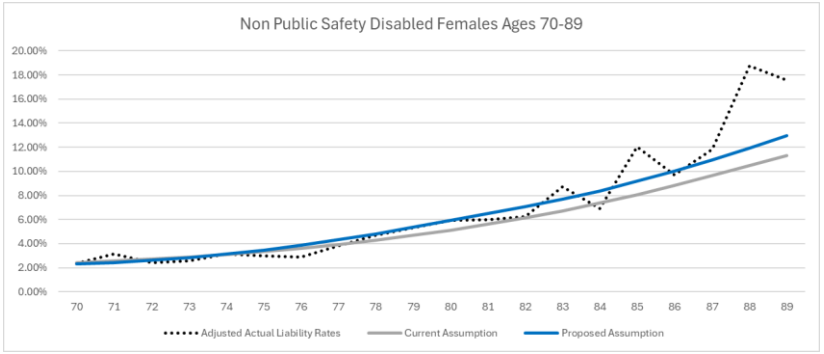
Cost Impact: increase

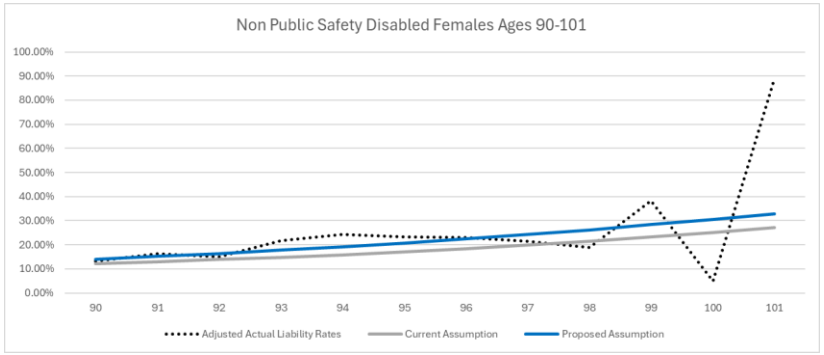
* See Appendix for additional details

Demographic Assumptions

Mortality – TSERS LGERS Non-Public Safety – Female Disabled







Adj. Actual	Expected*	A / E	Proposed*	A / P
$225.2M	$230.4M	97.74%	$224.3M	100.43%

Observation: fewer deaths over the period than expected overall (after adjustments)

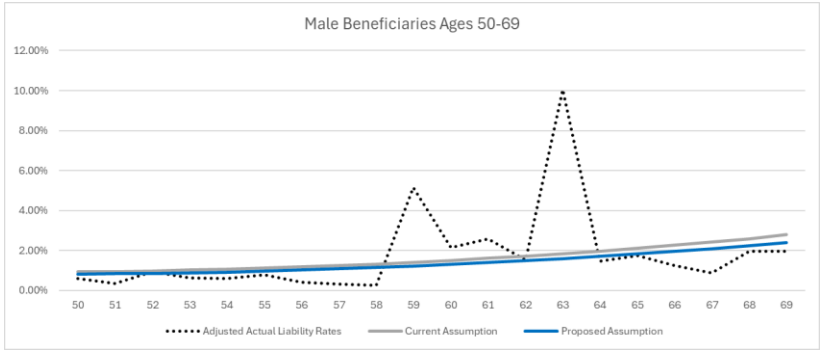
Recommendation: adjust rates, generally downwards to reflect actual experience

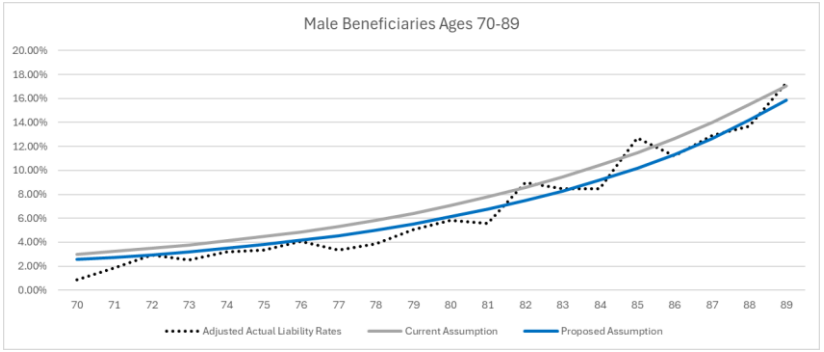
Cost Impact: increase

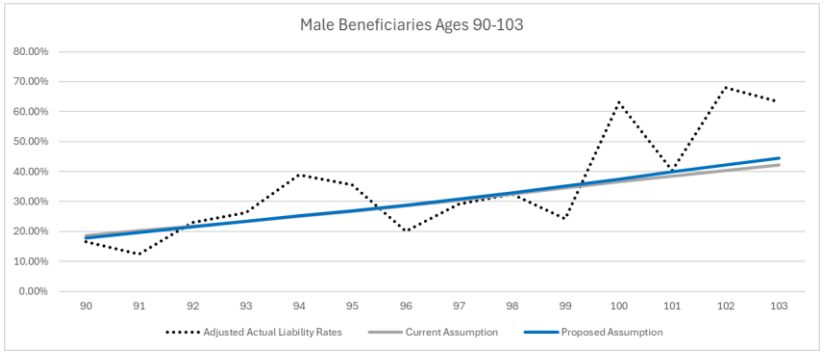
* See Appendix for additional details

Demographic Assumptions

Mortality – TSERS LGERS – Male Beneficiaries







Adj. Actual	Expected*	A / E	Proposed*	A / P
$72.1M	$77.5M	93.02%	$67.8M	106.30%

Observation: fewer deaths over the period than expected overall (after adjustments)

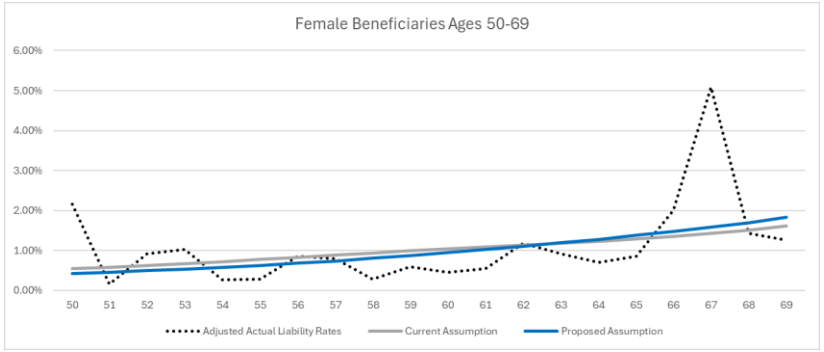
Recommendation: adjust rates, generally downwards to reflect actual experience

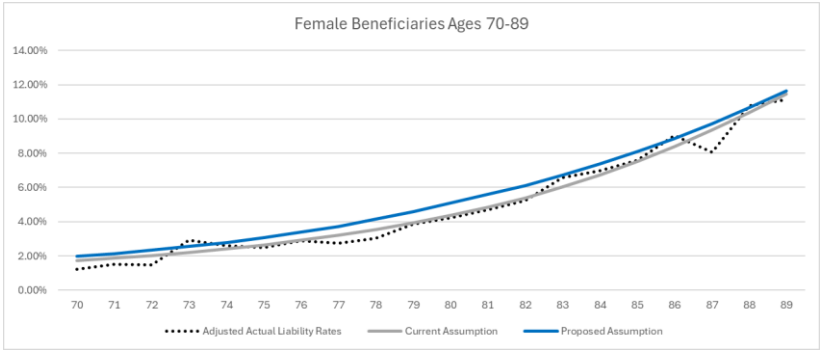
Cost Impact: increase

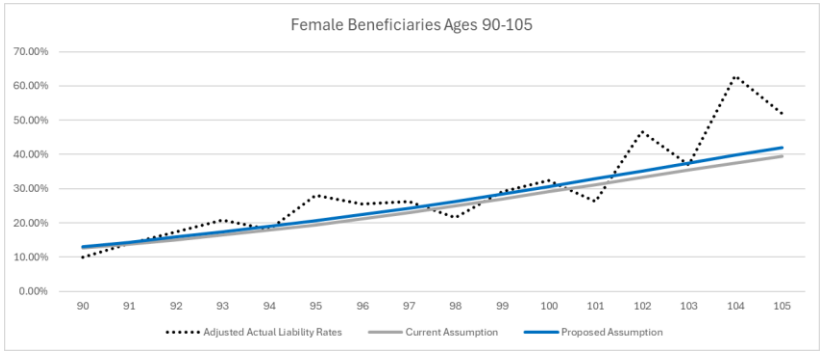
* See Appendix for additional details

Demographic Assumptions

Mortality – TSERS LGERS – Female Beneficiaries







Adj. Actual	Expected*	A / E	Proposed*	A / P
$363.8M	$328.0M	110.92%	$356.9M	101.95%
Observation: more deaths over the period than expected overall (after adjustments)				
Recommendation: adjust rates, generally upwards to reflect actual experience				
Cost Impact: decrease				

* See Appendix for additional details

Demographic Assumptions

Mortality – Summary of Proposed TSERS Mortality Rates

<table>
<tr><th>Group</th><th>Proposed Base Table and Mortality Improvement</th><th>Proposed Adjustments to Base Table</th></tr>
<tr><td>Teachers (Healthy)</td><td>PubT-2016(B) amount-weighted Below-median Teachers Mortality Table projected from 2016 using generational improvement with Scale MP-2021

Employee table prior to Termination

Retiree table for terminated employees and healthy retirees</td><td>Prior to Termination: No adjustments

Healthy Retirees/Terminated Employees:

<table>
<tr><th>Age</th><th>Male Factor</th><th>Female Factor</th><th>Age</th><th>Male Factor</th><th>Female Factor</th></tr>
<tr><td><73</td><td>94%</td><td>99%</td><td>83</td><td>103%</td><td>112%</td></tr>
<tr><td>73</td><td>94%</td><td>101%</td><td>84</td><td>104%</td><td>112%</td></tr>
<tr><td>74</td><td>94%</td><td>103%</td><td>85</td><td>105%</td><td>112%</td></tr>
<tr><td>75</td><td>95%</td><td>105%</td><td>86</td><td>105%</td><td>109%</td></tr>
<tr><td>76</td><td>96%</td><td>107%</td><td>87</td><td>105%</td><td>106%</td></tr>
<tr><td>77</td><td>97%</td><td>109%</td><td>88</td><td>105%</td><td>103%</td></tr>
<tr><td>78</td><td>98%</td><td>111%</td><td>89</td><td>105%</td><td>100%</td></tr>
<tr><td>79</td><td>99%</td><td>111%</td><td>90</td><td>105%</td><td>97%</td></tr>
<tr><td>80</td><td>100%</td><td>111%</td><td>91</td><td>105%</td><td>94%</td></tr>
<tr><td>81</td><td>101%</td><td>111%</td><td>>= 92</td><td>105%</td><td>93%</td></tr>
<tr><td>82</td><td>102%</td><td>111%</td><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>Law Enforcement Officers (Healthy)</td><td>PubS-2016 amount-weighted Safety Mortality Table projected from 2016 using generational improvement with Scale MP-2021

Employee table prior to Termination

Retiree table for terminated employees and healthy retirees</td><td>Prior to Termination: No adjustments

Healthy Retirees/Terminated Employees:
Rates for all members are multiplied by 106%.</td></tr>
</table>

Demographic Assumptions

Mortality – Summary of Proposed TSERS Mortality Rates

<table>
<tr><th>Group</th><th>Proposed Base Table and Mortality Improvement</th><th>Proposed Adjustments to Base Table</th></tr>
<tr><td>General and Other Education (Healthy)</td><td>PubG-2016 amount-weighted General Mortality Table projected from 2016 using generational improvement with Scale MP-2021

Employee table prior to Termination

Retiree table for terminated employees and healthy retirees</td><td>Prior to Termination: No adjustment

Healthy Retirees/Terminated Employees:

<table>
<tr><th>Age</th><th>Male Factor</th><th>Female Factor</th><th>Age</th><th>Male Factor</th><th>Female Factor</th></tr>
<tr><td>< 72</td><td>99%</td><td>94%</td><td>81</td><td>99%</td><td>103%</td></tr>
<tr><td>72</td><td>99%</td><td>95%</td><td>82</td><td>100%</td><td>105%</td></tr>
<tr><td>73</td><td>99%</td><td>96%</td><td>83</td><td>101%</td><td>107%</td></tr>
<tr><td>74</td><td>99%</td><td>97%</td><td>84</td><td>102%</td><td>109%</td></tr>
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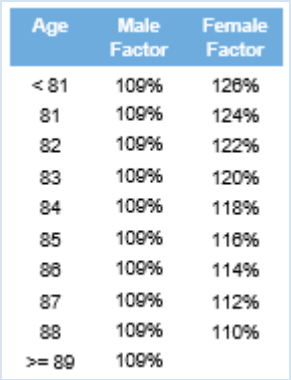
<tr><td>79</td><td>98%</td><td>101%</td><td>89</td><td>105%</td><td>103%</td></tr>
<tr><td>80</td><td>98%</td><td>101%</td><td>>= 90</td><td>105%</td><td>101%</td></tr>
</table>
</td></tr>
<tr><td>Non-Public Safety (Disabled)</td><td>PubNS-2016 amount-weighted Non-Safety Mortality Table for Disabled Retirees projected from 2016 using generational improvement with Scale MP-2021</td><td>Rates for male members are multiplied by 135% for all ages. Rates for female members are multiplied by 108% for all ages.</td></tr>
<tr><td>Law Enforcement Officers (Disabled)</td><td>PubNS-2016 amount-weighted Non-Safety Mortality Table for Disabled Retirees projected from 2016 using generational improvement with Scale MP-2021</td><td>Rates for all members are multiplied by 101%.</td></tr>
</table>

Demographic Assumptions

Mortality – Summary of Proposed TSERS Mortality Rates

Group	Proposed Base Table and Mortality Improvement	Proposed Adjustments to Base Table
Beneficiaries	PubG-2016(B) amount-weighted Below-median General Mortality Table for Contingent Survivors projected from 2016 using generational improvement with Scale MP-2021	

Age	Male Factor	Female Factor
< 81	109%	126%
81	109%	124%
82	109%	122%
83	109%	120%
84	109%	118%
85	109%	116%
86	109%	114%
87	109%	112%
88	109%	110%
>= 89	109%	

Demographic Assumptions

Mortality – Summary of Proposed LGERS Mortality Rates

<table>
<tr><th>Group</th><th>Proposed Base Table and Mortality Improvement</th><th>Proposed Adjustments to Base Table</th></tr>
<tr><td>General (Healthy)</td><td>PubG-2016 amount-weighted General Mortality Table projected from 2016 using generational improvement with Scale MP-2021

Employee table prior to Termination

Retiree table for terminated employees and healthy retirees</td><td>Prior to Termination: No adjustment

Healthy Retirees/Terminated Employees:
<table>
<tr><th>Age</th><th>Male Factor</th><th>Female Factor</th><th>Age</th><th>Male Factor</th><th>Female Factor</th></tr>
<tr><td>< 72</td><td>105%</td><td>103%</td><td>79</td><td>116%</td><td>104%</td></tr>
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<tr><td>73</td><td>105%</td><td>103%</td><td>81</td><td>116%</td><td>106%</td></tr>
<tr><td>74</td><td>107%</td><td>103%</td><td>82</td><td>116%</td><td>107%</td></tr>
<tr><td>75</td><td>109%</td><td>103%</td><td>83</td><td>116%</td><td>108%</td></tr>
<tr><td>76</td><td>111%</td><td>103%</td><td>84</td><td>116%</td><td>109%</td></tr>
<tr><td>77</td><td>113%</td><td>103%</td><td>>= 85</td><td>116%</td><td>110%</td></tr>
<tr><td>78</td><td>115%</td><td>103%</td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>Firefighters, Rescue Squad Workers & Law Enforcement Officers (Healthy)</td><td>PubS-2016 amount-weighted Safety Mortality Table projected from 2016 using generational improvement with Scale MP-2021

Employee table prior to Termination

Retiree table for terminated employees and healthy retirees</td><td>Prior to Termination: No adjustments

Healthy Retirees/Terminated Employees:
Rates for all members are multiplied by 106%.</td></tr>
</table>

Demographic Assumptions

Mortality – Summary of Proposed LGERS Mortality Rates

<table>
<tr><th>Group</th><th>Proposed Base Table and Mortality Improvement</th><th>Proposed Adjustments to Base Table</th></tr>
<tr><td>Non-Public Safety (Disabled Retirees)</td><td>PubNS-2016 amount-weighted Non-Safety Mortality Table for Disabled Retirees projected from 2016 using generational improvement with Scale MP-2021</td><td>Rates for male members are multiplied by 135% for all ages. Rates for female members are multiplied by 108% for all ages.</td></tr>
<tr><td>Firefighters, Rescue Squad Workers & Law Enforcement Officers (Disabled Retirees)</td><td>PubNS-2016 amount-weighted Non-Safety Mortality Table for Disabled Retirees projected from 2016 using generational improvement with Scale MP-2021</td><td>Rates for all members are multiplied by 101%.</td></tr>
<tr><td>Beneficiaries</td><td>PubG-2016(B) amount-weighted Below-median General Mortality Table for Contingent Survivors projected from 2016 using generational improvement with Scale MP-2021</td><td>
<table>
<tr><th>Age</th><th>Male Factor</th><th>Female Factor</th></tr>
<tr><td>< 81</td><td>109%</td><td>126%</td></tr>
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<tr><td>87</td><td>109%</td><td>112%</td></tr>
<tr><td>88</td><td>109%</td><td>110%</td></tr>
<tr><td>>= 89</td><td>109%</td><td></td></tr>
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</td></tr>
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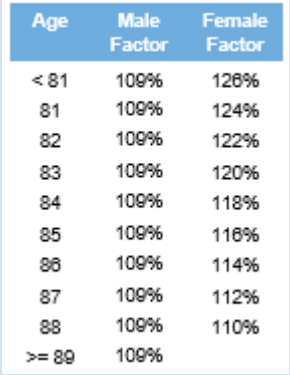
Demographic Assumptions

Mortality – Summary of Proposed LRS & CJRS Mortality Rates

Group	Proposed Base Table and Mortality Improvement	Proposed Adjustments to Base Table
Healthy Retirees and Terminated Employees	PubG-2016(A) amount-weighted Above-Median General Mortality Table for Retirees projected from 2016 using generational improvement with Scale MP-2021	No Adjustments
Non-Public Safety (Disabled Retirees)	PubNS-2016 amount-weighted Non-Safety Mortality Table for Disabled Retirees projected from 2016 using generational improvement with Scale MP-2021	No Adjustments
Active Employees	PubG-2016 amount-weighted General Mortality Table for Employees projected from 2016 using generational improvement with Scale MP-2021	No Adjustments

Demographic Assumptions

Mortality – Summary of Proposed LRS & CJRS Mortality Rates

Group	Proposed Base Table and Mortality Improvement	Proposed Adjustments to Base Table
Beneficiaries	PubG-2016(B) amount-weighted Below-median General Mortality Table for Contingent Survivors projected from 2016 using generational improvement with Scale MP-2021	

Age	Male Factor	Female Factor
< 81	109%	126%
81	109%	124%
82	109%	122%
83	109%	120%
84	109%	118%
85	109%	116%
86	109%	114%
87	109%	112%
88	109%	110%
>= 89	109%	

Demographic Assumptions

Mortality – Summary of Proposed NGPF Mortality Rates

<table>
<tr><th>Group</th><th>Proposed Base Table and Mortality Improvement</th><th>Proposed Adjustments to Base Table</th></tr>
<tr><td>Healthy Retirees and Terminated Employees</td><td>PubG-2016 amount-weighted General Mortality Table for Retirees projected from 2016 using generational improvement with Scale MP-2021</td><td>
<table>
<tr><th>Age</th><th>Male Factor</th><th>Female Factor</th><th>Age</th><th>Male Factor</th><th>Female Factor</th></tr>
<tr><td>< 72</td><td>99%</td><td>94%</td><td>81</td><td>99%</td><td>103%</td></tr>
<tr><td>72</td><td>99%</td><td>95%</td><td>82</td><td>100%</td><td>105%</td></tr>
<tr><td>73</td><td>99%</td><td>96%</td><td>83</td><td>101%</td><td>107%</td></tr>
<tr><td>74</td><td>99%</td><td>97%</td><td>84</td><td>102%</td><td>109%</td></tr>
<tr><td>75</td><td>98%</td><td>98%</td><td>85</td><td>103%</td><td>109%</td></tr>
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<tr><td>80</td><td>98%</td><td>101%</td><td>>= 90</td><td>105%</td><td>101%</td></tr>
</table>
</td></tr>
<tr><td>Active Employees</td><td>PubG-2016 amount-weighted General Mortality Table for Employees projected from 2016 using generational improvement with Scale MP-2021</td><td>No Adjustments</td></tr>
</table>

Demographic Assumptions

Mortality – Summary of Proposed NGPF Mortality Rates

Group	Proposed Base Table and Mortality Improvement	Proposed Adjustments to Base Table
Beneficiaries	PubG-2016(B) amount-weighted Below-median General Mortality Table for Contingent Survivors projected from 2016 using generational improvement with Scale MP-2021	See table below

Age	Male Factor	Female Factor
< 81	109%	126%
81	109%	124%
82	109%	122%
83	109%	120%
84	109%	118%
85	109%	116%
86	109%	114%
87	109%	112%
88	109%	110%
>= 89	109%	

Demographic Assumptions

Mortality – Summary of Proposed FRSWPF Mortality Rates

Group	Proposed Base Table and Mortality Improvement	Proposed Adjustments to Base Table
Healthy Retirees and Terminated Employees	PubS-2016 amount-weighted Safety Mortality Table for Retirees projected from 2016 using generational improvement with Scale MP-2021	Rates for all members are multiplied by 106%.
Disabled Retirees	PubNS-2016 amount-weighted Non-Safety Mortality Table for Disabled Retirees projected from 2016 using generational improvement with Scale MP-2021	Rates for all members are multiplied by 101%.
Active Employees	PubS-2016 amount-weighted Safety Mortality Table for Employees projected from 2016 using generational improvement with Scale MP-2021	No Adjustments

Demographic Assumptions

Mortality – Summary of Proposed FRSWPF Mortality Rates

Group	Proposed Base Table and Mortality Improvement	Proposed Adjustments to Base Table
Beneficiaries	PubG-2016(B) amount-weighted Below-median General Mortality Table for Contingent Survivors projected from 2016 using generational improvement with Scale MP-2021	See table below

Age	Male Factor	Female Factor
< 81	109%	126%
81	109%	124%
82	109%	122%
83	109%	120%
84	109%	118%
85	109%	116%
86	109%	114%
87	109%	112%
88	109%	110%
>= 89	109%	

Demographic Assumptions

Mortality – Summary of Proposed RODSPF Mortality Rates

<table>
<tr><th>Group</th><th>Proposed Base Table and Mortality Improvement</th><th>Proposed Adjustments to Base Table</th></tr>
<tr><td>Healthy Retirees and Terminated Employees</td><td>PubG-2016 amount-weighted General Mortality Table projected from 2016 using generational improvement with Scale MP-2021

Employee table prior to Termination

Retiree table for terminated employees and healthy retirees</td><td>Prior to Termination: No adjustment

Healthy Retirees/Terminated Employees:
<table>
<tr><th>Age</th><th>Male Factor</th><th>Female Factor</th><th>Age</th><th>Male Factor</th><th>Female Factor</th></tr>
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<tr><td>78</td><td>115%</td><td>103%</td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>Disabled Retirees</td><td>PubNS-2016 amount-weighted Non-Safety Mortality Table for Disabled Retirees projected from 2016 using generational improvement with Scale MP-2021</td><td>Rates for male members are multiplied by 135% for all ages. Rates for female members are multiplied by 108% for all ages.</td></tr>
</table>

Demographic Assumptions

Mortality – Summary of Proposed RODSPF Mortality Rates

<table>
<tr><th>Group</th><th>Proposed Base Table and Mortality Improvement</th><th>Proposed Adjustments to Base Table</th></tr>
<tr><td>Active Employees</td><td>PubG-2016 amount-weighted General Mortality Table for Employees projected from 2016 using generational improvement with Scale MP-2021</td><td>No Adjustments</td></tr>
<tr><td>Beneficiaries</td><td>PubG-2016(B) amount-weighted Below-median General Mortality Table for Contingent Survivors projected from 2016 using generational improvement with Scale MP-2021</td><td>
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<tr><th>Age</th><th>Male Factor</th><th>Female Factor</th></tr>
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<tr><td>>= 89</td><td>109%</td><td></td></tr>
</table>
</td></tr>
</table>

Demographic Assumptions

Retirement

Demographic Assumptions

Retirement

- **Retirement rates vary by age, gender, employee group and type of retirement (i.e., reduced and unreduced)**
- **Assumption dictates the expected ages and/or service levels at which members will commence their retirement benefit**
- **Key factors to consider in selection of retirement assumption**
    a) Employer-specific or job-related factors
    b) Plan design
    c) Social Security, Medicare or other non-employer-sponsored benefit programs
    d) Other employer-sponsored postretirement benefit programs
- **Current assumption – based on the recommendation made in the prior experience study**
- **Proposed assumption – set assumption based on a blend of experience over the study period and the current assumption**

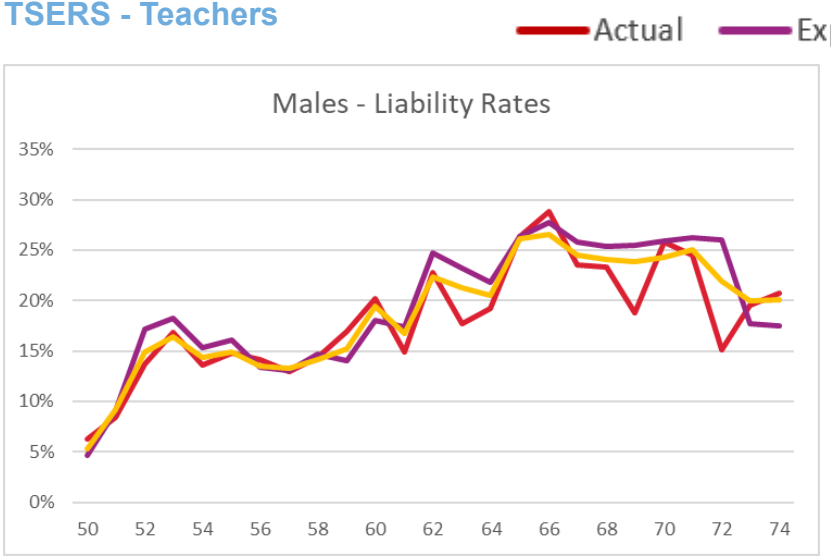
Demographic Assumptions

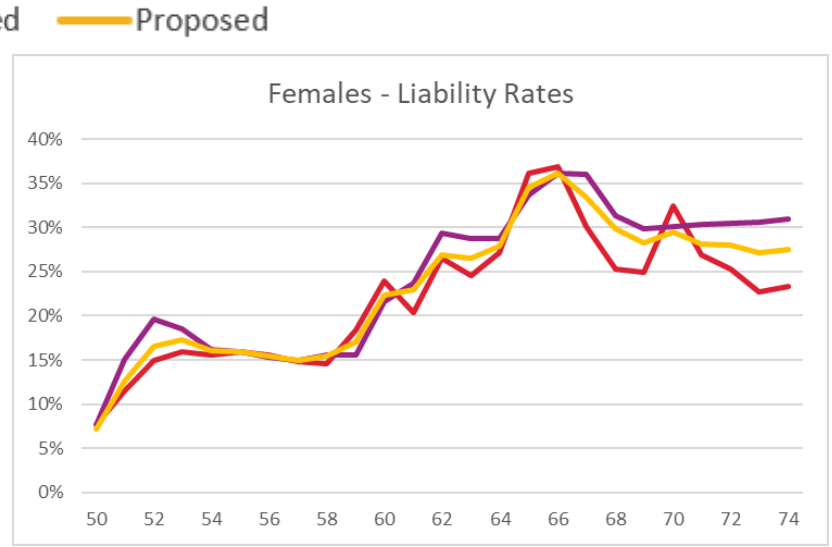
Retirement

- **For graphs and tables in the remainder of this Retirement section:**
  - "Cost Impact" is a high-level summary, which generally describes the impact of our proposed assumption compared to the current assumption
    - For example, "Cost Impact – Increase" is a general statement that our proposed retirement rates were generally adjusted upwards
      - Higher incidence of retirement generally corresponds with members commencing their benefit sooner with fully or partially subsidized retirement benefits, which are generally more valuable than delayed retirement with additional benefit accruals

Demographic Assumptions

Retirement
TSERS - Teachers





Group	Actual	Expected	A / E	Proposed	A / P
Males	$1.26B	$1.46B	85.97%	$1.41B	89.02%
Females	$5.06B	$5.50B	91.83%	$5.27B	95.97%

Observation: fewer retirements over the period than expected overall

Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: decrease

Demographic Assumptions

Retirement
TSERS - General

Group	Actual	Expected	A / E	Proposed	A / P
Males	$2.23B	$2.72B	82.02%	$2.48B	89.86%
Females	$2.65B	$3.00B	88.40%	$2.86B	92.80%

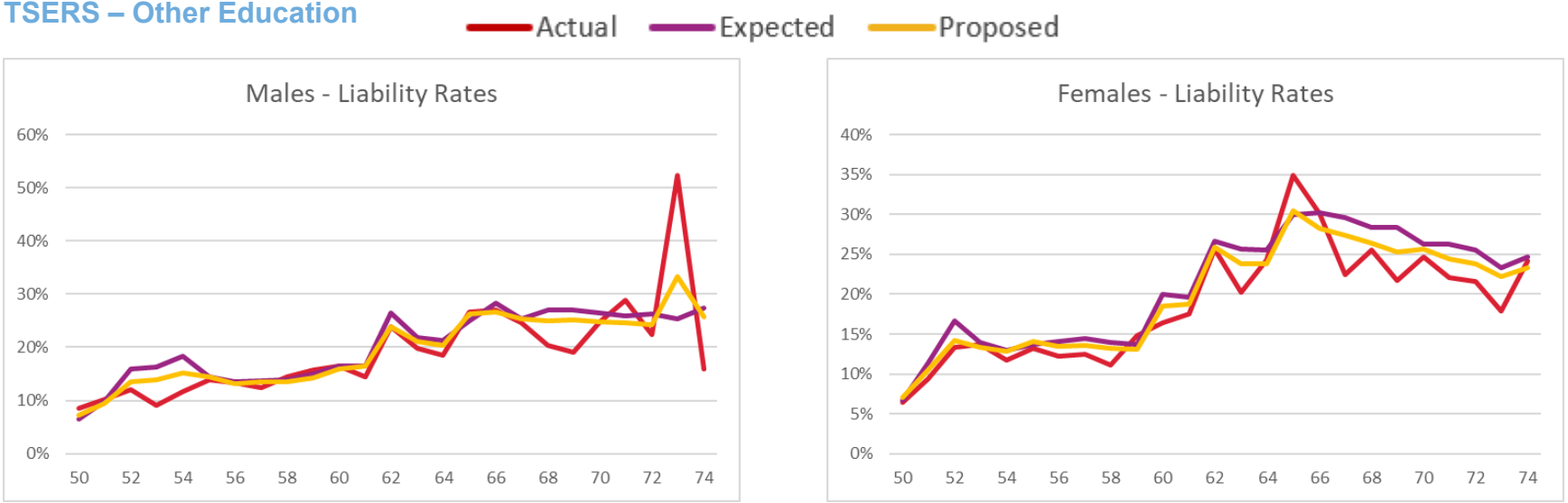
Observation: fewer retirements over the period than expected overall

Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: decrease

Demographic Assumptions

Retirement
TSERS – Other Education



Group	Actual	Expected	A / E	Proposed	A / P
Males	$814.0M	$939.0M	86.69%	$894.3M	91.02%
Females	$1.70B	$1.91B	88.86%	$1.82B	93.53%

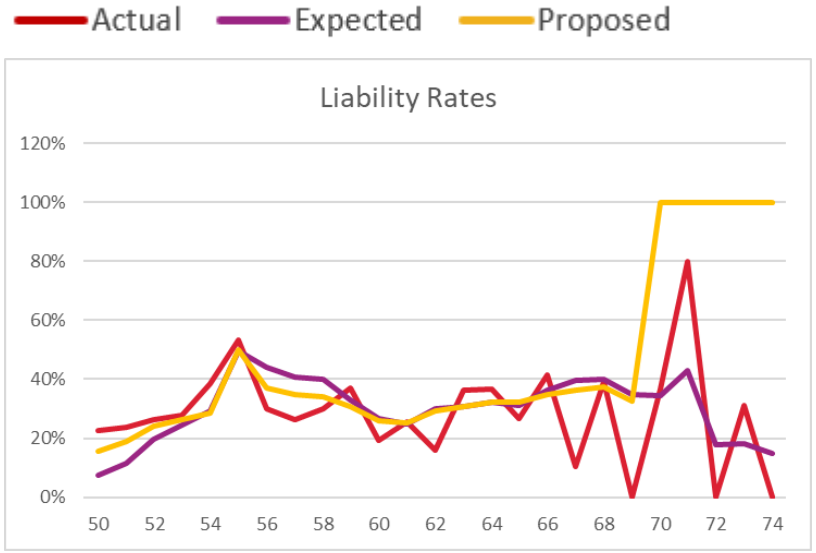
Observation: fewer retirements over the period than expected overall

Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: decrease

Demographic Assumptions

Retirement
TSERS – LEO

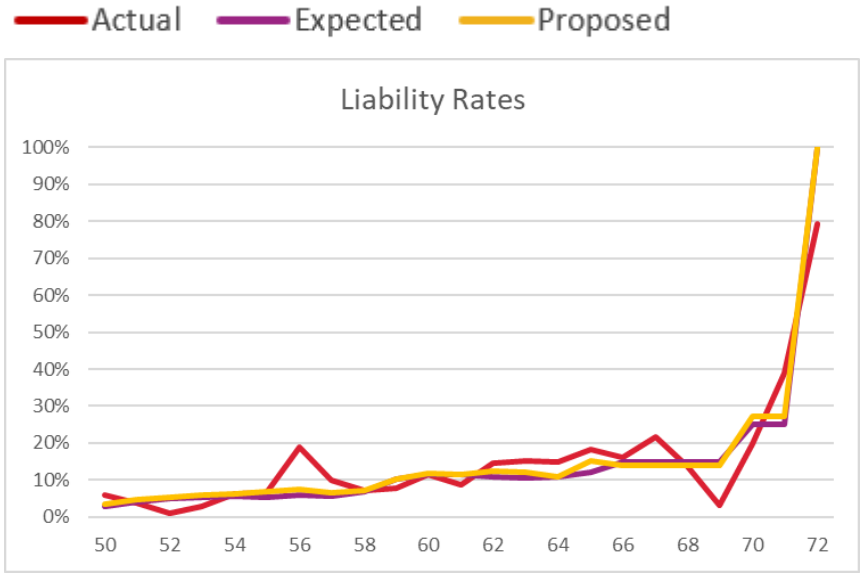


Observation: more retirements over the period than expected overall
Recommendation: adjust rates, generally upwards to reflect actual experience
Cost Impact: increase

Group	Actual	Expected	A / E	Proposed	A / P
Total	$459.2M	$356.9M	128.68%	$409.4M	112.17%

Demographic Assumptions

Retirement
CJRS



Observation: more retirements over the period than expected overall

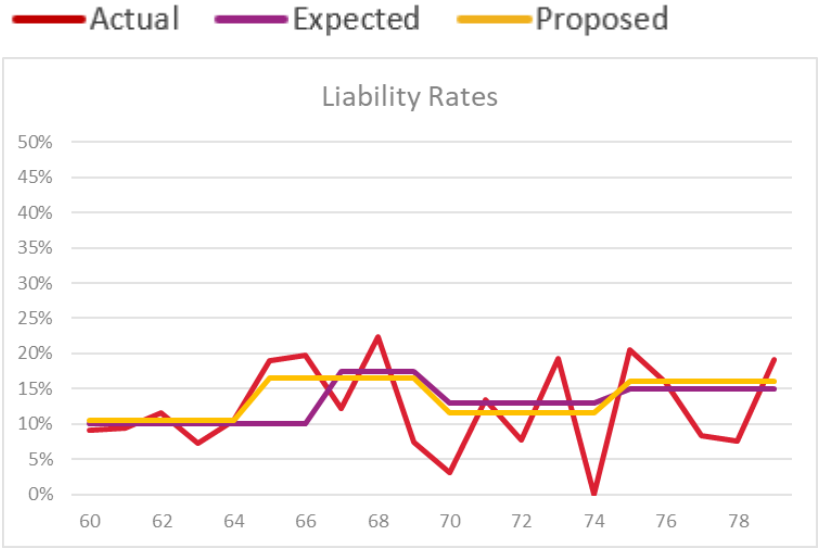
Recommendation: adjust rates, generally upwards to reflect actual experience

Cost Impact: increase

Group	Actual	Expected	A / E	Proposed	A / P
Total	$157.3M	$153.2M	102.70%	$161.7M	97.27%

Demographic Assumptions

Retirement
LRS



Observation: fewer retirements over the period than expected overall

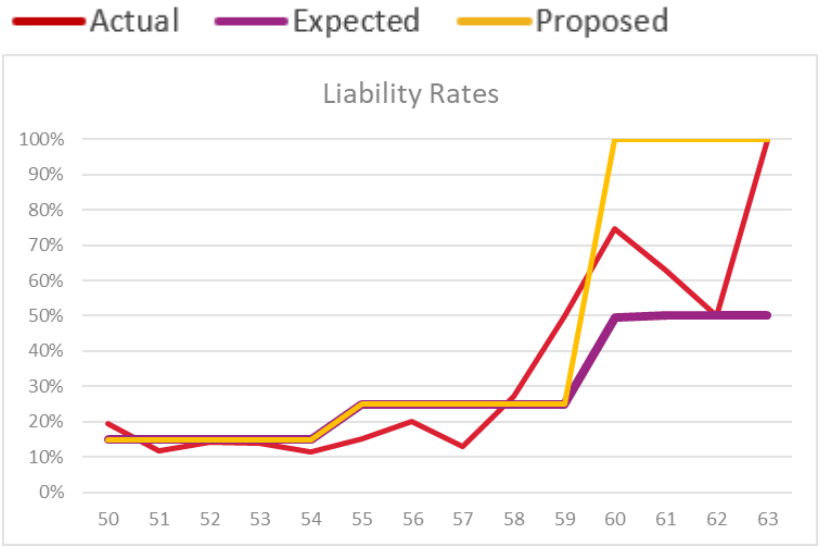
Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: decrease

Group	Actual	Expected	A / E	Proposed	A / P
Total	$2.81M	$4.84M	58.14%	$4.94M	57.00%

Demographic Assumptions

Retirement
NGPF



Observation: actual retirements generally in line with expected over the period

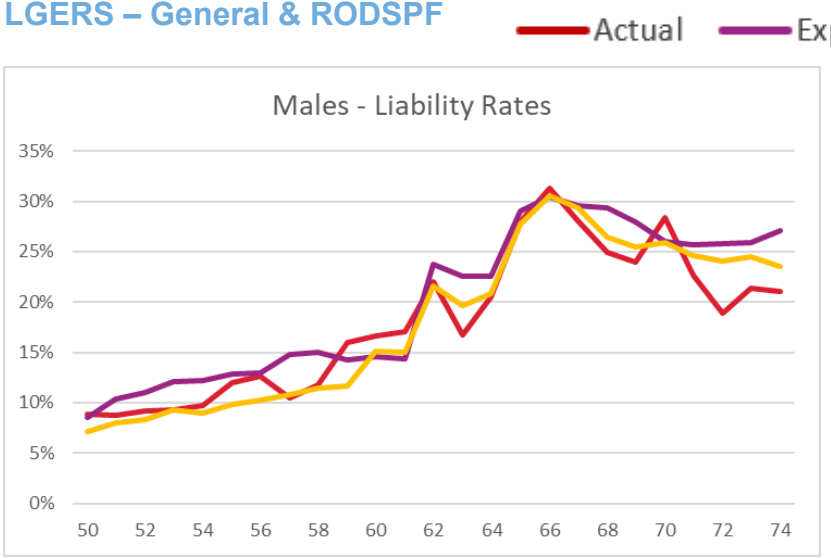
Recommendation: leave rates generally unchanged, except increase assumed retirement probability to 100% at age 60

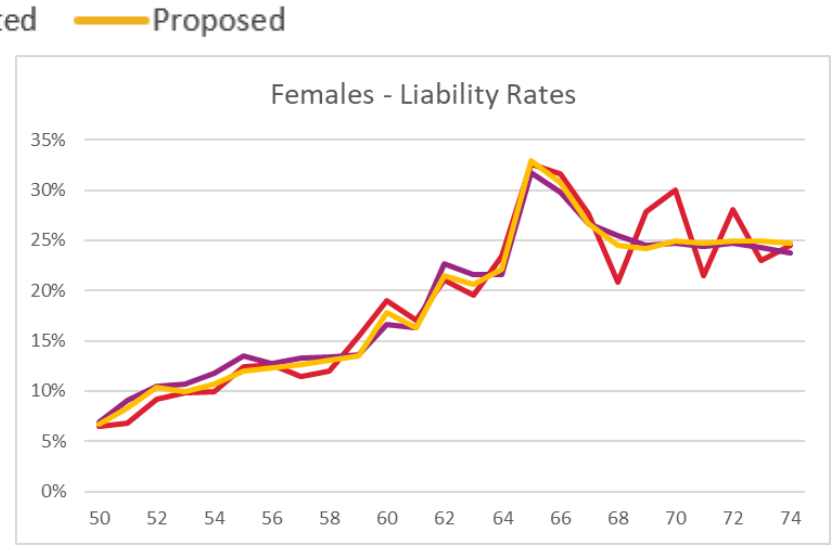
Cost Impact: increase

Group	Actual	Expected	A / E	Proposed	A / P
Total	$5.64M	$5.59M	100.89%	$6.36M	88.67%

Demographic Assumptions

Retirement
LGERS – General & RODSPF





Group	Actual	Expected	A / E	Proposed	A / P
Males	$1.81B	$1.97B	91.94%	$1.92B	94.75%
Females	$2.17B	$2.22B	97.69%	$2.23B	97.21%

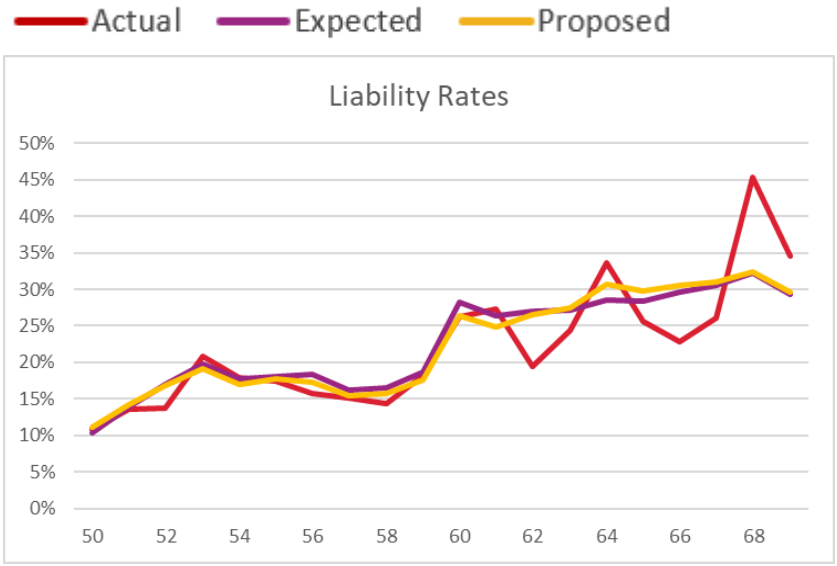
Observation: slightly fewer retirements over the period than expected overall

Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: slight decrease

Demographic Assumptions

Retirement
LGERS – Fire & Rescue



Observation: slightly fewer retirements over the period than expected overall

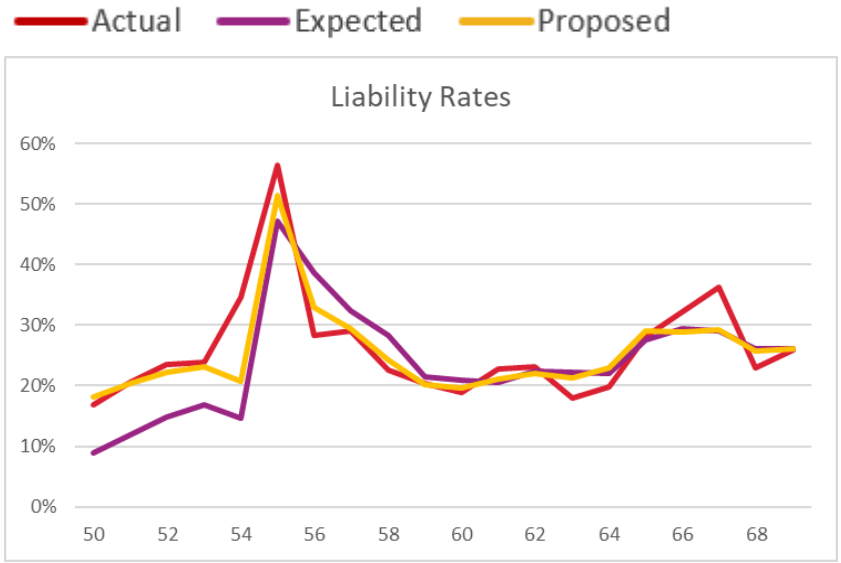
Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: slight decrease

Group	Actual	Expected	A / E	Proposed	A / P
Total	$500.96M	$520.61M	96.23%	$517.90M	96.73%

Demographic Assumptions

Retirement
LGERS – LEO



Observation: more retirements over the period than expected overall, mostly at reduced retirement ages

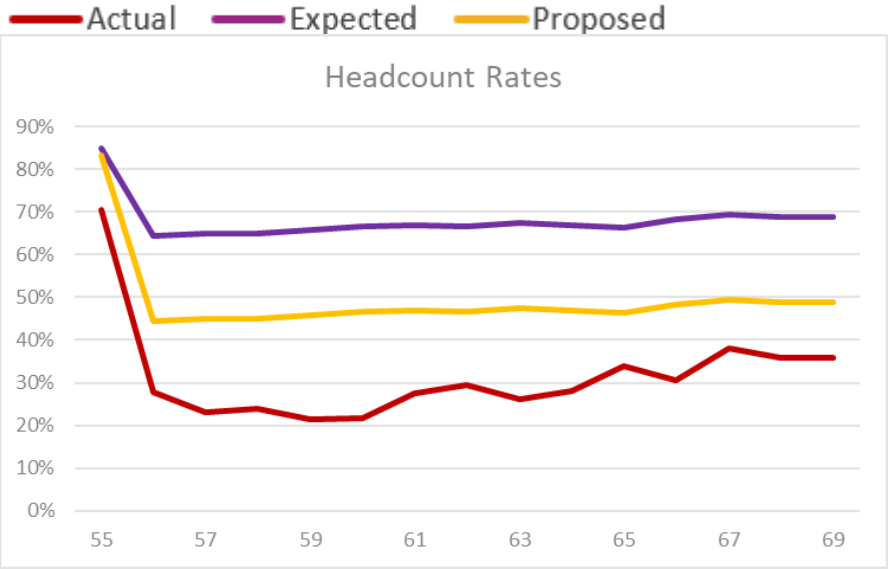
Recommendation: adjust rates, generally upwards to reflect actual experience

Cost Impact: decrease due to more than expected reduced retirements

Group	Actual	Expected	A / E	Proposed	A / P
Total	$1.47B	$1.04B	141.22%	$1.40B	104.60%

Demographic Assumptions

Retirement
FRSWPF



Observation: fewer retirements over the period than expected overall

Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: decrease

Group	Actual	Expected	A / E	Proposed	A / P
Total	1,554	2,692	57.73%	2,286	67.99%

Demographic Assumptions

Termination

Demographic Assumptions

Termination

- **Termination (or withdrawal) pertains to situations where covered members leave employment prior to attainment of retirement eligibility for reasons other than death or disability**
- **Assumption dictates the expected ages and/or service levels at which members will terminate employment prior to attainment of retirement eligibility for reasons other than death or disability**
- **Key factors to consider in selection of termination assumption**
    a) Employer-specific or job-related factors
    b) Plan design – particularly early retirement benefits, vesting schedule, or payout options
- **Current assumption – based on the recommendation made in the prior experience study**
- **Recommended assumption – set assumption based on a blend of experience over the study period and the current assumption**

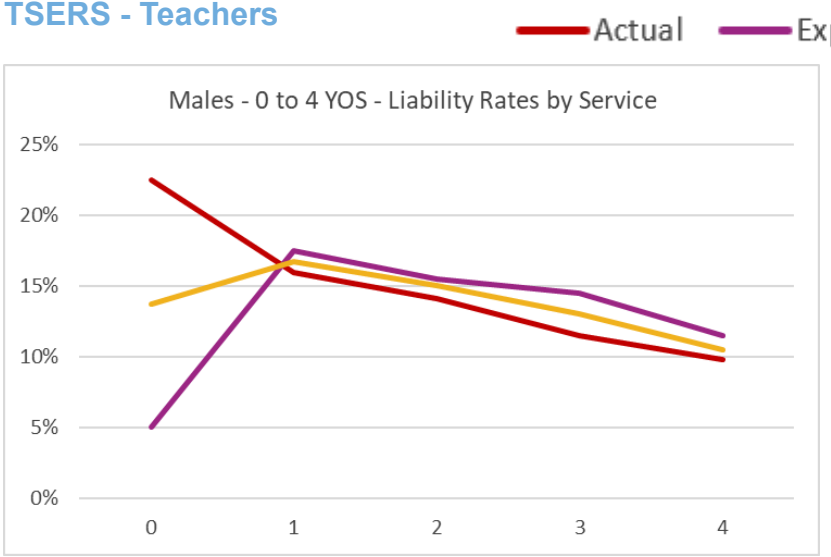
Demographic Assumptions

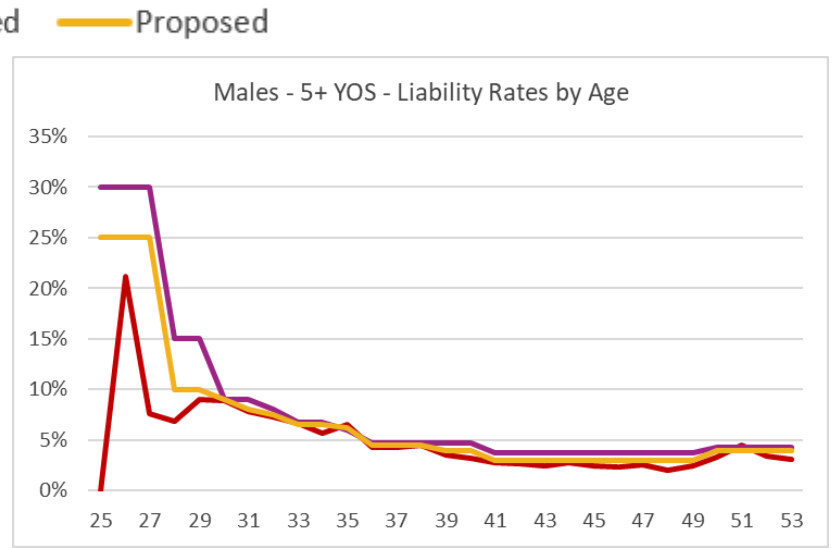
Termination

- **For graphs and tables in the remainder of this Termination section:**
  - "Cost Impact" is a high-level summary, which generally describes the impact of our proposed assumption compared to the current assumption
    - For example, "Cost Impact – Increase" is a general statement that our proposed termination rates were generally adjusted downwards
      - Lower incidence of termination generally corresponds with more members ultimately reaching retirement eligibility, with retirement benefits generally more valuable than termination benefits

Demographic Assumptions

Termination
TSERS - Teachers





Group	Actual	Expected	A / E	Proposed	A / P
Males – 0 to 4 YOS	$81.9M	$95.9M	85.47%	$88.8M	92.27%
Males – 5+ YOS	$358.7M	$458.6M	78.23%	$396.6M	90.45%

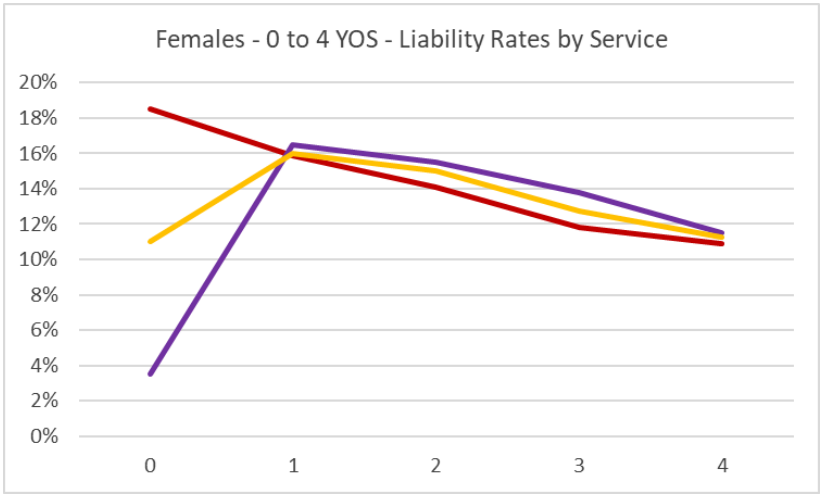
Observation: fewer terminations over the period than expected overall

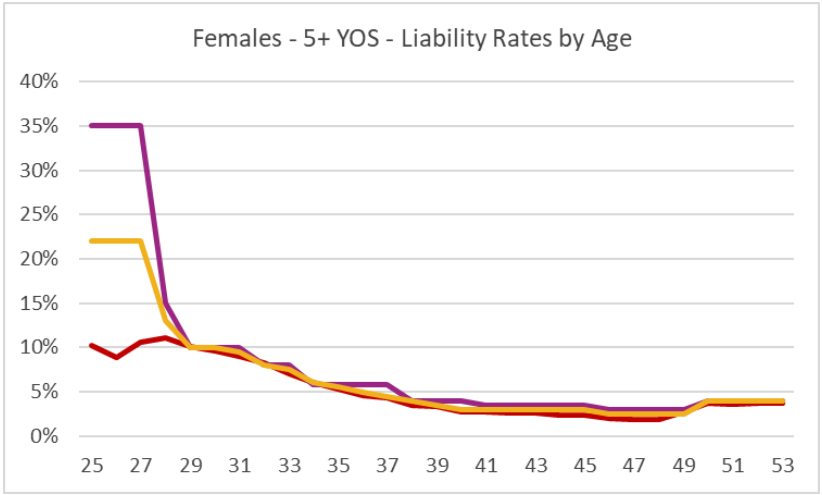
Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: increase

Demographic Assumptions

Termination
TSERS - Teachers





Group	Actual	Expected	A / E	Proposed	A / P
Females – 0 to 4 YOS	$277.7M	$304.0M	91.36%	$291.6M	95.24%
Females – 5+ YOS	$1.44B	$1.73B	83.29%	$1.55B	92.64%

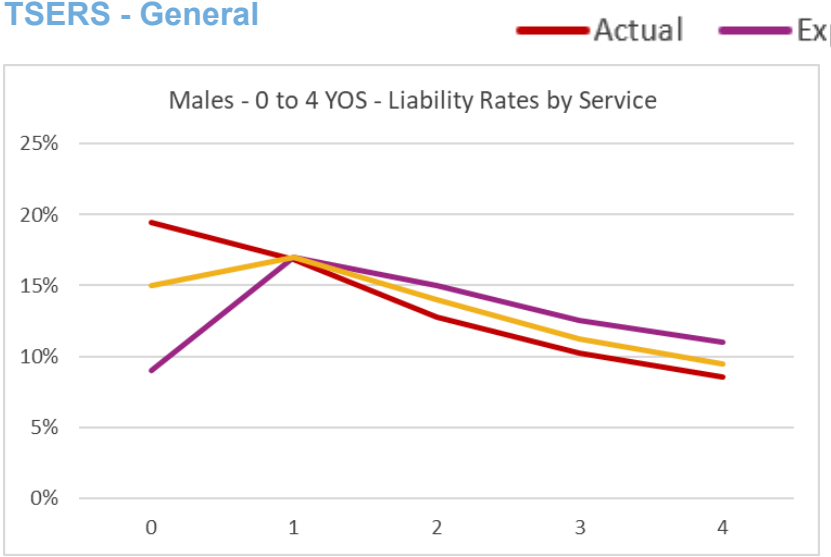
Observation: fewer terminations over the period than expected overall

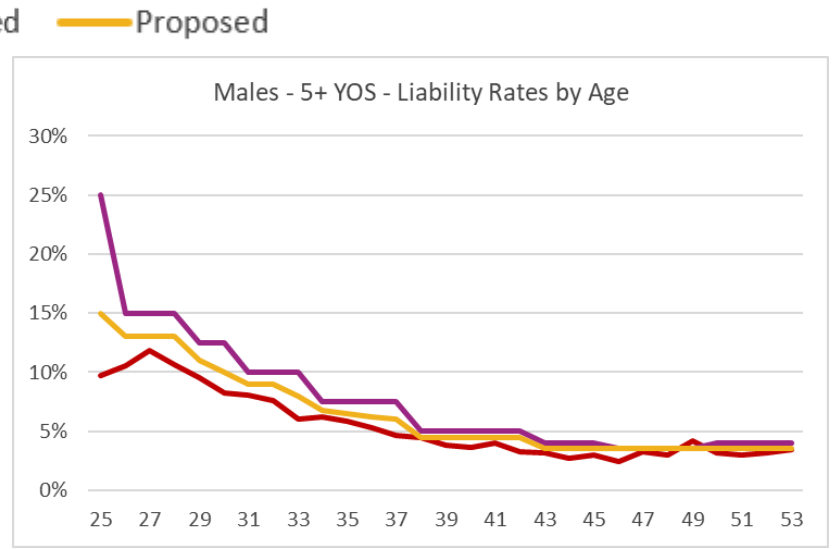
Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: increase

Demographic Assumptions

Termination
TSERS - General





Group	Actual	Expected	A / E	Proposed	A / P
Males – 0 to 4 YOS	$100.7M	$120.7M	83.46%	$109.6M	91.88%
Males – 5+ YOS	$488.5M	$607.8M	80.38%	$546.9M	89.33%

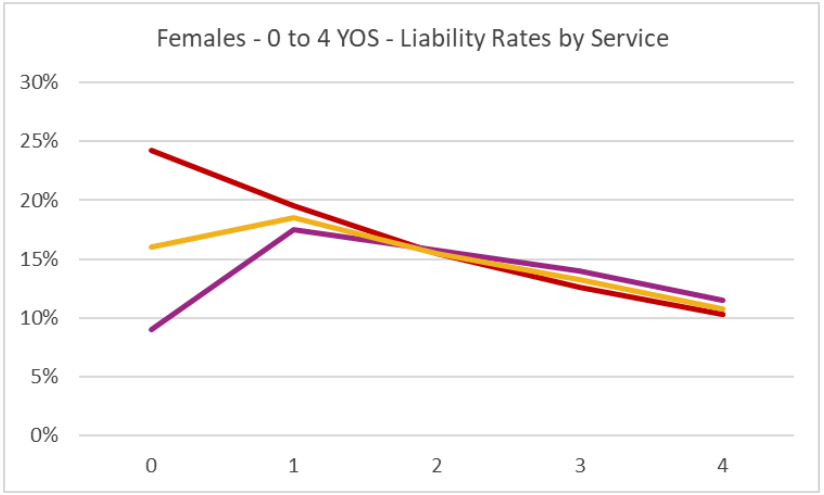
Observation: fewer terminations over the period than expected overall

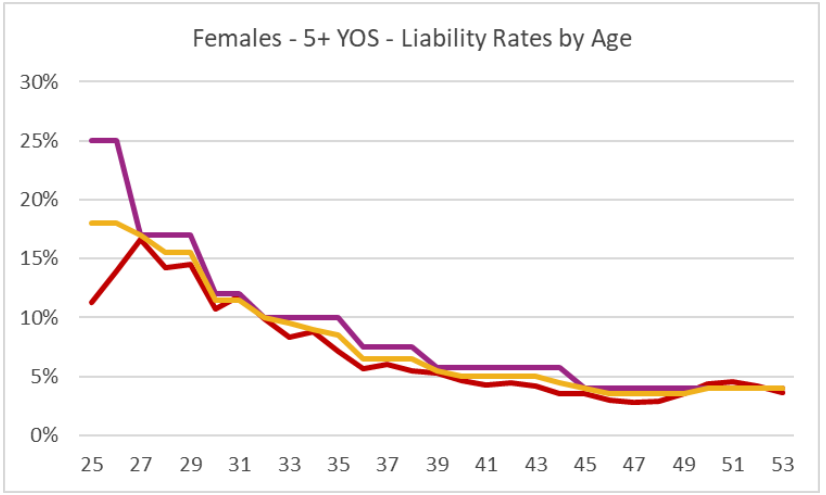
Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: increase

Demographic Assumptions

Termination
TSERS - General





Group	Actual	Expected	A / E	Proposed	A / P
Females – 0 to 4 YOS	$175.7M	$185.2M	94.84%	$179.1M	98.09%
Females – 5+ YOS	$703.4M	$812.7M	86.56%	$745.2M	94.40%

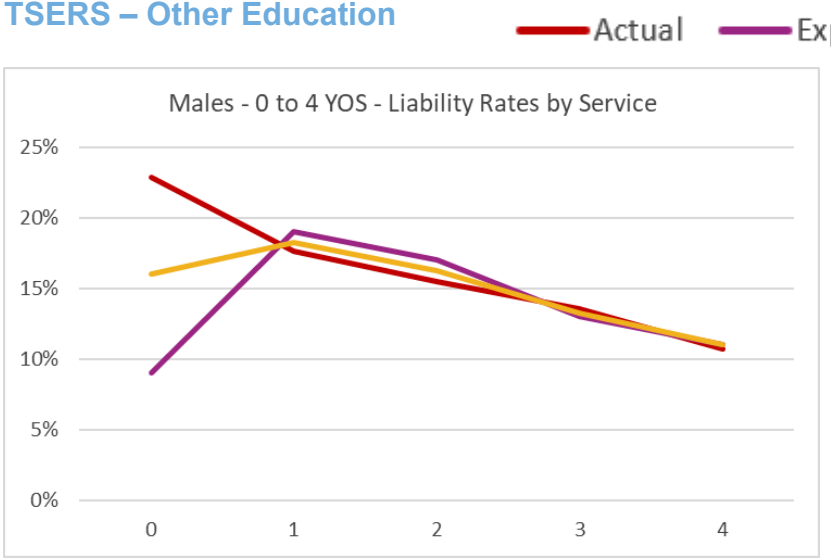
Observation: fewer terminations over the period than expected overall

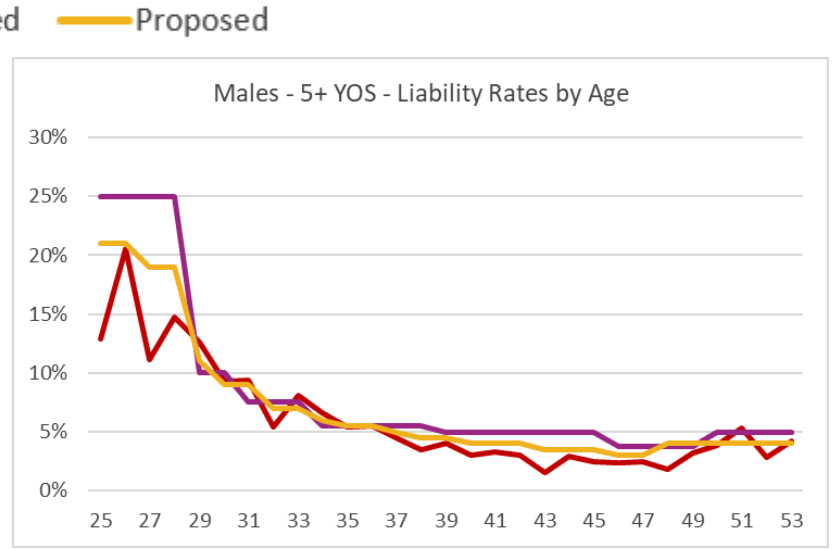
Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: increase

Demographic Assumptions

Termination
TSERS – Other Education





Group	Actual	Expected	A / E	Proposed	A / P
Males – 0 to 4 YOS	$37.5M	$38.7M	96.95%	$38.2M	98.20%
Males – 5+ YOS	$165.8M	$223.2M	74.27%	$193.5M	85.68%

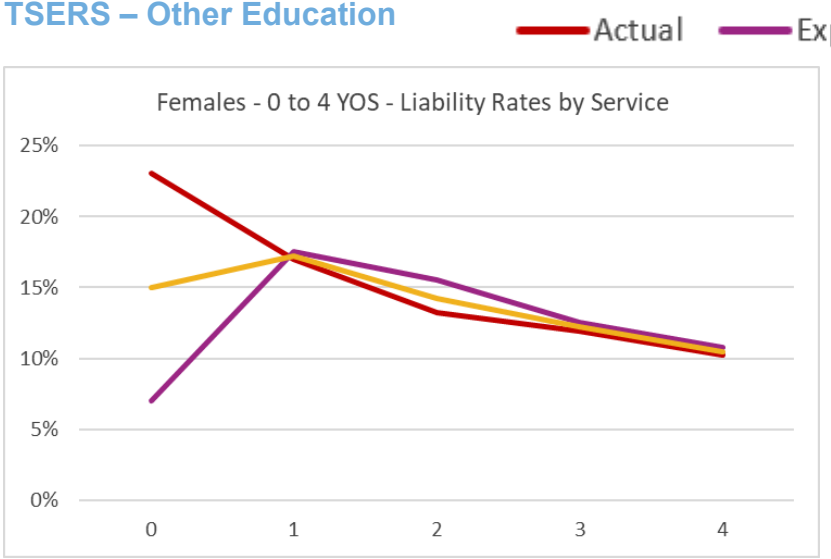
Observation: fewer terminations over the period than expected overall

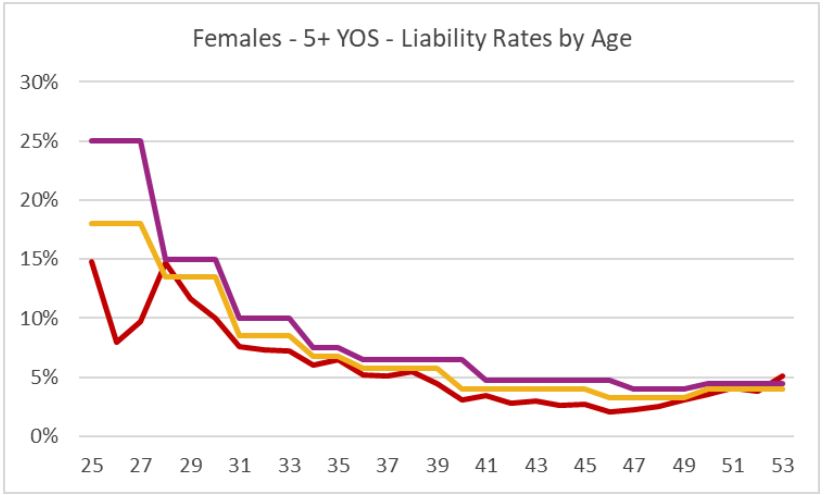
Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: increase

Demographic Assumptions

Termination
TSERS – Other Education





Group	Actual	Expected	A / E	Proposed	A / P
Females – 0 to 4 YOS	$61.9M	$66.5M	93.05%	$64.1M	96.47%
Females – 5+ YOS	$329.2M	$441.4M	74.59%	$382.8M	86.01%

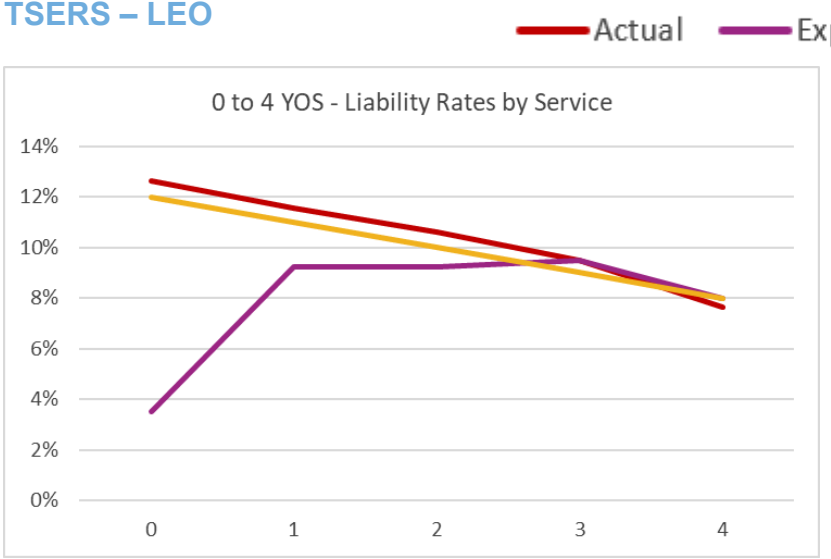
Observation: fewer terminations over the period than expected overall

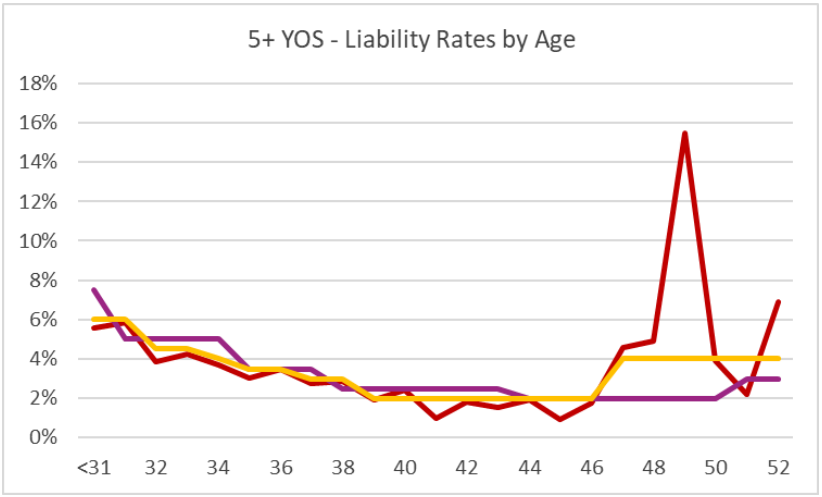
Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: increase

Demographic Assumptions

Termination
TSERS – LEO





Group	Actual	Expected	A / E	Proposed	A / P
0 to 4 YOS	$13.3M	$12.8M	103.90%	$13.0M	102.04%
5+ YOS	$133.7M	$82.5M	162.01%	$96.1M	139.16%

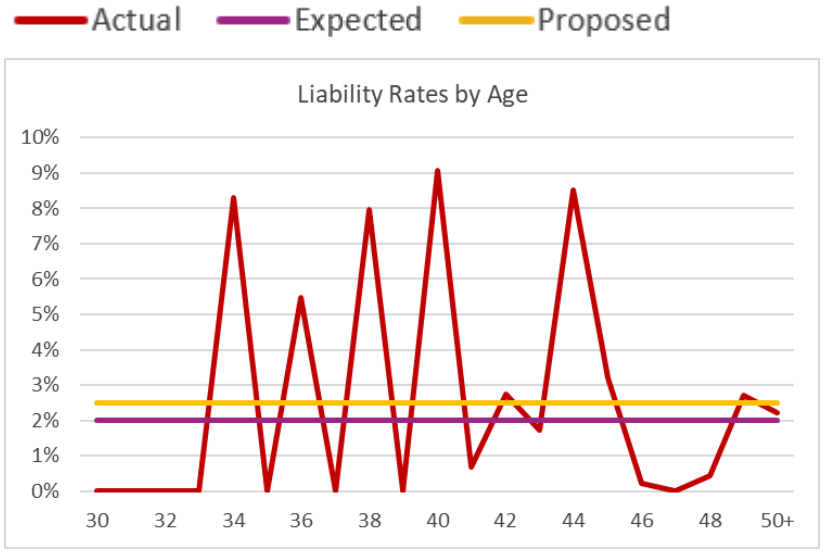
Observation: more terminations over the period than expected overall

Recommendation: adjust rates, generally upwards to reflect actual experience

Cost Impact: decrease

Demographic Assumptions

Termination
CJRS



Observation: more terminations over the period than expected overall

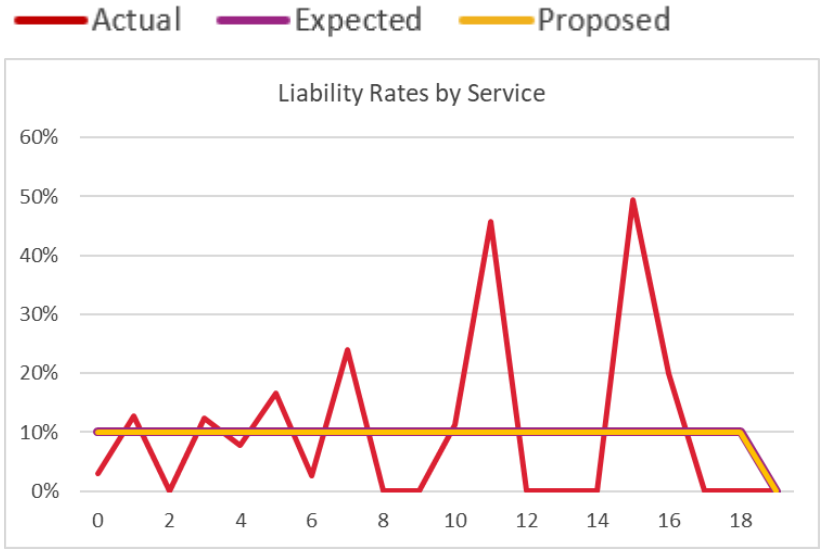
Recommendation: adjust rates, generally upwards to reflect actual experience

Cost Impact: decrease

Group	Actual	Expected	A / E	Proposed	A / P
Total	$6.29M	$5.08M	124.01%	$6.34M	99.21%

Demographic Assumptions

Termination
LRS

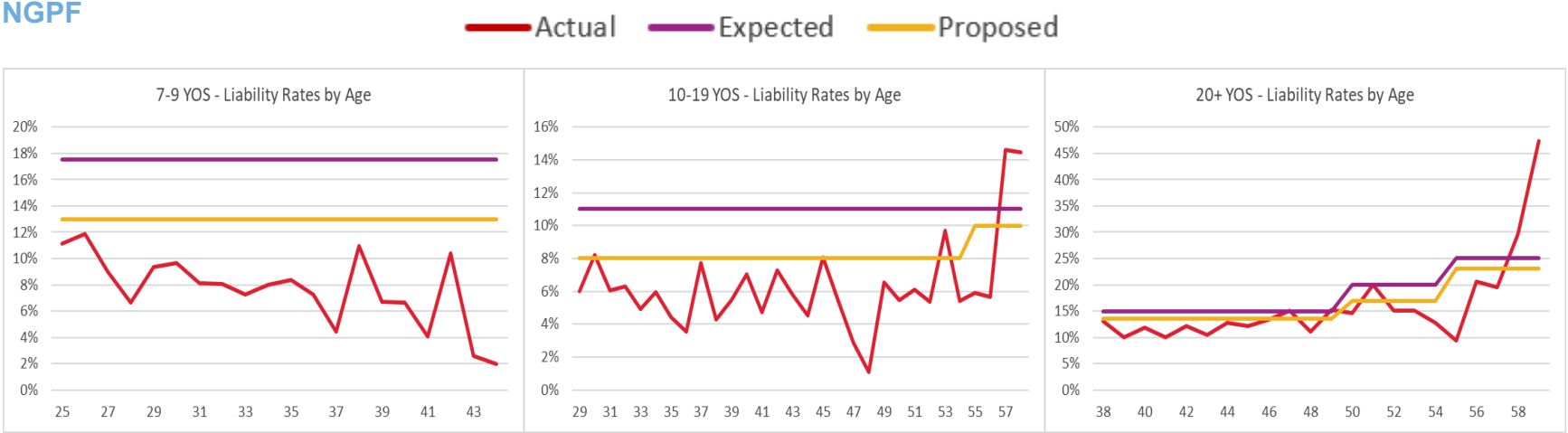


Observation: fewer terminations over the period than expected overall
Recommendation: no change
Cost Impact: none

Group	Actual	Expected	A / E	Proposed	A / P
Total	$1.06M	$1.14M	93.20%	$1.14M	93.20%

Demographic Assumptions

Termination
NGPF



Group	Actual	Expected	A / E	Proposed	A / P
7 to 9 YOS	$285.7k	$585.6k	48.78%	$443.0k	64.48%
10 to 19 YOS	$2.16M	$4.13M	52.34%	$3.03M	71.33%
20+ YOS	$7.27M	$8.98M	80.98%	$8.00M	90.99%

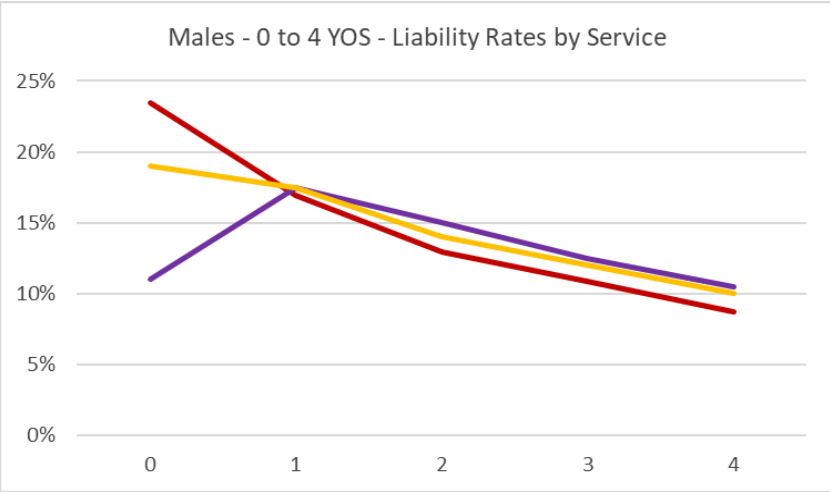
Observation: fewer terminations over the period than expected overall

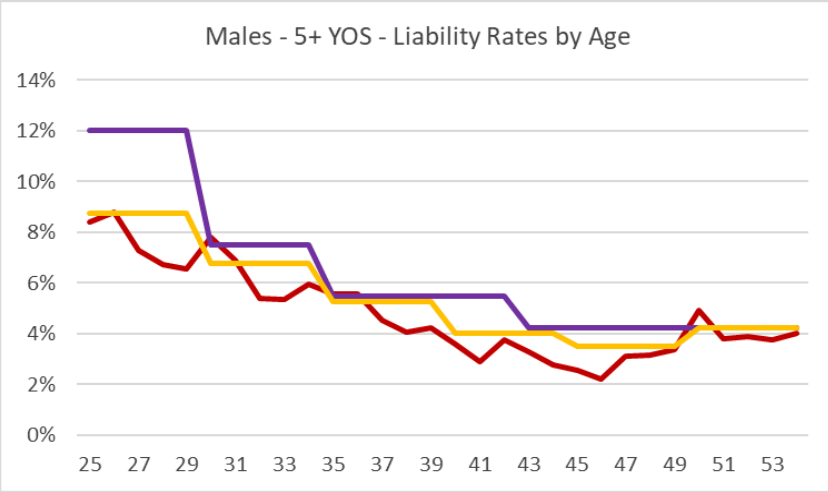
Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: increase

Demographic Assumptions

Termination
LGERS – General & RODSPF





Group	Actual	Expected	A / E	Proposed	A / P
Males – 0 to 4 YOS	$126.4M	$145.2M	87.11%	$139.0M	90.98%
Males – 5+ YOS	$460.2M	$591.6M	77.79%	$524.7M	87.70%

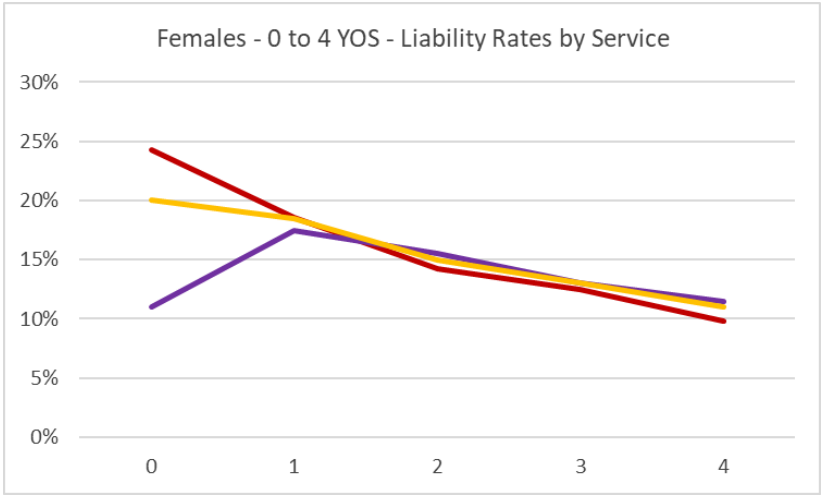
Observation: fewer terminations over the period than expected overall

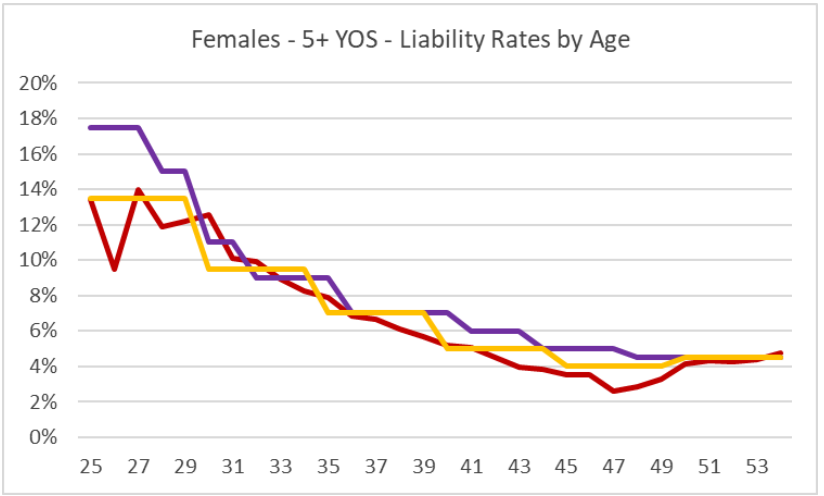
Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: increase

Demographic Assumptions

Termination
LGERS – General & RODSPF





Group	Actual	Expected	A / E	Proposed	A / P
Females – 0 to 4 YOS	$177.2M	$189.8M	93.38%	$187.4M	94.55%
Females – 5+ YOS	$620.9M	$746.9M	83.13%	$681.1M	91.16%

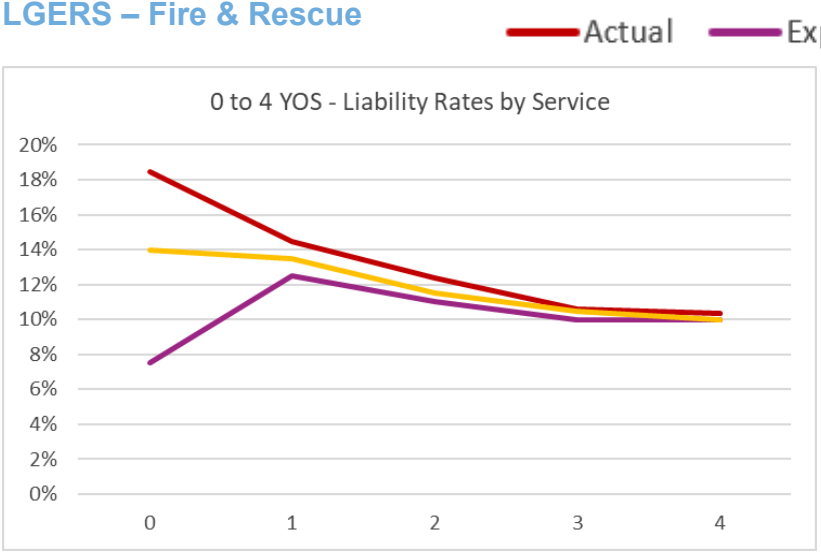
Observation: fewer terminations over the period than expected overall

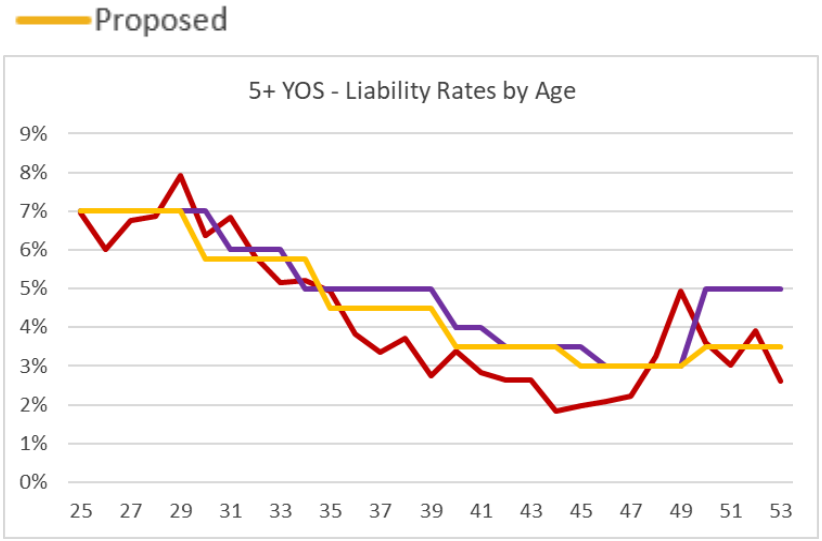
Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: increase

Demographic Assumptions

Termination
LGERS – Fire & Rescue





Group	Actual	Expected	A / E	Proposed	A / P
0 to 4 YOS	$39.6M	$36.7M	107.68%	$38.0M	104.05%
5+ YOS	$192.2M	$231.5M	83.04%	$215.8M	89.07%

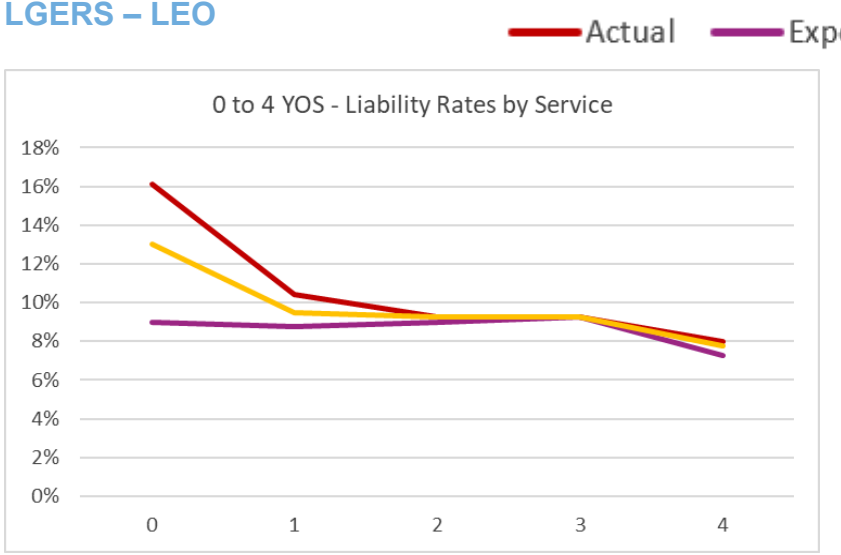
Observation: more terminations than expected at 0-4 YOS; fewer terminations than expected at 5+ YOS

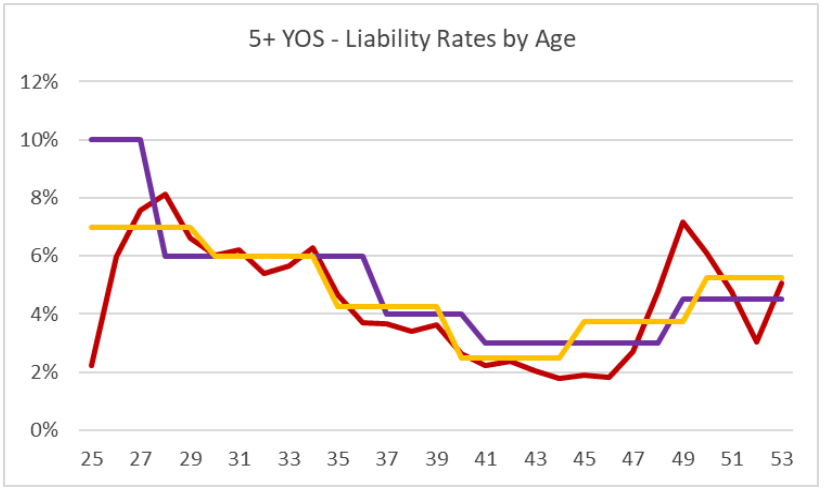
Recommendation: adjust rates to reflect actual experience

Cost Impact: increase due to more significant decrease in rates at 5+ YOS compared to increase at 0-4 YOS

Demographic Assumptions

Termination
LGERS – LEO





Group	Actual	Expected	A / E	Proposed	A / P
0 to 4 YOS	$44.8M	$42.3M	105.88%	$43.9M	102.02%
5+ YOS	$433.0M	$448.4M	96.55%	$440.5M	98.28%

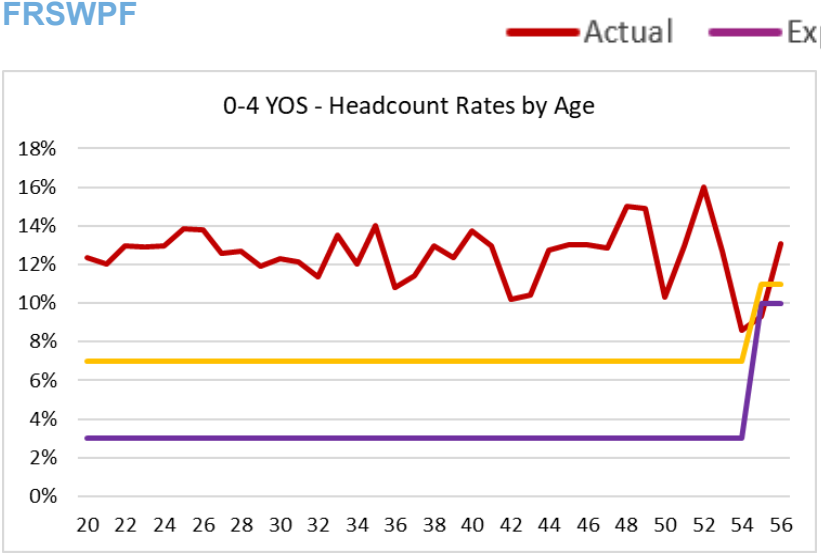
Observation: more terminations than expected at 0-4 YOS; fewer terminations than expected at 5+ YOS

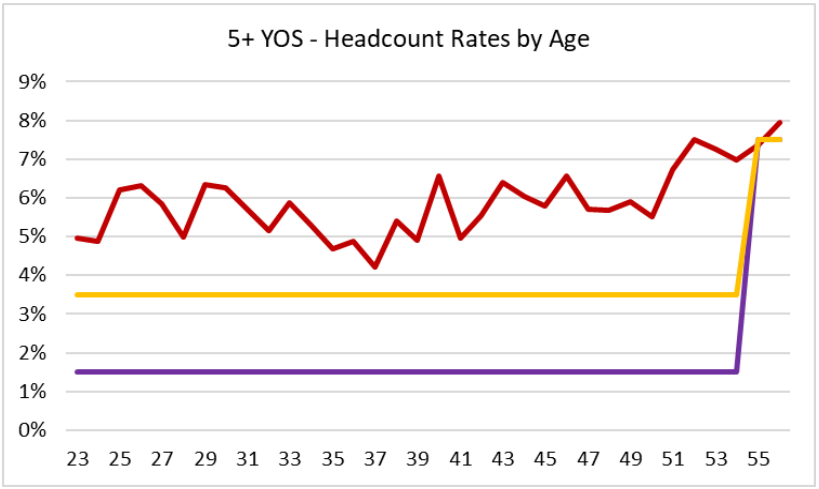
Recommendation: adjust rates to reflect actual experience

Cost Impact: increase due to more significant decrease in rates at 5+ YOS compared to increase at 0-4 YOS

Demographic Assumptions

Termination*
FRSWPF





Group	Actual	Expected	A / E	Proposed	A / P
0 to 4 YOS	4,348	1,150	378.22%	2,476	175.58%
5+ YOS	4,103	1,440	284.91%	2,692	152.42%

*Termination assumption is inclusive of active members who are expected to lapse

Observation: more terminations over the period than expected overall

Recommendation: adjust rates, generally upwards to reflect actual experience

Cost Impact: decrease

Other Demographic Assumptions

Other Demographic Assumptions

FRSWPF Lapsed Members

- An assumption in FRSWPF, which allows for lapsed members to return to work
- The assumed rate in which a lapsed member returns to active service is based on the number of years the member has been lapsed
- Based on a study in 2015, where there was significant data cleanup and analysis, lapsed members with less than 8 years of service were shown to have some probability of returning to work
- The current assumption was established in 2015 with the first two years as a phase in
- Recommend lowering the return to work in the first 2 years since lapse while slightly increasing the rates for the following 3 years

Years since lapse	Current Assumption	Proposed Assumption
1 Year	42.0%	35.0%
2 Years	23.0%	21.5%
3 Years	14.0%	14.5%
4 Years	10.0%	10.5%
5 Years	6.0%	6.5%
6 Years	4.5%	4.5%
7 Years	3.0%	3.0%
8+ Years	0.0%	0.0%

Observation: fewer lapsed members return to active service than assumed

Recommendation: adjust rates, generally downwards to reflect actual experience

Cost Impact: decrease due to fewer members assumed to return to active service

Other Demographic Assumptions

Leave Conversions - TSERS

- **We reviewed the previous five years of data to compare actual vs. expected results**
- **TSERS Updates:**
  - Recommend raising the Increase in AFC percentage (due to unused vacation leave) for all groups
  - Recommend lowering the Increase in Credited Service Years (due to unused sick leave) for all groups (except for LEO Males, which is unchanged)
  - Recommend leaving unchanged the Increase in Eligibility Service Years (due to unused sick leave) for all groups

		General Employees		Teachers, Librarians and Counselors		Law Enforcement Officers		Other Education	
		Male	Female	Male	Female	Male	Female	Male	Female
Increase in AFC (percentage) – Unused Vacation Leave		2.70%	2.70%	2.20%	2.20%	3.00%	3.00%	2.40%	2.40%
Increase in Service (yrs) – Unused Sick Leave	Credited	0.75	0.50	0.80	0.60	1.50	1.25	0.90	0.70
	Eligibility	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Observation: higher unused vacation leave and generally lower unused sick leave at retirement than assumed

Recommendation: increase unused vacation leave and generally decrease unused sick leave conversions, to reflect actual experience

Cost Impact: increase for unused vacation leave and decrease for unused sick leave

Other Demographic Assumptions

Leave Conversions - LGERS

- **We reviewed the previous five years of data to compare actual vs. expected results**
- **LGERS Updates:**
  - Recommend raising the Increase in AFC percentage (due to unused vacation leave) for all groups
  - Recommend lowering the Increase in Credited Service Years (due to unused sick leave) for all groups
  - Recommend leaving unchanged the Increase in Eligibility Service Years (due to unused sick leave) for all groups

	General		Fire & Rescue Squad		Law Enforcement	
	Male	Female	Male	Female	Male	Female
Increase in AFC (percentage) – Unused Vacation Leave	2.00%	2.00%	2.00%	2.00%	2.50%	2.50%
Increase in Creditable Service (years) - Unused Sick Leave						
Credited	0.70	0.50	1.10	1.10	1.00	1.00
Eligibility	1.00	1.00	1.00	1.00	1.00	1.00

Observation: higher unused vacation leave and lower unused sick leave at retirement than assumed

Recommendation: increase unused vacation leave and decrease unused sick leave conversions, to reflect actual experience

Cost Impact: increase for unused vacation leave and decrease for unused sick leave

Other Demographic Assumptions

National Guard – New Entrant Normal Cost Load

- The National Guard plan experiences losses due to not accounting for active members with less than 7 years of service due to lack of available data
- Over the last 3 years, total new entrant losses have averaged approximately $352,000 per year
- The current assumption provides for a load to the normal cost of $725,000
- We propose adjusting the load to $375,000 per year, and will continue to monitor this assumption

Other Demographic Assumptions

Transfers between Systems

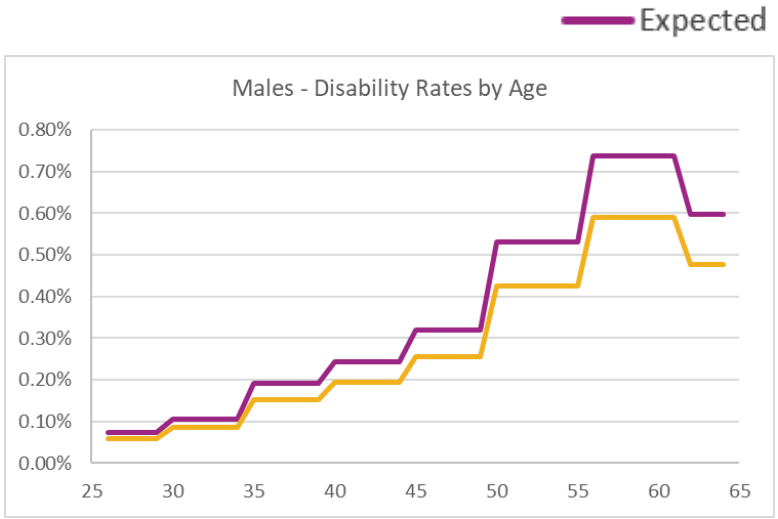
- Currently, there is no assumption regarding members transferring creditable service between systems
- In recent years, there have been measurable losses due to participants transferring-in creditable service into CJRS. We have not observed significant gains or losses in other systems.
- The CJRS liability losses, while measurable, are relatively insignificant after accounting for the corresponding transfer-in of assets
- We recommend no change to the assumptions related to transfers between Systems

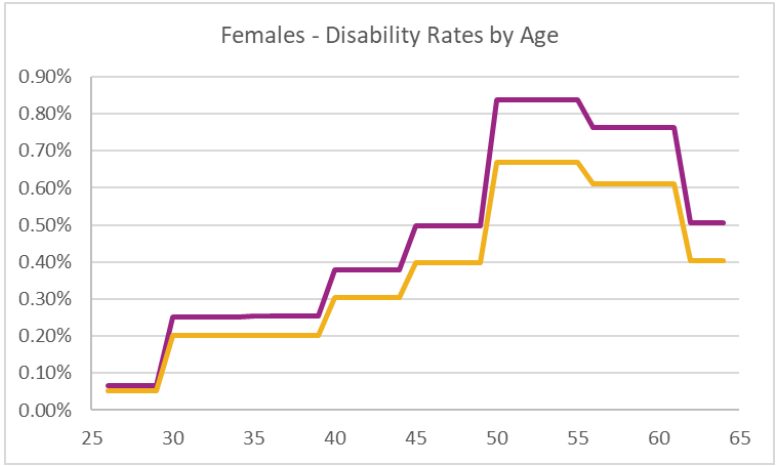
Other Demographic Assumptions

DIPNC

Disability Rates:

- An analysis of IBNR experience showed that actual new disabled members had 78% of the liability that was expected. Proposed rates of disability are reduced to 80% of expected.





Observation: lower actual emerging liability than expected
Recommendation: adjust rates to 80% of expected
Cost Impact: significant decrease

Other Demographic Assumptions

DIPNC (continued)

Disability Claim Termination Rates:

- Current Assumption: 2012 SOA Group Long-Term Disability ("GLTD") table with a 2-month elimination period, including margin and mortality improvement, but no diagnosis definition.
- Proposed Assumption: 2019 GLTD table with a 2-month elimination period with no diagnosis definition.
  - Cost Impact: significant decrease

Date of Disability:

- Current Assumption: 12 months before the benefit start date
- Proposed Assumption: 14 months before the benefit start date
  - Cost Impact: increase

Other Demographic Assumptions

DIPNC (continued)

Social Security Approval Rates and Timing for Members Under Five Years of Service as of July 31, 2007:

- Actives
  - Current Assumption: 50% of members, commencing after 1 year of benefits.
  - Proposed Assumption: 60% of members, commencing after 1 year of benefits.
  - Cost Impact: decrease
- Currently Disabled:
  - Current Assumption: 50% of members, commencing after 3 years of benefits.
  - Proposed Assumption: 50% of members, commencing after 1 year of benefits. This assumption applies only to currently disabled members who are not already approved. It is lower than the assumption for actives to account for members who have received approval during the first three years of the benefit.
  - Cost Impact: significant decrease

Other Demographic Assumptions

DIPNC and TSERS – Future Pay for TSERS Disabled Members

- **Current Assumption –** project pay from the date of disability to the current valuation date using the wage inflation assumption
- **Proposed Assumption –** no change

Other Demographic Assumptions

Marriage Assumption

- Current Assumption: Male spouses three years older than female spouses, various percent-married assumptions
- Proposed Assumption: Male spouses 2 years older than female spouses, no change to percent-married assumptions
  - Cost Impact: Insignificant

Line-of-Duty Deaths

- Current Assumption - LGERS: 50% of deaths prior to retirement for firefighters, rescue squad workers and law enforcement officers are assumed to occur in the line-of-duty
- Current Assumption - FRSWPF: 10% of deaths prior to retirement are assumed to occur in the line-of-duty
- Proposed Assumption: Increase the FRSWPF assumption of line-of-duty pre-retirement deaths from 10% to 50%
  - Cost Impact: Increase

Contributory Death Benefit Plan Participation Rate

- Current Assumption: 45% of non-disabled members elect / 60% of disabled members elect
- Proposed Assumption: 40% of non-disabled members elect / 55% of disabled members elect
  - Cost Impact: Increase

Other Demographic Assumptions

Benefit Commencement Age for Pre-Retirement Terminations

- Recommend setting to the earliest eligible retirement age

Form of Payment

- Currently assumed to be actuarially equivalent to the normal form of payment
- Recommend no change in the current assumptions

Administrative Expenses

- **Recommend leaving all unchanged with the following exceptions:**
  - NGPF – Update to be equal to prior year administrative expenses, from $150,000 per year
  - LGERS –Update to 0.10% of non-LEO payroll from 0.13% of non-LEO payroll
  - LRS – Update to 0.50% of payroll from 1.00% of payroll
  - RODSPF – Update to 0.30% of payroll from 0.40% of payroll

Funding Methodology

Funding Methodology

Amortization Method

- The unfunded actuarial accrued liability (UAAL) is the portion of actuarial accrued liability that is not covered by the assets of the retirement systems, where assets are determined on an actuarial, or smoothed, basis
- Actuarially determined employer contribution rates are calculated as the amount needed to pay for the cost of accruing benefits and to amortize, or pay down, the UAAL
- An amortization method determines the amount, timing and pattern of the increase or decrease required to systematically fund any source of UAAL, or recognize any Surplus (i.e., any assets in excess of AAL)
- Currently, TSERS and LGERS use a 12-year level-dollar layered amortization method. The first base was established for fiscal year ending 2013 for TSERS and fiscal year ending 2018 for LGERS. New bases are determined annually thereafter, where annual gains and losses as well as assumption changes are amortized as a level dollar over a 12-year period.
  - The 12-year amortization period was implemented in 2011 for TSERS with Session Law 2011-145

Funding Methodology

Amortization Method – Key Considerations Behind Recommendation

- Key information sources:
  - Guidance under ASOP 4 - Actuarial Standard of Practice No. 4
  - Non-binding guidance under Actuarial Funding Policies and Practices for Public Pension Plans paper second edition issued by the Conference of Consulting Actuaries Public Plans Community in August 2024 (CCA White Paper 2.0)
  - GFOA's "Core Elements of a Funding Policy for Governmental Pension and OPEB Plans"
- Key considerations:
  - Whether the amortization is open or closed
  - The source of the amortization base (e.g., plan experience, method or assumption changes, or plan provision changes)
  - Pattern of amortization payments, including any period of negative amortization payments (i.e., when the amortization payment for the period is less than the interest accrued)
  - Whether the amortization is positive (losses) or negative (gains)
  - The duration of the actuarial accrued liability
  - The average remaining service lifetime of active members
  - The funded status of the plans

Funding Methodology

Amortization Method - Analysis

- Based on the sources and considerations on the prior slide, we analyzed several different alternative amortization methods beginning with the fiscal year ending 2028 actuarially determined employer contributions
  - Reviewed length of amortization period
  - Considered alternative approaches to implementing change in amortization method, if adopted
  - Considered development of a surplus management policy
- Discussed system objectives identified by RSD, including the following:
  - Protecting against escalation of unfunded liabilities
  - Ensuring contribution sufficiency
  - Budget stability without “cliffs” in contribution rates
- In general, the results of the analysis showed:
  - Consolidating bases reduced contribution rates in earlier projection years, but increased the period to full funding
  - Lengthening prior bases reduced volatility in contribution rates, but increased the period to full funding
  - Keeping current 12-year bases but increasing the amortization period for future bases results in achieving full funding earlier than other transition methods, but contribution rates remain relatively higher in the earlier years of the projection period than other scenarios

Funding Methodology

Amortization Method – Recommendations

- **Recommendation #1:** We recommend changing the amortization method for all actuarial experience gains and losses to a 15-year closed, level-dollar amount approach
- Additionally, we recommend extending the amortization period for outstanding bases established prior to December 31, 2025, by 3 years (from the original 12-year schedule to a 15-year schedule from original payment)
  - This extension reduces the annual amortization payment, recalculated to ensure each base is fully paid off within 15 fiscal years from its original establishment date.
    - Previously, the original amortization payments were set to pay off each base within 12 fiscal years.
  - Changes would be effective with the actuarially determined employer contributions amounts beginning with the fiscal year ending in 2028
  - Impact of proposed method change included in Section 2 of this presentation
    - Projections at the end of this section isolate the impact of the change in amortization period only
    - Note that no projections in this presentation include the impact of the proposed surplus management policy

Funding Methodology

Amortization Method – Recommendations

- **Recommendation #2:** We recommend amortization of other sources of actuarial gains and losses in accordance with the following:
  - For actuarial assumption and method changes, we recommend treating the same as experience gains and losses
    - Support for recommendation: Use of five-year direct-rate smoothing of the impact of all actuarial assumption and method changes effectively extends the impact of actuarial assumptions and methods to 20 years
  - For active plan amendments applicable to all members, we recommend treating the same as experience gains and losses
    - Support for recommendation: Duration of all liabilities is 11 to 12 years with active liabilities longer in duration
    - Special consideration may be given to active plan amendments to closed groups with shorter duration of liabilities
  - For inactive plan amendments applicable to retired members and/or survivors of deceased members
    - Recommend employer contributions to fund one-time supplements be paid in a single year
    - Recommend employer contributions to fund COLAs be paid over a period no longer than 15 years, which is in line with average life expectancies for TSERS and LGERS retirees and survivors of deceased members

Funding Methodology

Amortization Method – Recommendations

- **Recommendation #3:** We recommend adoption of a surplus management policy should the retirement systems' funded status exceed 110%
  - We recommend the 110% threshold to provide a buffer that accounts for market volatility and unexpected liability losses
  - If the funded status of the plan exceeds 100% on an actuarial value of assets (AVA) basis, but less than 110%, we recommend:
    - All prior amortization bases would be considered fully amortized
    - No amortization contribution would be due
  - If the funded status of the plan exceeds 110% on an actuarial value of assets (AVA) basis, we recommend:
    - 30-year, level dollar, rolling amortization of only the portion of AVA in excess of 110% of AAL
    - Amortization amount as a percentage of pay would serve as an offset to the normal cost rate
    - Minimum actuarially determined contribution rate of 6% will still apply to TSERS and LGERS

Funding Methodology

Amortization Method – Recommendations

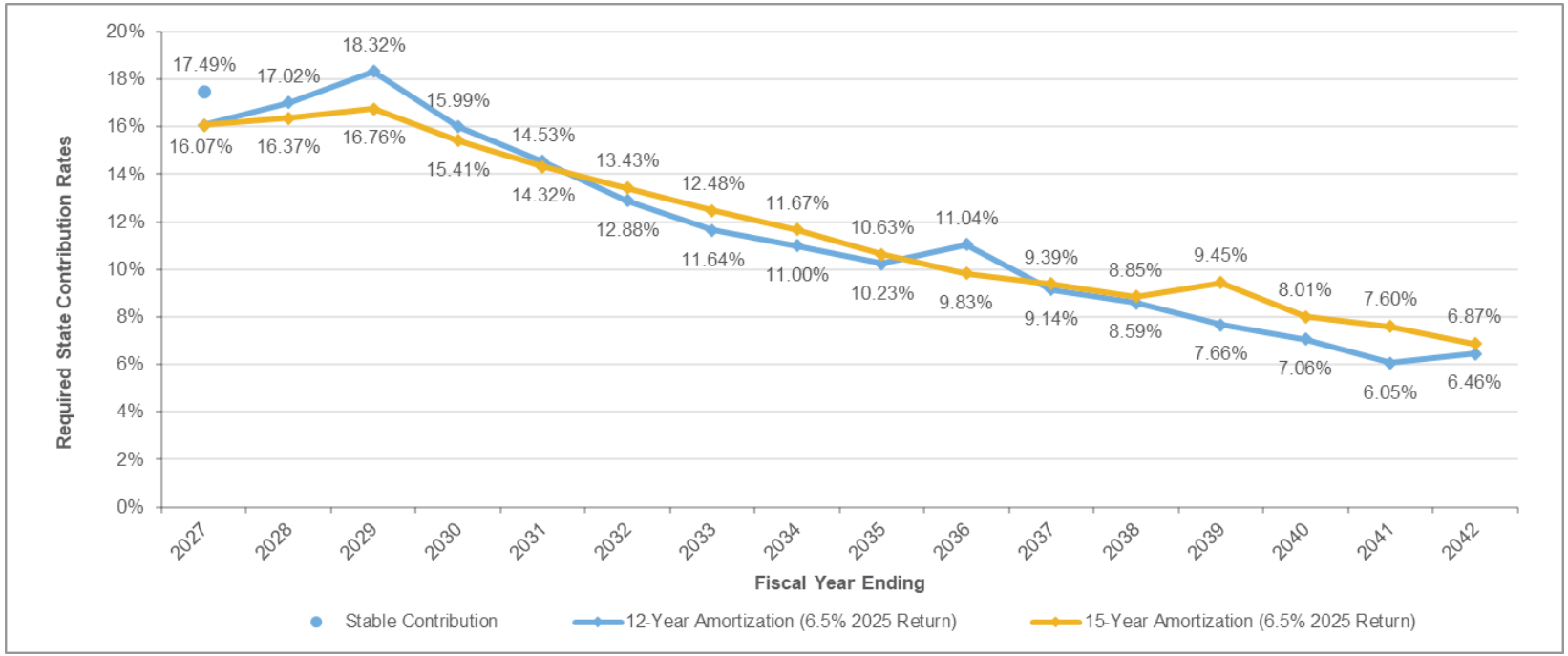
- **Recommendation #3 (continued):**
- If the funded status of the plan falls below 100% on an actuarial value of assets (AVA) basis after exceeding 100%, we recommend:
  - Restart of proposed 15-year amortization policy based on the UAAL
  - Single 15-year, level dollar amortization base would be established in first year AVA funded status falls back below 100%

- In any case the funded status of the plan is less than 110% on an actuarial value of assets (AVA) basis, we recommend limiting the total amortization payment to a minimum of zero (i.e., no offset to normal cost unless funded status exceeds 110%)

Funding Methodology

Comparison of Contribution Rates Under 12-Year Amortization Method vs. 15-Year Amortization Method

TSERS

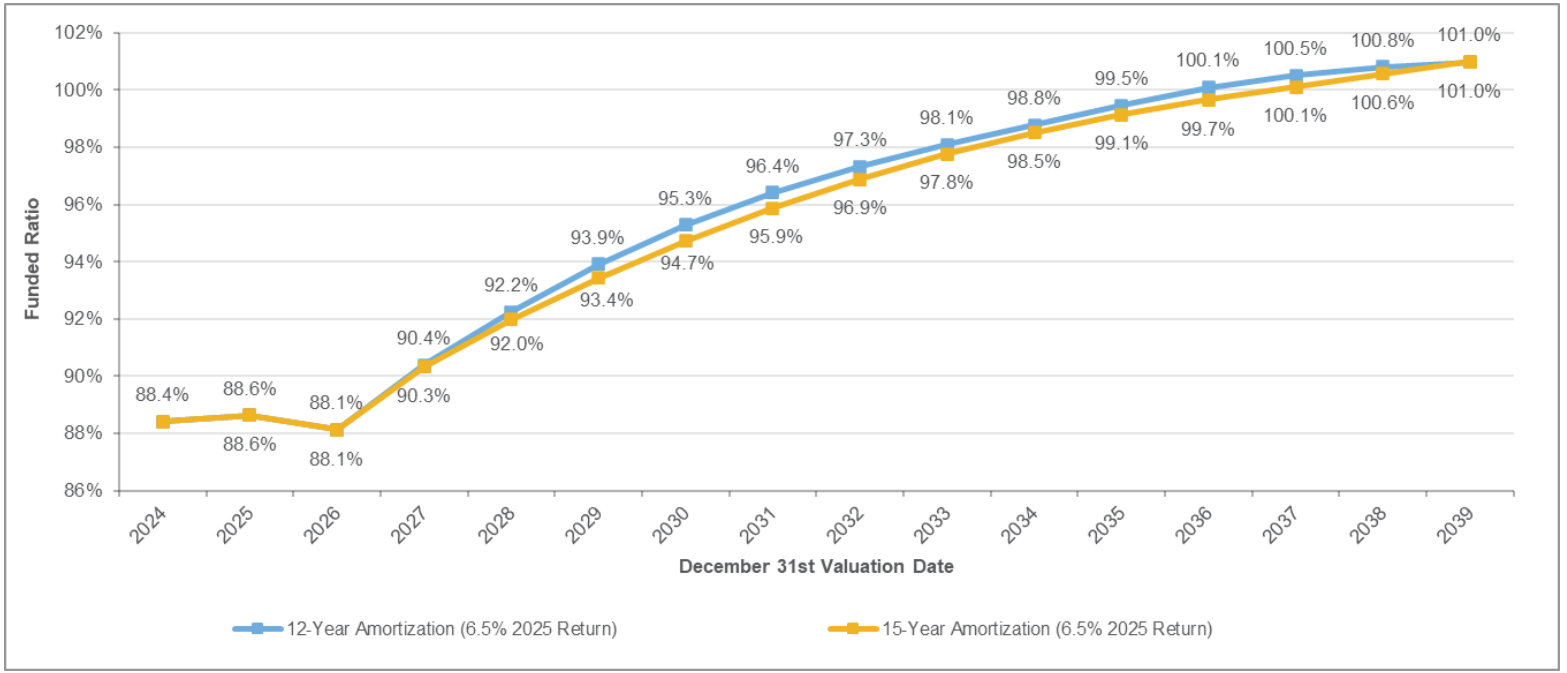


Note that all proposed assumption changes are reflected in the above illustration unless otherwise specified.

Funding Methodology

Comparison of Projected Funded Ratios Under 12-Year Amortization Method vs. 15-Year Amortization Method

TSERS

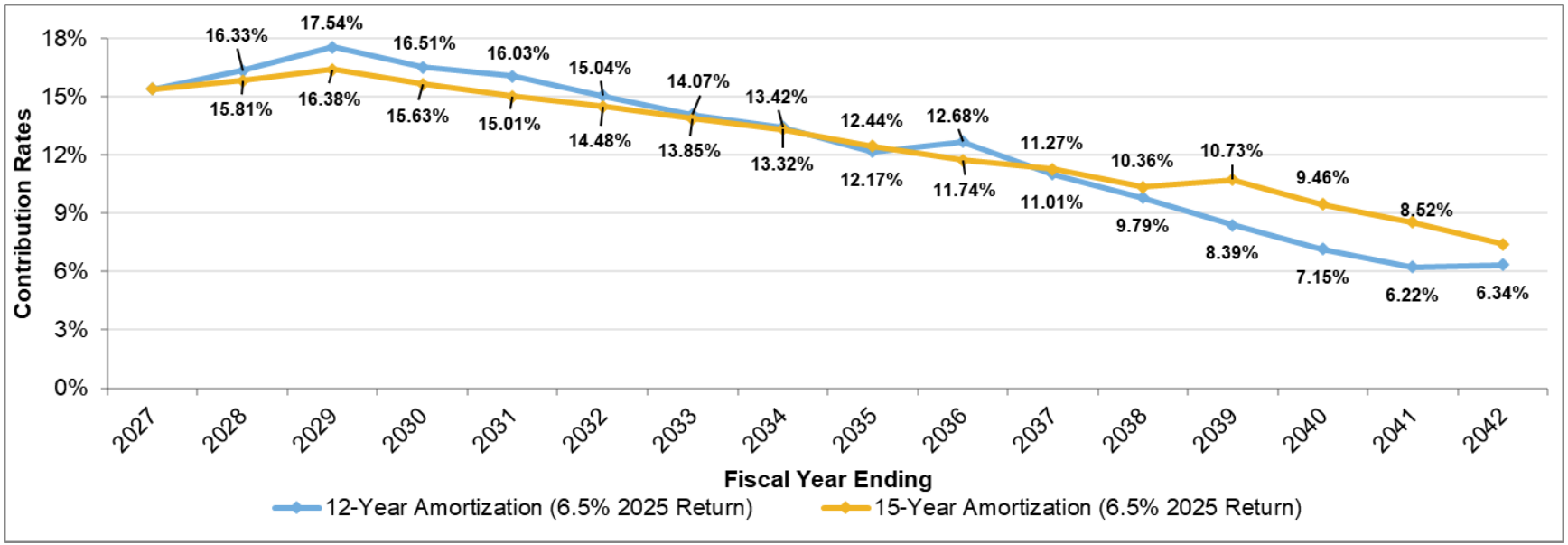


Note that all proposed assumption changes are reflected in the above illustration unless otherwise specified.

Funding Methodology

Comparison of Contribution Rates Under 12-Year Amortization Method vs. 15-Year Amortization Method

LGERS General Employees and Firefighters

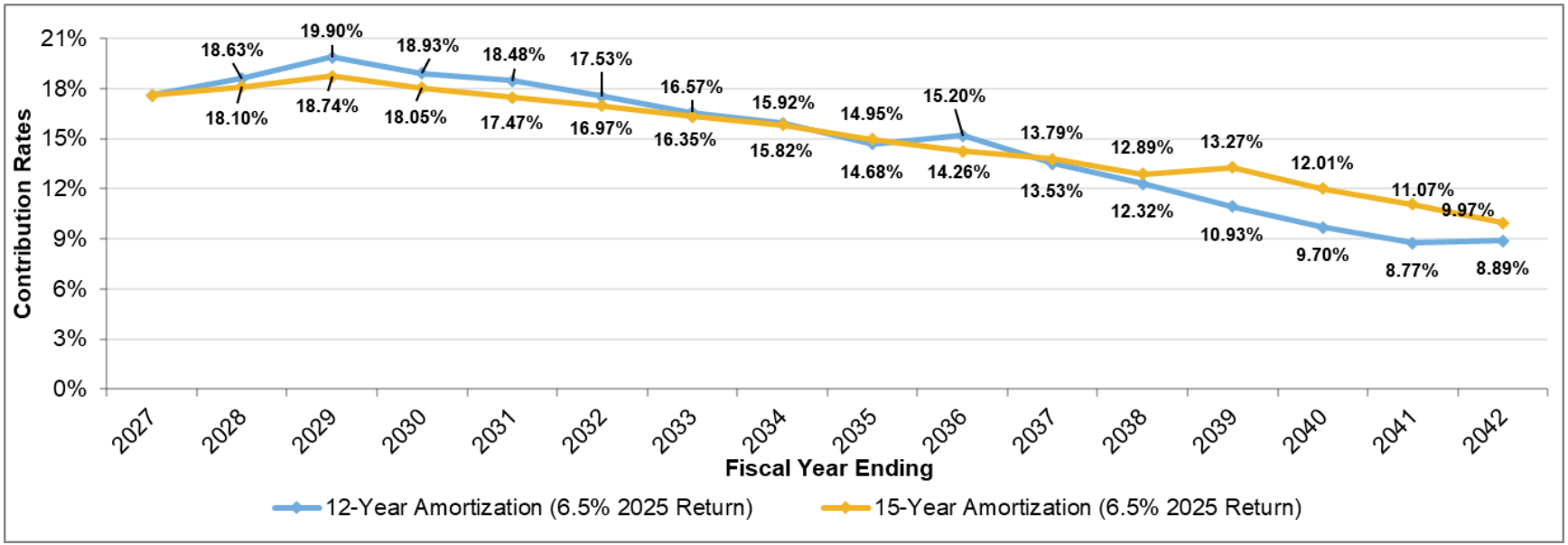


Note that all proposed assumption changes are reflected in the above illustration unless otherwise specified.

Funding Methodology

Comparison of Contribution Rates Under 12-Year Amortization Method vs. 15-Year Amortization Method

LGERS Law Enforcement Officers

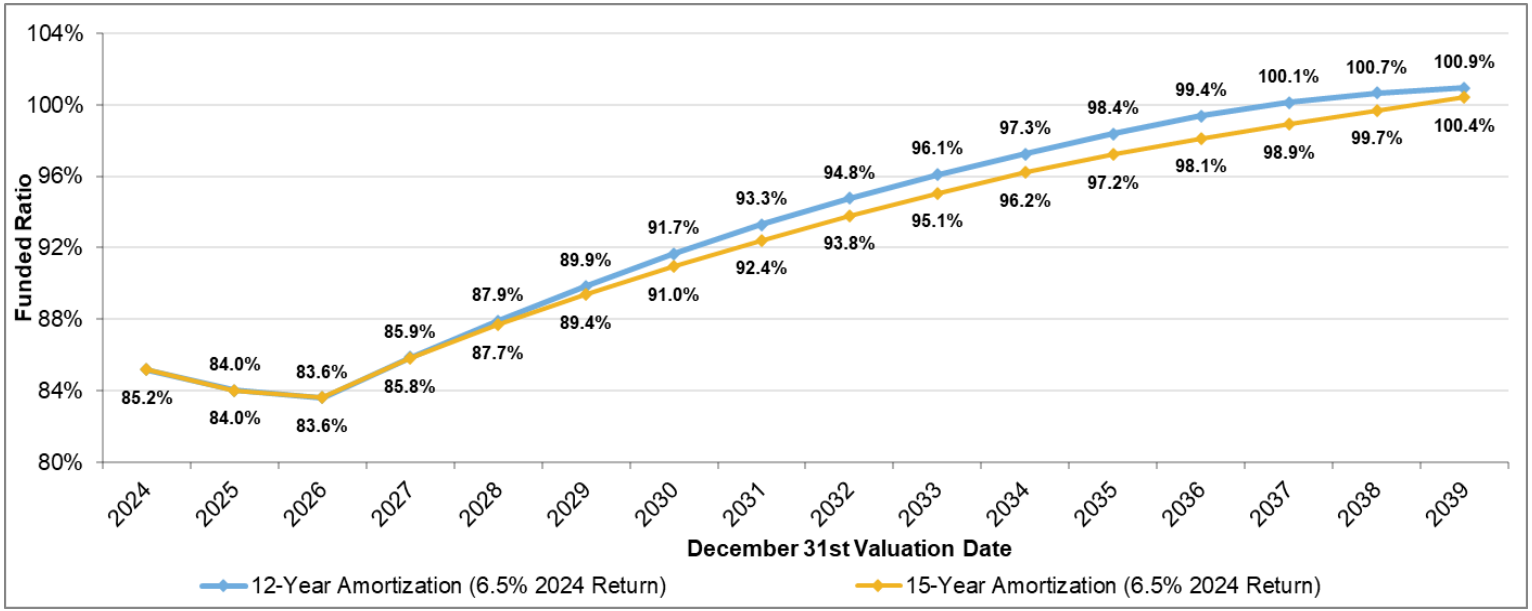


Note that all proposed assumption changes are reflected in the above illustration unless otherwise specified.

Funding Methodology

Comparison of Projected Funded Ratios Under 12-Year Amortization Method vs. 15-Year Amortization Method

LGERS



Note that all proposed assumption changes are reflected in the above illustration unless otherwise specified.

Funding Methodology

Actuarial Cost Method

RODSPF

- Currently uses the Entry Age Normal – Level Percent of Pay (EAN – Level %) Actuarial Cost Method
  - The EAN – Level % cost method allocates the annual normal cost over the employee's career as a level percentage of payroll.

- Recommend changing to the Entry Age Normal – Level Dollar (EAN – Level $) Actuarial Cost Method
  - The EAN – Level $ cost method allocates the annual normal cost over the employee's career as a level dollar amount.
  - RODSPF provides pension benefits which provides pay-related benefits with a flat dollar cap that serves to significantly reduce or eliminate the impact of future pay increases. Therefore, a level dollar method is more suitable.

Administrative Factors

Administrative Factors

- The following assumptions will be updated based on the set of assumptions that are adopted by the Boards at the January 2026 Board meeting:
  - Assumptions used for transfer benefit from Supplemental Retirement Plans
  - Assumptions used for withdrawal liability
  - COLA assumption used in calculating cost of service purchases at full actuarial cost
  - Mortality and interest used for optional forms of benefits
    - Illustrative impacts of option factor changes will be shared with the Boards of Trustees prior to the January 2026 meeting
- These assumptions will be first effective January 1, 2027

No Board Decisions Today

- Boards to review today
- Provide direction on additional analysis if needed
- Board scheduled to adopt recommendations at the January Board meeting

Gallagher

Appendix

Appendix A: TSERS Proposed Actuarial Assumptions and Methods

Interest Rate

6.50% per annum, compounded annually.

Price Inflation

2.50% per annum, compounded annually.

Real Wage Growth

0.75% per annum.

Payroll Growth

3.25% per annum.

Separations From Active Service

Representative values of the assumed rates of separation from active service are as follows:

Rates of Withdrawal

Up to five years of membership								
	General Employees		Teachers, Librarians, and Counselors		Law Enforcement Officers		Other Education	
Service	Male	Female	Male	Female	Male	Female	Male	Female
0	0.1500	0.1600	0.1375	0.1100	0.1200	0.1200	0.1600	0.1500
1	0.1700	0.1850	0.1675	0.1600	0.1100	0.1100	0.1825	0.1725
2	0.1400	0.1550	0.1500	0.1500	0.1000	0.1000	0.1625	0.1425
3	0.1125	0.1325	0.1300	0.1275	0.0900	0.0900	0.1325	0.1225
4	0.0950	0.1075	0.1050	0.1125	0.0800	0.0800	0.1100	0.1050

After five years of membership								
	General Employees		Teachers, Librarians, and Counselors		Law Enforcement Officers		Other Education	
Age	Male	Female	Male	Female	Male	Female	Male	Female
25	0.1500	0.1800	0.2500	0.2200	0.0600	0.0600	0.2100	0.1800
30	0.1100	0.1150	0.0900	0.1000	0.0600	0.0600	0.0900	0.1350
35	0.0675	0.0850	0.0625	0.0550	0.0350	0.0350	0.0550	0.0675
40	0.0450	0.0500	0.0400	0.0300	0.0200	0.0200	0.0400	0.0400
45	0.0350	0.0400	0.0300	0.0300	0.0200	0.0200	0.0350	0.0400
50	0.0350	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400
55	0.0350	0.0400	0.0400	0.0400			0.0400	0.0400
60	0.0350	0.0400	0.0400	0.0400			0.0400	0.0400

Appendix A: TSERS Proposed Actuarial Assumptions and Methods (continued)

Annual Rates of Mortality for Employees

(Base rates using Pub-2016 Amount weighted)

	General Employees		Teachers, Librarians, and Counselors		Law Enforcement Officers		Other Education	
Age	Male	Female	Male	Female	Male	Female	Male	Female
25	0.00042	0.00013	0.00024	0.00008	0.00034	0.00016	0.00042	0.00013
30	0.00048	0.00019	0.00028	0.00013	0.00040	0.00022	0.00048	0.00019
35	0.00052	0.00028	0.00035	0.00020	0.00047	0.00031	0.00052	0.00028
40	0.00069	0.00041	0.00047	0.00032	0.00059	0.00045	0.00069	0.00041
45	0.00099	0.00061	0.00070	0.00048	0.00079	0.00067	0.00099	0.00061
50	0.00147	0.00092	0.00109	0.00073	0.00116	0.00100	0.00147	0.00092
55	0.00226	0.00137	0.00174	0.00107	0.00180	0.00150	0.00226	0.00137
60	0.00341	0.00207	0.00271	0.00159	0.00291	0.00226	0.00341	0.00207
65	0.00493	0.00313	0.00410	0.00256	0.00472	0.00343	0.00493	0.00313
70	0.00729	0.00476	0.00627	0.00427	0.00874	0.00521	0.00729	0.00476
74	0.01048	0.00665	0.00891	0.00643	0.01431	0.00729	0.01048	0.00665

Annual Rates of Disability

Active Members with 5 or more years of service as of January 1, 1988

	General Employees		Teachers, Librarians, and Counselors		Law Enforcement Officers		Other Education	
Age	Male	Female	Male	Female	Male	Female	Male	Female
25	0.00020	0.00024	0.00006	0.00018	0.00330	0.00330	0.00020	0.00024
30	0.00040	0.00040	0.00012	0.00026	0.00430	0.00430	0.00040	0.00040
35	0.00100	0.00100	0.00030	0.00060	0.00600	0.00600	0.00100	0.00100
40	0.00300	0.00180	0.00066	0.00102	0.00790	0.00790	0.00300	0.00180
45	0.00500	0.00320	0.00138	0.00178	0.01100	0.01100	0.00500	0.00320
50	0.00840	0.00500	0.00234	0.00316	0.01760	0.01760	0.00840	0.00500
55	0.01440	0.00880	0.00474	0.00554	0.03070	0.03070	0.01440	0.00880
60	0.02400	0.01380	0.00768	0.01020	0.06010	0.06010	0.02400	0.01380
64	0.03160	0.01780	0.01124	0.01392	0.11210	0.11210	0.03160	0.01780

Appendix A: TSERS Proposed Actuarial Assumptions and Methods (continued)

Retirements

Representative values of the assumed rates of retirement from active service are as follows:

Annual Rates of Retirement for Active Members

General Employees

Male	Service						
Age	5	10	15	20	25	30	35
50				0.0325	0.0400	0.4000	0.4000
55				0.0325	0.0525	0.2800	0.2800
60	0.0825	0.0650	0.0775	0.0900	0.2500	0.2300	0.2300
65	0.1725	0.2325	0.2600	0.2850	0.3100	0.2750	0.2750
70	0.1725	0.2325	0.2350	0.2500	0.2000	0.2750	0.2750
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000

Female	Service						
Age	5	10	15	20	25	30	35
50				0.0375	0.0425	0.3250	0.3250
55				0.0425	0.0425	0.2350	0.2350
60	0.0775	0.0925	0.0925	0.0950	0.2500	0.2350	0.2350
65	0.2200	0.2625	0.2950	0.3100	0.3350	0.2600	0.2600
70	0.1950	0.2300	0.2250	0.2400	0.3350	0.2800	0.2800
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Teachers, Librarians, and Counselors

Male	Service						
Age	5	10	15	20	25	30	35
50				0.0325	0.0400	0.7000	0.7000
55				0.0475	0.0400	0.3500	0.3500
60	0.0775	0.0900	0.1100	0.1100	0.3600	0.2500	0.2500
65	0.2000	0.2200	0.2500	0.3500	0.3600	0.2500	0.2500
70	0.2000	0.2500	0.2500	0.2500	0.2750	0.2500	0.2500
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Female	Service						
Age	5	10	15	20	25	30	35
50				0.0500	0.0425	0.5500	0.5500
55				0.0500	0.0575	0.3500	0.3500
60	0.0950	0.1050	0.1300	0.1300	0.3500	0.3500	0.3500
65	0.2500	0.3000	0.3000	0.3900	0.4500	0.3500	0.3500
70	0.2500	0.2500	0.2700	0.3400	0.2750	0.3000	0.3000
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Appendix A: TSERS Proposed Actuarial Assumptions and Methods (continued)

Law Enforcement Officers

	Service						
Age	5	10	15	20	25	30	35
50			0.0550	0.0500	0.1800	0.6000	0.6000
55	0.2500	0.1500	0.4000	0.4500	0.6000	0.5000	0.5000
60	0.1000	0.1500	0.2000	0.3000	0.2700	0.4500	0.4500
65	0.1775	0.3500	0.4000	0.3000	0.3000	0.4000	0.4000
70	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Other Education

Male	Service						
Age	5	10	15	20	25	30	35
50				0.0350	0.0375	0.4000	0.4000
55				0.0400	0.0550	0.2750	0.2750
60	0.0800	0.0700	0.0900	0.0900	0.2250	0.2400	0.2400
65	0.2000	0.2300	0.2900	0.3000	0.3750	0.2750	0.2750
70	0.1500	0.2300	0.2500	0.2300	0.3000	0.3000	0.3000
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Female	Service						
Age	5	10	15	20	25	30	35
50				0.0450	0.0475	0.3750	0.3750
55				0.0550	0.0700	0.2750	0.2750
60	0.0850	0.0900	0.1000	0.1000	0.3000	0.2500	0.2500
65	0.2500	0.2750	0.2750	0.3500	0.3400	0.3000	0.3000
70	0.1750	0.2100	0.2300	0.2500	0.4000	0.2750	0.2750
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Assumed Retirement Age for Deferred Vested Members

Not Law Enforcement Officers:

Current and future deferred vested members are assumed to retire at age 60 with 5 years of service and less than 20 years of service or age 50 if they have 20 or more years of service.

Law Enforcement Officers

Current and future deferred vested members are assumed to retire at age 55 with 5 years of service and less than 15 years of service and at age 50 if they have 15 or more years of service for members in Law Enforcement.

Appendix A: TSERS Proposed Actuarial Assumptions and Methods (continued)

Salary Merit Increases

Total assumed salary increases are these merit rates combined with the wage inflation assumption of 3.25% (2.50% price inflation plus 0.75% real wage growth). Representative values of the assumed annual rates of salary merit increases are as follows:

Service	General Employees	Teachers, Librarians and Counselors	Law Enforcement Officers	Other Education
0	4.00%	5.00%	5.75%	4.75%
5	2.50%	3.25%	3.90%	3.30%
10	1.60%	2.00%	2.00%	2.30%
15	0.75%	1.00%	1.25%	1.70%
20	0.60%	0.55%	1.25%	1.50%
25	0.40%	0.50%	1.00%	0.80%
30	0.00%	0.50%	0.40%	0.45%
>=35	0.00%	0.00%	0.00%	0.00%

Post-Decrement Mortality

Representative values of the assumed post-decrement mortality rates as of 2016 prior to any mortality improvements are as follows:

Annual Rates of Post-Decrement Mortality (healthy members)

	General Employees		Teachers, Librarians, and Counselors		Law Enforcement Officers		Other Education	
Age	Male	Female	Male	Female	Male	Female	Male	Female
55	0.00422	0.00285	0.00309	0.00246	0.00314	0.00268	0.00422	0.00285
60	0.00625	0.00361	0.00455	0.00295	0.00479	0.00428	0.00625	0.00361
65	0.00886	0.00516	0.00691	0.00423	0.00785	0.00709	0.00886	0.00516
70	0.01380	0.00892	0.01136	0.00741	0.01420	0.01236	0.01380	0.00892
75	0.02441	0.01730	0.02058	0.01483	0.02672	0.02232	0.02441	0.01730
80	0.04516	0.03377	0.04082	0.03102	0.04927	0.04068	0.04516	0.03377

Appendix A: TSERS Proposed Actuarial Assumptions and Methods (continued)

Annual Rates of Post-Decrement Mortality (survivors and disabled members)

	All Survivors		Disabled Members			
			Non - Law Enforcement Officers		Law Enforcement Officers	
Age	Male	Female	Male	Female	Male	Female
55	0.00989	0.00650	0.01783	0.01204	0.01334	0.01126
60	0.01310	0.00937	0.02722	0.01834	0.02036	0.01715
65	0.01800	0.01378	0.03248	0.02024	0.02430	0.01893
70	0.02607	0.02088	0.03822	0.02436	0.02859	0.02279
75	0.03992	0.03272	0.05513	0.03703	0.04125	0.03463
80	0.06411	0.05335	0.08702	0.06201	0.06510	0.05799

Mortality Assumption

All mortality rates use Pub-2016 amount-weighted tables.

Mortality Projection

All mortality rates are projected from 2016 using generational improvement with Scale MP-2021.

Deaths After Termination/Retirement (General Employees and Other Education)

Mortality rates are based on the General Mortality Table for Retirees, with adjustments as follows:.

Age	Male Factor	Female Factor	Age	Male Factor	Female Factor
< 72	99%	94%	81	99%	103%
72	99%	95%	82	100%	105%
73	99%	96%	83	101%	107%
74	99%	97%	84	102%	109%
75	98%	98%	85	103%	109%
76	98%	99%	86	104%	109%
77	98%	100%	87	105%	107%
78	98%	101%	88	105%	105%
79	98%	101%	89	105%	103%
80	98%	101%	>= 90	105%	101%

Appendix A: TSERS Proposed Actuarial Assumptions and Methods (continued)

Deaths After Termination/Retirement (Teachers)

Mortality rates are based on the Below-median Teachers Mortality Table for Retirees, with adjustments as follows:

Age	Male Factor	Female Factor
<73	94%	99%
73	94%	101%
74	94%	103%
75	95%	105%
76	96%	107%
77	97%	109%
78	98%	111%
79	99%	111%
80	100%	111%
81	101%	111%
82	102%	111%

Age	Male Factor	Female Factor
83	103%	112%
84	104%	112%
85	105%	112%
86	105%	109%
87	105%	106%
88	105%	103%
89	105%	100%
90	105%	97%
91	105%	94%
>= 92	105%	93%

Deaths After Termination/Retirement (Law Enforcement Officers)

Mortality rates are based on the Safety Mortality Table for Retirees. Rates for all members are multiplied by 106%.

Deaths of Contingent Survivors (before and after death of original member) and Alternate Payees

Mortality rates are based on the Below-median General Mortality Table for Contingent Survivors, with adjustments as follows:

Age	Male Factor	Female Factor
< 81	109%	126%
81	109%	124%
82	109%	122%
83	109%	120%
84	109%	118%
85	109%	116%
86	109%	114%
87	109%	112%
88	109%	110%
>= 89	109%	108%

Appendix A: TSERS Proposed Actuarial Assumptions and Methods (continued)

Deaths After Disablement

Mortality rates are based on the General Mortality Table for Disabled Retirees. Rates for male members not in Law Enforcement are multiplied by 135% for all ages, while male members in Law Enforcement are multiplied by 101% for all ages. Rates for female members not in Law Enforcement are multiplied by 108% for all ages, while female members in Law Enforcement are multiplied by 101% for all ages.

Deaths Prior to Termination/Retirement

Mortality rates for the general and other education groups are based on the General Mortality Table for Employees. Mortality rates for teachers are based on the Teachers Mortality Table for Employees. Mortality rates for law enforcement officers are based on the Safety Mortality Table for Employees.

Timing of Assumptions

All withdrawals, deaths, disabilities, retirements and salary increases are assumed to occur July 1 of each year. The timing of retirement changes from mid-year to beginning of year at and after the 100% retirement age.

Leave Conversions

Sick leave can be converted to increase creditable service and used to meet the eligibility requirements for retirement. Unused vacation leave can be converted to increase creditable service or compensation but does not add to the eligibility service. The assumed impact of these conversions is shown in the table below.

		General Employees		Teachers, Librarians and Counselors		Law Enforcement Officers		Other Education	
		Male	Female	Male	Female	Male	Female	Male	Female
Increase in AFC (percentage) – Unused Vacation Leave		2.70%	2.70%	2.20%	2.20%	3.00%	3.00%	2.40%	2.40%
Increase in Service (yrs) – Unused Sick Leave	Credited	0.75	0.50	0.80	0.60	1.50	1.25	0.90	0.70
	Eligibility	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Liability for Inactive Members

For inactive members with five or more years of service without actual deferred benefit amounts, a deferred benefit amount is estimated based on available data and contribution balances projecting backwards assuming 4% salary growth and 4% interest on contribution balances where necessary. For inactive members with less than five years of service the liability is equal to the member's accumulated contributions.

Administrative Expenses

0.10% of payroll added to the normal cost rate.

Marriage Assumption

100% married with male spouses two years older than female spouses.

Missing Gender Code

For members reported on the data without a gender code, we use the prior year's code where available or assign a code based on inspection.

Appendix A: TSERS Proposed Actuarial Assumptions and Methods (continued)

Reported Compensation

Calendar year compensation as furnished by the system's office.

Valuation Compensation

Reported compensation adjusted to reflect the assumed rate of pay as of the valuation date and the probability of decrement during the year.

Compensation for members receiving DIPNC benefits

Compensation earned as of the disability benefit effective date is increased by inflation to the valuation date.

Compensation Limits

No compensation limits are applied.

Actuarial Cost Method

Entry age normal cost method. Under this method, the actuarial value of projected benefits for each individual participant is allocated as a level percentage of compensation over the working lifetime of the participant between the date of employment and assumed date of exit.

Normal Cost

Normal cost rate reflects the impact of new entrants during the year.

Amortization Period

15-year closed, level-dollar amount. The amortization period for outstanding bases established prior to December 31, 2025 is extended by 3 years effective with the actuarially determined employer contributions amounts beginning with the fiscal year ending in 2028. The first amortization base was created for the contribution payable for fiscal year ending 2012.

Asset Valuation Method

The actuarial value of assets is based upon a smoothed market value method. Under this method, asset returns in excess of or less than the expected return on market value of assets will be reflected in the actuarial value of assets over a five-year period. The Actuarial Value of Assets was reset to the market value of assets at December 31, 2014. The calculation of the Actuarial Value of Assets is based on the following formula:

$MV - 80\% \times G/(L)_1 - 60\% \times G/(L)_2 - 40\% \times G/(L)_3 - 20\% \times G/(L)_4$

MV = the market value of assets as of the valuation date

$G/(L)_i$ = the asset gain or (loss) for the i-th year preceding the valuation date

Appendix A: TSERS Proposed Actuarial Assumptions and Methods (continued)

Direct Rate Smoothing

Assumption and method changes adopted by the experience study prepared as of December 31, 2024 are expected to decrease the actuarially determined contribution requirements of TSERS by 2.32% of payroll. The impact of these assumption and method changes will be smoothed over a five-year period so that 20% of the impact is recognized for each valuation starting with the December 31, 2025 valuation, and will be fully recognized in the December 31, 2029 valuation.

Appendix A: CJRS Proposed Actuarial Assumptions and Methods

Interest Rate

6.50% per annum, compounded annually.

Price Inflation

2.50% per annum, compounded annually.

Real Wage Growth

0.75% per annum.

Payroll Growth

3.25% per annum.

Withdrawal

2.50% termination rate assumed for all years.

Separations Before Retirement

Representative values of the assumed annual rates of separation are as follows:

	Annual Rates of		
	Disability	Base Mortality*	
Age	Male & Female	Male	Female
25	.00002	.00042	.00013
30	.00003	.00048	.00019
35	.00008	.00052	.00028
40	.00017	.00069	.00041
45	.00035	.00099	.00061
50	.00059	.00147	.00092
55	.00119	.00226	.00137
60	.00192	.00341	.00207
64	.00246	.00459	.00288

* Base mortality rates as of 2016.

Appendix A: CJRS Proposed Actuarial Assumptions and Methods (continued)

Service Retirement

Representative values of the assumed annual rates of service retirement for active members are as follows:

Annual Rates of Retirement						
	Service					
Age	5	10	15	20	24	25 +
50	.0275	.0275	.0275	.0275	.1350	.1000
55	.0275	.0275	.0275	.0275	.1500	.1000
60	.0375	.0375	.0375	.0375	.2500	.1700
65	.1300	.1300	.1300	.1300	.2500	.1600
70	.2500	.2500	.2500	.2500	.2500	.3000

All members are assumed to retire no later than age 72. S.L. 2023-134, which became law on October 3, 2023, increases the required retirement age from 72 to 76 for Supreme Court Justices and appellate judges. We do not expect this change to have a material impact on active member retirement patterns for the current population, and accordingly did not change the service retirement assumption. We will continue to monitor retirement experience.

Current and future deferred vested members are assumed to retire age 50.

Salary Increases (Merit Only)

Representative values of the assumed annual rates of salary merit increases are as follows:

Annual Rate of Salary Increase	
Service	Rate
0	.0175
5	.0125
10	.0075
>=15	.0000

Appendix A: CJRS Proposed Actuarial Assumptions and Methods (continued)

Post-Decrement Mortality

Representative values of the assumed post-decrement mortality rates in 2016 prior to any mortality improvements are as follows:

Annual Rate of Death after Decrement						
	Healthy Members		All Survivors		Disabled Members	
Age	Male	Female	Male	Female	Male	Female
55	.00355	.00291	0.00989	0.00650	.01321	.01115
60	.00539	.00369	0.01310	0.00937	.02016	.01698
65	.00769	.00527	0.01800	0.01378	.02406	.01874
70	.01219	.00911	0.02607	0.02088	.02831	.02256
75	.02180	.01696	0.03992	0.03272	.04084	.03429
80	.04068	.03212	0.06411	0.05335	.06446	.05742

Deaths After Termination/Retirement

Mortality rates are based on the Pub-2016 General Retirees Above-Median Amount-Weighted Mortality.

Deaths After Disablement

Mortality rates are based on the Pub-2016 General Disabled Retirees Amount-Weighted Mortality.

Appendix A: CJRS Proposed Actuarial Assumptions and Methods (continued)

Deaths of Contingent Survivors (before and after death of original member) and Alternate Payees

Mortality rates are based on the Below-median General Mortality Table for Contingent Survivors, with adjustments as follows:

Age	Male Factor	Female Factor
< 81	109%	126%
81	109%	124%
82	109%	122%
83	109%	120%
84	109%	118%
85	109%	116%
86	109%	114%
87	109%	112%
88	109%	110%
>= 89	109%	108%

Deaths Prior to Termination/Retirement

Mortality rates are based on the Pub-2016 General Employees Amount-Weighted Mortality Table.

Mortality Projection

All mortality rates are projected from 2016 using generational improvement with Scale MP-2021.

Timing of Assumptions

All withdrawals, deaths, disabilities, retirements, and salary increases are assumed to occur July 1 of each year. The timing of retirement changes from mid-year to beginning of year at and after the 100% retirement age.

Liability for Inactive Members

The liability for members who terminated prior to five years of creditable service is estimated to be 100% of the member's accumulated contributions. The liability for members who terminated after completing five years of creditable service is estimated based on the member's current age and the service and reported compensation at termination of employment.

Administrative Expenses

0.05% of payroll added to the normal cost rate.

Appendix A: CJRS Proposed Actuarial Assumptions and Methods (continued)

Marriage Assumption

90% of male members married and 50% of female members married with the male spouses two years older than female spouses.

Missing Gender Code

For members reported on the data without a gender code, we use the prior year's code where available or assign a code based on first name.

Reported Compensation

Calendar year compensation as furnished by the system's office.

Valuation Compensation

Reported compensation adjusted to reflect the assumed rate of pay as of the valuation date and the probability of decrement during the year.

Compensation Limits

No compensation limits are applied.

Actuarial Cost Method

Entry age normal cost method. Under this method, the actuarial value of projected benefits for each individual participant is allocated as a level percentage of compensation over the working lifetime of the participant between the date of employment and assumed date of exit.

Normal Cost

Normal cost rate reflects the impact of new entrants during the year.

Amortization Period

15-year closed, level-dollar amount. The amortization period for outstanding bases established prior to December 31, 2025 is extended by 3 years effective with the actuarially determined employer contributions amounts beginning with the fiscal year ending in 2028. The first amortization base was created for the contribution payable for fiscal year ending 2012.

Appendix A: CJRS Proposed Actuarial Assumptions and Methods (continued)

Asset Valuation Method

The actuarial value of assets is based upon a smoothed market value method. Under this method, asset returns in excess of or less than the expected return on market value of assets will be reflected in the actuarial value of assets over a five- year period. The calculation of the Actuarial Value of Assets is based on the following formula:

MV – 80% x G/(L)1 – 60% x G/(L)2 – 40% x G/(L)3 – 20% x G/(L)4

MV = the market value of assets as of the valuation date

G/(L)i = the asset gain or (loss) for the i-th year preceding the valuation date

Direct Rate Smoothing

Assumption and method changes adopted by the experience study prepared as of December 31, 2024 are expected to decrease the actuarially determined contribution requirements of CJRS by 6.74% of payroll. The impact of these assumption and method changes will be smoothed over a five-year period so that 20% of the impact is recognized for each valuation starting with the December 31, 2025 valuation, and will be fully recognized in the December 31, 2029 valuation.

Appendix A: LRS Proposed Actuarial Assumptions and Methods

Interest Rate

6.50% per annum, compounded annually.

Price Inflation

2.50% per annum, compounded annually.

Real Wage Growth

0.75% per annum.

Annual Rate of Salary Increase

3.25%.

Separations Before Retirement

Representative values of the assumed annual rates of separation are as follows:

Age	Annual Rate of Disability	Base Mortality*		Withdrawal
		Male	Female	
25	.0001	.00042	.00013	.100
30	.0004	.00048	.00019	.100
35	.0010	.00052	.00028	.100
40	.0029	.00069	.00041	.100
45	.0049	.00099	.00061	.100
50	.0084	.00147	.00092	.100
55	.0144	.00226	.00137	.100
60		.00341	.00207	.100
64		.00459	.00288	.100

* Base mortality rates as of 2016

Appendix A: LRS Proposed Actuarial Assumptions and Methods (continued)

Service Retirement

Representative values of the assumed annual rates of separation for members with at least 5 years of service are as follows:

Annual Rates of Retirement	
Age	Rate
60	0.105
65	0.165
70	0.115
75	0.160
80	1.000

Current and future deferred vested members are assumed to retire age 65.

Post-Decrement Mortality

Representative values of the assumed post-decrement mortality rates as of 2016 prior to any mortality improvements are as follows:

Annual Rate of Death after Decrement						
	Healthy Members		All Survivors		Disabled Members	
Age	Male	Female	Male	Female	Male	Female
55	.00355	.00291	0.00989	0.00650	.01321	.01115
60	.00539	.00369	0.01310	0.00937	.02016	.01698
65	.00769	.00527	0.01800	0.01378	.02406	.01874
70	.01219	.00911	0.02607	0.02088	.02831	.02256
75	.02180	.01696	0.03992	0.03272	.04084	.03429
80	.04068	.03212	0.06411	0.05335	.06446	.05742

Deaths After Termination/Retirement

Mortality rates are based on the Pub-2016 General Retirees Above-Median Amount-Weighted Mortality.

Deaths After Disablement

Mortality rates are based on the Pub-2016 General Disabled Retirees Amount-Weighted Mortality.

Appendix A: LRS Proposed Actuarial Assumptions and Methods (continued)

Deaths of Contingent Survivors (before and after death of original member) and Alternate Payees

Mortality rates are based on the Below-median General Mortality Table for Contingent Survivors, with adjustments as follows:

Age	Male Factor	Female Factor
< 81	109%	126%
81	109%	124%
82	109%	122%
83	109%	120%
84	109%	118%
85	109%	116%
86	109%	114%
87	109%	112%
88	109%	110%
>= 89	109%	108%

Deaths Prior to Termination/Retirement

Mortality rates are based on the Pub-2016 General Employees Amount-Weighted Mortality Table.

Mortality Projection

All mortality rates are projected from 2016 using generational improvement with Scale MP-2021.

Marriage Assumption

100% married with male spouses two years older than female spouses.

Missing Gender Code

For members reported on the data without a gender code, we use the prior year's code where available or assign a code based on inspection.

Liability for Inactive Members

The liability for members who terminated prior to five years of creditable service is estimated to be 100% of the member's accumulated contributions. The liability for members who terminated after completing five years of creditable service is estimated based on the member's current age and the service and reported compensation at termination of employment.

Appendix A: LRS Proposed Actuarial Assumptions and Methods (continued)

Timing of Assumptions

All withdrawals, deaths, disabilities, retirements and salary increases are assumed to occur July 1 of each year. The timing of retirement changes from mid-year to beginning of year at and after the 100% retirement age.

Administrative Expenses

0.50% of payroll added to the normal cost rate.

Reported Compensation

Calendar year compensation as furnished by the system's office.

Valuation Compensation

Reported compensation adjusted to reflect the assumed rate of pay as of the valuation date and the probability of decrement during the year.

Compensation Limits

No compensation limits are applied.

Actuarial Cost Method

Entry age normal cost method. Under this method, the actuarial value of projected benefits for each individual participant is allocated as a level percentage of compensation over the working lifetime of the participant between the date of employment and assumed date of exit.

Amortization Period

15-year closed, level-dollar amount. The amortization period for outstanding bases established prior to December 31, 2025 is extended by 3 years effective with the actuarially determined employer contributions amounts beginning with the fiscal year ending in 2028. The first amortization base was created for the contribution payable for fiscal year ending 2012.

Appendix A: LRS Proposed Actuarial Assumptions and Methods (continued)

Asset Valuation Method

Actuarial value, as developed in Table 8. Actuarial value of assets is based upon a smoothed market value method. Under this method, asset returns in excess of or less than the expected return on market value of assets will be reflected in the actuarial value of assets over a five-year period. The calculation of the Actuarial Value of Assets is based on the following formula:

$MV - 80\% \times G/(L)_1 - 60\% \times G/(L)_2 - 40\% \times G/(L)_3 - 20\% \times G/(L)_4$

MV = the market value of assets as of the valuation date

$G/(L)_i$ = the asset gain or (loss) for the i-th year preceding the valuation date

Direct Rate Smoothing

Assumption and method changes adopted by the experience study prepared as of December 31, 2024 are expected to decrease the actuarially determined contribution requirements of LRS by 0.80% of payroll. The impact of these assumption and method changes will be smoothed over a five-year period so that 20% of the impact is recognized for each valuation starting with the December 31, 2025 valuation, and will be fully recognized in the December 31, 2029 valuation.

Appendix A: NGPF Proposed Actuarial Assumptions and Methods

Interest Rate

6.50% per annum, compounded annually.

Active Members

Normal Cost is loaded $375,000 to account for active members with less than 7 years of service that are not included in the valuation.

Separations From Active Service

Assumed annual rates of separation from active service are as follows:

Annual Rates of Withdrawal				
	Service			
Age	< = 6	7 – 9	10 - 19	> = 20
< = 50	0.000	0.130	0.080	0.135
50 - 54	0.000	0.130	0.080	0.170
> = 55	0.000	0.130	0.100	0.230

Deaths Prior to Termination/Retirement

Representative values of the assumed pre-decrement mortality rates prior to any mortality improvements are as follows:

Annual Rates of Mortality		
	Base Mortality*	
Age	Males	Females
25	0.00042	0.00013
30	0.00048	0.00019
35	0.00052	0.00028
40	0.00069	0.00041
45	0.00099	0.00061
50	0.00147	0.00092
55	0.00226	0.00137
60	0.00341	0.00207

* Base mortality rates as of 2016.

Appendix A: NGPF Proposed Actuarial Assumptions and Methods (continued)

Service Retirement

Assumed annual rates of retirement from active service are as follows:

Annual Rates of Retirement		
	Service	
Age	<=19	>=20
<=55	0.000	0.150
55-59	0.000	0.250
>=60	0.000	1.000

Current and future deferred vested participants are assumed to retire at age 60.

Benefit Payments for Deferred Vested Members Over Age 60

All current deferred vested members over age 60 are assumed to receive a payment on the valuation date equal to the amount of payments due retroactively to age 60, without adjustment for any interest.

Post-Decrement Mortality

Representative values of the assumed post-decrement mortality rates prior to any mortality improvements are as follows:

Annual Rates of Mortality				
	Healthy Members		All Survivors	
Age	Males	Females	Males	Females
55	0.00422	0.00285	0.00989	0.00650
60	0.00625	0.00361	0.01310	0.00937
65	0.00886	0.00516	0.01800	0.01378
70	0.01380	0.00892	0.02607	0.02088
75	0.02441	0.01730	0.03992	0.03272
80	0.04516	0.03377	0.06411	0.05335
85	0.08602	0.07021	0.10515	0.08303
90	0.15778	0.11764	0.18118	0.13165

Appendix A: NGPF Proposed Actuarial Assumptions and Methods (continued)

Deaths After Termination/Retirement

Mortality rates are based on the General Mortality Table for Retirees, with adjustments as follows:

Age	Male Factor	Female Factor	Age	Male Factor	Female Factor
< 72	99%	94%	81	99%	103%
72	99%	95%	82	100%	105%
73	99%	96%	83	101%	107%
74	99%	97%	84	102%	109%
75	98%	98%	85	103%	109%
76	98%	99%	86	104%	109%
77	98%	100%	87	105%	107%
78	98%	101%	88	105%	105%
79	98%	101%	89	105%	103%
80	98%	101%	>= 90	105%	101%

Deaths of Contingent Survivors (before and after death of original member) and Alternate Payees

Mortality rates are based on the Below-median General Mortality Table for Contingent Survivors, with adjustments as follows:

Age	Male Factor	Female Factor
< 81	109%	126%
81	109%	124%
82	109%	122%
83	109%	120%
84	109%	118%
85	109%	116%
86	109%	114%
87	109%	112%
88	109%	110%
>= 89	109%	108%

Appendix A: NGPF Proposed Actuarial Assumptions and Methods (continued)

Mortality Projection

Post-retirement mortality rates are projected from 2016 using generational improvement with Scale MP-2021.

Deaths Prior to Termination/Retirement

Mortality Rates are based on the Pub 2016 General Employees Amount-Weighted Mortality Table.

Timing of Assumptions

All withdrawals, deaths and retirements are assumed to occur July 1 of each year. The timing of retirement changes from mid-year to beginning of year at and after the 100% retirement age.

Administrative Expenses

Equal to prior year actual administrative expenses added to Normal Cost.

Missing Gender Code

For members reported on the data without a gender code, we use the prior year's code where available or assign a code based on inspection.

Other Data Assumptions

- Members of the Army National Guard who were terminated vested participants in the prior valuation but were reported with less than 15 years of prior North Carolina National Guard duty were assumed to have terminated without a vested benefit.
- Inactive Army National Guard members who were reported this year with over 20 years of total service and more than 15 years of North Carolina National Guard duty (or National Guard duty information was omitted), but were not included as deferred vested members the previous year, are assumed to have terminated with a vested benefit.
- Where service showed an unexpected change from the prior year and an explanation for the change could not be reconciled, the creditable service reported for the current year was accepted.

Actuarial Cost Method

Entry age normal cost method. Under this method, the actuarial value of projected benefits for each individual participant is allocated as a level dollar over the working lifetime of the participant between the date of employment and assumed date of exit.

Appendix A: NGPF Proposed Actuarial Assumptions and Methods (continued)

Asset Valuation Method

Actuarial value, as developed in Section 3. Actuarial value of assets is based upon a smoothed market value method. Under this method, asset returns in excess of or less than the expected return on market value of assets will be reflected in the actuarial value of assets over a five-year period. The calculation of the Actuarial Value of Assets is based on the following formula:

$MV - 80\% \times G/(L)_1 - 60\% \times G/(L)_2 - 40\% \times G/(L)_3 - 20\% \times G/(L)_4$

MV = the market value of assets as of the valuation date

$G/(L)_i$ = the asset gain or (loss) for the i-th year preceding the valuation date

Direct Rate Smoothing

Assumption and method changes adopted by the experience study prepared as of December 31, 2024 are expected to increase the preliminary actuarially determined contribution requirements of NGPF by $1.6M. The impact of these assumption and method changes will be smoothed over a five-year period so that 20% of the impact is recognized for each valuation starting with the December 31, 2025 valuation, and will be fully recognized in the December 31, 2029 valuation.

Appendix A: DIPNC Proposed Actuarial Assumptions and Methods

Discount Rate

4.50% per annum, compounded annually.

Expected Rate of Return on Assets

4.50% per annum, net of expenses.

Price Inflation

2.50% per annum, compounded annually.

Real Wage Growth

0.75% per annum.

Payroll Growth

For disability events that first occur on or after January 1, 1988, extended STD and LTD benefits (before reductions) are assumed to increase 3.25% per annum. Otherwise, no increases have been assumed.

Long-term National Average Payroll Growth

3.25% per annum for the purposes of calculating Social Security benefits.

Future Increases in Social Security Benefits

For disability events that first occur on or after January 1, 1988, Social Security disability benefits are assumed to increase by 2.50% per annum. Otherwise, no increases have been assumed.

Separations From Active Service

Representative values of the assumed rates of separation from active service are as follows:

Rates of Withdrawal

Up to five years of membership								
	General Employees		Teachers, Librarians, and Counselors		Law Enforcement Officers		Other Education	
Service	Male	Female	Male	Female	Male	Female	Male	Female
0	0.1500	0.1600	0.1375	0.1100	0.1200	0.1200	0.1600	0.1500
1	0.1700	0.1850	0.1675	0.1600	0.1100	0.1100	0.1825	0.1725
2	0.1400	0.1550	0.1500	0.1500	0.1000	0.1000	0.1625	0.1425
3	0.1125	0.1325	0.1300	0.1275	0.0900	0.0900	0.1325	0.1225
4	0.0950	0.1075	0.1050	0.1125	0.0800	0.0800	0.1100	0.1050

Appendix A: DIPNC Proposed Actuarial Assumptions and Methods (continued)

After five years of membership								
	General Employees		Teachers, Librarians, and Counselors		Law Enforcement Officers		Other Education	
Age	Male	Female	Male	Female	Male	Female	Male	Female
25	0.1500	0.1800	0.2500	0.2200	0.0600	0.0600	0.2100	0.1800
30	0.1100	0.1150	0.0900	0.1000	0.0600	0.0600	0.0900	0.1350
35	0.0675	0.0850	0.0625	0.0550	0.0350	0.0350	0.0550	0.0675
40	0.0450	0.0500	0.0400	0.0300	0.0200	0.0200	0.0400	0.0400
45	0.0350	0.0400	0.0300	0.0300	0.0200	0.0200	0.0350	0.0400
50	0.0350	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400
55	0.0350	0.0400	0.0400	0.0400			0.0400	0.0400
60	0.0350	0.0400	0.0400	0.0400			0.0400	0.0400

Annual Rates of Mortality for Employees

(Base rates using Pub-2016 Amount weighted)

	General Employees		Teachers, Librarians, and Counselors		Law Enforcement Officers		Other Education	
Age	Male	Female	Male	Female	Male	Female	Male	Female
25	0.00042	0.00013	0.00024	0.00008	0.00034	0.00016	0.00042	0.00013
30	0.00048	0.00019	0.00028	0.00013	0.00040	0.00022	0.00048	0.00019
35	0.00052	0.00028	0.00035	0.00020	0.00047	0.00031	0.00052	0.00028
40	0.00069	0.00041	0.00047	0.00032	0.00059	0.00045	0.00069	0.00041
45	0.00099	0.00061	0.00070	0.00048	0.00079	0.00067	0.00099	0.00061
50	0.00147	0.00092	0.00109	0.00073	0.00116	0.00100	0.00147	0.00092
55	0.00226	0.00137	0.00174	0.00107	0.00180	0.00150	0.00226	0.00137
60	0.00341	0.00207	0.00271	0.00159	0.00291	0.00226	0.00341	0.00207
65	0.00493	0.00313	0.00410	0.00256	0.00472	0.00343	0.00493	0.00313
70	0.00729	0.00476	0.00627	0.00427	0.00874	0.00521	0.00729	0.00476
74	0.01048	0.00665	0.00891	0.00643	0.01431	0.00729	0.01048	0.00665

Appendix A: DIPNC Proposed Actuarial Assumptions and Methods (continued)

Annual Rates of Disability

Active Members with less than 5 years of service as of January 1, 1988

Age	Male	Female
25	0.00059	0.00052
30	0.00085	0.00202
35	0.00153	0.00203
40	0.00194	0.00304
45	0.00255	0.00398
50	0.00425	0.00670
55	0.00425	0.00670
60	0.00590	0.00610
64	0.00477	0.00404

Retirements

Representative values of the assumed rates of retirement from active service are as follows:

Annual Rates of Retirement for Active Members

General Employees

Male	Service						
Age	5	10	15	20	25	30	35
50				0.0325	0.0400	0.4000	0.4000
55				0.0325	0.0525	0.2800	0.2800
60	0.0825	0.0650	0.0775	0.0900	0.2500	0.2300	0.2300
65	0.1725	0.2325	0.2600	0.2850	0.3100	0.2750	0.2750
70	0.1725	0.2325	0.2350	0.2500	0.2000	0.2750	0.2750
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000

Female	Service						
Age	5	10	15	20	25	30	35
50				0.0375	0.0425	0.3250	0.3250
55				0.0425	0.0425	0.2350	0.2350
60	0.0775	0.0925	0.0925	0.0950	0.2500	0.2350	0.2350
65	0.2200	0.2625	0.2950	0.3100	0.3350	0.2600	0.2600
70	0.1950	0.2300	0.2250	0.2400	0.3350	0.2800	0.2800
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Appendix A: DIPNC Proposed Actuarial Assumptions and Methods (continued)

Teachers, Librarians, and Counselors

Male	Service						
Age	5	10	15	20	25	30	35
50				0.0325	0.0400	0.7000	0.7000
55				0.0475	0.0400	0.3500	0.3500
60	0.0775	0.0900	0.1100	0.1100	0.3600	0.2500	0.2500
65	0.2000	0.2200	0.2500	0.3500	0.3600	0.2500	0.2500
70	0.2000	0.2500	0.2500	0.2500	0.2750	0.2500	0.2500
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Female	Service						
Age	5	10	15	20	25	30	35
50				0.0500	0.0425	0.5500	0.5500
55				0.0500	0.0575	0.3500	0.3500
60	0.0950	0.1050	0.1300	0.1300	0.3500	0.3500	0.3500
65	0.2500	0.3000	0.3000	0.3900	0.4500	0.3500	0.3500
70	0.2500	0.2500	0.2700	0.3400	0.2750	0.3000	0.3000
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Law Enforcement Officers

	Service						
Age	5	10	15	20	25	30	35
50			0.0550	0.0500	0.1800	0.6000	0.6000
55	0.2500	0.1500	0.4000	0.4500	0.6000	0.5000	0.5000
60	0.1000	0.1500	0.2000	0.3000	0.2700	0.4500	0.4500
65	0.1775	0.3500	0.4000	0.3000	0.3000	0.4000	0.4000
70	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Other Education

Male	Service						
Age	5	10	15	20	25	30	35
50				0.0350	0.0375	0.4000	0.4000
55				0.0400	0.0550	0.2750	0.2750
60	0.0800	0.0700	0.0900	0.0900	0.2250	0.2400	0.2400
65	0.2000	0.2300	0.2900	0.3000	0.3750	0.2750	0.2750
70	0.1500	0.2300	0.2500	0.2300	0.3000	0.3000	0.3000
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Appendix A: DIPNC Proposed Actuarial Assumptions and Methods (continued)

Female	Service						
Age	5	10	15	20	25	30	35
50				0.0450	0.0475	0.3750	0.3750
55				0.0550	0.0700	0.2750	0.2750
60	0.0850	0.0900	0.1000	0.1000	0.3000	0.2500	0.2500
65	0.2500	0.2750	0.2750	0.3500	0.3400	0.3000	0.3000
70	0.1750	0.2100	0.2300	0.2500	0.4000	0.2750	0.2750
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Salary Merit Increases

Total assumed salary increases are these merit rates combined with the wage inflation assumption of 3.25% (2.50% price inflation plus 0.75% real wage growth). Representative values of the assumed annual rates of salary merit increases are as follows:

Service	General Employees	Teachers, Librarians and Counselors	Law Enforcement Officers	Other Education
0	4.00%	5.00%	5.75%	4.75%
5	2.50%	3.25%	3.90%	3.30%
10	1.60%	2.00%	2.00%	2.30%
15	0.75%	1.00%	1.25%	1.70%
20	0.60%	0.55%	1.25%	1.20%
25	0.40%	0.50%	1.00%	0.80%
30	0.00%	0.50%	0.40%	0.45%
>=35	0.00%	0.00%	0.00%	0.00%

Post-Decrement Mortality

Representative values of the assumed post-decrement mortality rates as of 2016 prior to any mortality improvements are as follows:

Annual Rates of Post-Decrement Mortality (healthy members)

	General Employees		Teachers, Librarians, and Counselors		Law Enforcement Officers		Other Education	
Age	Male	Female	Male	Female	Male	Female	Male	Female
55	0.00422	0.00285	0.00309	0.00246	0.00314	0.00268	0.00422	0.00285
60	0.00625	0.00361	0.00455	0.00295	0.00479	0.00428	0.00625	0.00361
65	0.00886	0.00516	0.00691	0.00423	0.00785	0.00709	0.00886	0.00516
70	0.01380	0.00892	0.01136	0.00741	0.01420	0.01236	0.01380	0.00892
75	0.02441	0.01730	0.02058	0.01483	0.02672	0.02232	0.02441	0.01730
80	0.04516	0.03377	0.04082	0.03102	0.04927	0.04068	0.04516	0.03377

Appendix A: DIPNC Proposed Actuarial Assumptions and Methods (continued)

Annual Rates of Post-Decrement Mortality (survivors and disabled members)

	All Survivors		Disabled Members			
			Non - Law Enforcement Officers		Law Enforcement Officers	
Age	Male	Female	Male	Female	Male	Female
55	0.00989	0.00650	0.01783	0.01204	0.01334	0.01126
60	0.01310	0.00937	0.02722	0.01834	0.02036	0.01715
65	0.01800	0.01378	0.03248	0.02024	0.02430	0.01893
70	0.02607	0.02088	0.03822	0.02436	0.02859	0.02279
75	0.03992	0.03272	0.05513	0.03703	0.04125	0.03463
80	0.06411	0.05335	0.08702	0.06201	0.06510	0.05799

Mortality Assumption

All mortality rates use Pub-2016 amount-weighted tables.

Mortality Projection

All mortality rates are projected from 2016 using generational improvement with Scale MP-2021.

Deaths After Termination/Retirement (General Employees and Other Education)

Mortality rates are based on the General Mortality Table for Retirees, with adjustments as follows:.

Age	Male Factor	Female Factor
< 72	99%	94%
72	99%	95%
73	99%	96%
74	99%	97%
75	98%	98%
76	98%	99%
77	98%	100%
78	98%	101%
79	98%	101%
80	98%	101%

Age	Male Factor	Female Factor
81	99%	103%
82	100%	105%
83	101%	107%
84	102%	109%
85	103%	109%
86	104%	109%
87	105%	107%
88	105%	105%
89	105%	103%
>= 90	105%	101%

Appendix A: DIPNC Proposed Actuarial Assumptions and Methods (continued)

Deaths After Termination/Retirement (Teachers)

Mortality rates are based on the Below-median Teachers Mortality Table for Retirees, with adjustments as follows:

Age	Male Factor	Female Factor
<73	94%	99%
73	94%	101%
74	94%	103%
75	95%	105%
76	96%	107%
77	97%	109%
78	98%	111%
79	99%	111%
80	100%	111%
81	101%	111%
82	102%	111%

Age	Male Factor	Female Factor
83	103%	112%
84	104%	112%
85	105%	112%
86	105%	109%
87	105%	106%
88	105%	103%
89	105%	100%
90	105%	97%
91	105%	94%
>= 92	105%	93%

Deaths After Termination/Retirement (Law Enforcement Officers)

Mortality rates are based on the Safety Mortality Table for Retirees. Rates for all members are multiplied by 106%.

Deaths of Contingent Survivors (before and after death of original member) and Alternate Payees

Mortality rates are based on the Below-median General Mortality Table for Contingent Survivors, with adjustments as follows:

Age	Male Factor	Female Factor
< 81	109%	126%
81	109%	124%
82	109%	122%
83	109%	120%
84	109%	118%
85	109%	116%
86	109%	114%
87	109%	112%
88	109%	110%
>= 89	109%	108%

Appendix A: DIPNC Proposed Actuarial Assumptions and Methods (continued)

Deaths After Disablement (Disabled Members at Retirement)

Mortality rates are based on the General Mortality Table for Disabled Retirees. Rates for male members not in Law Enforcement are multiplied by 135% for all ages, while male members in Law Enforcement are multiplied by 101% for all ages. Rates for female members not in Law Enforcement are multiplied by 108% for all ages, while female members in Law Enforcement are multiplied by 101% for all ages.

Deaths Prior to Termination/Retirement

Mortality rates for the general and other education groups are based on the General Mortality Table for Employees. Mortality rates for teachers are based on the Teachers Mortality Table for Employees. Mortality rates for law enforcement officers are based on the Safety Mortality Table for Employees.

Timing of Assumptions

All withdrawals, deaths, disabilities, retirements and salary increases are assumed to occur July 1 of each year. The timing of retirement changes from mid-year to beginning of year at and after the 100% retirement age.

Disability Claim Termination Rates

Monthly select disability claim termination rates were used for the first 24 months of disability. These rates were annualized for use in the valuation, accounting for mid-year timing of decrements. The following tables contain age-at-disability and gender-based rates of disability claim termination per 1,000 lives for sample durations of disability:

Male	Age at Disability								
Disability Duration (months)	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64
5	180.5	157.8	141.5	125.3	111.6	98.5	85.0	75.2	67.4
10	86.6	73.7	62.8	53.9	46.6	40.5	34.1	29.8	26.6
15	62.1	53.6	44.1	37.2	31.5	27.2	22.2	19.1	17.0
20	42.9	36.9	31.1	26.3	22.2	19.2	15.4	13.4	12.1
24	44.9	38.9	32.7	27.7	23.1	19.6	15.4	13.3	11.7

Female	Age at Disability								
Disability Duration (months)	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64
5	166.2	146	128.8	116.2	105.8	97.4	87.9	81.0	74.0
10	79.0	68.6	60.8	54.4	49.7	45.4	40.2	36.1	32.2
15	58.1	49.8	43.0	37.6	33.2	29.5	25.3	22.4	19.6
20	41.3	35.0	30.2	26.1	22.6	20.1	16.8	14.9	13.2
24	43.3	36.8	31.5	27.1	23.1	20.1	16.5	14.4	12.6

Appendix A: DIPNC Proposed Actuarial Assumptions and Methods (continued)

Annual select and ultimate disability claim termination rates were used after the first 24 months of disability, with select rates effective from 5 to 25 years. The following tables contain age-at-disability and gender-based rates of disability claim termination per 1,000 lives for sample durations of disability:

Male	Age at Disability								
Disability Duration (years)	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64
5	136.1	119.0	102.7	89.1	78.0	69.6	57.1	57.8	56.5
10	59.6	57.7	51.4	44.5	40.1	40.6	43.5	47.3	52.1
15	42.3	39.3	38.8	36.9	38.0	42.5	46.6	53.1	60.7
20	35.2	35.4	39.4	42.2	46.8	54.8	61.8	78.4	96.4
25	39.7	39.2	45.2	47.0	49.4	68.6	78.1	115.9	169.0

Female	Age at Disability								
Disability Duration (years)	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64
5	132.3	110.7	93.5	79.6	68.7	61.5	51.1	51.4	49.0
10	59.0	52.7	42.6	35.9	31.3	30.4	31.5	34.9	40.2
15	42.5	38.2	31.7	28.5	27.7	29.4	33.0	33.9	49.0
20	37.5	32.7	30.1	28.7	31.7	36.2	40.9	55.9	80.3
25	40.2	36.4	34.9	32.3	36.7	55.6	56.1	104.1	167.7

Dates of Disability

The date of disability is the calendar month, day, and year on which a claimant meets the definition of disability under Plan. This date is used to estimate the member's age-at-disability and the duration of the member's disability, which are used in the determination of the applicable monthly select, and annual select and ultimate, disability claim termination rates described above.

The Retirement Systems Division (RSD) did not provide date of disability or age-at-disability for members who are receiving extended short-term and long-term disability benefits under the Plan as of December 31, 2024. We assumed that dates of disability for these members occurred 14 months before their benefit start dates.

Assumed Social Security Disability Benefit Approval Rates

Future Disabled Members

60% of members who had less than five years of service as of July 31, 2007 are assumed to receive approval for Social Security disability benefits from the conclusion of the waiting period and prior to the completion of four years of disability. Approval is assumed to occur one year after the conclusion of the waiting period. All other members are assumed to receive approval for Social Security disability benefits.

Current Disabled Members

Actual Social Security disability benefit approval information is used where available. If actual Social Security disability decisions are not available, 50% of currently disabled members who had less than five years of service as of July 31, 2007 are assumed to receive approval for Social Security disability benefits. Approval is assumed to occur one year after the benefit start date. Otherwise, all other currently disabled members are assumed to receive approval for Social Security disability benefits.

Appendix A: DIPNC Proposed Actuarial Assumptions and Methods (continued)

Gross Benefit Adjustments

Our understanding is that the gross benefit amounts provided by the RSD as of December 31, 2024, reflect the multipliers and/or limits applicable to the disability program in which the claimant is enrolled, as reported on the census data. For the purposes of projecting benefits for participants receiving extended short-term disability beyond the first year, gross benefit amounts payable to members who are currently receiving extended short-term disability benefits were adjusted to reflect the multipliers used under the long-term disability program. However, if "unlimited" gross benefits were not provided on the census data, we assumed that claimants would have the highest allowable gross benefit under the Plan's long-term disability provisions if the highest allowable extended short-term gross benefit was provided on the census data.

Social Security Benefit Offsets

Future Disabled Members

Estimated projected Social Security benefits for future disabled members are based on expected long-term National Average Wage growth assumptions, assumptions about future increases in Social Security benefits, valuation salaries from age at entry to future decrement dates, and the Social Security benefit determination rules applicable to the law year in effect on future decrement dates.

Estimated projected Social Security retirement benefits were adjusted to reflect reductions/increases for early/late commencement.

Current Disabled Members

Social Security benefit offsets were not provided for some claimants – for example, members who are currently receiving extended short-term disability benefits – as of December 31, 2024. We estimated Social Security benefits for affected claimants based on the relevant assumptions listed above, wages at termination projected backward reflecting relative changes in National Average Wages to member aged 20, and the Social Security benefit determination rules applicable to the 2024 law year. The RSD provided the estimated Social Security benefits that are used to offset gross benefits for claimants with more than three years of disability. These were used to offset the benefits for claimants with more than three years of disability who had over 5 years of service in 2007 and were denied or did not receive approval for Social Security disability benefits.

Other Offsets

No additional offsets – including but not limited to Worker's Compensation, VA benefits, and Outside Earnings – other than those reported, have been assumed.

Administrative Expenses

0.01% of payroll added to the normal cost rate.

Marriage Assumption

100% married with male spouses two years older than female spouses.

Missing Gender Code

For members reported on the data without a gender code, we use the prior year's code where available or assign a code based on inspection.

Appendix A: DIPNC Proposed Actuarial Assumptions and Methods (continued)

Reported Compensation

Calendar year compensation as furnished by the system's office.

Valuation Compensation

Reported compensation adjusted to reflect the assumed rate of pay as of the valuation date and the probability of decrement during the year.

Compensation Limits

No compensation limits are applied.

Actuarial Cost Method

Aggregate cost method. Under this method, the actuarial value of projected postemployment benefits for all active participants and currently disabled members in excess of the Actuarial Value of Assets is allocated as a level percentage of compensation for all active participants between the valuation date and the assumed date of exit of the last employee.

The actuarial cost method was prescribed by the System for the purposes of preparing the actuarially determined employer contribution rate for the Plan as of December 31, 2024.

Normal Cost

The annual normal cost is the share of the total actuarial value of projected postemployment benefits for all active participants and currently disabled members in excess of the Actuarial Value of Assets as a percentage of all future compensation, multiplied by total compensation of all active participants during the valuation year.

Amortization Period

The Aggregate cost method does not identify or separately amortize unfunded actuarial liabilities. Actuarial gains (losses) reduce (increase) future normal costs as they occur.

Asset Valuation Method

The actuarial value of assets is based upon a smoothed market value method. Under this method, asset returns in excess of or less than the expected return on market value of assets will be reflected in the actuarial value of assets over a five-year period. The Actuarial Value of Assets was reset to the market value of assets at December 31, 2014. The calculation of the Actuarial Value of Assets is based on the following formula:

$MV - 80\% \times G/(L)_1 - 60\% \times G/(L)_2 - 40\% \times G/(L)_3 - 20\% \times G/(L)_4$

MV = the market value of assets as of the valuation date

$G/(L)_i$ = the asset gain or (loss) for the i-th year preceding the valuation date

The AVA cannot be less than 80% or more than 120% of the market value of assets.

The asset valuation method was prescribed by the System for the purposes of preparing the actuarially determined employer contribution rate for the Plan as of December 31, 2024.

Appendix A: DIPNC Proposed Actuarial Assumptions and Methods (continued)

Incurred But Not Reported Claims (IBNR)

For long-term disability, a reserve of 14/12 of the one-year term cost for expected disablements during the year is added to account for the waiting period after disability to receive LTD benefits.

Funding Policy

The actuarial cost method, asset valuation method, and other components of the contribution allocation procedure were considered and approved by the Board during the most recent experience study. ADC rates as of the valuation date were developed based on the Plan's Normal Cost as a percent of pay plus an allowance for administrative expenses, as approved by the System.

Direct Rate Smoothing

Assumption and method changes adopted by the experience study prepared as of December 31, 2024 are expected to decrease the actuarially determined contribution requirements of DIPNC by 0.06% of payroll. The impact of these assumption and method changes will be smoothed over a five-year period so that 20% of the impact is recognized for each valuation starting with the December 31, 2025 valuation, and will be fully recognized in the December 31, 2029 valuation.

Appendix A: LGERS Proposed Actuarial Assumptions and Methods

Interest Rate

6.50% per annum, compounded annually.

Price Inflation

2.50% per annum, compounded annually.

Real Wage Growth

0.75% per annum.

Payroll Growth

3.25% per annum.

Separations From Active Service

Representative values of the assumed rates of separation from active service are as follows:

Annual Rates of Withdrawal

Up to five years of membership						
	General Employees		Firefighters & Rescue Squad Workers		Law Enforcement Officers	
Service	Male	Female	Male	Female	Male	Female
0	0.1900	0.2000	0.1400	0.1400	0.1300	0.1300
1	0.1750	0.1850	0.1350	0.1350	0.0950	0.0950
2	0.1400	0.1500	0.1150	0.1150	0.0925	0.0925
3	0.1200	0.1300	0.1050	0.1050	0.0925	0.0925
4	0.1000	0.1100	0.1000	0.1000	0.0775	0.0775

After five years of membership						
	General Employees		Firefighters & Rescue Squad Workers		Law Enforcement Officers	
Age	Male	Female	Male	Female	Male	Female
25	0.0875	0.1350	0.0700	0.0700	0.0700	0.0700
30	0.0675	0.0950	0.0575	0.0575	0.0600	0.0600
35	0.0525	0.0700	0.0450	0.0450	0.0425	0.0425
40	0.0400	0.0500	0.0350	0.0350	0.0250	0.0250
45	0.0350	0.0400	0.0300	0.0300	0.0375	0.0375
50	0.0425	0.0450	0.0350	0.0350	0.0525	0.0525
55	0.0425	0.0450	0.0350	0.0350	0.0525	0.0525
60	0.0425	0.0450	0.0350	0.0350		

Appendix A: LGERS Proposed Actuarial Assumptions and Methods (continued)

Annual Rates of Mortality for Employees

(Base rates using Pub-2016 Amount weighted)

	General Employees		Firefighters & Rescue Squad Workers		Law Enforcement Officers	
Age	Male	Female	Male	Female	Male	Female
25	0.00042	0.00013	0.00034	0.00016	0.00034	0.00016
30	0.00048	0.00019	0.00040	0.00022	0.00040	0.00022
35	0.00052	0.00028	0.00047	0.00031	0.00047	0.00031
40	0.00069	0.00041	0.00059	0.00045	0.00059	0.00045
45	0.00099	0.00061	0.00079	0.00067	0.00079	0.00067
50	0.00147	0.00092	0.00116	0.00100	0.00116	0.00100
55	0.00226	0.00137	0.00180	0.00150	0.00180	0.00150
60	0.00341	0.00207	0.00291	0.00226	0.00291	0.00226
65	0.00493	0.00313	0.00472	0.00343	0.00472	0.00343
70	0.00729	0.00476	0.00874	0.00521	0.00874	0.00521
74	0.01048	0.00665	0.01431	0.00729	0.01431	0.00729

Annual Rates of Disability

	General Employees		Firefighters & Rescue Squad Workers		Law Enforcement Officers	
Age	Male	Female	Male	Female	Male	Female
25	0.00040	0.00050	0.00060	0.00060	0.00060	0.00250
30	0.00050	0.00050	0.00100	0.00090	0.00100	0.00300
35	0.00050	0.00050	0.00070	0.00240	0.00200	0.00400
40	0.00100	0.00050	0.00400	0.00380	0.00300	0.00500
45	0.00200	0.00150	0.00400	0.00480	0.00400	0.00600
50	0.00300	0.00300	0.00800	0.00760	0.00400	0.00700
55	0.00500	0.00450	0.01200	0.01760	0.00400	0.00700
60	0.00650	0.00450	0.01500	0.02760	0.00400	0.00700
64	0.00650	0.00450	0.01500	0.03000	0.00400	0.00700

Annual Rates of Retirement

General Employees

Male	Service						
Age	5	10	15	20	25	30	35
50				0.0350	0.0700	0.3000	0.3000
55				0.0350	0.0700	0.2000	0.2000
60	0.0700	0.0750	0.0800	0.1000	0.2500	0.2000	0.2000
65	0.2250	0.2500	0.2850	0.3000	0.3000	0.2750	0.2750
70	0.2000	0.2500	0.2500	0.2750	0.3000	0.2500	0.2500
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Appendix A: LGERS Proposed Actuarial Assumptions and Methods (continued)

Annual Rates of Retirement (continued)

General Employees (continued)

Female	Service						
Age	5	10	15	20	25	30	35
50				0.0400	0.0575	0.3250	0.3250
55				0.0500	0.0650	0.2250	0.2250
60	0.0800	0.0800	0.1000	0.1000	0.3000	0.2500	0.2500
65	0.2500	0.3000	0.3500	0.3750	0.3500	0.3000	0.3000
70	0.2200	0.2500	0.2250	0.3000	0.2250	0.2500	0.2500
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Firefighters & Rescue Squad Workers

Age	Service						
	5	10	15	20	25	30	35
50				0.0400	0.0450	0.4500	0.4500
55	0.1000	0.0500	0.0500	0.0400	0.0450	0.3500	0.3500
60	0.1000	0.1000	0.1000	0.1000	0.3500	0.3250	0.3250
65	0.1700	0.2500	0.2500	0.3000	0.4000	0.3250	0.3250
70	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Law Enforcement Officers

Age	Service						
	5	10	15	20	25	30	35
50			0.0400	0.0350	0.2000	0.7500	0.7500
55	0.1500	0.2500	0.3750	0.4750	0.6500	0.4250	0.4250
60	0.1500	0.1500	0.1500	0.2000	0.2500	0.2500	0.2500
65	0.2250	0.3250	0.3000	0.2500	0.3750	0.2500	0.2500
70	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Assumed Retirement Age for Deferred Vested Members

General Employees and Firefighters & Rescue Squad Workers:

Current and future terminated vested participants are assumed to retire at age 55 for members with 20 years of service and age 60 for all other members.

Law Enforcement Officers:

Current and future terminated vested participants are assumed to retire at age 50 for members with 15 years of service and age 60 for all other members.

Appendix A: LGERS Proposed Actuarial Assumptions and Methods (continued)

Salary Merit Increases

Total assumed salary increases are these merit rates added to the wage inflation assumption of 3.25% (2.50% price inflation plus 0.75% real wage growth). Representative values of the assumed annual rates of salary merit increases are as follows:

Annual Rates of Salary Increase

Service	General Employees	Firefighters & Rescue Squad Workers	Law Enforcement Officers
0	5.50%	6.25%	6.25%
5	3.25%	3.75%	3.25%
10	2.00%	2.50%	2.25%
15	1.50%	2.00%	1.80%
20	1.10%	1.50%	1.55%
25	1.00%	1.50%	1.50%
30	1.00%	1.50%	1.50%
35	0.50%	0.50%	1.00%
>=40	0.00%	0.00%	0.00%

Post-Decrement Mortality

Representative values of the assumed post-retirement mortality rates as of 2016 (the most recent developed Public Pension mortality tables) prior to any mortality improvements are as follows:

Annual Rate of Post-Decrement Mortality (healthy members)

Age	General Employees		Firefighter, Rescue Squad Workers, & Law Enforcement Officers	
	Male	Female	Male	Female
55	0.00443	0.00312	0.00314	0.00268
60	0.00656	0.00396	0.00479	0.00428
65	0.00930	0.00565	0.00785	0.00709
70	0.01449	0.00977	0.01420	0.01236
75	0.02661	0.01818	0.02672	0.02232
80	0.05239	0.03511	0.04927	0.04068

Annual Rate of Post-Decrement Mortality (survivors and disabled members)

Age	All Survivors		Disabled Members			
			General Employees		Firefighters, Rescue Squad Workers, & Law Enforcement Officers	
	Male	Female	Male	Female	Male	Female
55	0.00989	0.00650	0.01783	0.01204	0.01334	0.01126
60	0.01310	0.00937	0.02722	0.01834	0.02036	0.01715
65	0.01800	0.01378	0.03248	0.02024	0.02430	0.01893
70	0.02607	0.02088	0.03822	0.02436	0.02859	0.02279
75	0.03992	0.03272	0.05513	0.03703	0.04125	0.03463
80	0.06411	0.05335	0.08702	0.06201	0.06510	0.05799

Appendix A: LGERS Proposed Actuarial Assumptions and Methods (continued)

Mortality Assumption

All mortality rates use Pub-2016 amount-weighted tables.

Mortality Projection

All mortality rates are projected from 2016 using generational improvement with Scale MP-2021.

Deaths After Termination/Retirement (General Employees)

Mortality rates are based on the General Mortality Table for Retirees, with adjustments as follows:

Age	Male Factor	Female Factor
< 72	105%	103%
72	105%	103%
73	105%	103%
74	107%	103%
75	109%	103%
76	111%	103%
77	113%	103%
78	115%	103%

Age	Male Factor	Female Factor
79	116%	104%
80	116%	105%
81	116%	106%
82	116%	107%
83	116%	108%
84	116%	109%
>= 85	116%	110%

Deaths After Termination/Retirement (Firefighters, Rescue Squad Workers & Law Enforcement Officers)

Mortality rates are based on the Safety Mortality Table for Retirees. Rates for all members are multiplied by 106%. Because the retiree tables have no rates prior to age 45, the Safety Mortality Table for Employees is used for ages less than 45.

Deaths of Contingent Survivors (before and after death of original member) and Alternate Payees

Mortality rates are based on the Below-median General Mortality Table for Contingent Survivors, with adjustments as follows:

Age	Male Factor	Female Factor
< 81	109%	126%
81	109%	124%
82	109%	122%
83	109%	120%
84	109%	118%
85	109%	116%
86	109%	114%
87	109%	112%
88	109%	110%
>= 89	109%	108%

Appendix A: LGERS Proposed Actuarial Assumptions and Methods (continued)

Deaths After Disablement

Mortality rates are based on the General Mortality Table for Disabled Retirees. Rates for General Employee male members are multiplied by 135%, while Firefighter, Rescue Squad Worker & Law Enforcement Officer male members' rates are multiplied by 101%. Rates for General Employee female members are multiplied by 108%, while Firefighter, Rescue Squad Worker & Law Enforcement Officer female members' rates are multiplied by 101%.

Deaths Prior to Termination/Retirement

Mortality rates for General Employees are based on the General Mortality Table for Employees. Mortality rates for Firefighters, Rescue Squad Workers & Law Enforcement Officers are based on the Safety Mortality Table for Employees.

Line-of-Duty Deaths

50% of deaths prior to retirement for firefighters, rescue squad workers and law enforcement officers are assumed to occur in the line-of-duty.

Timing of Assumptions

All withdrawals, deaths, disabilities, retirements and salary increases are assumed to occur July 1 of each year. The timing of retirement changes from mid-year to beginning of year at and after the 100% retirement age.

Leave Conversions

Sick leave can be converted to increase creditable service and used to meet the eligibility requirements for retirement. Unused vacation leave can be converted to increase creditable service or compensation, but does not add to the eligibility service. The assumed impact of these conversions is shown in the table below.

	General		Fire & Rescue Squad		Law Enforcement	
	Male	Female	Male	Female	Male	Female
Increase in AFC (percentage) – Unused Vacation Leave	2.00%	2.00%	2.00%	2.00%	2.50%	2.50%
Increase in Creditable Service (years) - Unused Sick Leave						
Credited	0.70	0.50	1.10	1.10	1.00	1.00
Eligibility	1.00	1.00	1.00	1.00	1.00	1.00

Liability for Inactive Members

For inactive members with five or more years of service, without actual deferred benefit amounts a deferred benefit amount is estimated based on available data and contribution balances projecting backwards assuming 4% salary growth and 4% interest on contribution balances where necessary. For inactive members with less than five years of service the liability is equal to the member's accumulated contributions.

Administrative Expenses

0.10% of payroll for general employees and firefighters is added to the normal cost.

Marriage Assumption

100% married with male spouses two years older than female spouses.

Appendix A: LGERS Proposed Actuarial Assumptions and Methods (continued)

Missing Gender Code

For members reported on the data without a gender code, we use the prior year's code where available or assign a code.

Reported Compensation

Calendar year compensation as furnished by the system's office.

Valuation Compensation

Reported compensation adjusted to reflect the assumed rate of pay as of the valuation date and the probability of decrement during the year.

Compensation Limits

No compensation limits are applied.

Actuarial Cost Method

Entry age normal cost method. Entry age is established on an individual basis.

Normal Cost

Normal cost rate reflects the impact of new entrants during the year.

Amortization Period

15-year closed, level-dollar amount. The amortization period for outstanding bases established prior to December 31, 2025 is extended by 3 years effective with the actuarially determined employer contributions amounts beginning with the fiscal year ending in 2028. The first amortization base was created for the contribution payable for fiscal year ending 2018.

Asset Valuation Method

Actuarial value, as developed in Table 7. The actuarial value of assets is based upon a smoothed market value method. Under this method, asset returns in excess of or less than the expected return on market value of assets will be reflected in the actuarial value of assets over a five-year period. The calculation of the Actuarial Value of Assets is based on the following formula:

$MV - 80\% \times G/(L)_1 - 60\% \times G/(L)_2 - 40\% \times G/(L)_3 - 20\% \times G/(L)_4$

MV = the market value of assets as of the valuation date

$G/(L)_i$ = the asset gain or (loss) for the i-th year preceding the valuation date

Direct Rate Smoothing

Assumption and method changes adopted by the experience study prepared as of December 31, 2024, decreased the actuarially determined contribution requirements of LGERS by 0.79% of payroll for General and Firefighters and 0.64% of payroll for Law Enforcement Officers. The impact of these assumption and method changes will be smoothed over a five-year period so that 20% of the impact is recognized for each valuation starting with the December 31, 2025 valuation, and will be fully recognized in the December 31, 2029 valuation.

Appendix A: FRSWPF Proposed Actuarial Assumptions and Methods

Interest Rate

6.50% per annum, compounded annually.

Price Inflation:

2.50% per annum, compounded annually.

Separations from Active Service

Representative values of the assumed annual rates of withdrawal and vesting, retirement, death, and disability are as follows:

Annual Rates of Withdrawal

	Service		
Age	<5	5-19	20+
< 55	0.070	0.035	1.000
55-59	0.110	0.075	1.000
> 60	0.110	0.075	1.000

Annual Rates of Retirement

	Service		
Age	<20	20	21+
55	0.000	0.750	0.850
56-69	0.000	0.550	0.400
70	0.000	1.000	1.000

Annual Rates of Base Mortality and Disability

	Base Mortality*		Disability
Age	Male	Female	
25	.00034	.00016	.0005
30	.00040	.00022	.0005
35	.00047	.00031	.0008
40	.00059	.00045	.0010
45	.00079	.00067	.0022
50	.00116	.00100	.0024
55	.00180	.00150	.0035
60	.00291	.00226	.0061
65	.00472	.00343	
69	.00684	.00441	

* Base mortality rates using Pub-2016 Safety Amount-Weighted mortality table

Appendix A: FRSWPF Proposed Actuarial Assumptions and Methods (continued)

Return to Service

The assumed rates in which a lapsed member returns to active service are based on the number of years that the member has been lapsed. These rates are as follows:

Number of Years Member has been Lapsed	Percentage of Members Assumed to Return to Active Service*	Number of Years Member has been Lapsed	Percentage of Members Assumed to Return to Active Service*
1 Year	35.0%	5 Years	6.5%
2 Years	21.5%	6 Years	4.5%
3 Years	14.5%	7 Years	3.0%
4 Years	10.5%	8+ Years	0.0%

* Members who are assumed to return to service are assumed to do so at the valuation date. Members who are assumed to not return to service (and have not yet attained 20 years of service) are assumed to receive a refund of contribution at age 55.

Post-Decrement Mortality

Representative values of the assumed post-decrement mortality rates are based on the Pub-2016 Safety Retirees Amount-Weighted mortality table for healthy members and the Pub-2016 General Disabled Retirees Amount-Weighted mortality table for disabled members, prior to any mortality improvements, are as follows:

Annual Rate of Death after Decrement				
	Healthy Members		Disabled Members	
Age	Male	Female	Male	Female
55	.00314	.00268	.01334	.01126
60	.00479	.00428	.02036	.01715
65	.00785	.00709	.02430	.01893
70	.01420	.01236	.02859	.02279
75	.02672	.02232	.04125	.03463
80	.04927	.04068	.06510	.05799

Mortality Assumption

All mortality rates use Pub-2016 amount-weighted tables.

Mortality Projection

All mortality rates are projected from 2016 using generational improvement with Scale MP-2021.

Deaths After Termination/Retirement (Healthy Members)

Mortality rates are based on the Safety Mortality Table for Retirees. Rates for all members are multiplied by 106%. Because the retiree tables have no rates prior to age 45, the Safety Mortality Table for Employees is used for ages less than 45.

Deaths After Disablement

Mortality rates are based on the General Mortality Table for Disabled Retirees. Rates for all members are multiplied by 101%.

Appendix A: FRSWPF Proposed Actuarial Assumptions and Methods (continued)

Deaths of Contingent Survivors (before and after death of original member) and Alternate Payees

Mortality rates are based on the Below-median General Mortality Table for Contingent Survivors, with adjustments as follows:

Age	Male Factor	Female Factor
< 81	109%	126%
81	109%	124%
82	109%	122%
83	109%	120%
84	109%	118%
85	109%	116%
86	109%	114%
87	109%	112%
88	109%	110%
>= 89	109%	108%

Deaths Prior to Termination/Retirement

Mortality rates are based on the Pub-2016 Safety Employees Amount-Weighted Mortality Table.

Line of Duty Death Assumption

50% of pre-retirement deaths are assumed to be in the line of duty.

Designated Beneficiary Assumption

100% of members are assumed to have a designated beneficiary. Male members are assumed to have a female beneficiary that is two years younger, and female members are assumed to have a male beneficiary that is two years older.

Missing Gender Code

For members reported on the data without a gender code, we use the prior year's code where available or assign a code based on inspection.

Timing of Assumptions

All withdrawals, deaths, disabilities, and retirements are assumed to occur July 1 of each year. The timing of retirement changes from mid-year to beginning of year at and after the 100% retirement age.

Future Expenses

Equal to prior year actual administrative expenses added to Normal Cost.

Appendix A: FRSWPF Proposed Actuarial Assumptions and Methods (continued)

Actuarial Cost Method

Entry age normal cost method. Under this method, the actuarial value of projected benefits for each individual participant is allocated as a level dollar amount over the working lifetime of the participant between the date of employment and assumed date of exit.

Amortization Period

15-year closed, level-dollar amount. The amortization period for outstanding bases established prior to December 31, 2025 is extended by 3 years effective with the actuarially determined employer contributions amounts beginning with the fiscal year ending in 2028. The first amortization base was created for the contribution payable for fiscal year ending 2012.

Asset Valuation Method

Actuarial value, as developed in Table 8. The actuarial value of assets is based upon a smoothed market value method. Under this method, asset returns in excess of or less than the expected return on market value of assets will be reflected in the actuarial value of assets over a five-year period. The Actuarial Value of Assets was reset to the market value of assets as of December 31, 2014. The calculation of the Actuarial Value of Assets is based on the following formula:

$MV - 80\% \times G/(L)_1 - 60\% \times G/(L)_2 - 40\% \times G/(L)_3 - 20\% \times G/(L)_4$
MV = the market value of assets as of the valuation date
$G/(L)_i$ = the asset gain or (loss) for the i-th year preceding the valuation date

Direct Rate Smoothing

Assumption and method changes adopted by the experience study prepared as of December 31, 2024, increased the actuarially determined contribution requirements of the Fund by $3,061,912. The impact of these assumption and method changes will be smoothed over a five-year period so that 20% of the impact has been recognized for each valuation starting with the December 31, 2025 valuation, and will be fully recognized in the December 31, 2029 valuation.

Appendix A: RODSPF Proposed Actuarial Assumptions and Methods

Interest Rate

4.50% per annum, compounded annually.

Inflation

2.50% per annum, compounded annually.

Real Wage Growth

0.75% per annum.

Payroll Growth:

3.25% per annum.

Separations From Active Service

Representative values of the assumed rates of separation from active service are as follows:

Annual Rate of Withdrawal		
Service	Male	Female
0	.1900	.2000
1	.1750	.1850
2	.1400	.1550
3	.1200	.1300
4	.1000	.1100

Appendix A: RODSPF Proposed Actuarial Assumptions and Methods (continued)

	Annual Rates of					
	Withdrawal and Vesting*		Base Mortality**		Disability	
Age	Male	Female	Male	Female	Male	Female
25	.0875	.1350	.00042	.00013	.0004	.0005
30	.0675	.0950	.00048	.00019	.0005	.0005
35	.0525	.0700	.00052	.00028	.0005	.0005
40	.0400	.0500	.00069	.00041	.0010	.0005
45	.0350	.0400	.00099	.00061	.0020	.0015
50	.0425	.0450	.00147	.00092	.0030	.0030
55	.0425	.0450	.00226	.00137	.0050	.0045
60	.0425	.0450	.00341	.00207	.0065	.0045
65			.00493	.00313		
69			.00670	.00438		

* These rates apply only after five years of membership in the system.

** Base mortality rates as of 2016.

Retirements

Representative values of the assumed rates of retirement from active service are as follows:

Service - Males							
Age	5	10	15	20	25	30	35
50				0.035	0.070	0.300	0.300
55				0.035	0.070	0.200	0.200
60	0.070	0.075	0.080	0.100	0.250	0.200	0.200
65	0.225	0.250	0.285	0.300	0.300	0.275	0.275
70	0.200	0.250	0.250	0.275	0.300	0.250	0.250
75	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Service - Females							
Age	5	10	15	20	25	30	35
50				0.040	0.058	0.325	0.325
55				0.050	0.065	0.225	0.225
60	0.080	0.080	0.100	0.100	0.300	0.250	0.250
65	0.250	0.300	0.350	0.375	0.350	0.300	0.300
70	0.200	0.250	0.225	0.300	0.225	0.250	0.250
75	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Appendix A: RODSPF Proposed Actuarial Assumptions and Methods (continued)

Salary Merit Increases

Total assumed salary increases are these merit rates added to the wage inflation assumption of 3.25% (2.50% price inflation plus 0.75% real wage growth). Representative values of the assumed annual rates of salary merit increases are as follows:

Service	Annual Rate of Salary Increase
0	5.50%
5	3.25%
10	2.00%
15	1.50%
20	1.10%
25	1.00%
30	1.00%
35	0.50%
40	0.00%

Mortality Assumption

All mortality rates use Pub-2016 amount-weighted tables.

Post-Decrement Mortality

Representative values of the assumed post-decrement mortality rates as of 2016 (the most recent developed Public Pension mortality tables) prior to any mortality improvements are as follows:

Annual Rates of Death after Decrement				
	Healthy Members		Disabled Members	
Age	Male	Female	Male	Female
55	.00443	.00312	.01783	.01204
60	.00656	.00396	.02722	.01834
65	.00930	.00565	.03248	.02024
70	.01449	.00977	.03822	.02436
75	.02661	.01818	.05513	.03703
80	.05239	.03511	.08702	.06201

Appendix A: RODSPF Proposed Actuarial Assumptions and Methods (continued)

Deaths After Termination/Retirement (Healthy Members)

Mortality rates are based on the General Mortality Table for Retirees, with adjustments as follows:

Age	Male Factor	Female Factor
< 72	105%	103%
72	105%	103%
73	105%	103%
74	107%	103%
75	109%	103%
76	111%	103%
77	113%	103%
78	115%	103%

Age	Male Factor	Female Factor
79	116%	104%
80	116%	105%
81	116%	106%
82	116%	107%
83	116%	108%
84	116%	109%
>= 85	116%	110%

Deaths of Contingent Survivors (before and after death of original member) and Alternate Payees

Mortality rates are based on the Below-median General Mortality Table for Contingent Survivors, with adjustments as follows:

Age	Male Factor	Female Factor
< 81	109%	126%
81	109%	124%
82	109%	122%
83	109%	120%
84	109%	118%
85	109%	116%
86	109%	114%
87	109%	112%
88	109%	110%
>= 89	109%	108%

Death After Disablement

Mortality rates are based on the General Mortality Table for Disabled Retirees. Rates for General Employee male members are multiplied by 135%. Rates for General Employee female members are multiplied by 108%.

Appendix A: RODSPF Proposed Actuarial Assumptions and Methods (continued)

Deaths Prior to Termination/Retirement

Mortality rates for General Employees are based on the General Mortality Table for Employees.

Mortality Projection

All mortality rates are projected from 2016 using generational improvement with Scale MP-2021.

Missing Gender Code

For members reported on the data without a gender code, we use the prior year's code where available or assign a code based on inspection.

Timing of Assumptions

All withdrawals, deaths, disabilities, retirements, and salary increases are assumed to occur July 1 of each year. The timing of retirement changes from mid-year to beginning of year at and after the 100% retirement age.

Age and Service Methods

Service is provided from RSD and is split between service in RODSPF and total service under LGERS or an equivalent locally sponsored plan. For valuation purposes, age and service as of the valuation date for each individual have been rounded to the nearest integer.

Administrative Expenses

Assumed to be 0.30% of payroll and added to normal cost.

Reported Compensation

Calendar year compensation as furnished by the system's office.

Valuation Compensation

Reported compensation adjusted to reflect the assumed rate of pay as of the valuation date and the probability of decrement during the year.

Actuarial Cost Method

Entry age normal cost method. Under this method, the actuarial value of projected benefits for each individual participant is allocated as a level dollar amount over the working lifetime of the participant between the date of employment and assumed date of exit.

Appendix A: RODSPF Proposed Actuarial Assumptions and Methods (continued)

Asset Valuation Method

Actuarial value, as developed in Appendix B. The actuarial value of assets is based upon a smoothed market value method. Under this method, asset returns in excess of or less than the expected return on market value of assets will be reflected in the actuarial value of assets over a five-year period. The calculation of the Actuarial Value of Assets is based on the following formula:

$MV - 80\% \times G/(L)_1 - 60\% \times G/(L)_2 - 40\% \times G/(L)_3 - 20\% \times G/(L)_4$

MV = the market value of assets as of the valuation date

$G/(L)_i$ = the asset gain or (loss) for the i-th year preceding the valuation date

Appendix B: Mortality Experience Results by Group and Age-Band

Teachers - Ret - Male						
Beginning Age	Ending Age	A / E (current assumption)*	Credibility Factor	A / E (unadjusted Pub-2016)**	Avg. Adjustment Factor to Pub-2016 Base	A / E (Adjusted Pub-2016)
0	82	98.2%	84.2%	92.5%	94%	95.8%
83	120	108.8%	84.1%	105.4%	105%	100.7%
Total		**102.4%**		**97.5%**		**97.8%**

* Pub-2010 Teachers Retirees Amount-Weighted Mortality (Below Median) projected to 2022 using MP-2019, with adjustments as described in the December 31, 2024, TSERS valuation report

** Pub-2016 Teachers Retirees Amount-Weighted Mortality (Below Median) projected to 2022 using MP-2021

Teachers - Ret - Female						
Beginning Age	Ending Age	A / E (current assumption)*	Credibility Factor	A / E (unadjusted Pub-2016)**	Avg. Adjustment Factor to Pub-2016 Base	A / E (Adjusted Pub-2016)
0	75	95.2%	100.0%	99.2%	99%	99.0%
76	82	108.5%	99.2%	110.7%	111%	100.5%
83	88	113.3%	98.9%	112.3%	112%	102.7%
89	120	95.5%	100.0%	92.9%	93%	97.9%
Total		**102.1%**		**103.8%**		**100.0%**

* Pub-2010 Teachers Retirees Amount-Weighted Mortality (Below Median) projected to 2022 using MP-2019, with adjustments as described in the December 31, 2024, TSERS valuation report

** Pub-2016 Teachers Retirees Amount-Weighted Mortality (Below Median) projected to 2022 using MP-2021

Public Safety - Ret - Combined						
Beginning Age	Ending Age	A / E (current assumption)*	Credibility Factor	A / E (unadjusted Pub-2016)**	Avg. Adjustment Factor to Pub-2016 Base	A / E (Adjusted Pub-2016)
0	120	85.1%	59.0%	100.1%	106%	94.4%
Total		**85.1%**		**100.1%**		**94.4%**

* Pub-2010 Safety Retirees Amount-Weighted Mortality projected to 2022 using MP-2019, with adjustments as described in the December 31, 2024, TSERS valuation report

** Pub-2016 Safety Retirees Amount-Weighted Mortality projected to 2022 using MP-2021

Appendix B: Mortality Experience Results by Group and Age-Band

TSERS General/Other - Ret - Male						
Beginning Age	Ending Age	A / E (current assumption)*	Credibility Factor	A / E (unadjusted Pub-2016)**	Avg. Adjustment Factor to Pub-2016 Base	A / E (Adjusted Pub-2016)
0	74	90.8%	90.4%	99.4%	99%	100.4%
75	83	91.8%	93.6%	98.0%	98%	99.4%
84	120	104.9%	92.4%	105.5%	105%	101.2%
Total		**94.2%**		**100.3%**		**100.3%**

* Pub-2010 General Retirees Amount-Weighted Mortality projected to 2022 using MP-2019, with adjustments as described in the December 31, 2024, TSERS valuation report

** Pub-2016 General Retirees Amount-Weighted Mortality projected to 2022 using MP-2021

TSERS General/Other - Ret - Female						
Beginning Age	Ending Age	A / E (current assumption)*	Credibility Factor	A / E (unadjusted Pub-2016)**	Avg. Adjustment Factor to Pub-2016 Base	A / E (Adjusted Pub-2016)
0	74	92.1%	87.1%	92.7%	94%	98.0%
75	82	103.4%	92.3%	100.6%	101%	99.9%
83	88	110.8%	87.8%	109.7%	109%	101.8%
89	120	96.7%	89.1%	100.8%	101%	99.5%
Total		**98.8%**		**98.5%**		**99.4%**

* Pub-2010 General Retirees Amount-Weighted Mortality projected to 2022 using MP-2019, with adjustments as described in the December 31, 2024, TSERS valuation report

** Pub-2016 General Retirees Amount-Weighted Mortality projected to 2022 using MP-2021

LGERS General - Ret - Male						
Beginning Age	Ending Age	A / E (current assumption)*	Credibility Factor	A / E (unadjusted Pub-2016)**	Avg. Adjustment Factor to Pub-2016 Base	A / E (Adjusted Pub-2016)
0	76	86.9%	75.7%	106.4%	105%	100.5%
77	120	99.6%	78.4%	120.2%	116%	104.0%
Total		**91.6%**		**111.5%**		**101.9%**

* Pub-2010 General Retirees Amount-Weighted Mortality projected to 2022 using MP-2019, with adjustments as described in the December 31, 2024, LGERS valuation report

** Pub-2016 General Retirees Amount-Weighted Mortality projected to 2022 using MP-2021

Appendix B: Mortality Experience Results by Group and Age-Band

LGERS General - Ret - Female						
Beginning Age	Ending Age	A / E (current assumption)*	Credibility Factor	A / E (unadjusted Pub-2016)**	Avg. Adjustment Factor to Pub-2016 Base	A / E (Adjusted Pub-2016)
0	81	100.1%	84.5%	103.8%	103%	100.5%
82	120	118.3%	80.2%	113.1%	110%	103.4%
Total		**104.6%**		**106.3%**		**101.3%**

* Pub-2010 General Retirees Amount-Weighted Mortality projected to 2022 using MP-2019, with adjustments as described in the December 31, 2024, LGERS valuation report

** Pub-2016 General Retirees Amount-Weighted Mortality projected to 2022 using MP-2021

Pub Safety - Dis - Combined						
Beginning Age	Ending Age	A / E (current assumption)*	Credibility Factor	A / E (unadjusted Pub-2016)**	Avg. Adjustment Factor to Pub-2016 Base	A / E (Adjusted Pub-2016)
0	120	90.7%	33.2%	101.6%	101%	100.6%
Total		**90.7%**		**101.6%**		**100.6%**

* Pub-2010 General Disabled Amount-Weighted Mortality projected to 2022 using MP-2019, with adjustments as described in the December 31, 2024, TSERS valuation report

** Pub-2016 General Disabled Amount-Weighted Mortality projected to 2022 using MP-2021

Non-Pub Safety - Dis - Male						
Beginning Age	Ending Age	A / E (current assumption)*	Credibility Factor	A / E (unadjusted Pub-2016)**	Avg. Adjustment Factor to Pub-2016 Base	A / E (Adjusted Pub-2016)
0	120	92.9%	91.0%	138.4%	135%	102.5%
Total		**92.9%**		**138.4%**		**102.5%**

* Pub-2010 General Disabled Amount-Weighted Mortality projected to 2022 using MP-2019, with adjustments as described in the December 31, 2024, TSERS valuation report

** Pub-2016 General Disabled Amount-Weighted Mortality projected to 2022 using MP-2021

Appendix B: Mortality Experience Results by Group and Age-Band

Non-Pub Safety - Dis - Female						
Beginning Age	Ending Age	A / E (current assumption)*	Credibility Factor	A / E (unadjusted Pub-2016)**	Avg. Adjustment Factor to Pub-2016 Base	A / E (Adjusted Pub-2016)
0	120	97.7%	100.0%	108.5%	108%	100.4%
Total		**97.7%**		**108.5%**		**100.4%**

* Pub-2010 General Disabled Amount-Weighted Mortality projected to 2022 using MP-2019, with adjustments as described in the December 31, 2024, TSERS valuation report

** Pub-2016 General Disabled Amount-Weighted Mortality projected to 2022 using MP-2021

Beneficiaries - Male						
Beginning Age	Ending Age	A / E (current assumption)*	Credibility Factor	A / E (unadjusted Pub-2016)**	Avg. Adjustment Factor to Pub-2016 Base	A / E (Adjusted Pub-2016)
0	120	93.0%	59.4%	115.9%	109%	106.3%
Total		**93.0%**		**115.9%**		**106.3%**

* Pub-2010 Teachers Contingent Survivors Amount-Weighted Mortality (Below Median) projected to 2022 using MP-2019, with adjustments as described in the December 31, 2024, TSERS valuation report

** Pub-2016 General Contingent Survivors Amount-Weighted Mortality (Below Median) projected to 2022 using MP-2021

Beneficiaries - Female						
Beginning Age	Ending Age	A / E (current assumption)*	Credibility Factor	A / E (unadjusted Pub-2016)**	Avg. Adjustment Factor to Pub-2016 Base	A / E (Adjusted Pub-2016)
0	86	114.7%	97.4%	127.1%	126%	103.1%
87	120	103.6%	98.0%	108.2%	108%	99.5%
Total		**110.9%**		**120.5%**		**101.9%**

* Pub-2010 Teachers Contingent Survivors Amount-Weighted Mortality (Below Median) projected to 2022 using MP-2019, with adjustments as described in the December 31, 2024, TSERS valuation report

** Pub-2016 General Contingent Survivors Amount-Weighted Mortality (Below Median) projected to 2022 using MP-2021

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