


Preview of Demographic Experience Study Results

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Presentation to: LEOFF 2 Retirement Board



Office of the State Actuary
"Supporting financial security for generations."

September 25, 2019

Today's Presentation

- Brief Overview of the Process
 - Background/Status
- Historic Illustration
 - Link to Demographic Assumptions
- How will Contribution Rates be Impacted?
- Next Steps
 - No action required by Board

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Brief Overview Of The Process

1. Review of historical plan experience
 - Mostly focused on behavior or choices members make
 - Typically analyze data from 6+ years
 - Usually tells the what, but rarely the why
2. Evaluate how current assumptions compare to actual experience
3. Consider a variety of factors, including
 - e.g., Impact of Great Recession, changes to plan design
 - Apply professional judgment and expectations for the future
4. Actuaries select a set of demographic assumptions
 - Goal is to ensure assumptions remain a reasonable estimate of future plan experience (for purposes of adequate pre-funding)

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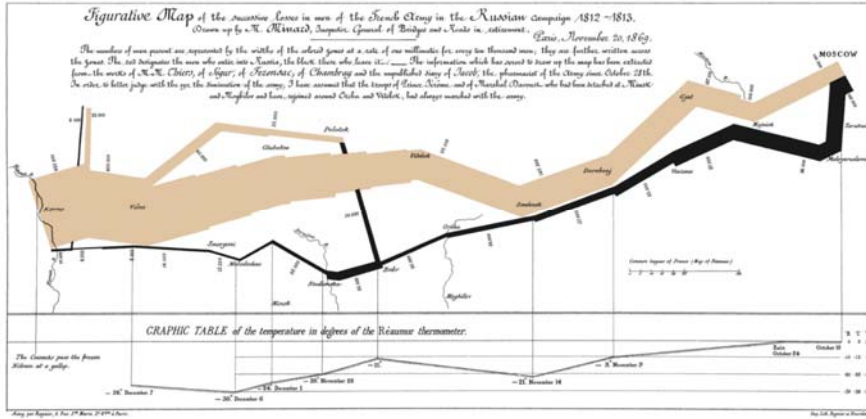
Background/Status

- OSA started work about 2 years ago
 - To date, project has taken over 3,000 staff hours
 - Perform this analysis approximately every 6 years
- Assumptions we selected are preliminary
 - Subject to change via external actuarial audit
- Major assumptions we'll focus on today

- | | |
|----------------|------------------|
| 1. Termination | 4. Mortality |
| 2. Retirement | 5. Salary |
| 3. Disability | 6. Miscellaneous |

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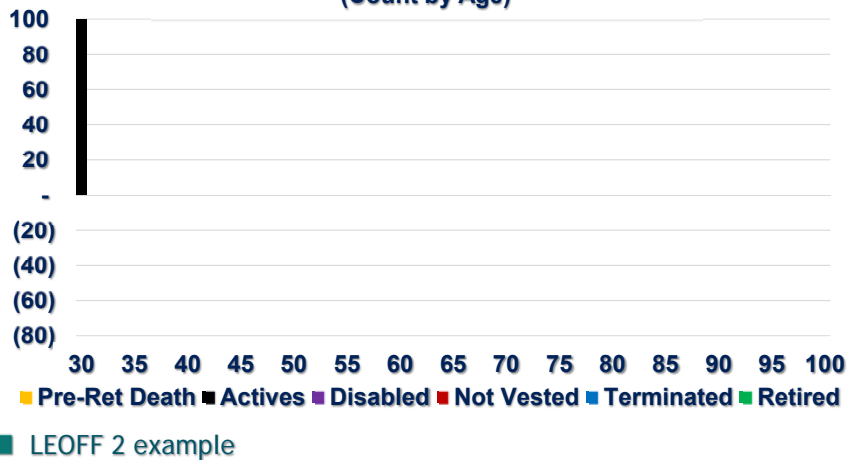
Historic Illustration



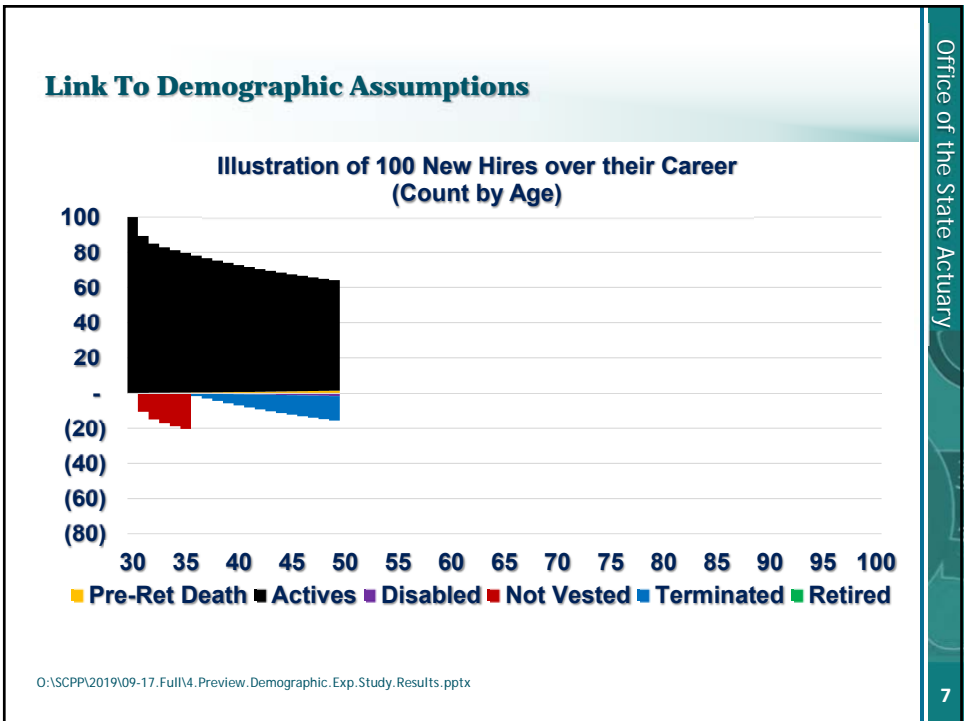
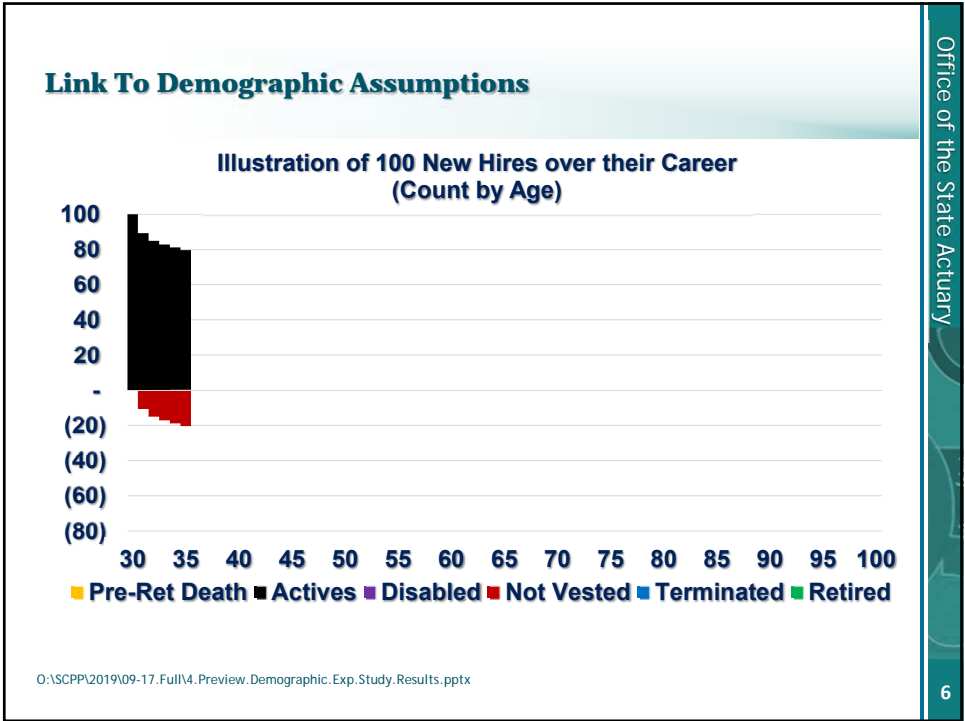
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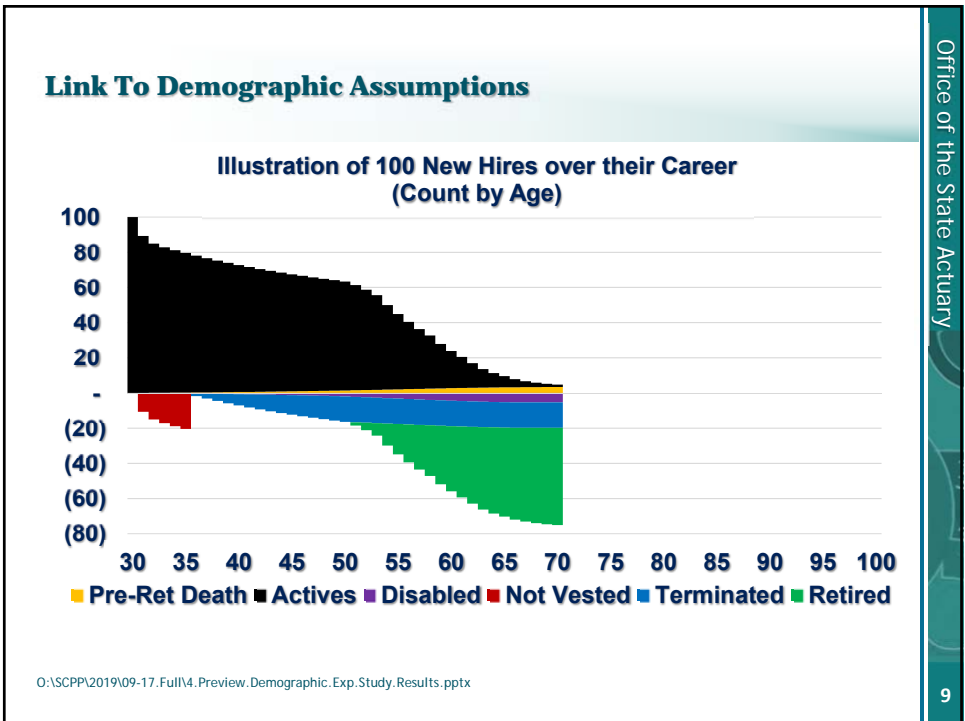
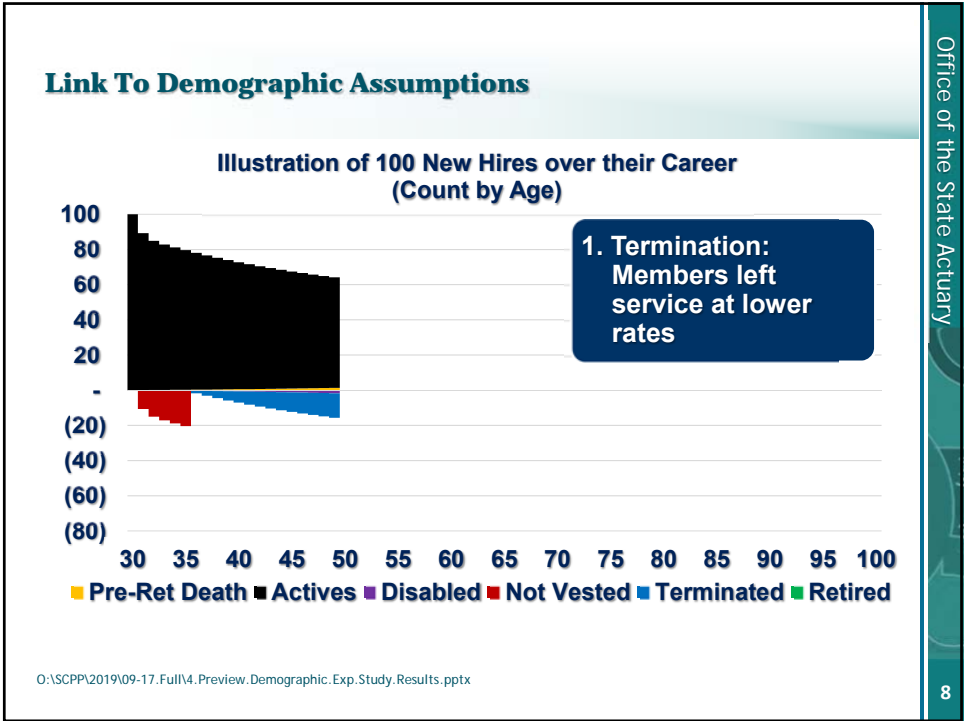
Link To Demographic Assumptions

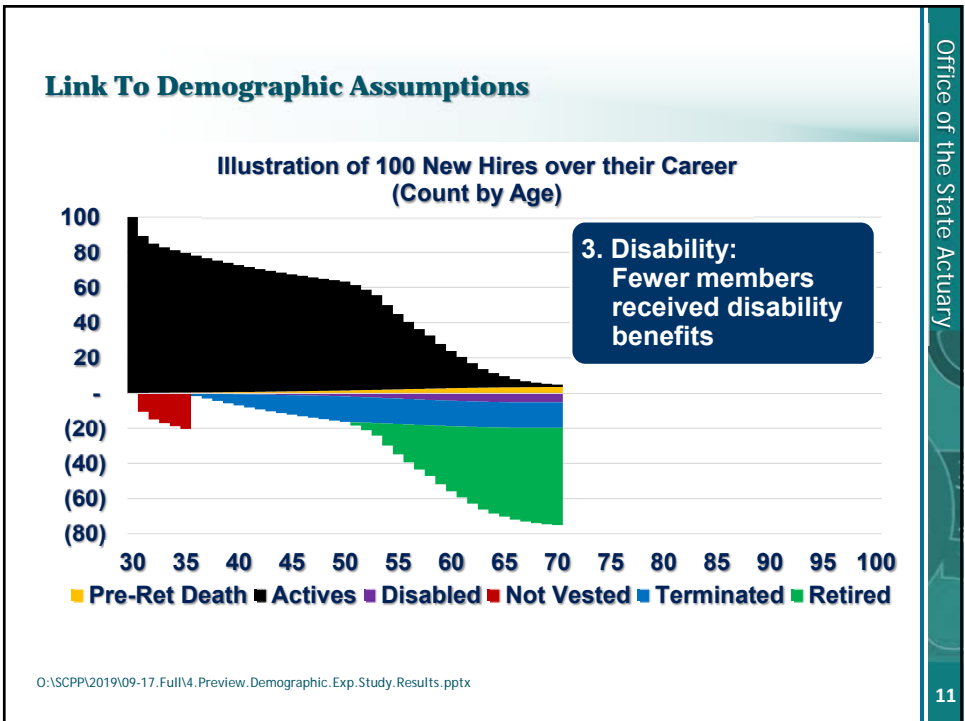
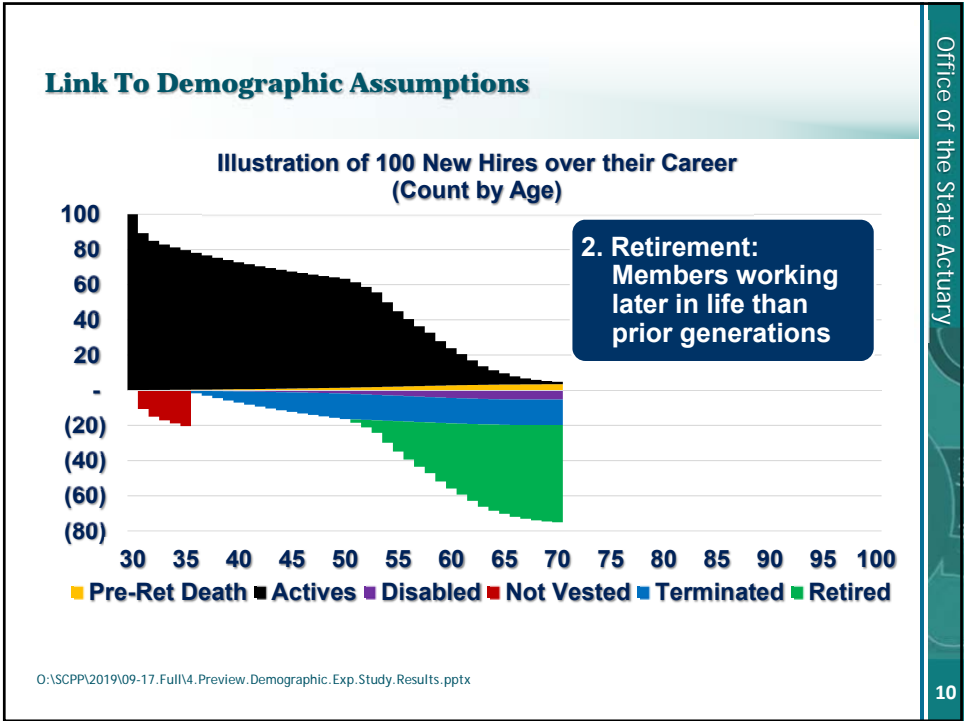
Illustration of 100 New Hires over their Career (Count by Age)

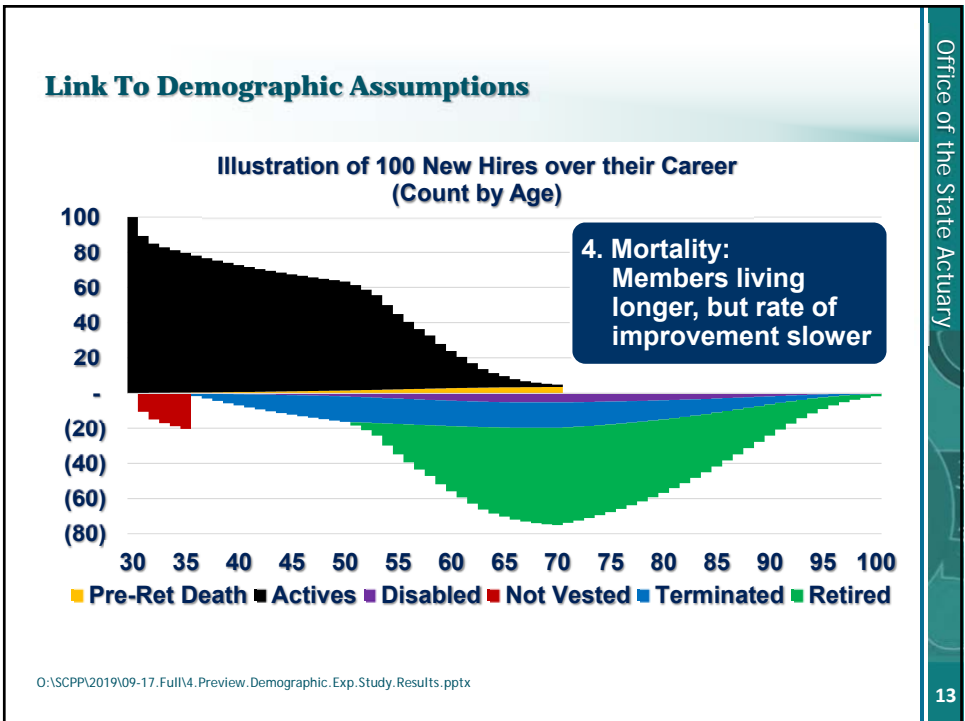
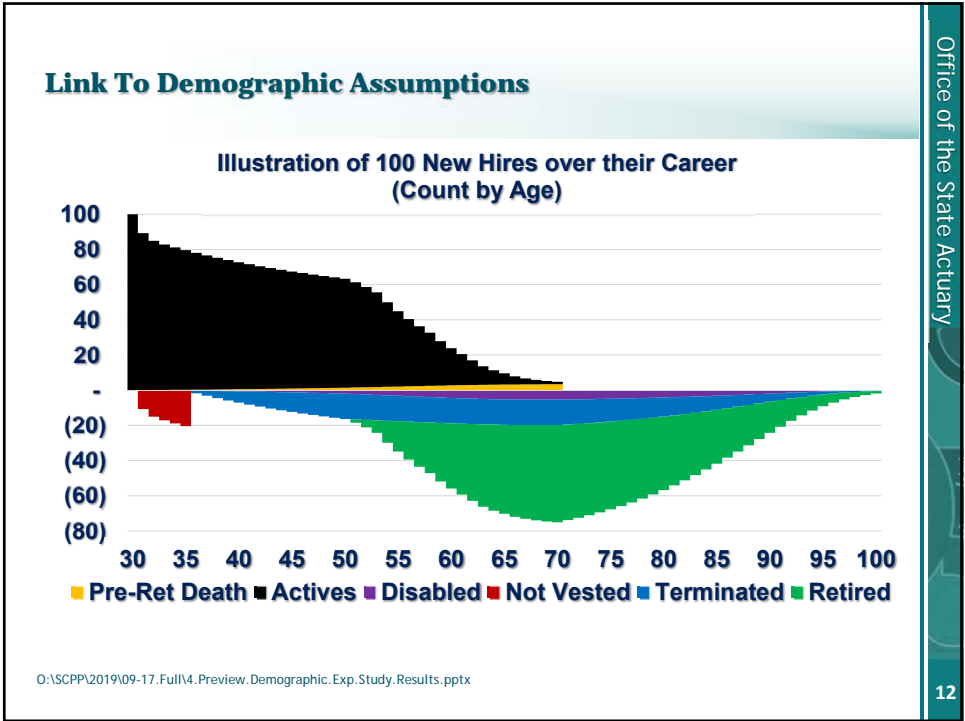


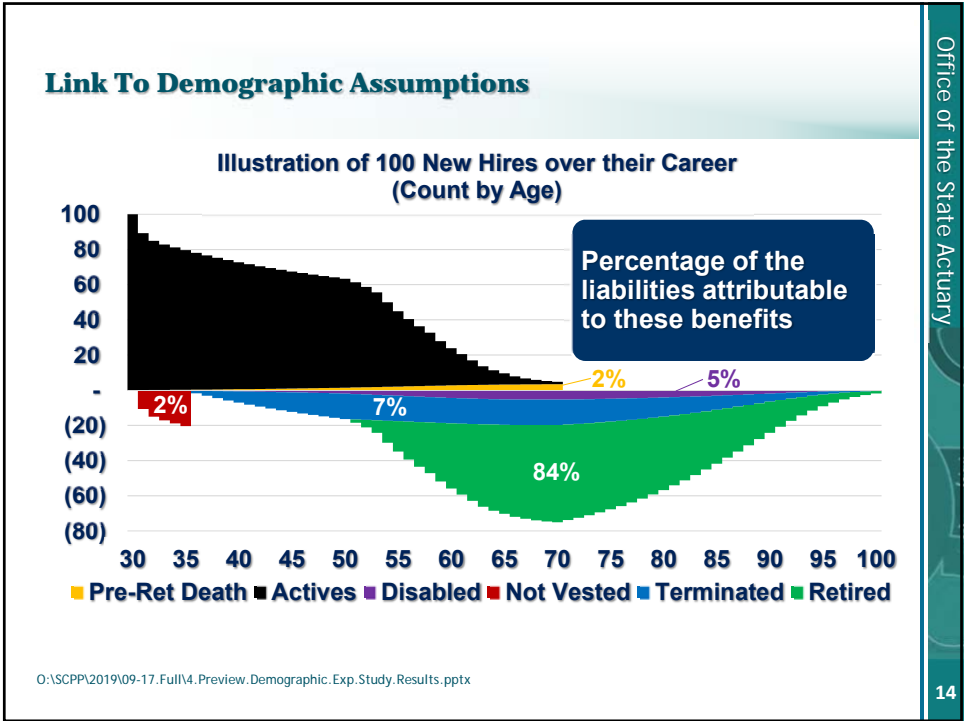
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- ### Other Details
5. Service-Based Salary Growth
 - Salary increases generally similar to our prior expectations
 6. Miscellaneous Assumptions
 - Made general updates, focusing on simplicity
 - Interesting Information
 - LEO and FF exhibited slightly different behavior in some cases
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How Will Contribution Rates Be Impacted?

Assumption	LEOFF 2
Termination Rates	0.02%
Disability Rates	(0.01%)
Retirement Rates	(0.06%)
Mortality Rates	0.00%
Salary Merit	(0.03%)
Miscellaneous	N/A
Total Rate Impact	(0.08%)

Note: Displayed as Total Employer impacts (entry age funding method).

- Impacts vary by assumption
 - Suggests historical experience was generally similar to expectations
- See **Appendix** for details by System and Assumption

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Next Steps

For OSA

- Finalize our preliminary report
- Collaborate with actuarial auditor next spring
- Incorporate assumption changes into 6/30/2019 actuarial valuation
 - Impacts contribution rates in 2021-23 Biennium

For the LEOFF 2 Board

- No action required
- Will receive update next interim

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Appendix

- Historic Illustration And Link To Demographic Assumptions
- Which Assumptions Were Studied And Highlights From Our Analysis
- Link To Demographic Assumptions
- How Will Contribution Rates Be Impacted?



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Historic Illustration And Link To Demographic Assumptions

Slide on the War of 1812

- Illustrates Napoleon's March to Moscow
 - Thickness of beige line represents number of soldiers in the army
 - Shows location of troops, as well as attrition over time
 - Includes return trip home (in black) and associated winter temperatures
- May be one of the best statistical graphs ever drawn

Pension Example on Following Slides

- Starts with 100 hypothetical new hires, age 30
 - Thickness of line shows how/when active group declines over time
- Illustrates 20% quit before vesting; 10% die or disable pre-retirement; 15% terminate w/ vested pension and 55% retire after full career, along with how long they live
- A vast majority of the liability is due to the retirement group

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Which Assumptions Were Studied And Highlights From Our Analysis

1. Termination Rates

- General Definition
 - Estimates how long people work
- High-Level Observation
 - Generally members left service at lower rate than previously expected
- Interesting Takeaway
 - LEO/FFs have slightly different experience; maintained blended rates

2. Retirement Rates

- General Definition
 - Identifies when pension benefits begin
- High-Level Observation
 - Members continue to defer collecting pension benefits
- Interesting Takeaway
 - Maintained gender-neutral and LEO/FF blended rates

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Which Assumptions Were Studied And Highlights From Our Analysis

3. Disability Rates

- General Definition
 - Approximates occurrence of disability benefits paid
- High-Level Observation
 - Generally members disable at lower rate than previously expected
- Interesting Takeaway
 - Noted FFs have higher actual rates of disability than LEOs

4. Mortality Rates

- General Definition
 - Primarily projects duration of annuity payments
- High-Level Observation
 - Members continue to live longer, but rate of improvement slower
- Interesting Takeaway
 - New public plans tables for General Employees, Teachers, and Public Safety

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Which Assumptions Were Studied And Highlights From Our Analysis

5. Service-Based Salary Growth

- General Definition
 - Independent of inflation-based or general salary growth
- High-Level Observation
 - Salary increases generally similar to our prior expectations
- Interesting Takeaway
 - Maintained gender-neutral and LEO/FF blended rates

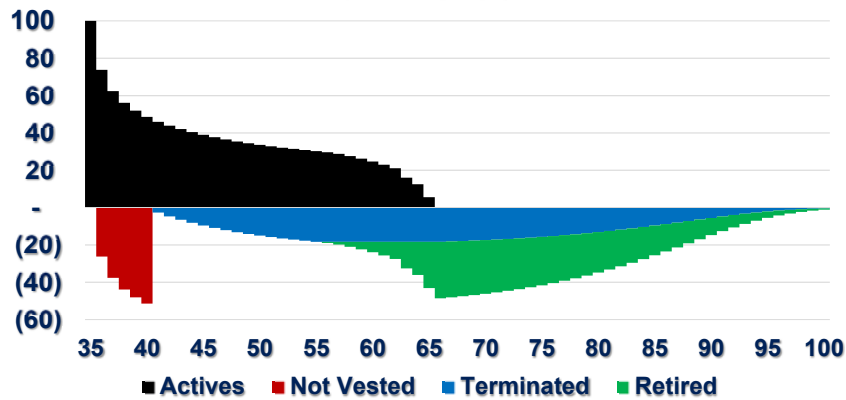
6. Miscellaneous Assumptions

- Examples
 - Military service credit, duty-related death and disability benefits
- High-Level Observation
 - Made general updates, focusing on simplicity
- Interesting Takeaway
 - Changes generally have limited impacts to estimated plan costs

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Link To Demographic Assumptions

Illustration of 100 New Hires over their Career
(Count by Age)



Graphical comparison of PERS 2

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How Will Contribution Rates Be Impacted?

Assumption	PERS 2/3	TRS 2/3	SERS 2/3	PSERS 2	LEOFF 2	WSPRS 1/2*
Termination Rates	(0.18%)	0.05%	(0.02%)	(0.06%)	0.03%	(0.12%)
Disability Rates	0.02%	(0.01%)	0.01%	(0.01%)	0.00%	0.07%
Retirement Rates	0.05%	(0.32%)	0.11%	(0.10%)	(0.12%)	0.78%
Mortality Rates	(0.30%)	0.30%	(0.01%)	(0.27%)	(0.04%)	(0.91%)
Salary Merit	0.06%	0.15%	0.09%	0.09%	(0.03%)	(0.05%)
Miscellaneous	N/A	N/A	N/A	N/A	N/A	N/A
Total Rate Impact	(0.40%)	0.17%	0.18%	(0.35%)	(0.16%)	(0.23%)

*All cost/savings allocated to Employer (above Employee maximum contribution rate).
 Note: Displayed as Total Employer changes (aggregate funding method)

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How Will Contribution Rates Be Impacted?

- PERS 2/3, PSERS 2, and WSPRS 1/2
 - Decrease in employer rates by about 0.20% to 0.40%
 - Reduction primarily attributable to new mortality tables
- TRS 2/3 and SERS 2/3
 - Increase in employer rates by just under 0.20%
 - Higher required rates due to a combination of assumption changes
- Limited impact to PERS 1 and TRS 1
 - Expected to be at contribution rate floors when effective in 2021-23
 - Projected payoff dates slightly earlier than previously anticipated

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