

Nebraska Public Employees Retirement Systems

2012 Actuarial Experience
Analysis Results

Presentation to the Public Employees Retirement Board
August 20, 2012

Purpose

- To compare actual plan experience with actuarial assumptions used in the valuation
- Changes in assumptions are recommended if:
 - Sufficient data available which shows material difference between expected and actual experience
 - Future experience is likely to be different given recent trends
- Provide a better measurement of a pension plan's actuarial position and projected cost

About Actuarial Assumptions

- Used to Quantify Amount and Value of Future Benefit Payments
- Should be a realistic “Best Guess” based on:
 - Past history
 - Future expectations
- Appropriately conservative given Board’s Fiduciary Responsibility
- Should be explicit - each assumption individually reasonable
- Setting of assumptions is a blend of art and science
- No one right answer, but a range of acceptable answers

Assumption Types

- Economic
- Decremental
- Other

Frequency

- NPERS last performed an Experience Analysis in 2007
- NPERS policy to perform this analysis every 4 or 5 years
- Most systems perform this type of analysis every 3-6 years

Economic Assumptions

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Economic Adjustments

- Inflation should be consistently applied to:
 - Investment return
 - Salary increases
 - COLA's
 - Interest credit rate
 - Interest on member contributions
- Real returns should reflect asset mix
 - 92% of return the result of asset allocation
- Assumptions should
 - Reflect benefit payment period (i.e., long-term over 40-50 years)
 - Consider recent trends
 - Consider future expectations

Understanding Economic Assumptions

$$\begin{array}{r} \text{Interest Rate} \\ - \text{Inflation Rate} \\ \hline = \text{Real Rate of Return} \end{array}$$

Interest rate determines how much money we think we'll have.

Inflation rate tells us what we think it will buy.

Real Return is the reason to pre-fund benefit payments.

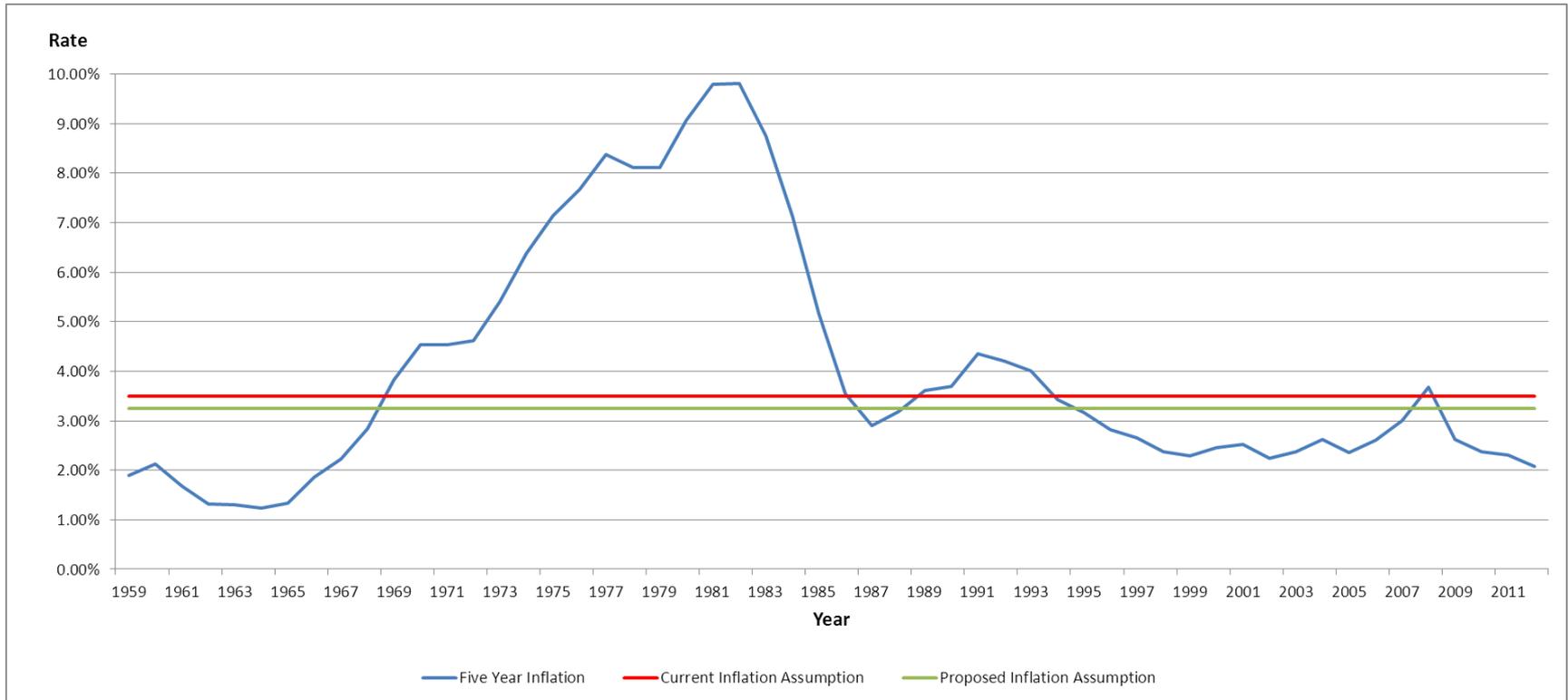
Actual Economic Experience 1994 - 2011

Year Ending June 30 th	Investment Return on Market Value*	Investment Return on Actuarial Value*	5-Year Average Inflation	Real Return
1994	3.7%	3.7%	3.4%	0.3%
1995	15.2%	15.2%	3.2%	12.0%
1996	15.4%	9.0%	2.8%	6.2%
1997	18.5%	11.1%	2.7%	8.4%
1998	19.1%	14.1%	2.4%	11.7%
1999	10.1%	14.0%	2.3%	11.7%
2000	8.3%	14.2%	2.5%	11.7%
2001	(4.3%)	9.7%	2.5%	7.2%
2002	(6.1%)	4.6%	2.3%	2.3%
2003	5.2%	2.0%	2.4%	(0.4%)
2004	14.6%	3.0%	2.6%	0.4%
2005	9.8%	4.1%	2.4%	1.7%
2006	10.4%	7.2%	2.6%	4.6%
2007	17.7%	11.6%	3.0%	8.6%
2008	(5.8%)	9.1%	3.7%	5.4%
2009	(19.1%)	1.9%	2.6%	(0.7%)
2010	13.6%	1.1%	2.4%	(1.3%)
2011	<u>23.3%</u>	<u>4.0%</u>	<u>2.3%</u>	<u>1.7%</u>
Arithmetic Average	8.3%	7.8%	2.7%	5.1%
Geometric Average	7.7%	7.7%	2.7%	5.0%

*School System used. Experience for other plans is similar.

History of Inflation

5-Year Average Annualized Rate 1959-2012 (as of June 30th)



Mean Historical Inflation Rate:

- Over last 30 years: 2.9%
- Over last 50 years: 4.2%

Economic Productivity

1994-2011

- Productivity in the economy results in wage increases being higher over time than increases in consumer prices.

Year	Average Total SS Wages	Wage Increase %	CPI-W Increase %	Productivity
1993	\$ 23,132.67			
1994	23,753.53	2.68%	2.39%	0.29%
1995	24,705.66	4.01%	3.09%	0.91%
1996	25,913.90	4.89%	2.80%	2.09%
1997	27,426.00	5.84%	2.14%	3.69%
1998	28,861.44	5.23%	1.46%	3.77%
1999	30,469.84	5.57%	1.94%	3.63%
2000	32,154.82	5.53%	3.93%	1.60%
2001	32,921.92	2.39%	3.19%	-0.81%
2002	33,252.09	1.00%	0.74%	0.26%
2003	34,064.95	2.44%	2.10%	0.34%
2004	35,648.55	4.65%	3.17%	1.48%
2005	36,952.94	3.66%	2.59%	1.07%
2006	38,651.41	4.60%	4.47%	0.12%
2007	40,405.48	4.54%	2.67%	1.87%
2008	41,334.97	2.30%	5.55%	-3.25%
2009	40,711.61	-1.51%	-1.98%	0.47%
2010	41,673.83	2.36%	1.36%	1.00%
2011	42,657.33 *	2.36%	4.06%	-1.70%
Arithmetic Mean:				0.94%
Geometric Mean:				0.92%

* Estimated.

Setting Economic Assumptions

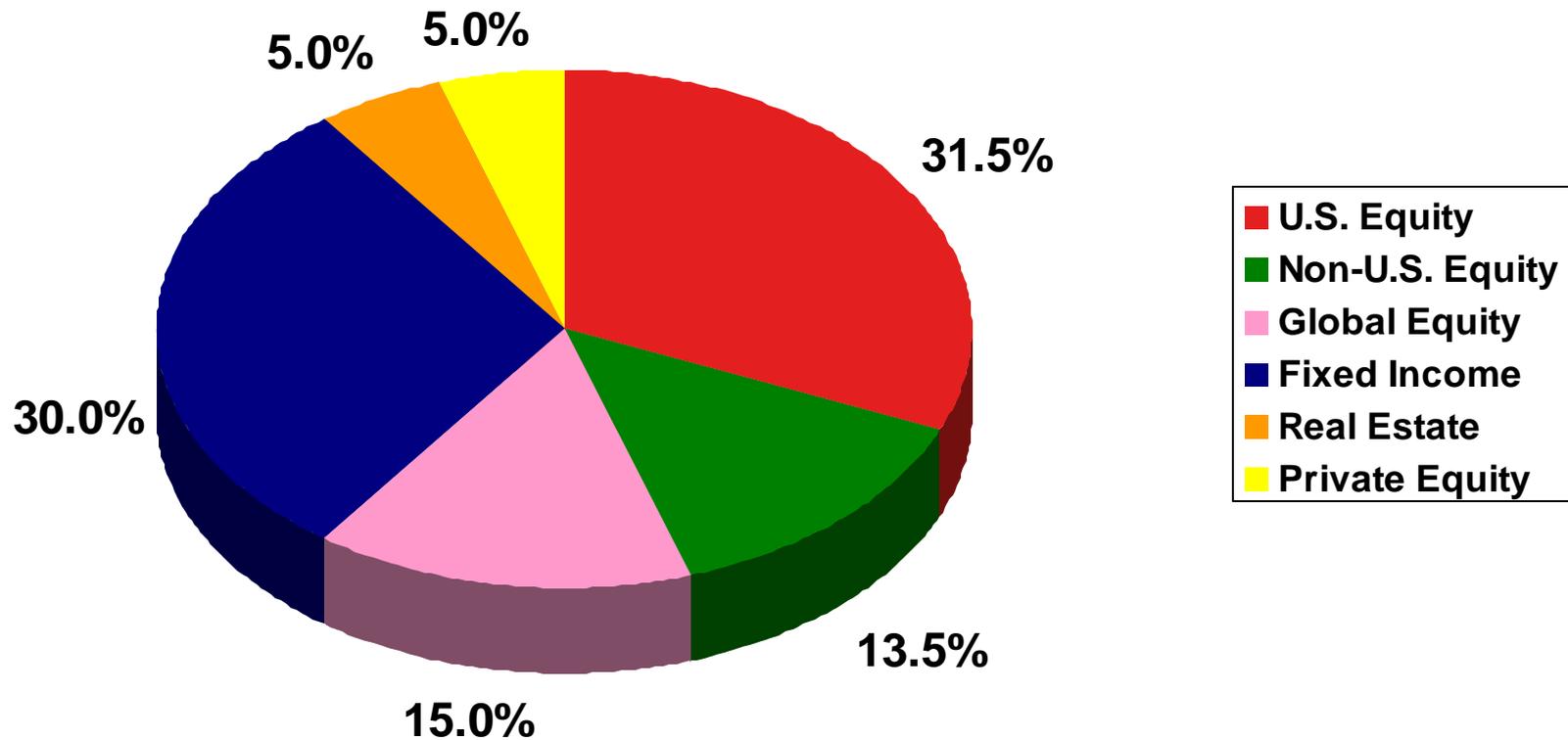
- Recent trends suggest:
 - Lower inflationary environment
 - Much lower interest rates
 - Equity returns have rebounded, but investment models predict lower returns over the next 5 - 10 years
- Buck generates projected asset returns based on the GEMS® Economic Scenario Generator (ESG) which is an econometric model
- Model simulates up to 5,000 paths and results are collected and percentiles computed
 - Returns on various asset classes are computed in a manner consistent with forecast economic environments
 - Expected returns and correlations change over time and are different on each path, consistent with forecast economic conditions on that path
- Actuarial Standards of Practice require actuaries to use an interest rate assumption that is not greater than the expected long-term investment rate of return, and can include a margin for adverse deviation (conservatism) to the extent reasonable.

Development of Investment Return Assumption

- Based on current Asset Allocation Policy
 - Allocation of Traditional DB and Cash Balance assets virtually the same
- Expected future investment rates of return (real and nominal) and inflation were forecasted using GEMS modeling system
 - Expected inflation and returns are outputs of the econometric model
 - Returns and inflation were forecasted over the next 30 years
 - Arithmetic mean results for each year and cumulative geometric mean results were determined
 - Stochastic results with range of outcomes was also generated
- Projected benefit payments for the School System were discounted at the geometric mean investment returns (used 1% ROR for FY12) expected and compared with the School System Liabilities
 - Assumed rate must produce a liability that is at least as much of the liability determined using forecasted returns

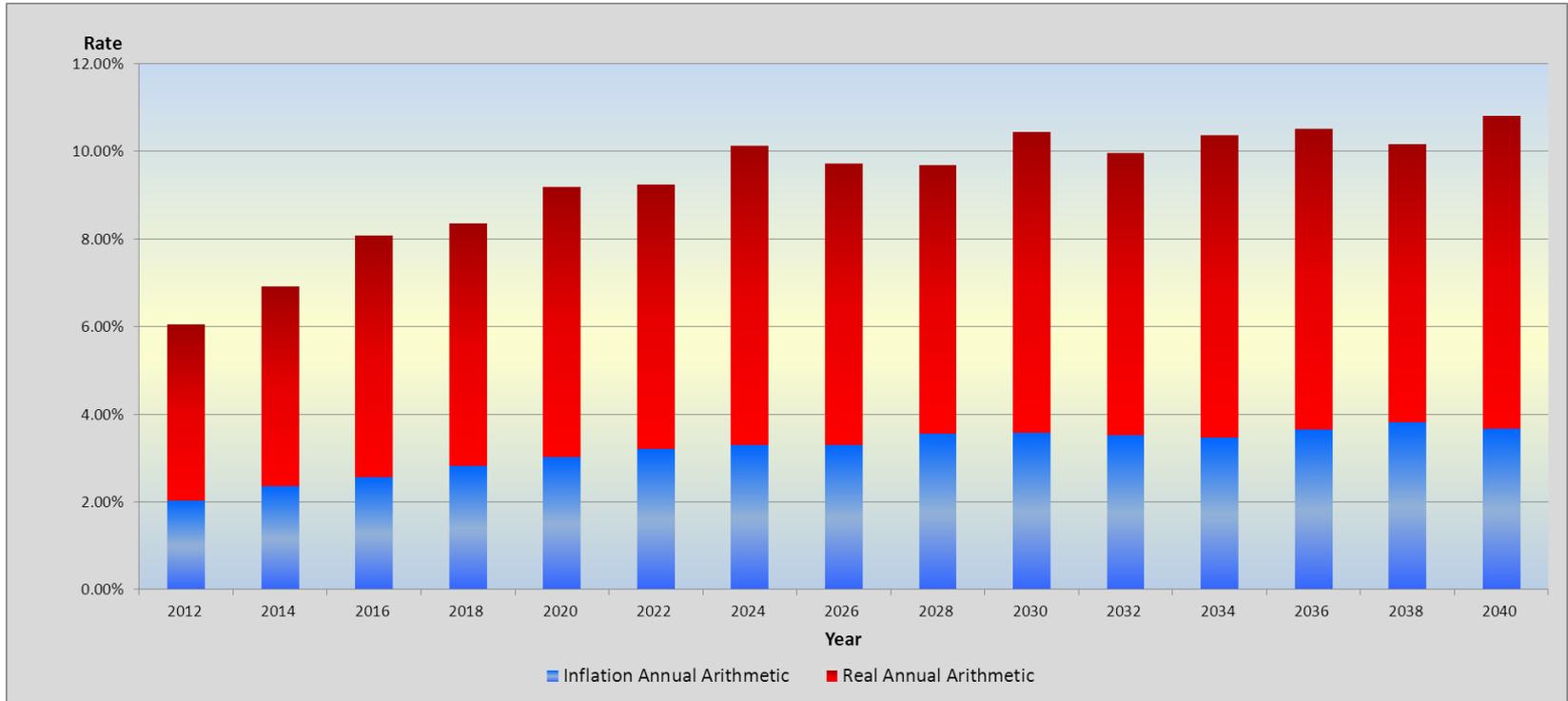
Nebraska Investment Council Asset Allocation Policy

December 31, 2011



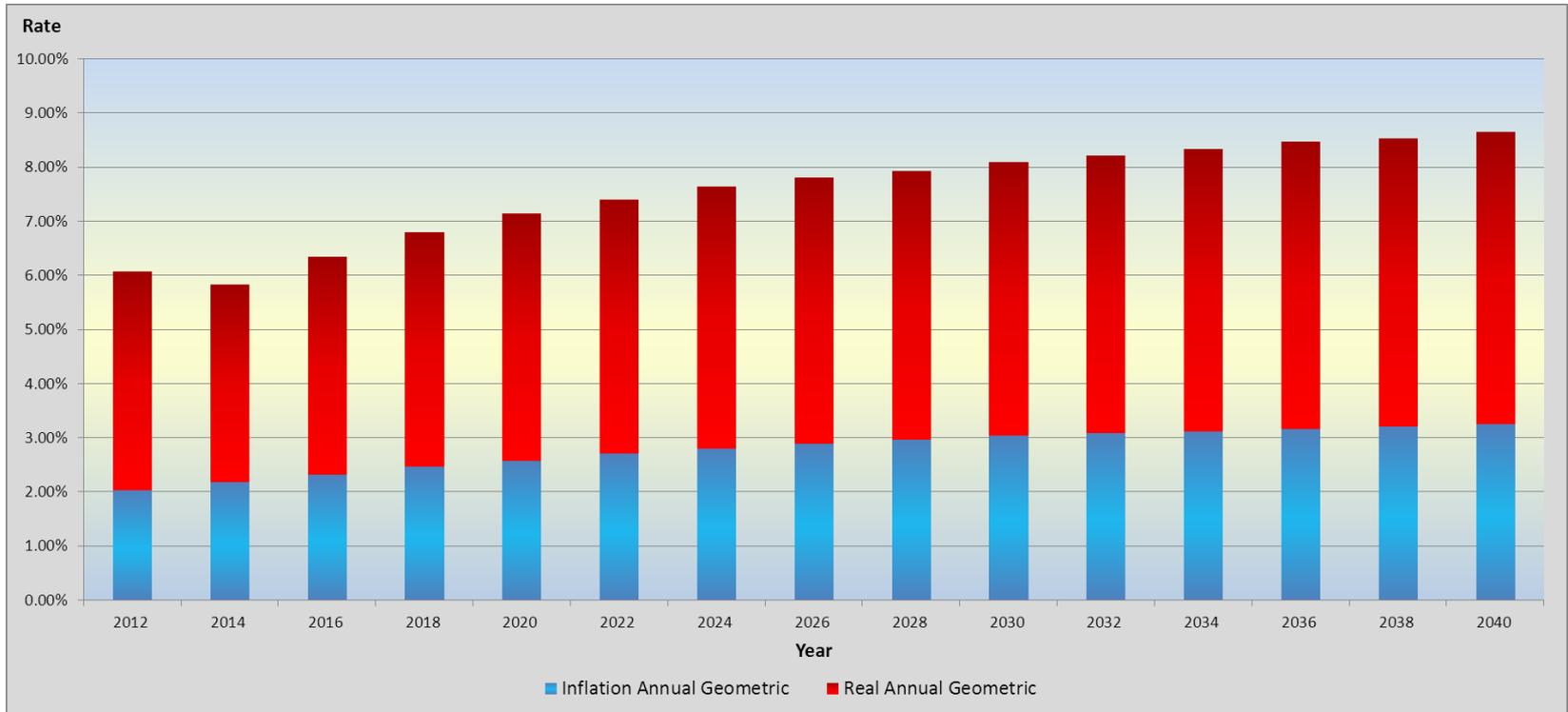
Nebraska PERS

Annual Expected Investment Rates of Return by Year (Arithmetic)
2012 - 2040



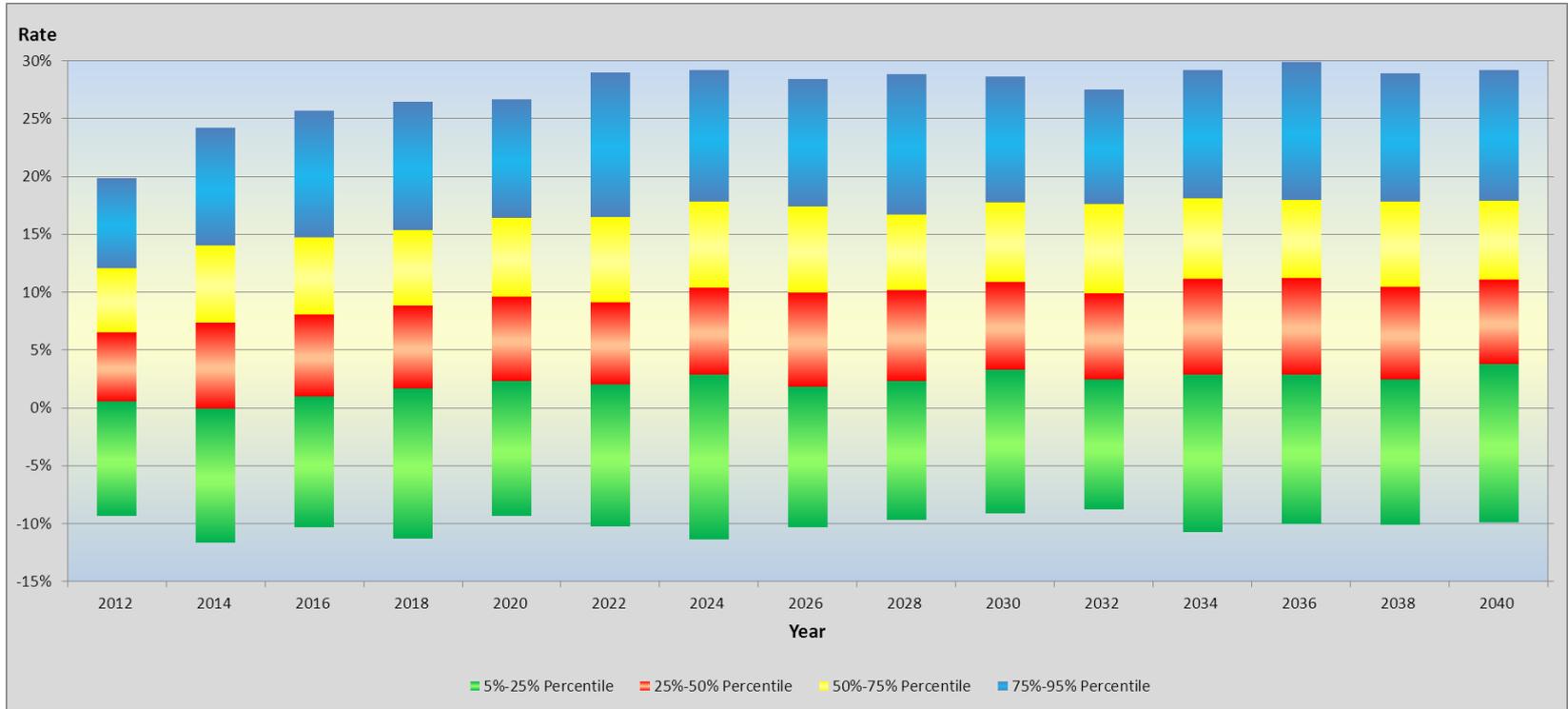
Nebraska PERS

Cumulative Expected Investment Rates of Return for Time Period (Geometric)
2012 - 2040



Nebraska PERS

Distribution of Investment Rates of Return by Year (Arithmetic)
2012 - 2040

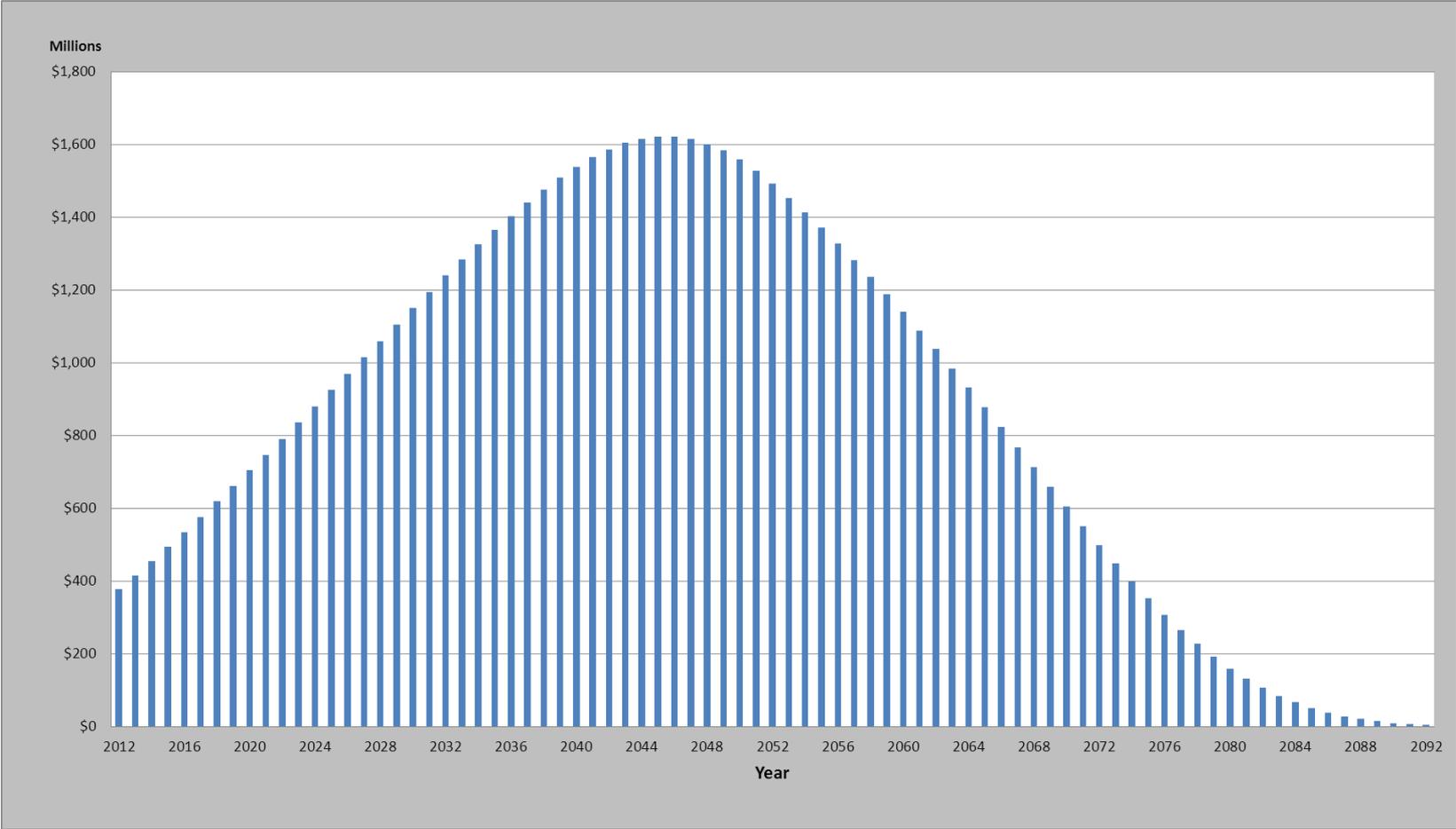


Nebraska PERS

Distribution of Cumulative Investment Rates of Return for Time Period (Geometric)
2012 - 2040



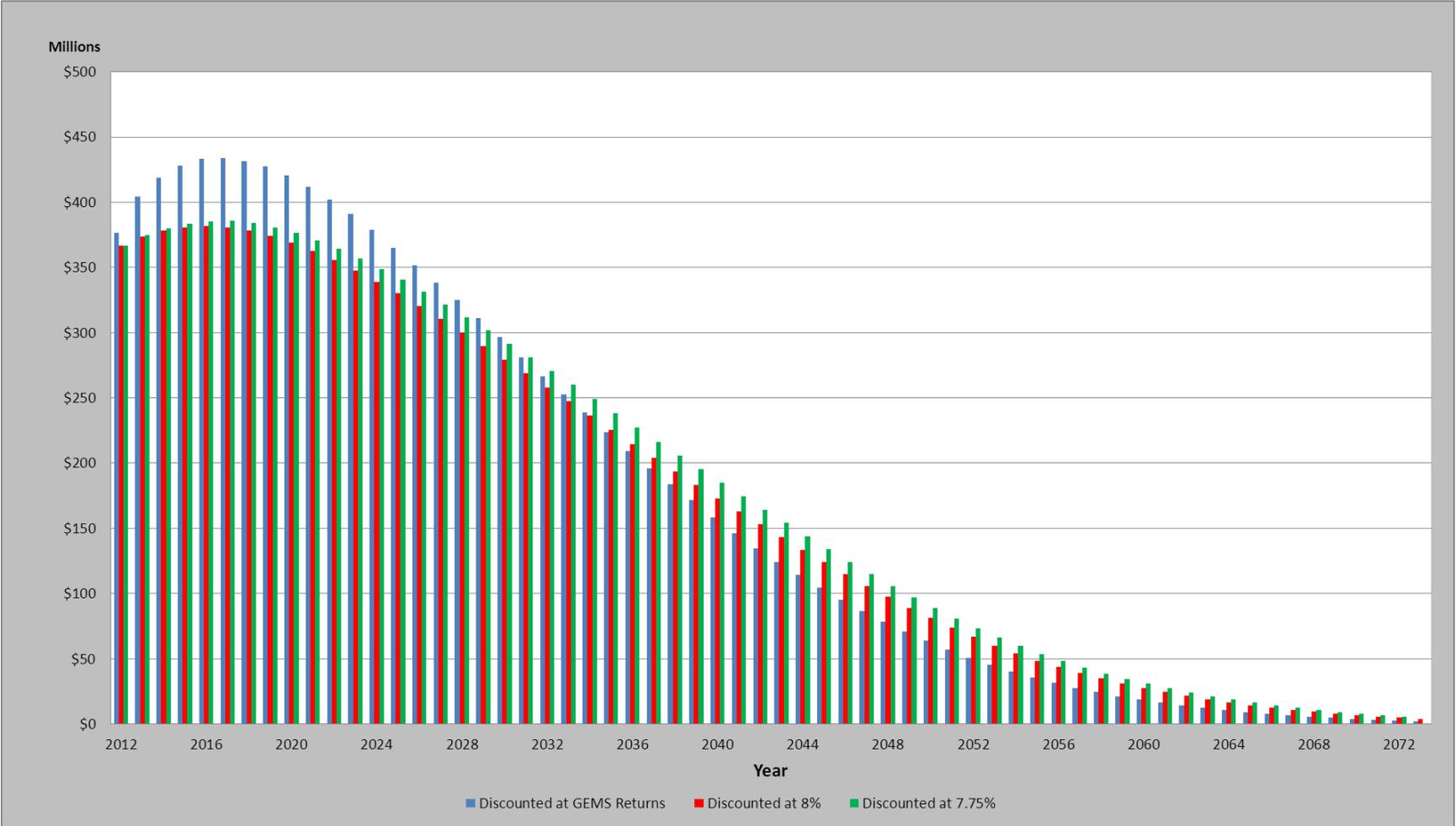
Nebraska School Retirement System Projected Annual Benefit Payments – Current Members 2012-2092



Nebraska School Retirement System

Discounted Values of Benefit Payments – Current Members

2012-2072



Economic Assumptions

Conclusions

- Economy is currently in a low inflationary environment, but is expected to revert to more normal levels long-term. Buck recommends:
 - A reduction in the consumer price inflation assumption from 3.5% to 3.25% to reflect impact of low near-term inflation
 - A reduction to the economic productivity assumption from 1.0% to 0.75% which is reflected in salary increases
 - Reduce the wage inflation assumption from 4.5% to 4.0%
- Investment returns are likely to be lower than assumed in the short-term as the economy slowly recovers from the “Great Recession”, and are expected to increase over time to a level greater than the assumed rate long-term.
- Projected benefit payment liability for Schools was calculated at following discount rates:

– 1% ROR in FY12, then GEMS returns:	\$11,007 million
– Current 8.0% assumption:	\$10,678 million
– Recommended 7.75% assumption:	\$11,111 million
- Based on Buck’s Modeling of expected investment returns, the current assumption of 8.0% does **not** meet the actuarial standards requirement. We recommend a reduction in the investment return assumption/discount rate from 8.0% to 7.75%.

Summary of Economic Assumption Recommendations

	<u>Current</u>	<u>Recommended</u>
• Investment Return		
– School, Patrol and Judges	8.00%	7.75%
– State and County Cash Balance	7.75%	7.75%
• Inflation	3.50%	3.25%
• Salary Increases		
– Inflation	3.50%	3.25%
– Productivity	<u>1.00%</u>	<u>0.75%</u>
– Economic Portion	4.50%	4.00%
• COLA's		
– Initial Rate	2.50%	2.50%
– After Purchasing Power Floor	3.50%	3.25%
• Interest on Member Contributions	5.50%	4.25%
• Interest Credit Rate for Cash Balance	7.00%	6.75%
• Annuitization Rate for Cash Balance	7.75%	7.75%

Demographic Assumptions

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Decremental Adjustments

- Follow experience
- Watch trends (e.g., improving mortality, utilization of early retirement, etc.)
- Factor in special events during investigation period (e.g., early retirement window, change in benefit eligibility, negotiated salary increases)
- Ratio of Actual experience to Expected experience (a.k.a. A/E ratio) gives measurement of the difference between observed and assumed results for the period
 - Ratio above 100% indicates more decrements than assumed
 - Ratio under 100% indicates less decrements than assumed

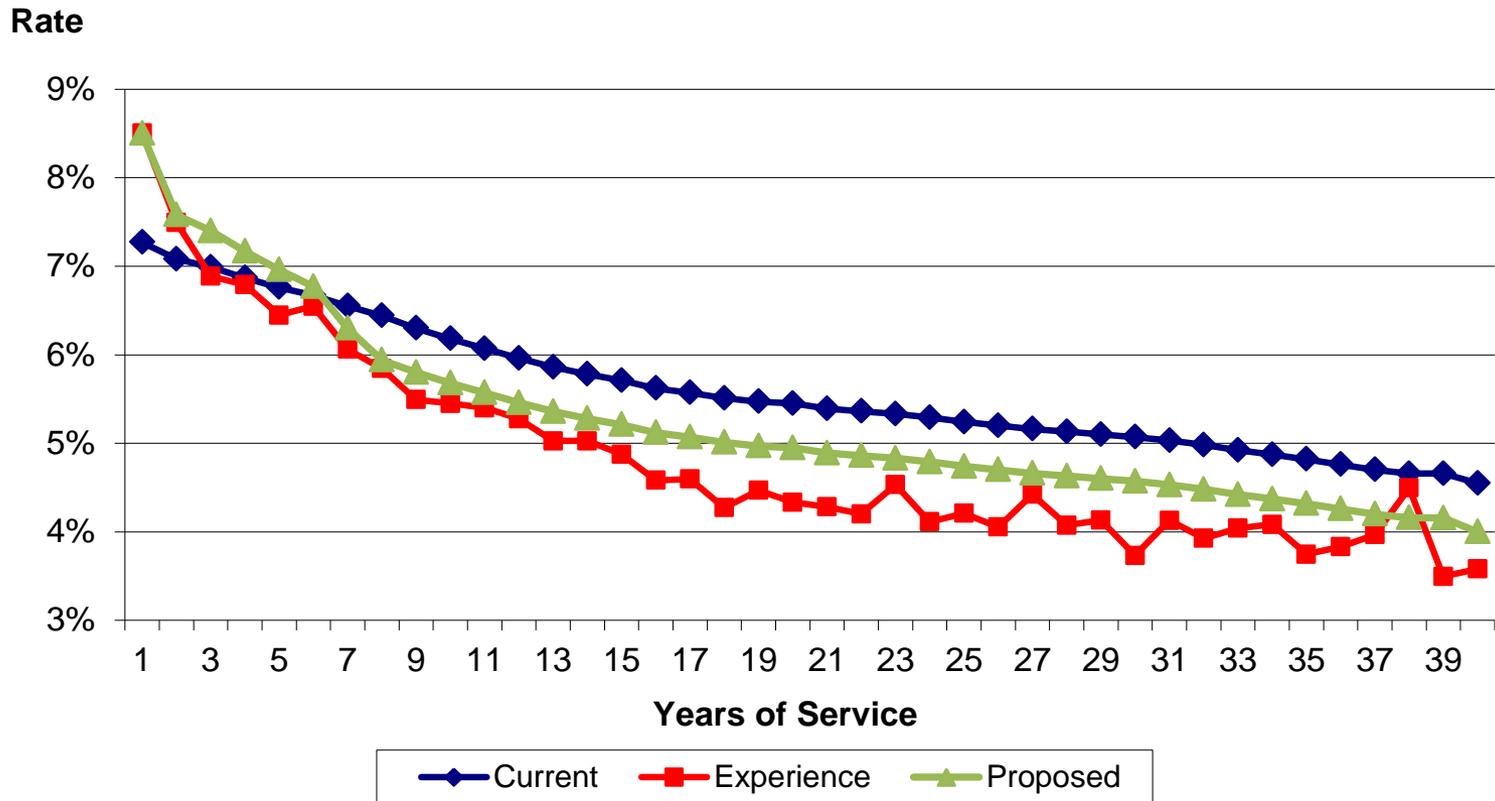
School Retirement System

- **Graphs of Current and Proposed Demographic Assumptions**
- **Summaries of Proposed Economic and Demographic Changes**
- **Summary of Impact of Economic and Demographic Changes**

School Retirement System

2012 Experience Analysis (2006-2011)

Salary Increases (includes Inflation)

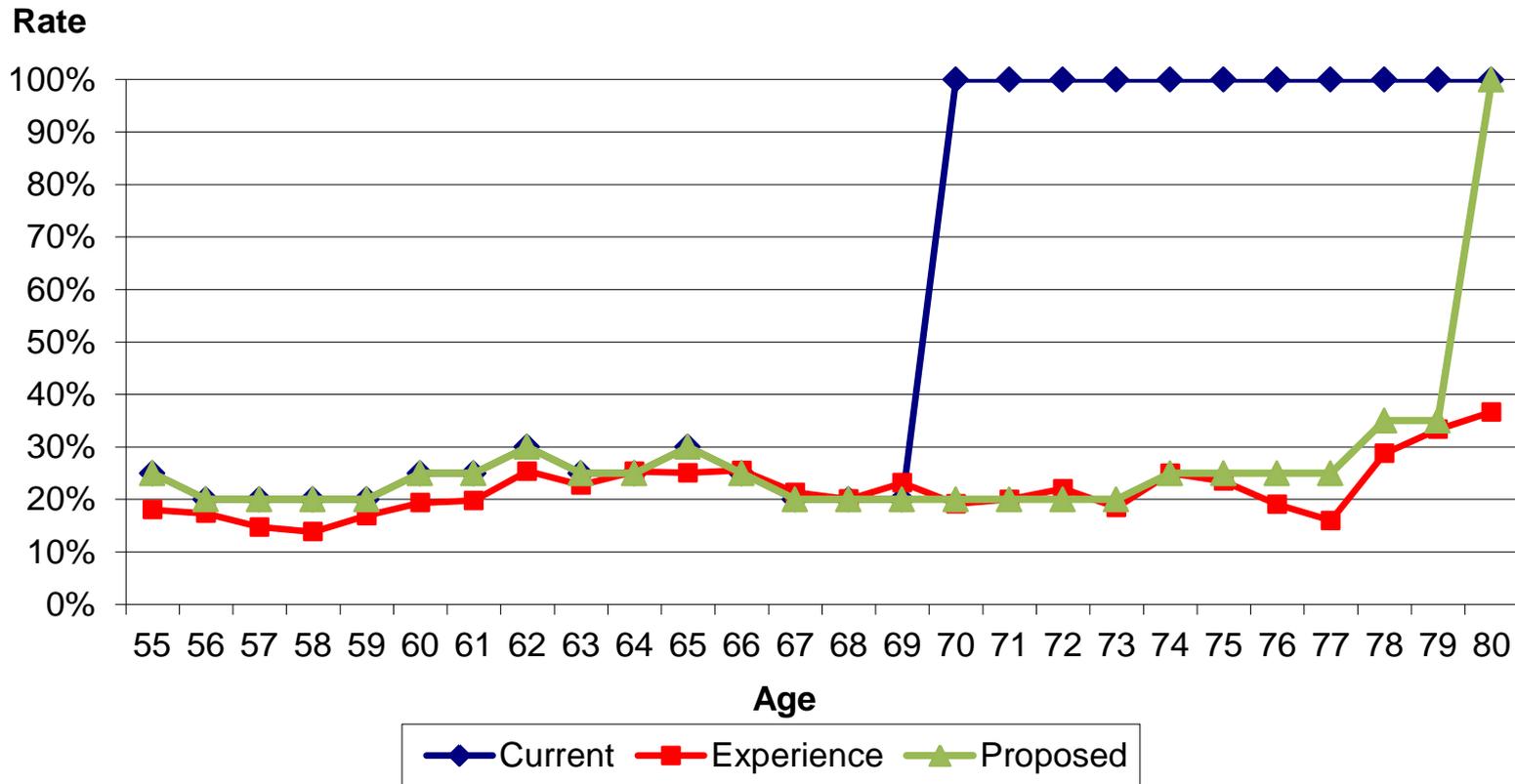


Current % A/E: 90% Proposed % A/E: 94%

School Retirement System

2012 Experience Analysis (2006-2011)

Retirement Rates - Normal (65/5) and Unreduced Early (55/Rule of 85)

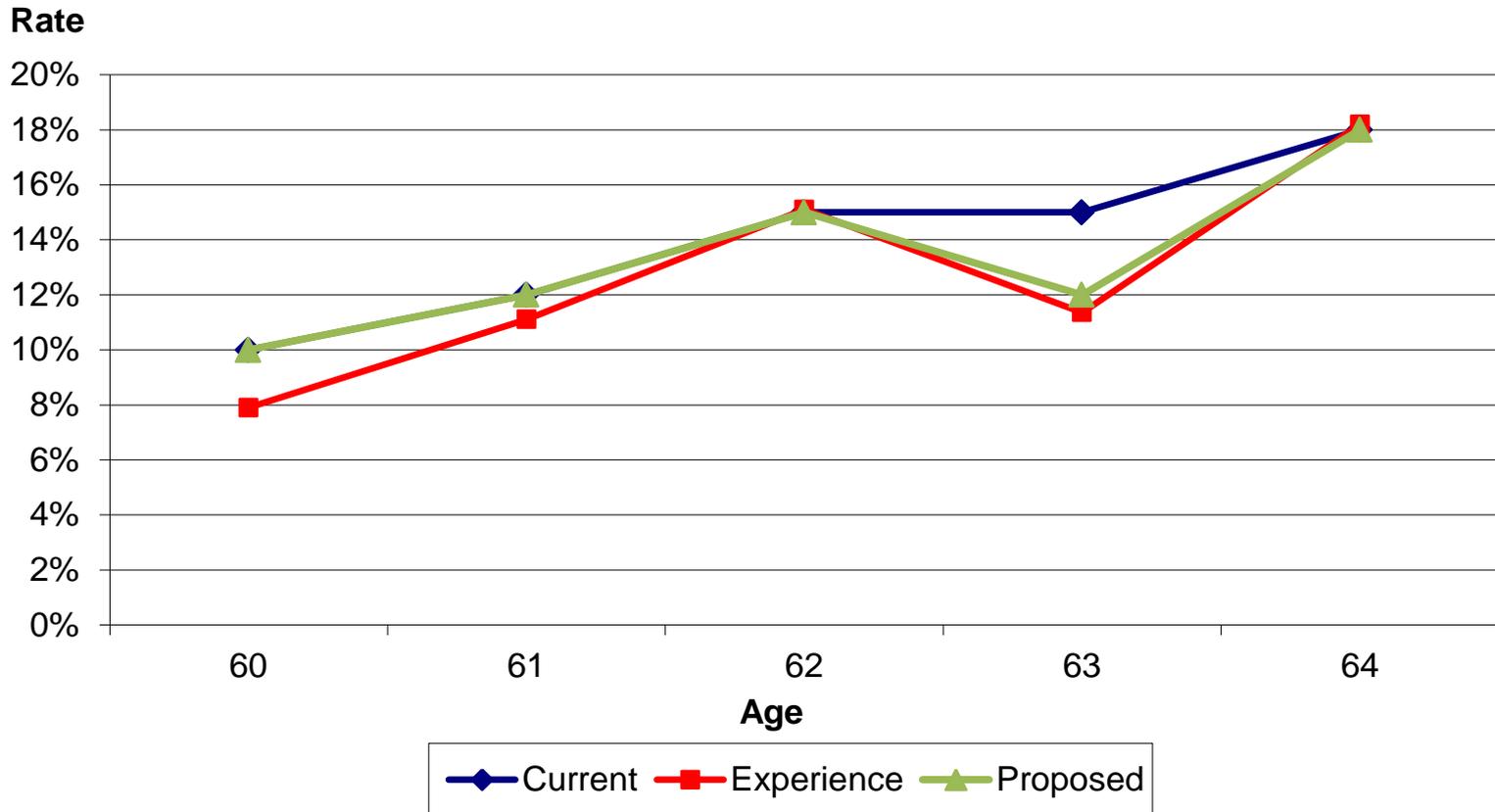


Experience - Actual retirements: 4,096 Expected retirements: 6,553 Current % A/E: 63% Proposed % A/E: 85%

School Retirement System

2012 Experience Analysis (2006-2011)

Retirement Rates - Reduced Early Benefit (60/5)

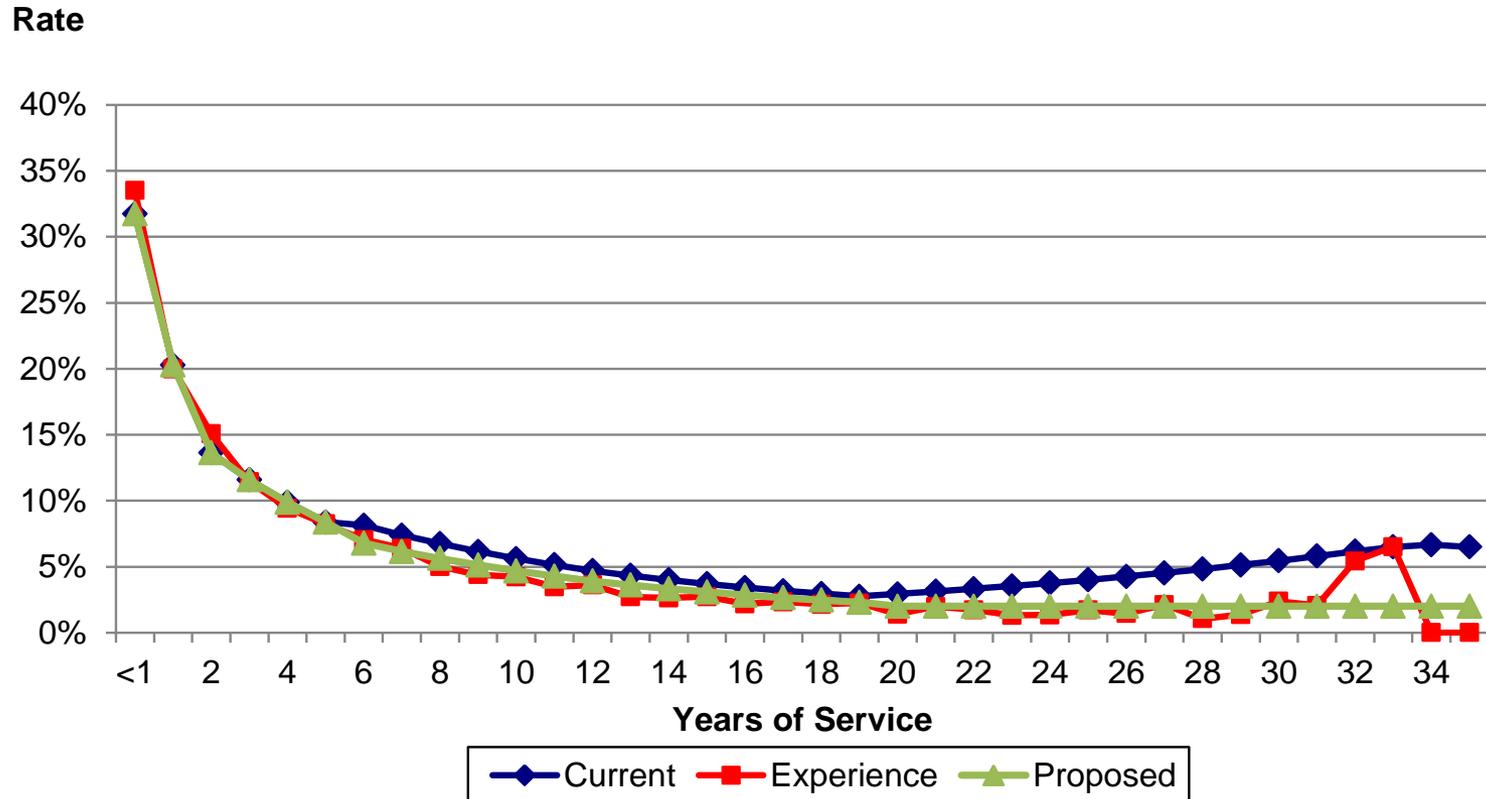


Experience - Actual retirements: 956 Expected retirements: 1,065 Current % A/E: 90% Proposed % A/E: 93%

School Retirement System

2012 Experience Analysis (2006-2011)

Withdrawal Rates - Females

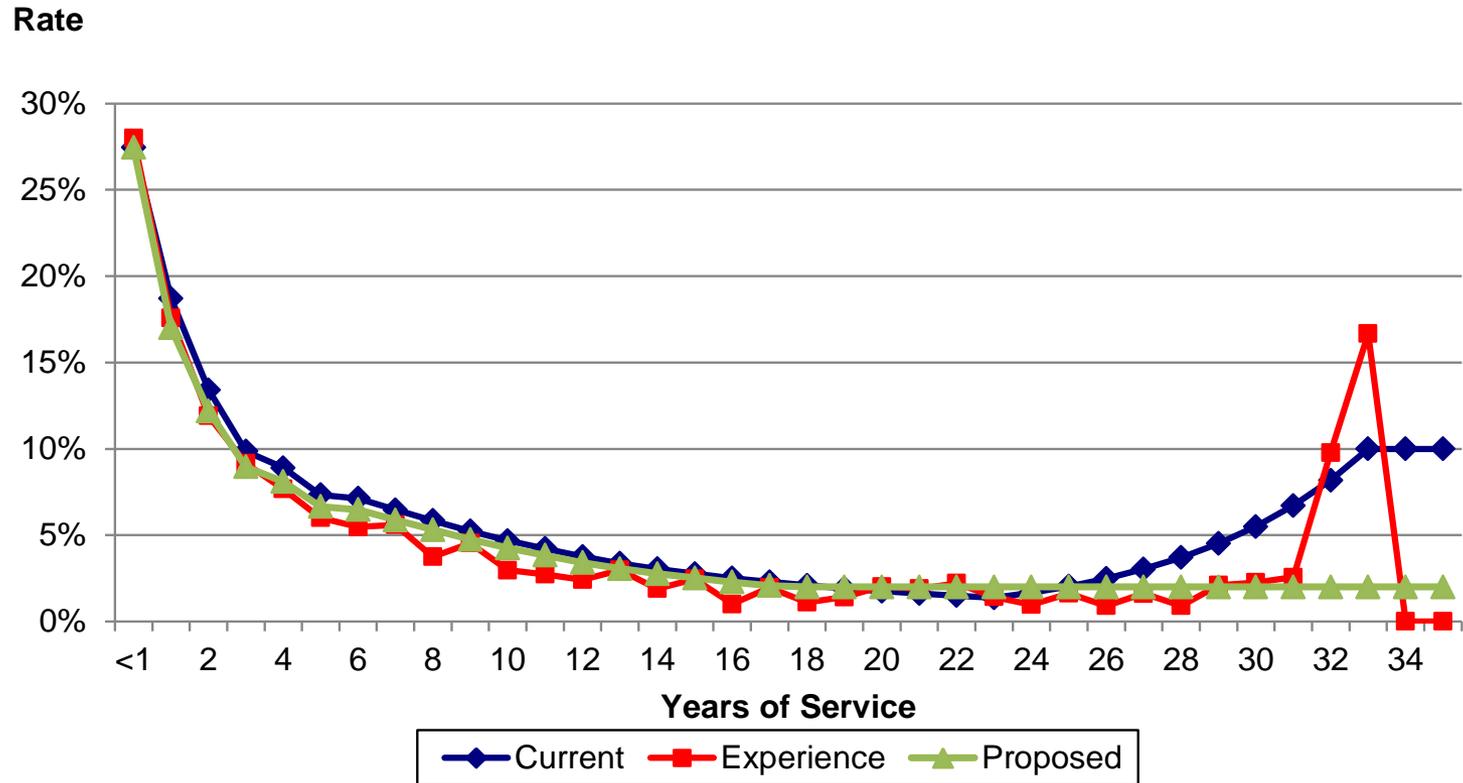


Experience - Actual turnover: 9,861 Expected turnover: 10,900 Current % A/E: 90% Proposed % A/E: 98%

School Retirement System

2012 Experience Analysis (2006-2011)

Withdrawal Rates - Males

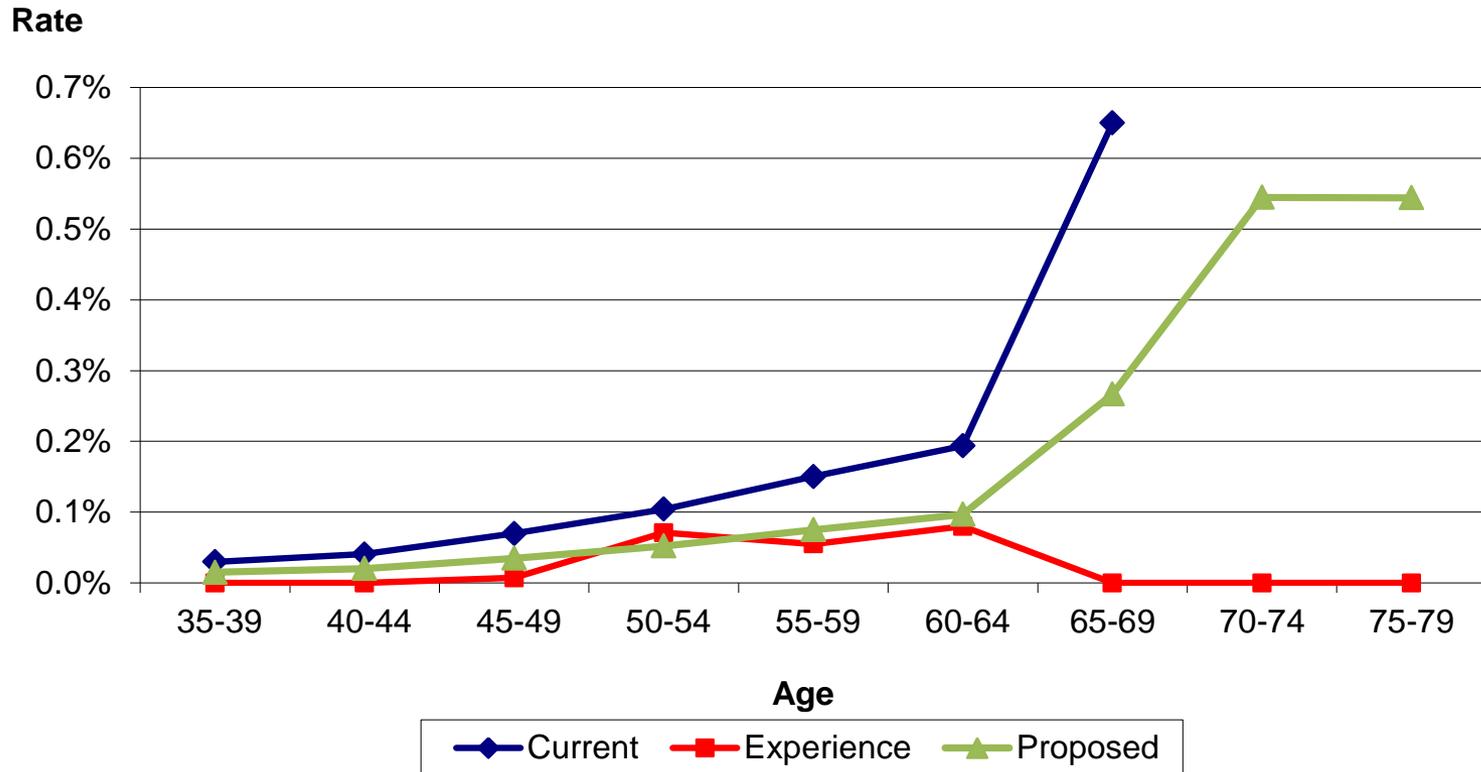


Experience - Actual turnover: 2,436 Expected turnover: 2,847 Current % A/E: 86% Proposed % A/E: 95%

School Retirement System

2012 Experience Analysis (2006-2011)

Disability Rates

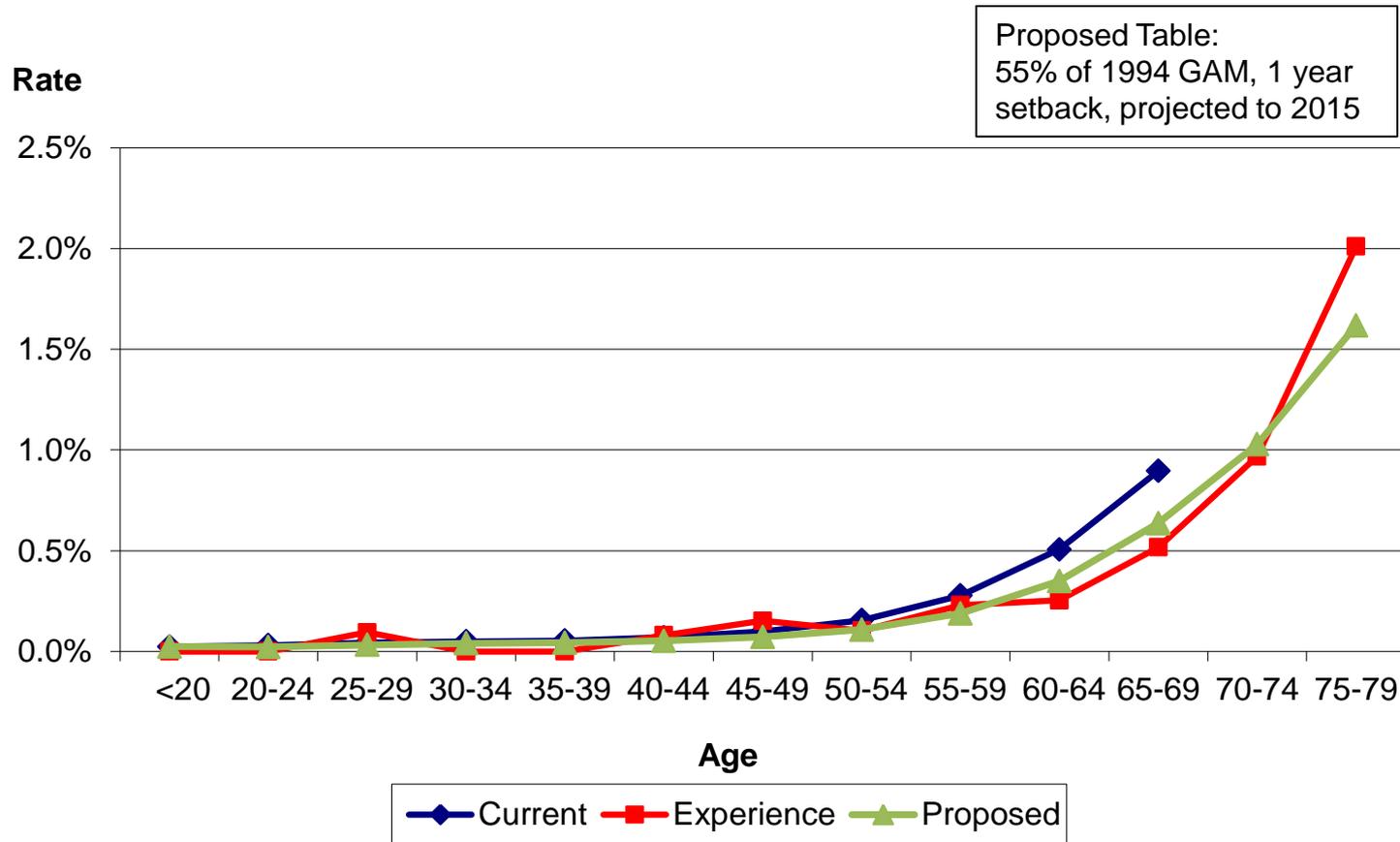


Experience - Actual disabilities: 53 Expected disabilities: 166 Current % A/E: 32% Proposed % A/E: 56%

School Retirement System

2012 Experience Analysis (2006-2011)

Pre-retirement Mortality - Males

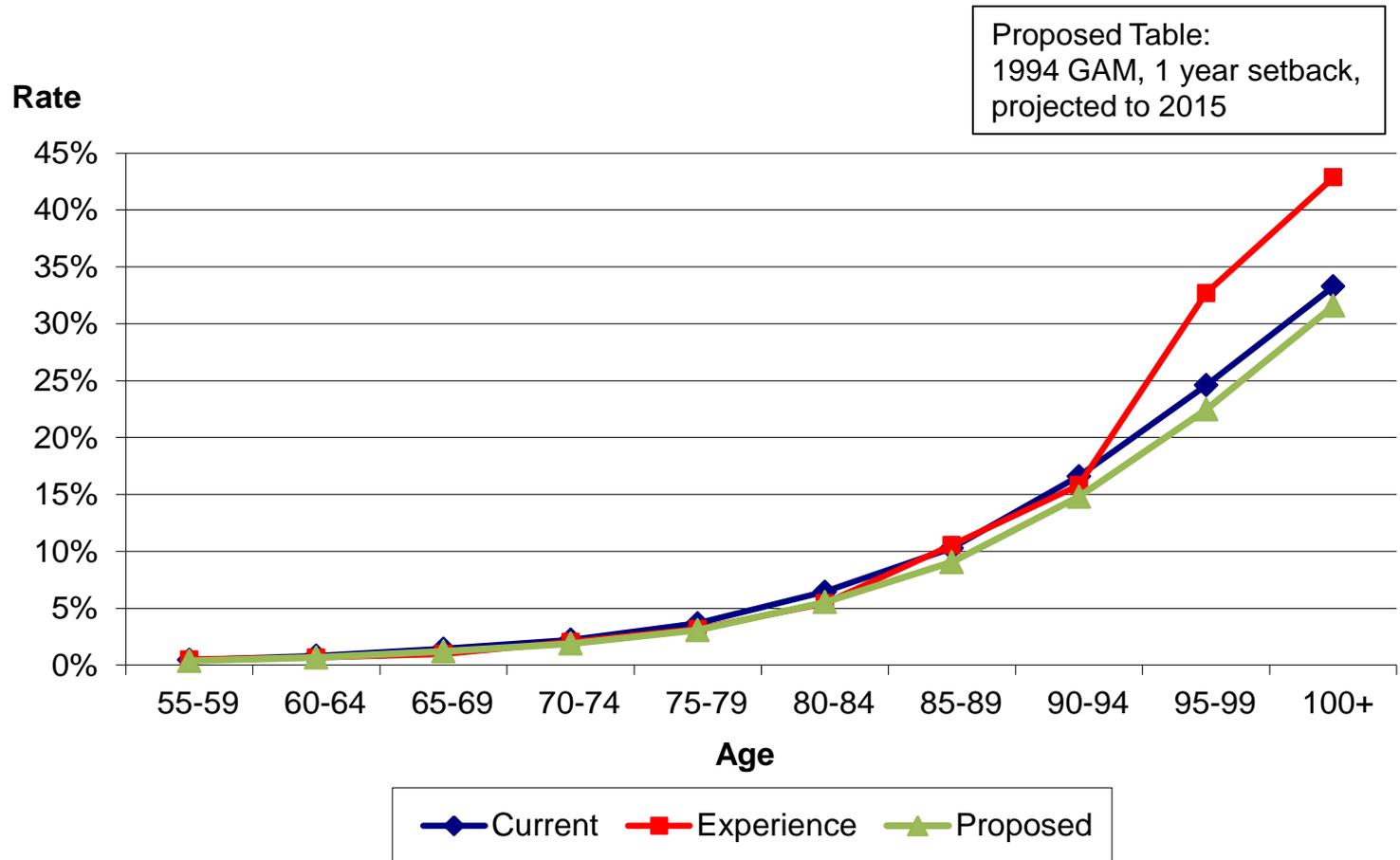


Experience - Actual deaths: 70 Expected deaths: 84 Current % A/E: 83% Proposed % A/E: 102%

School Retirement System

2012 Experience Analysis (2006-2011)

Post-retirement Mortality - Males

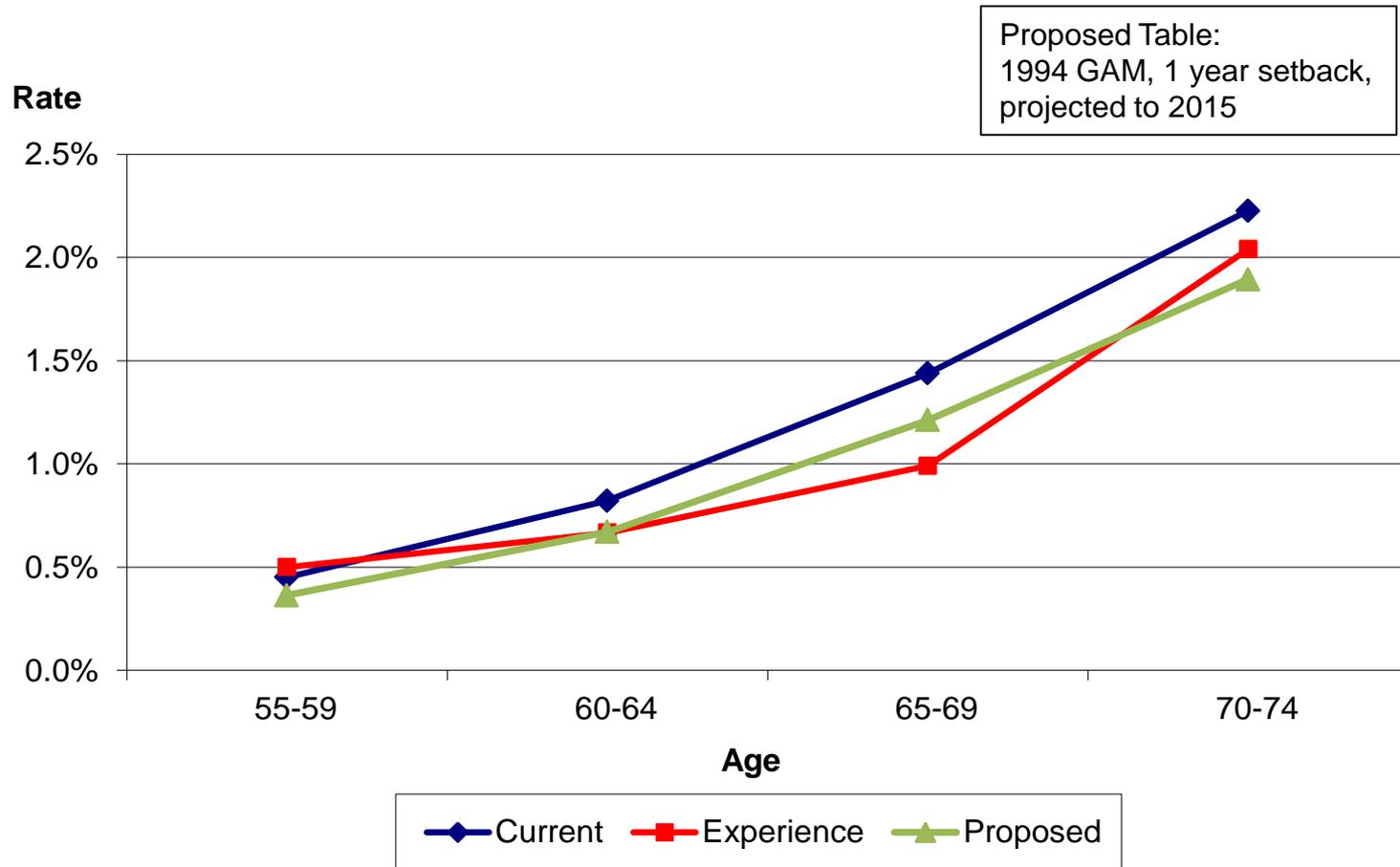


Experience - Actual deaths: 662 Expected deaths: 737 Current % A/E: 90% Proposed % A/E: 105%

School Retirement System

2012 Experience Analysis (2006-2011)

Post-retirement Mortality - Males - Closer look at key ages

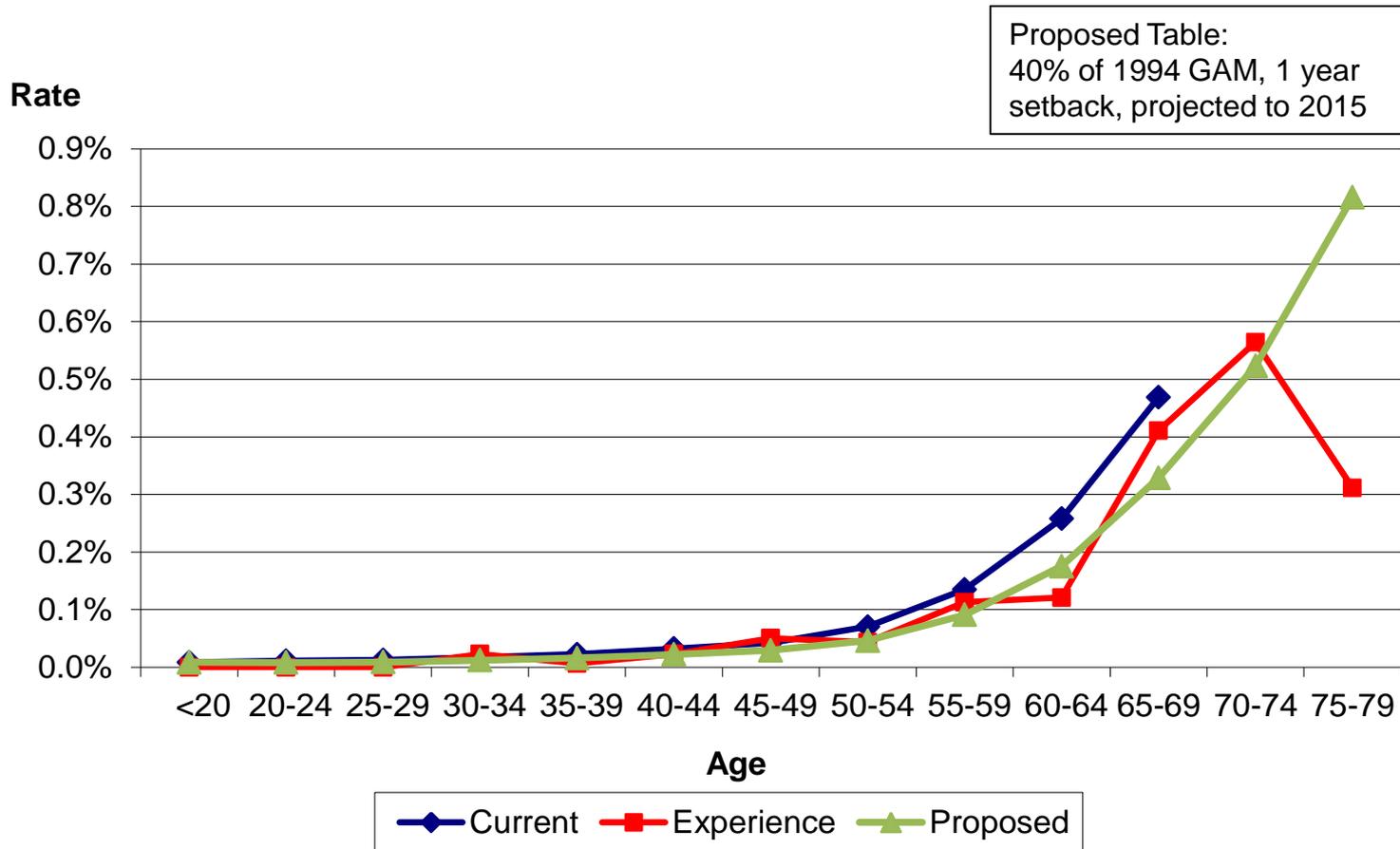


Experience - Actual deaths: 662 Expected deaths: 737 Current % A/E: 90% Proposed % A/E: 105%

School Retirement System

2012 Experience Analysis (2006-2011)

Pre-retirement Mortality - Females

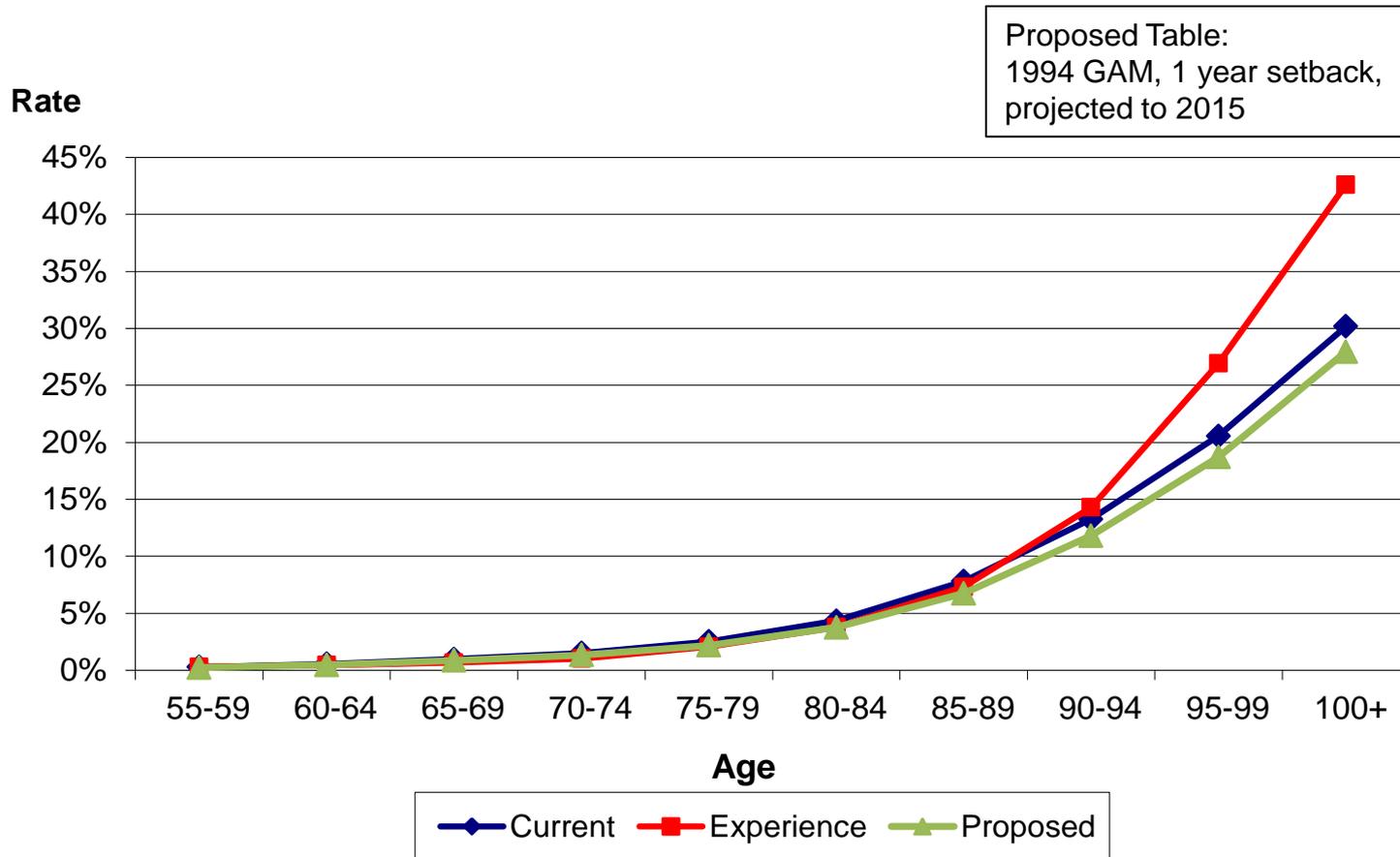


Experience - Actual deaths: 88 Expected deaths: 113 Current % A/E: 78% Proposed % A/E: 103%

School Retirement System

2012 Experience Analysis (2006-2011)

Post-retirement Mortality - Females

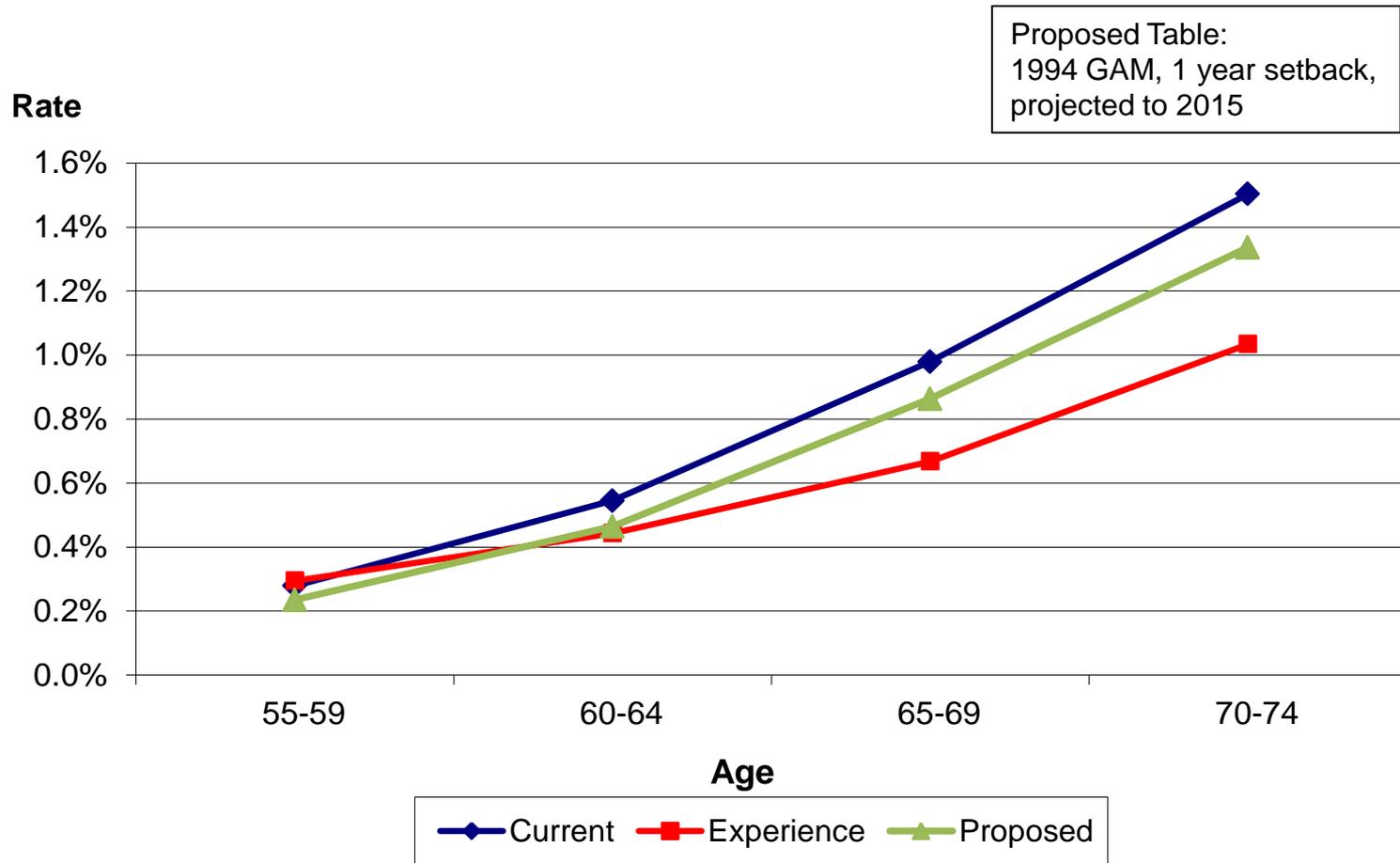


Experience - Actual deaths: 1,502 Expected deaths: 1,579 Current % A/E: 95% Proposed % A/E: 109%

School Retirement System

2012 Experience Analysis (2006-2011)

Post-retirement Mortality - Females - Closer look at key ages



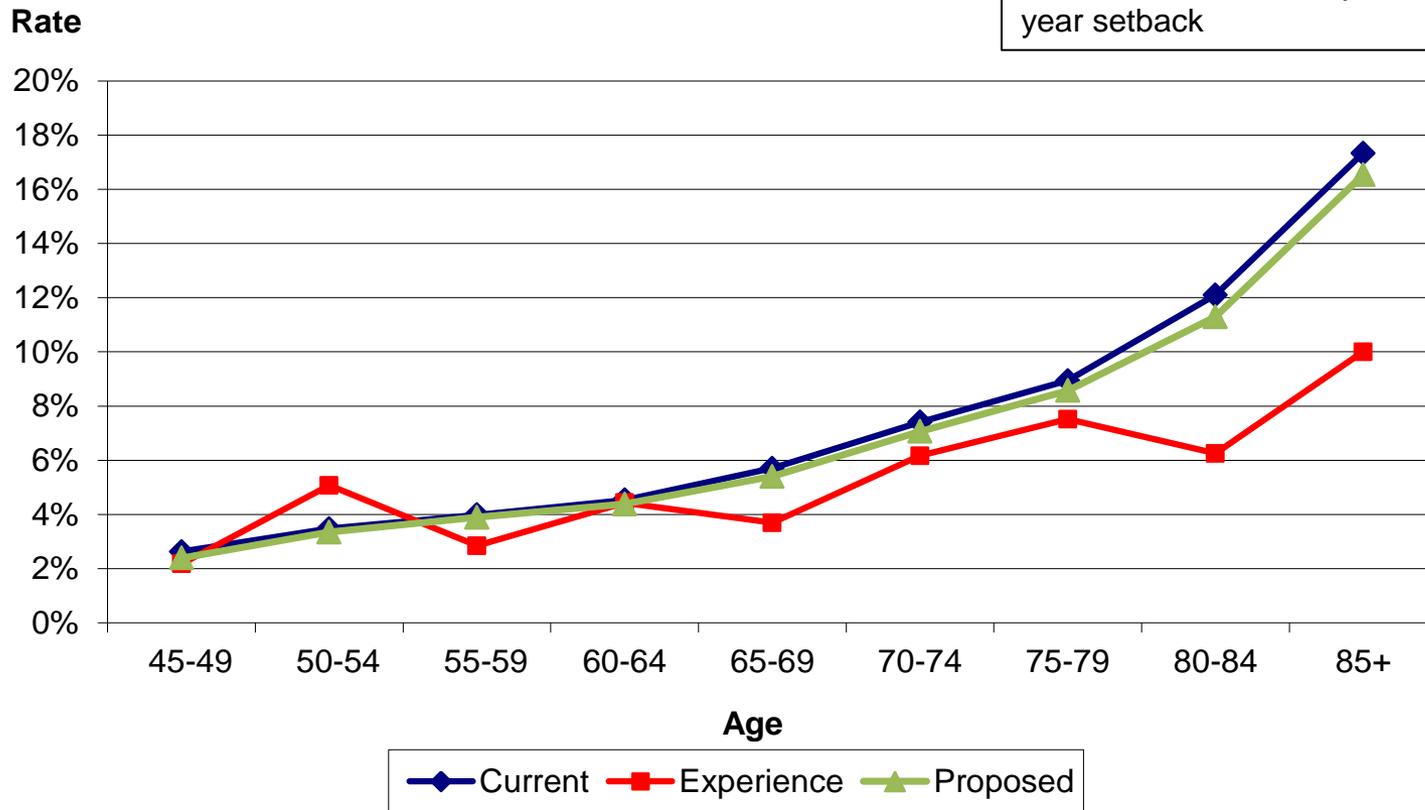
Experience - Actual deaths: 1,502 Expected deaths: 1,579 Current % A/E: 95% Proposed % A/E: 109%

School Retirement System

2012 Experience Analysis (2006-2011)

Disabled Mortality

Proposed Table:
1983 Railroad Disability, 1
year setback



Experience - Actual deaths: 75 Expected deaths: 94.45 Current % A/E: 79% Proposed % A/E: 83%

School Retirement System

2012 Experience Analysis (2006-2011)

Summary of Economic and Demographic Assumption Recommendations

	Current	Proposed	Impact on Liabilities
Investment Return	8.00%/year	7.75%/year	Increase
Salary Increases	Service based: 7.5% for <1 year, grading down to 4.6% at 40 years	Service based: 9% for <1 year, grading down to 4% at 40 years	Decrease
Retirement Rates	Various age/service based rates, ages 55 to 70	Age/Service based: Decrease age 63, Extend 100% retirement to age 80	Decrease
Mortality			
➤ Healthy Pre-Retirement	1994 GAM, Proj to 2010, 65% of male and 50% of female rates	1994 GAM, 1 Year Setback, Proj to 2015, 55% of male and 40% of female rates	Increase
➤ Healthy Post-Retirement	1994 GAM, Proj to 2010	1994 GAM, 1 Year Setback, Proj to 2015	Increase
➤ Disabled	1983 RR Disability	1983 RR Disability, 1 Year Setback	Increase
Withdrawal	Service based: 27%/32% for <1 year, grading down to 1%/3% and back up to 10%/7% at 34 years	Service based: 27%/32% for <1 year, grading down to 2% 18/20 years	Increase
Disability	0.03% age 35, grading up to 1.1% age 69	Reduce by 50%	Decrease

School Retirement System

2012 Experience Analysis (2006-2011)

Impact of Proposed and Alternative Assumptions - Excludes Omaha (\$ in millions)

Projected Funding	July 1, 2011		
	Current Assumptions	Proposed Assumptions - 8% Return	Proposed Assumptions - 7.75% Return
1. Actuarial Accrued Liability	\$ 9,024	\$ 9,143	\$ 9,437
2. Actuarial Value of Assets	<u>7,257</u>	<u>7,257</u>	<u>7,257</u>
3. Unfunded Actuarial Accrued Liability	\$ 1,767	\$ 1,886	\$ 2,180
4. Funded Ratio	80%	79%	77%
5. Annual Actuarial Contribution			
- Normal Cost	\$ 187	\$ 194	\$ 205
- Amortization of Unfunded	<u>155</u>	<u>165</u>	<u>186</u>
- Total Contribution	\$ 342	\$ 359	\$ 391
- % of Pay	20.39%	21.32%	23.24%
6. Expected Contribution			
- Total	\$ 319	\$ 319	\$ 319
- % of Pay	18.99%	18.99%	18.99%
7. Additional (Excess) Required Contribution			
- Amount	\$ 23	\$ 40	\$ 72
- % of Pay	1.40%	2.33%	4.25%

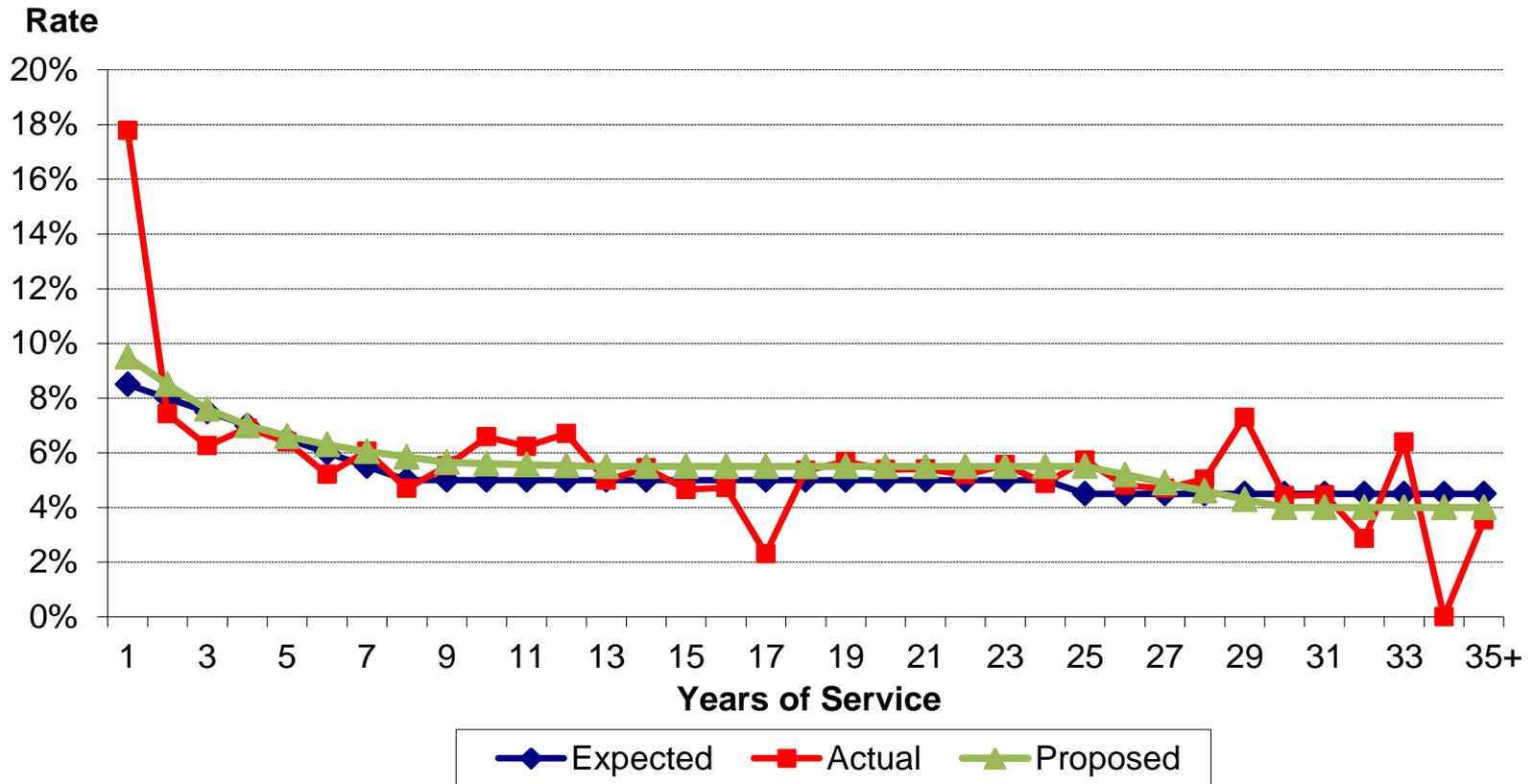
State Patrol Retirement System

- **Graphs of Current and Proposed Demographic Assumptions**
- **Summary of Proposed Economic and Demographic Changes**
- **Summary of Impact of Economic and Demographic Changes**

State Patrol Retirement System

2012 Experience Analysis (2006-2011)

Salary Increases (includes Inflation)

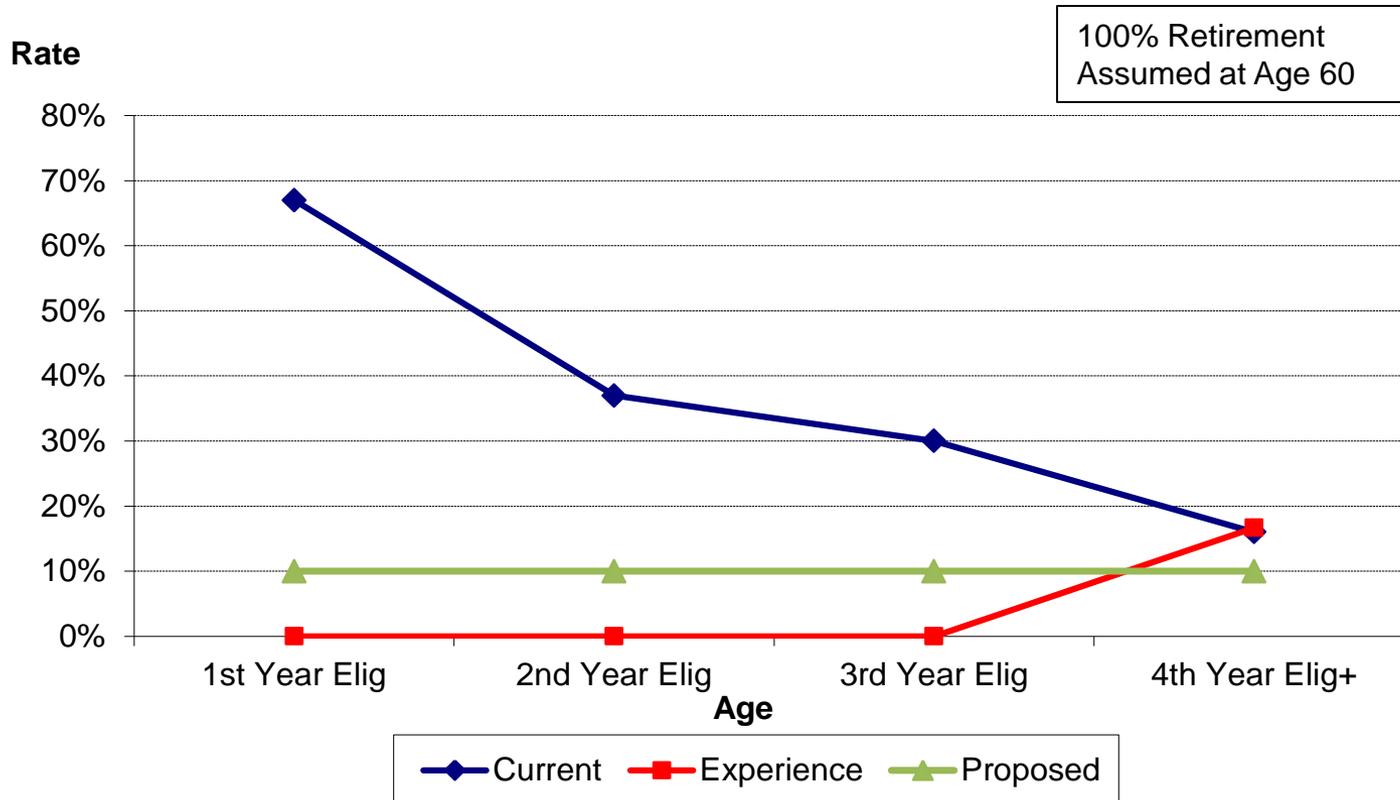


Current % A/E: 106% Proposed % A/E: 98%

State Patrol Retirement System

2012 Experience Analysis (2006-2011)

Unreduced Non-DROP Retirement Rates (55/10 or 60/any)

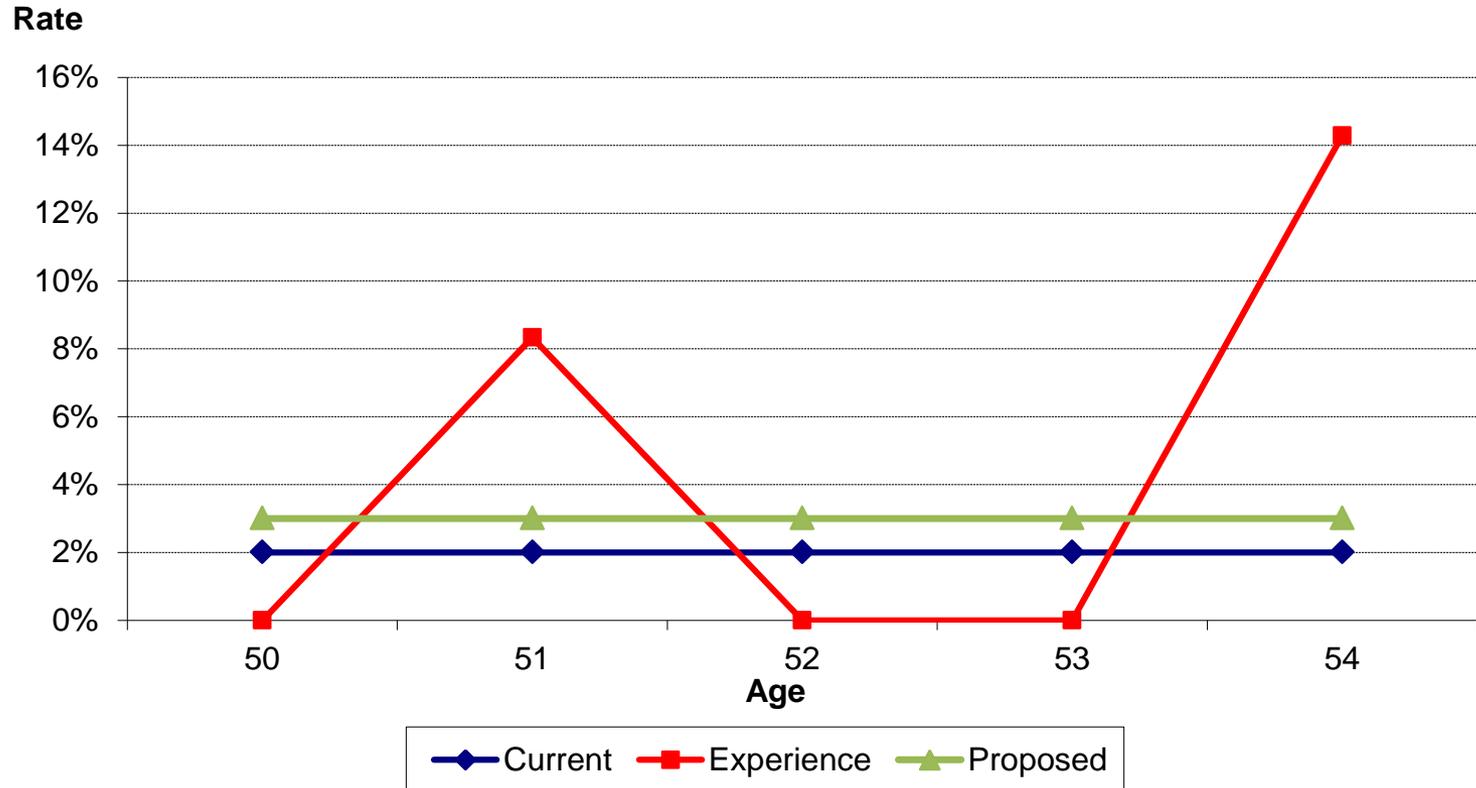


Experience - Actual retirements: 4 Expected retirements: 12.81 Current % A/E: 31% Proposed % A/E: 75%

State Patrol Retirement System

2012 Experience Analysis (2006-2011)

Reduced Non-DROP Retirement Rates (50/10)

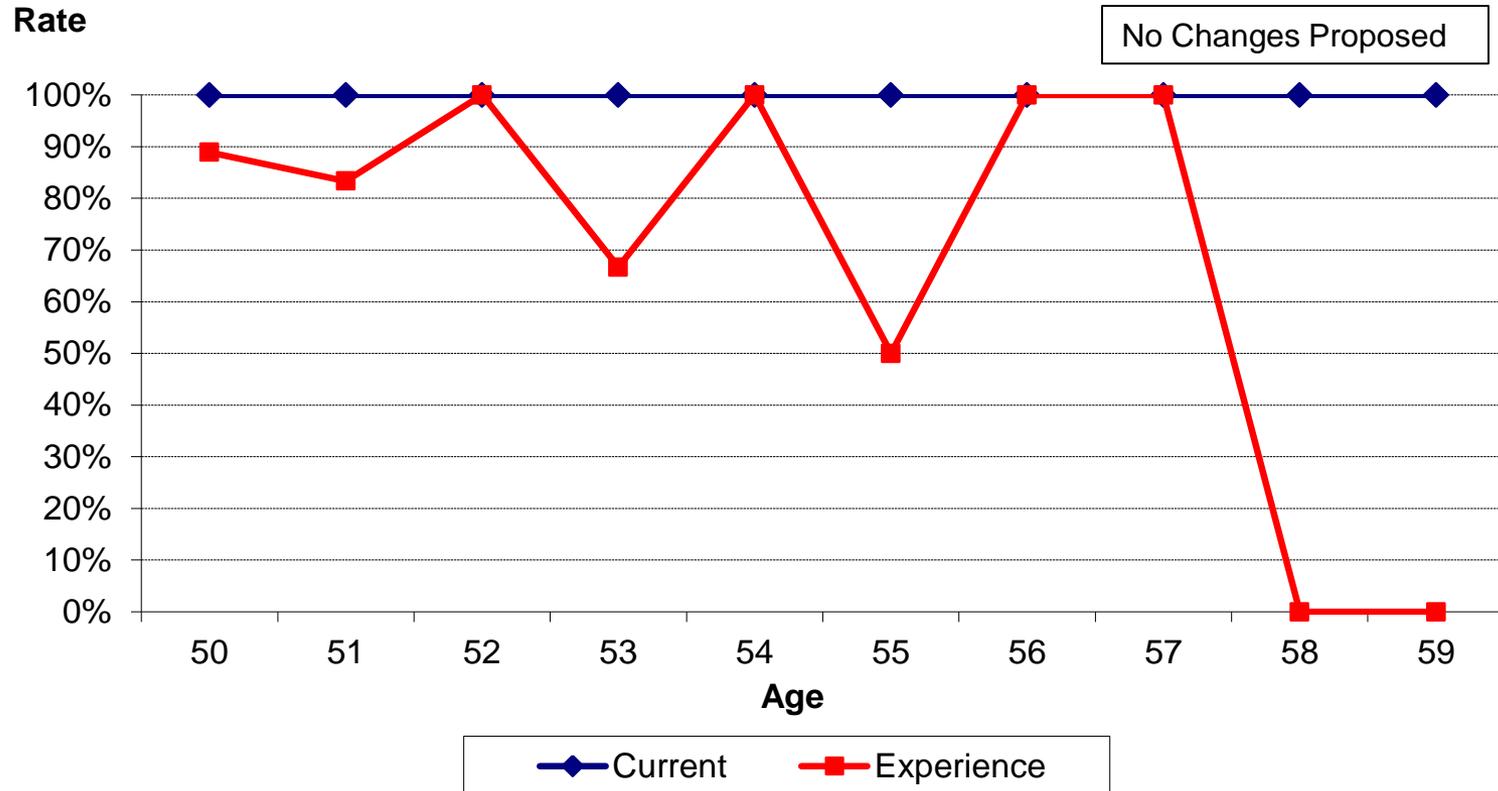


Experience - Actual retirements: 4 Expected retirements: 1.96 Current % A/E: 204% Proposed % A/E: 136%

State Patrol Retirement System

2012 Experience Analysis (2009-2011)

Unreduced DROP Retirement Rates (50/25)

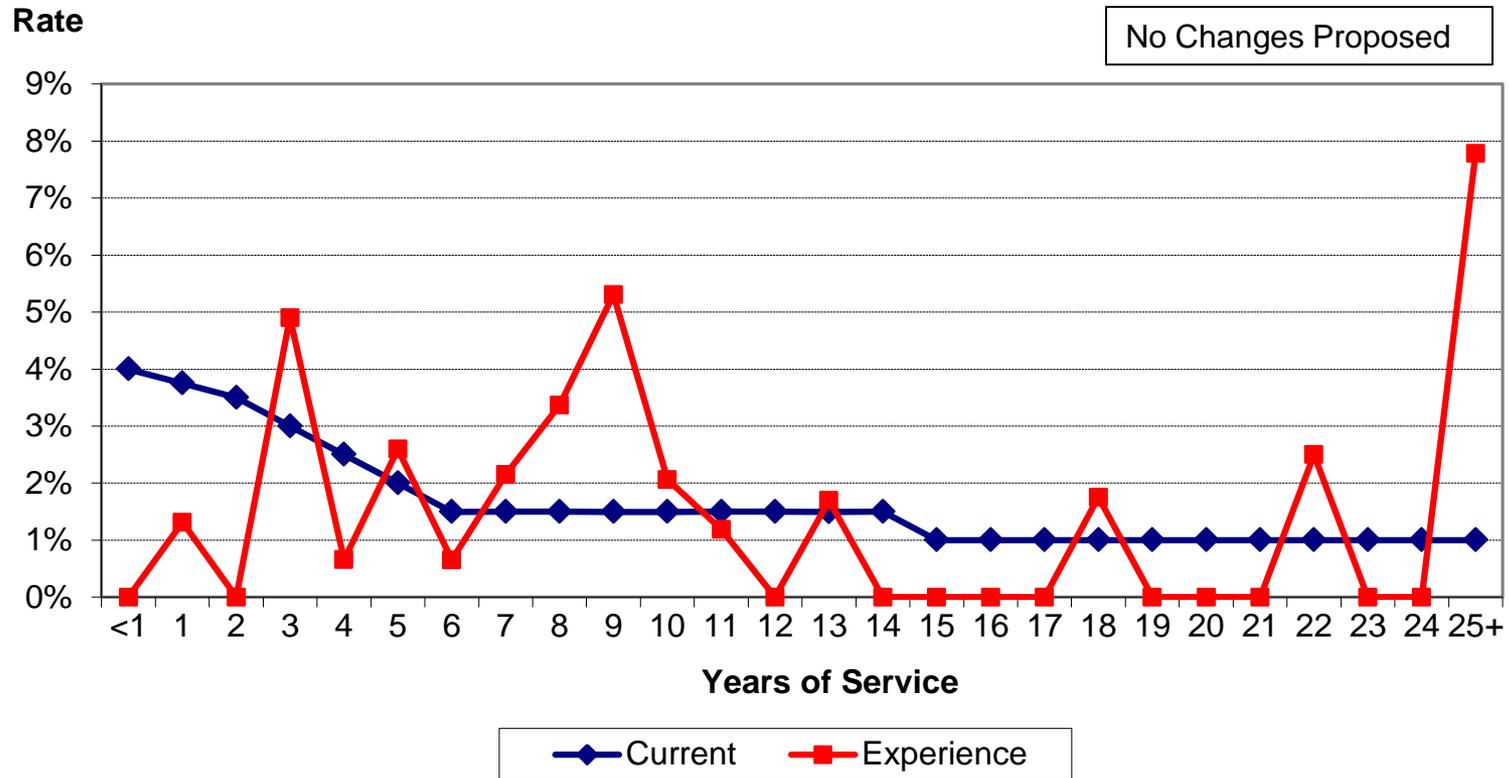


Experience - Actual retirements: 22 Expected retirements: 26 Current % A/E: 85%

State Patrol Retirement System

2012 Experience Analysis (2006-2011)

Withdrawal Rates

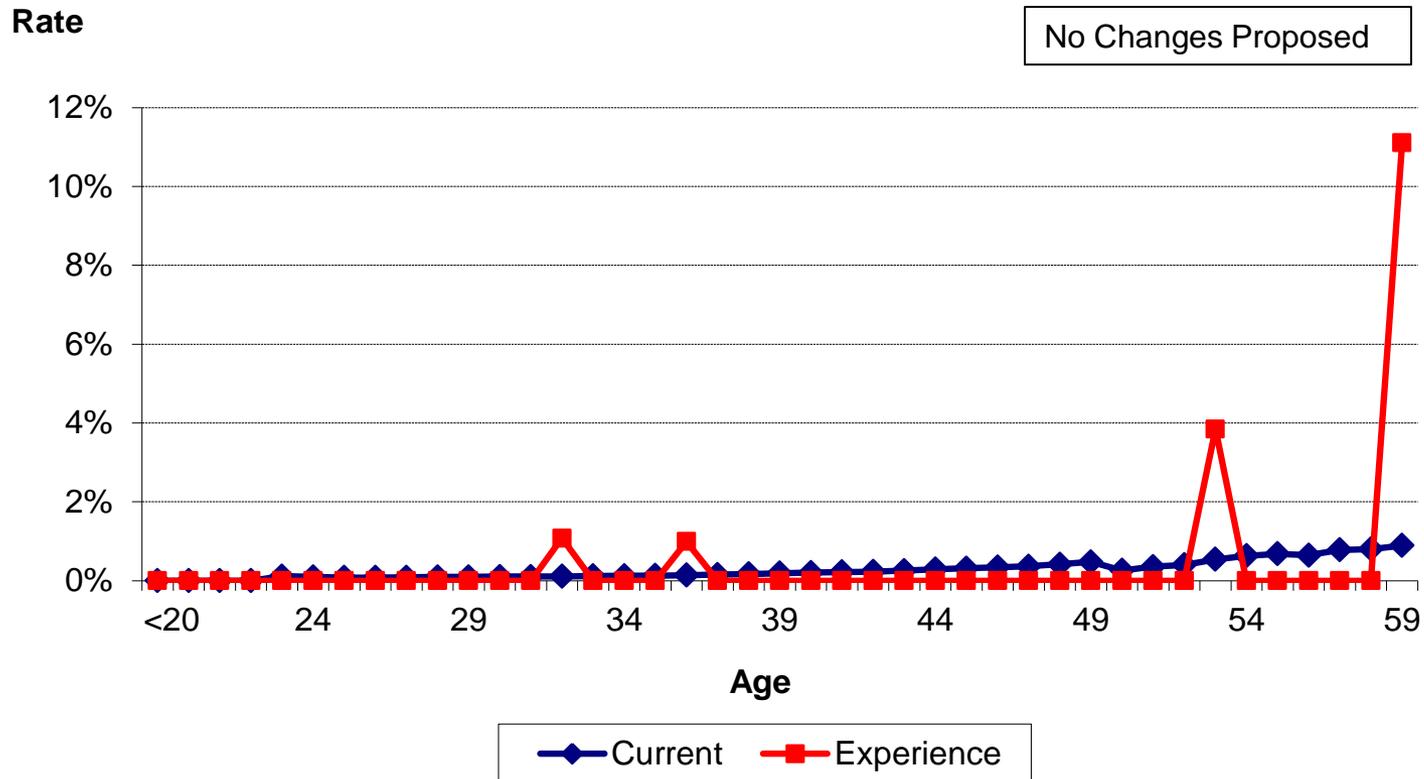


Experience - Actual turnover: 41 Expected turnover: 36.31 Current % A/E: 113%

State Patrol Retirement System

2012 Experience Analysis (2006-2011)

Disability Rates

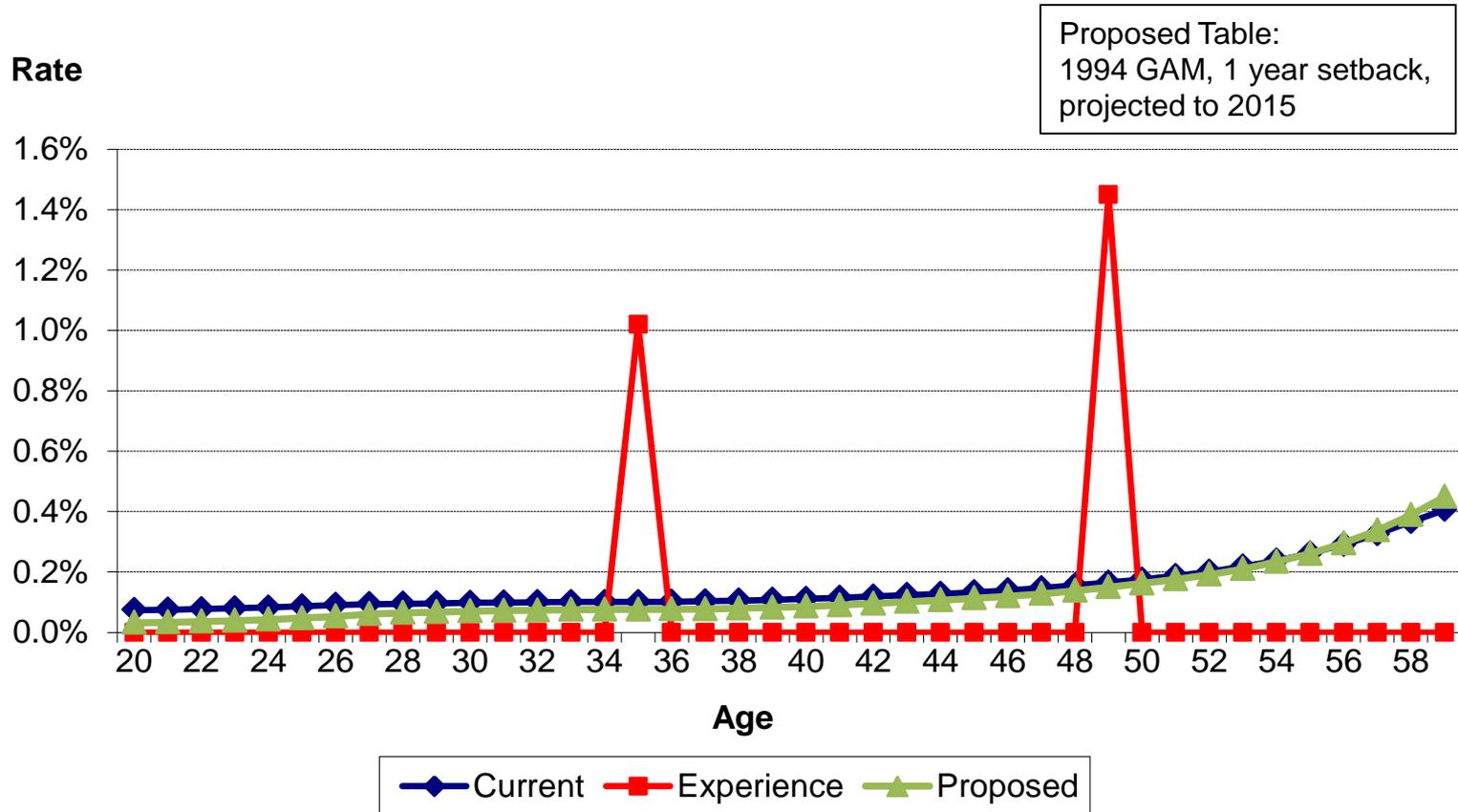


Experience - Actual disabilities: 4 Expected disabilities: 5.36 Current % A/E: 75%

State Patrol Retirement System

2012 Experience Analysis (2006-2011)

Pre-retirement Mortality - Males

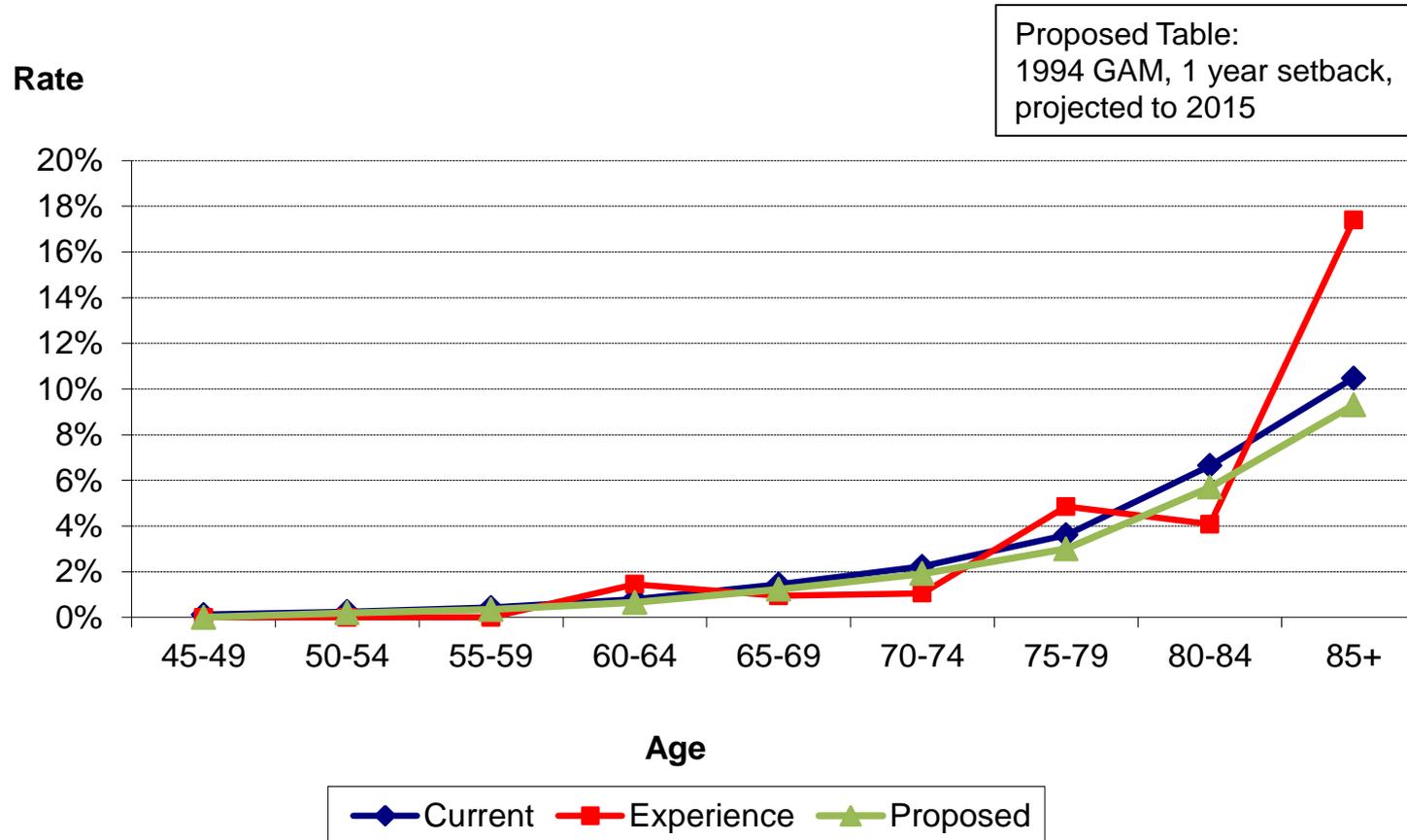


Experience - Actual deaths: 2 Expected deaths: 2.58 Current % A/E: 78% Proposed A/E: 97%

State Patrol Retirement System

2012 Experience Analysis (2006-2011)

Post-retirement Mortality - Males



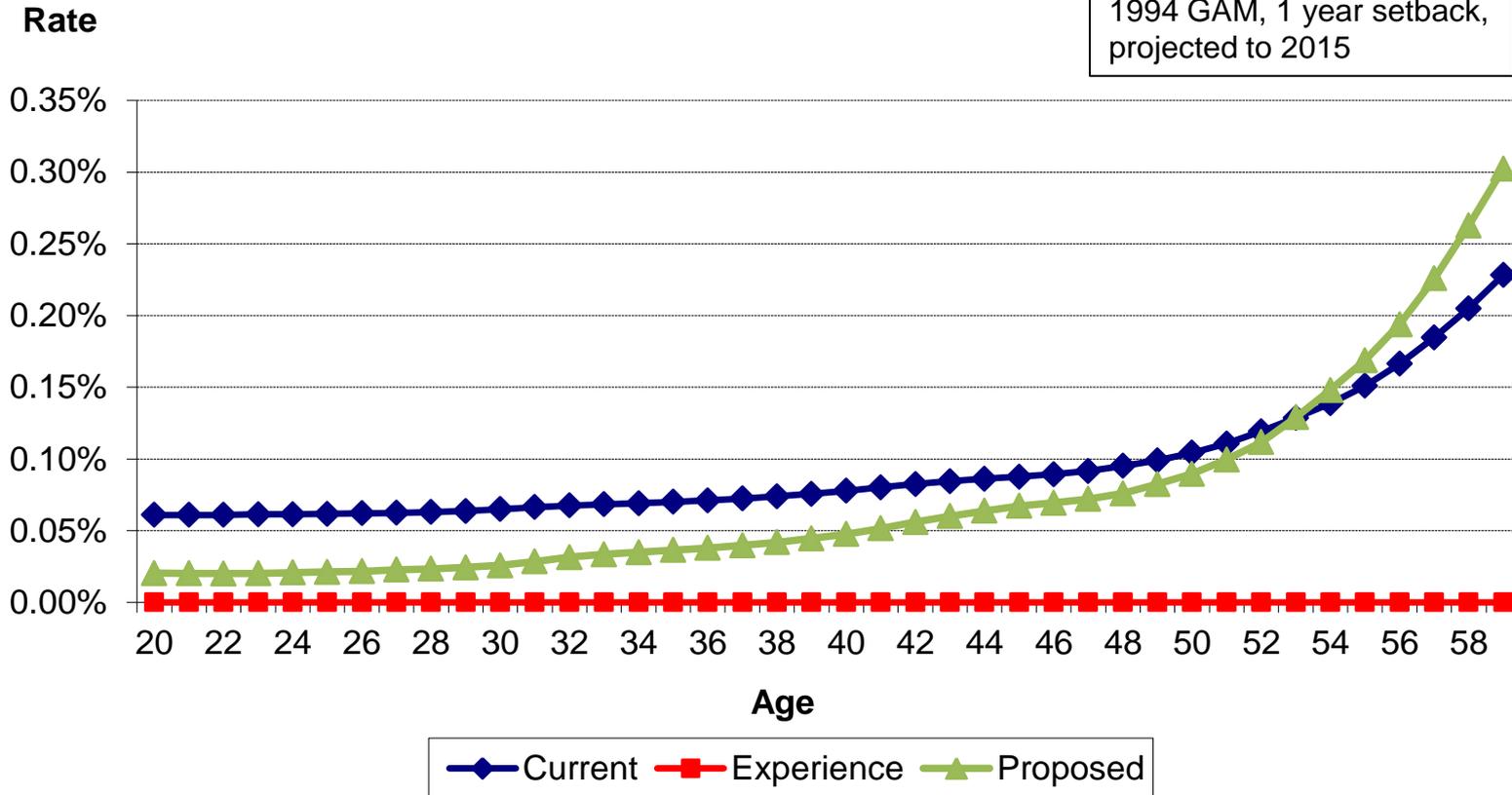
Experience - Actual deaths: 25 Expected deaths: 26.36 Current % A/E: 95% Proposed % A/E: 112%

State Patrol Retirement System

2012 Experience Analysis (2006-2011)

Pre-retirement Mortality - Females

Proposed Table:
1994 GAM, 1 year setback,
projected to 2015



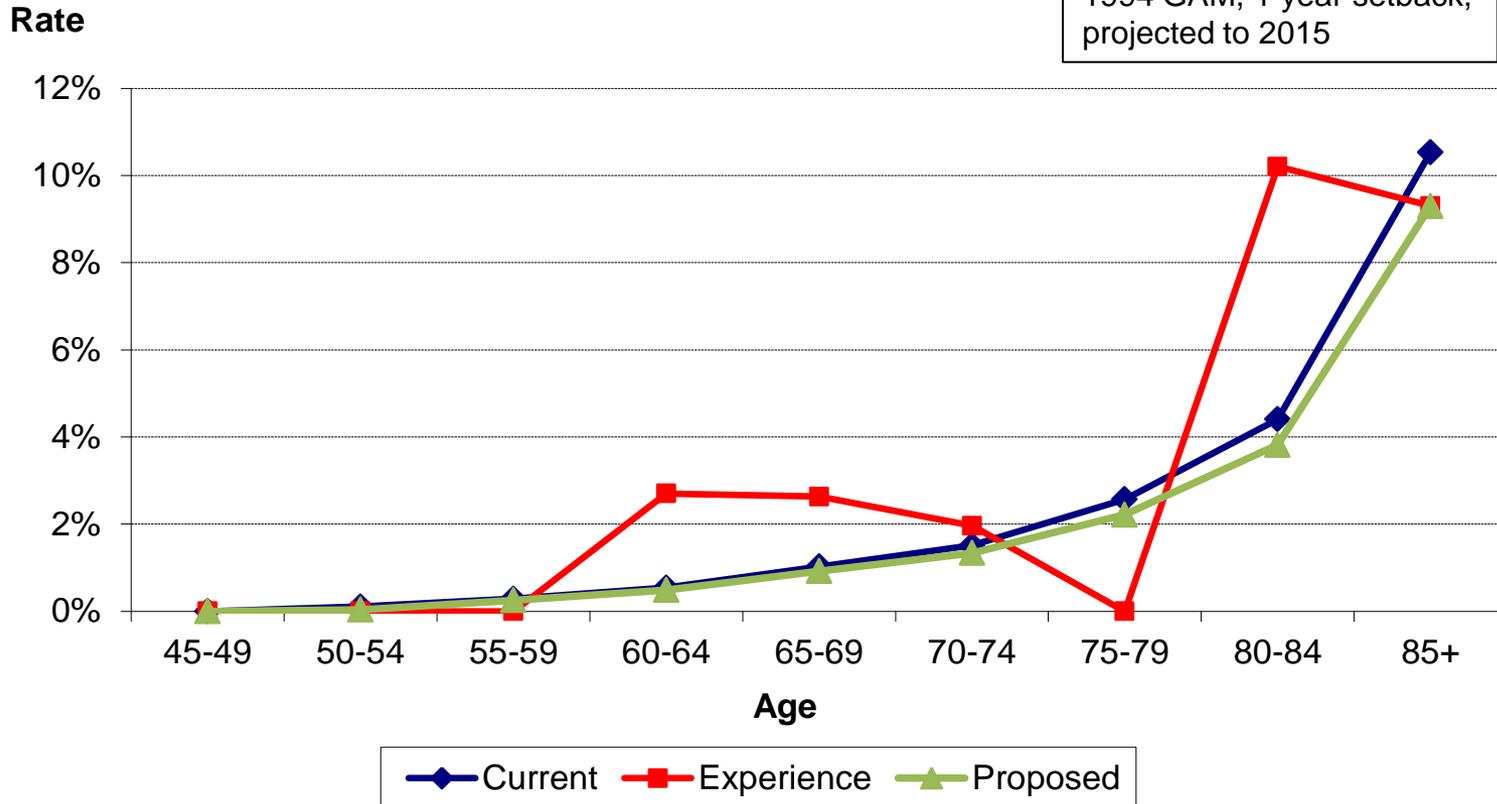
Experience - Actual deaths: 0 Expected deaths: 0.02 Current % A/E: 0% Proposed % A/E: 0%

State Patrol Retirement System

2012 Experience Analysis (2006-2011)

Post-retirement Mortality - Females

Proposed Table:
1994 GAM, 1 year setback,
projected to 2015



Experience - Actual deaths: 12 Expected deaths: 9.11 Current % A/E: 132% Proposed % A/E: 150%

State Patrol Retirement System

2012 Experience Analysis (2006-2011)

Summary of Economic and Demographic Assumption Recommendations

	Current	Proposed	Impact on Liabilities
Investment Return	8.00%/year	7.75%/year	Increase
Salary Increases	Service based: 9% in 1st year, grading down to 4.5% at 25 years	Service based: 9.5% in 1st year, grading down to 4.0% at 30 years	Increase
➤ Halpin adjustment	8.7%	8.7%	None
Retirement Rates	Service based: 2% after 50/10, 67%, 37%, 30% & 16% at 1 st , 2 nd , 3 rd & 4 th eligible for Unreduced, 100% at age 60	Service based: 3% after 50/10, 10% if eligible for Unreduced, 100% at age 60	Decrease
Mortality			
➤ Healthy	1994 GAM, Proj to 2010	1994 GAM, 1 Year Setback, Proj to 2015	Increase
➤ Disabled	1983 RR Disability	No Change	None
Withdrawal	Service based: 4%, grading down to 1.5% at 6 years, reducing to 1% at 15 years and beyond	No Change	None
Disability	.06% age 20, grading up to 1.36% age 60	No Change	None

State Patrol Retirement System

2012 Experience Analysis (2006-2011)

Impact of Proposed and Alternative Assumptions (\$ in millions)

Projected Funding	July 1, 2011		
	Current Assumptions	Proposed Assumptions - 8% Return	Proposed Assumptions - 7.75% Return
1. Actuarial Accrued Liability	\$ 339.6	\$ 348.5	\$ 359.4
2. Actuarial Value of Assets	<u>279.2</u>	<u>279.2</u>	<u>279.2</u>
3. Unfunded Actuarial Accrued Liability/(Reserve)	\$ 60.4	\$ 69.3	\$ 80.2
4. Funded Ratio	82%	80%	78%
5. Annual Actuarial Contribution			
- Normal Cost	\$ 7.2	\$ 7.6	\$ 8.1
- Amortization of Unfunded	<u>5.3</u>	<u>6.0</u>	<u>6.8</u>
- Total Contribution	\$ 12.5	\$ 13.6	\$ 14.9
- % of Pay	47.81%	52.13%	56.93%
6. Expected Contribution			
- Total	\$ 10.2	\$ 10.2	\$ 10.2
- % of Pay	39.20%	39.20%	39.20%
7. Additional (Excess) Required Contribution			
- Amount	\$ 2.3	\$ 3.4	\$ 4.7
- % of Pay	8.61%	12.93%	17.73%

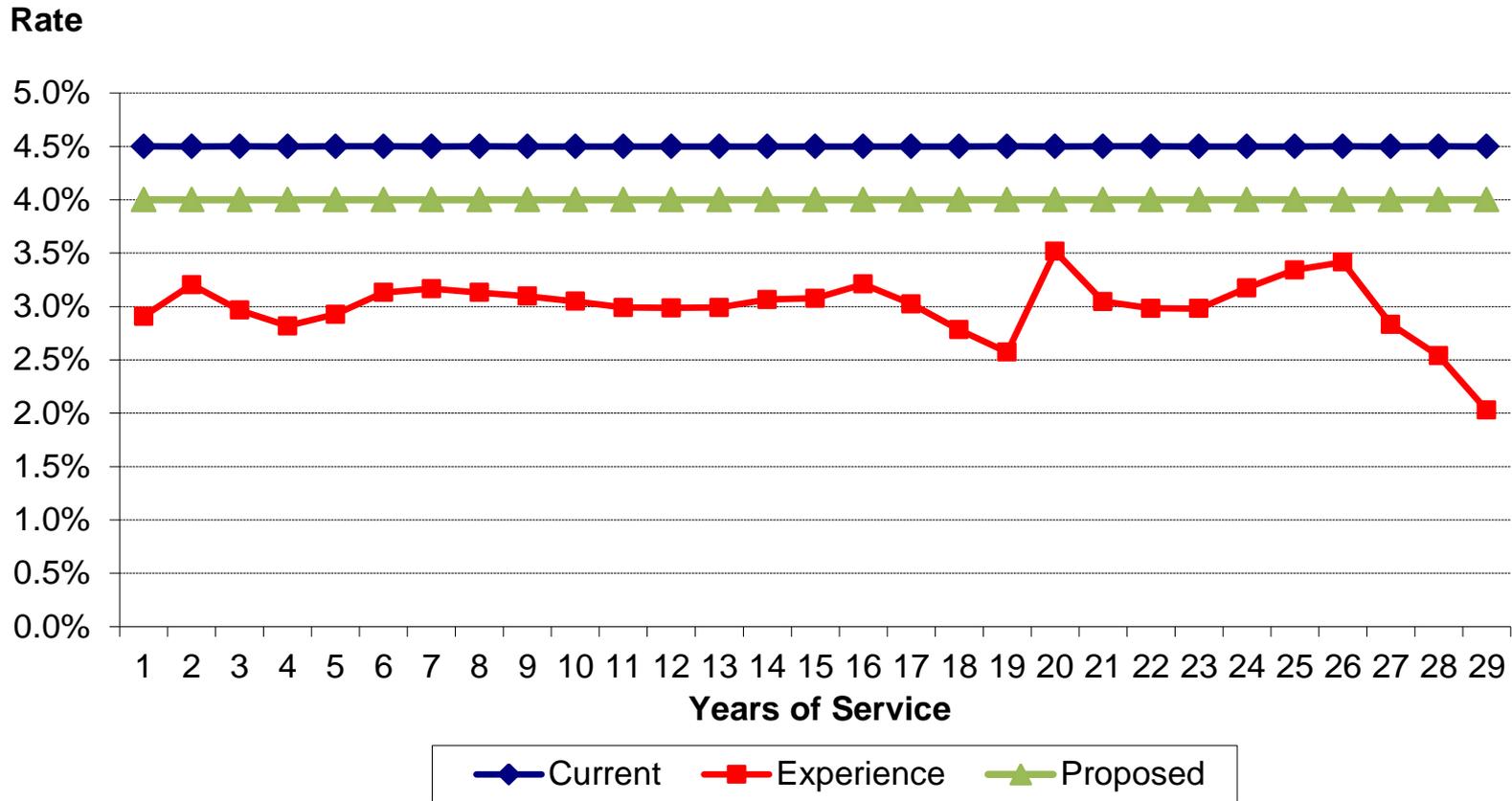
Judges' Retirement System

- **Graphs of Current and Proposed Demographic Assumptions**
- **Summary of Proposed Economic and Demographic Changes**
- **Summary of Impact of Economic and Demographic Changes**

Judges' Retirement System

2012 Experience Analysis (2006-2011)

Salary Increases (includes Inflation)

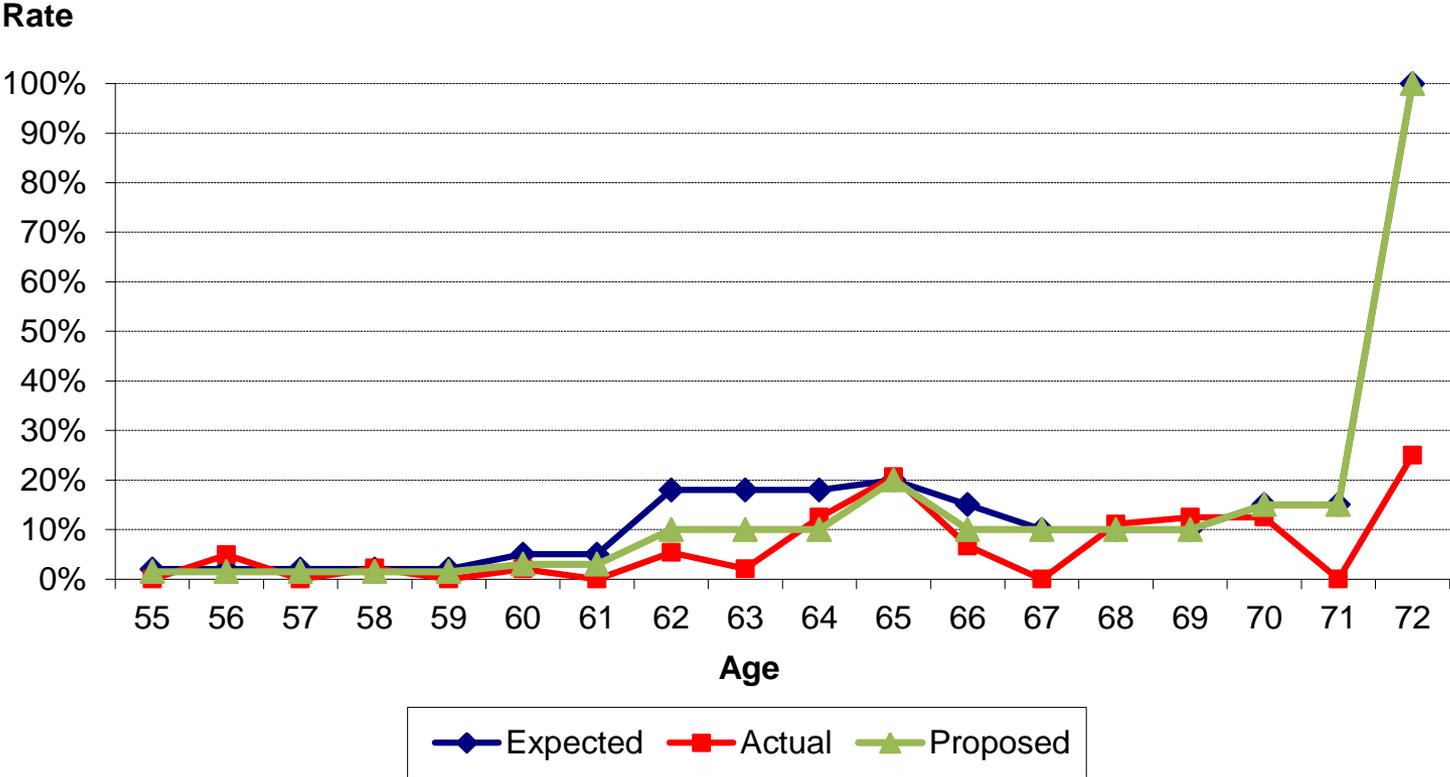


Current % A/E: 67% Proposed % A/E: 76%

Judges' Retirement System

2012 Experience Analysis (2006-2011)

Retirement Rates

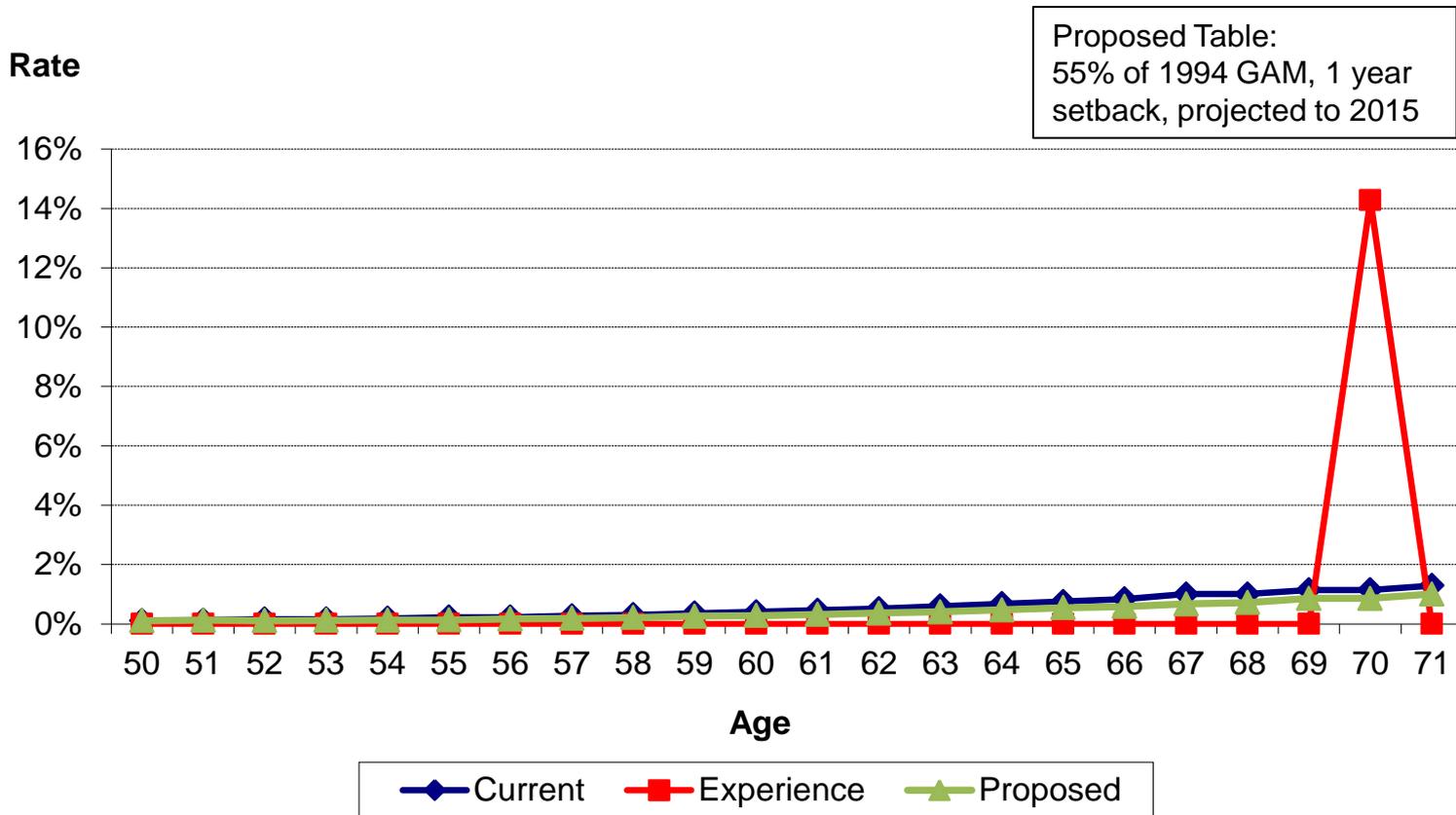


Experience - Actual retirements: 25 Expected retirements: 56.10 Current % A/E: 45% Proposed % A/E: 61%

Judges' Retirement System

2012 Experience Analysis (2006-2011)

Pre-retirement Mortality - Males

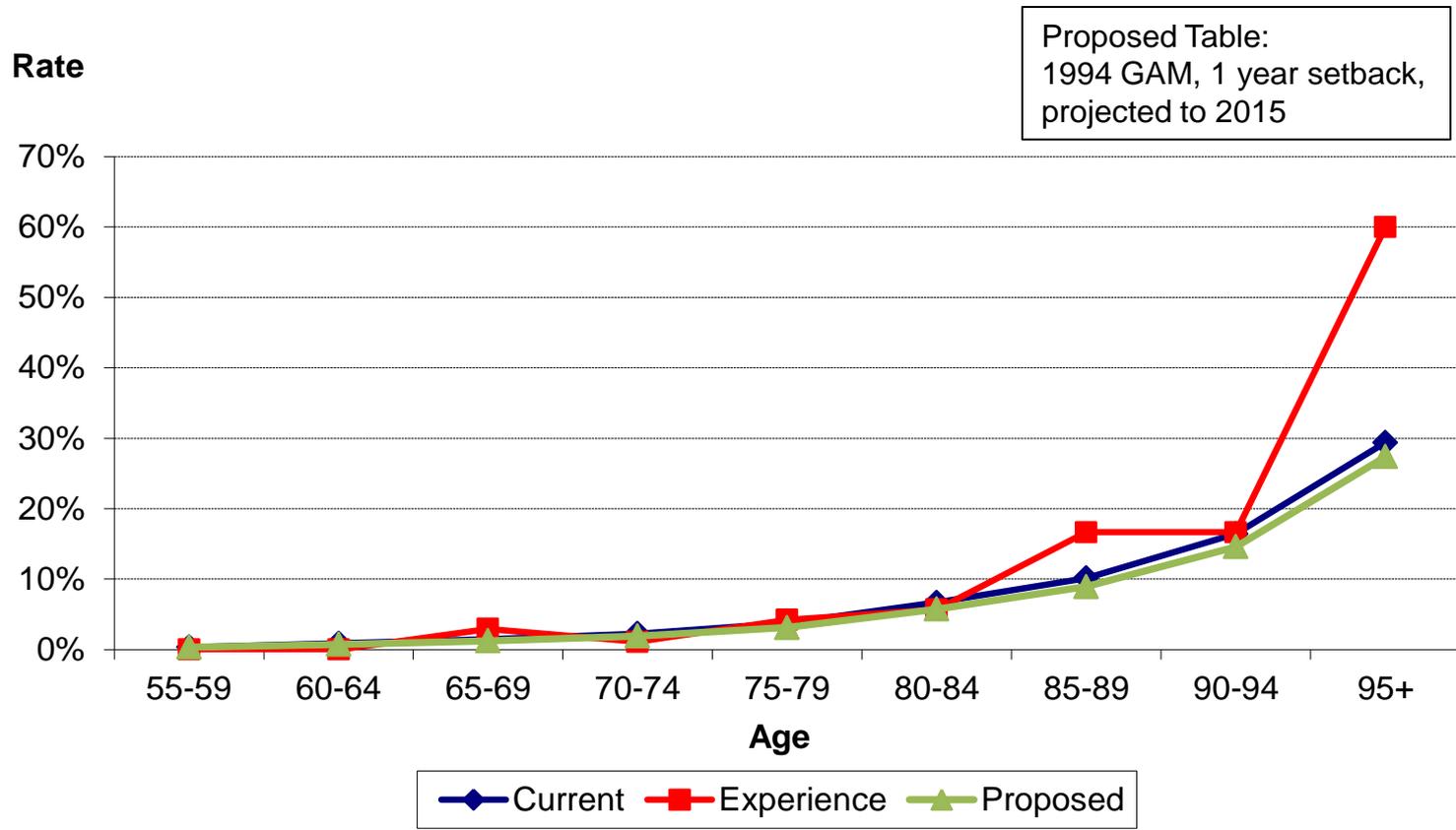


Experience - Actual deaths: 2 Expected deaths: 2.59 Current % A/E: 43% Proposed % A/E: 61%

Judges' Retirement System

2012 Experience Analysis (2006-2011)

Post-retirement Mortality - Males

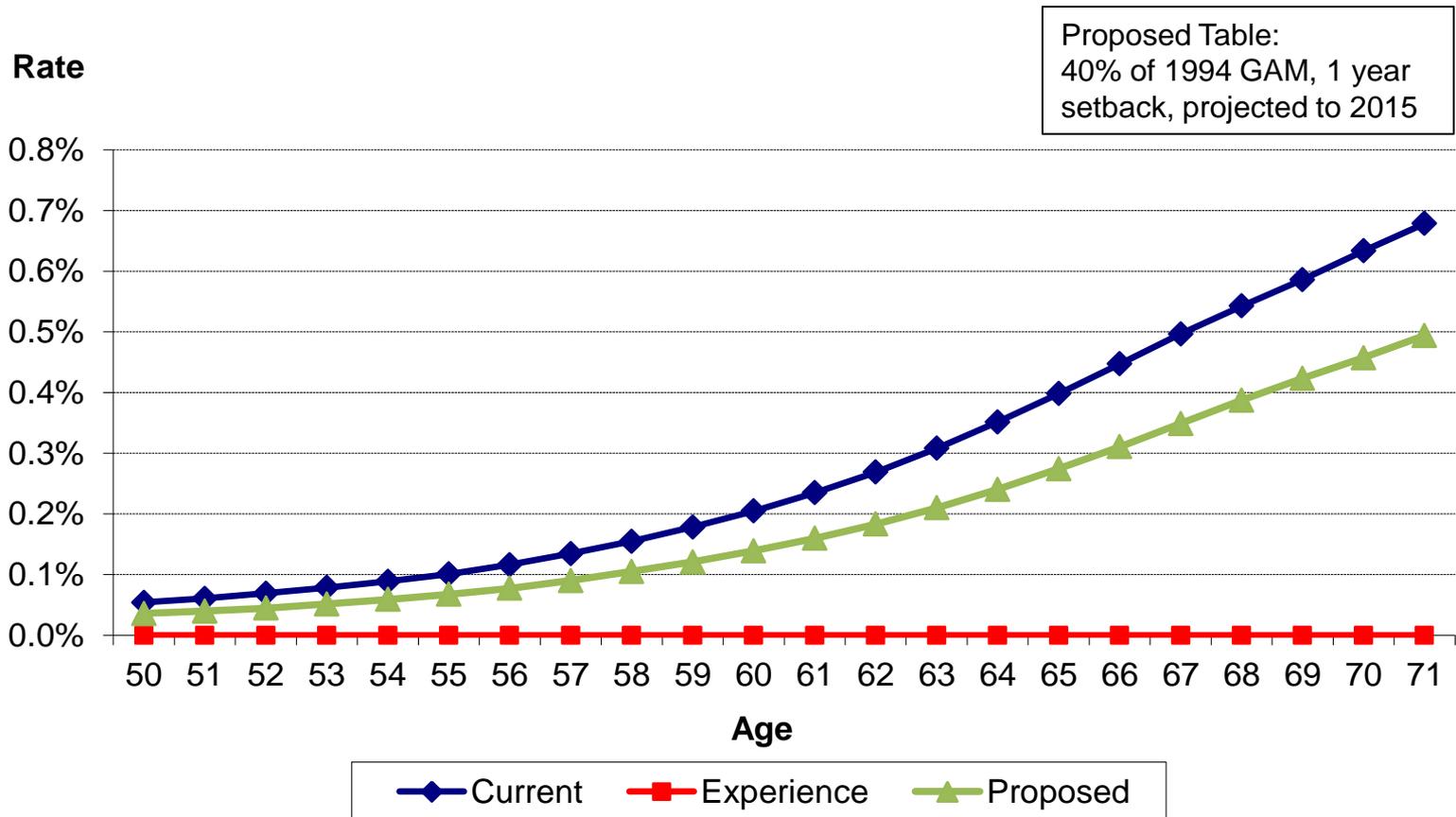


Experience - Actual deaths: 29 Expected deaths: 23.64 Current % A/E: 123% Proposed % A/E: 141%

Judges' Retirement System

2012 Experience Analysis (2006-2011)

Pre-retirement Mortality - Females

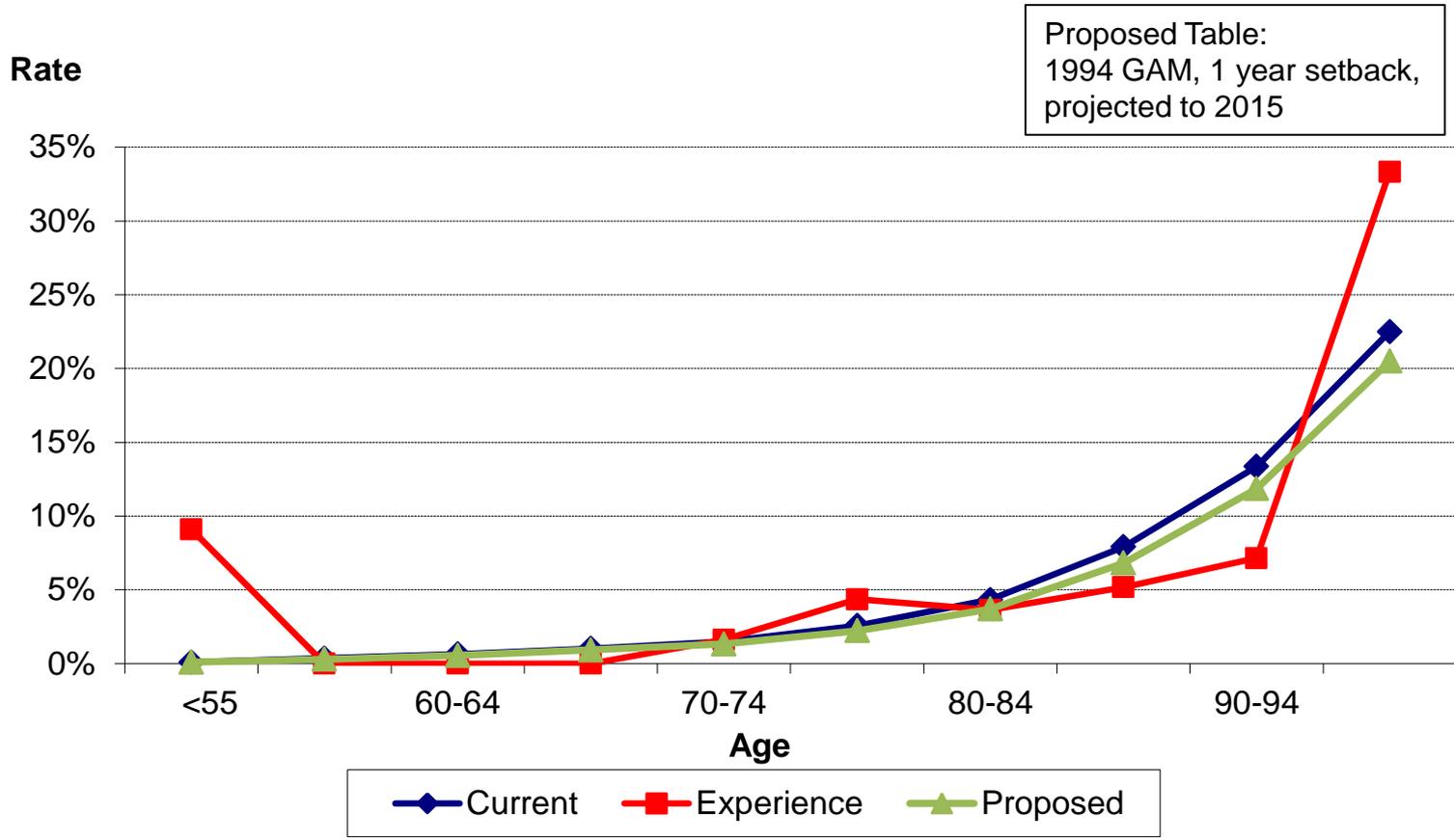


Experience - Actual deaths: 0 Expected deaths: 0.36 Current % A/E: 0% Proposed % A/E: 0%

Judges' Retirement System

2012 Experience Analysis (2006-2011)

Post-retirement Mortality - Females



Experience - Actual deaths: 13 Expected deaths: 13.69 Current % A/E: 95% Proposed % A/E: 109%

Judges' Retirement System

2012 Experience Analysis (2006-2011)

Summary of Economic and Demographic Assumption Recommendations

	Current	Proposed	Impact on Liabilities
Investment Return	8.00%/year	7.75%/year	Increase
Salary Increases	4.5% at all ages	4.0% at all ages	Decrease
Retirement Rates	Various rates, ages 55 to 72	Decrease ages 55-64 and age 66	Decrease
Mortality			
➤ Healthy Pre-Retirement	1994 GAM, Proj to 2010, 65% of male and 50% of female rates	1994 GAM, 1 Year Setback, Proj to 2015, 55% of male and 40% of female rates	Increase
➤ Healthy Post-Retirement	1994 GAM, Proj to 2010	1994 GAM, 1 Year Setback, Proj to 2015	Increase
Withdrawal	None	No Change	None
Disability	None	No Change	None

Judges' Retirement System

2012 Experience Analysis (2006-2011)

Impact of Proposed and Alternative Assumptions

(\$ in thousands)

Projected Funding	July 1, 2011		
	Current Assumptions	Proposed Assumptions - 8% Return	Proposed Assumptions - 7.75% Return
1. Actuarial Accrued Liability	\$ 128,265	\$ 132,003	\$ 135,298
2. Actuarial Value of Assets	<u>125,191</u>	<u>125,191</u>	<u>125,191</u>
3. Unfunded Actuarial Accrued Liability/(Reserve)	\$ 3,074	\$ 6,812	\$ 10,107
4. Funded Ratio	98%	95%	93%
5. Annual Actuarial Contribution			
- Normal Cost	\$ 3,838	\$ 3,568	\$ 3,746
- Amortization of Unfunded	<u>263</u>	<u>582</u>	<u>845</u>
- Total Contribution	\$ 4,101	\$ 4,150	\$ 4,591
- % of Pay	22.56%	22.83%	25.25%
6. Expected Contribution			
- Total	\$ 4,912	\$ 4,912	\$ 4,912
- % of Pay	27.02%	27.02%	27.02%
7. Additional (Excess) Required Contribution			
- Amount	\$ (811)	\$ (762)	\$ (321)
- % of Pay	(4.46%)	(4.19%)	(1.77%)

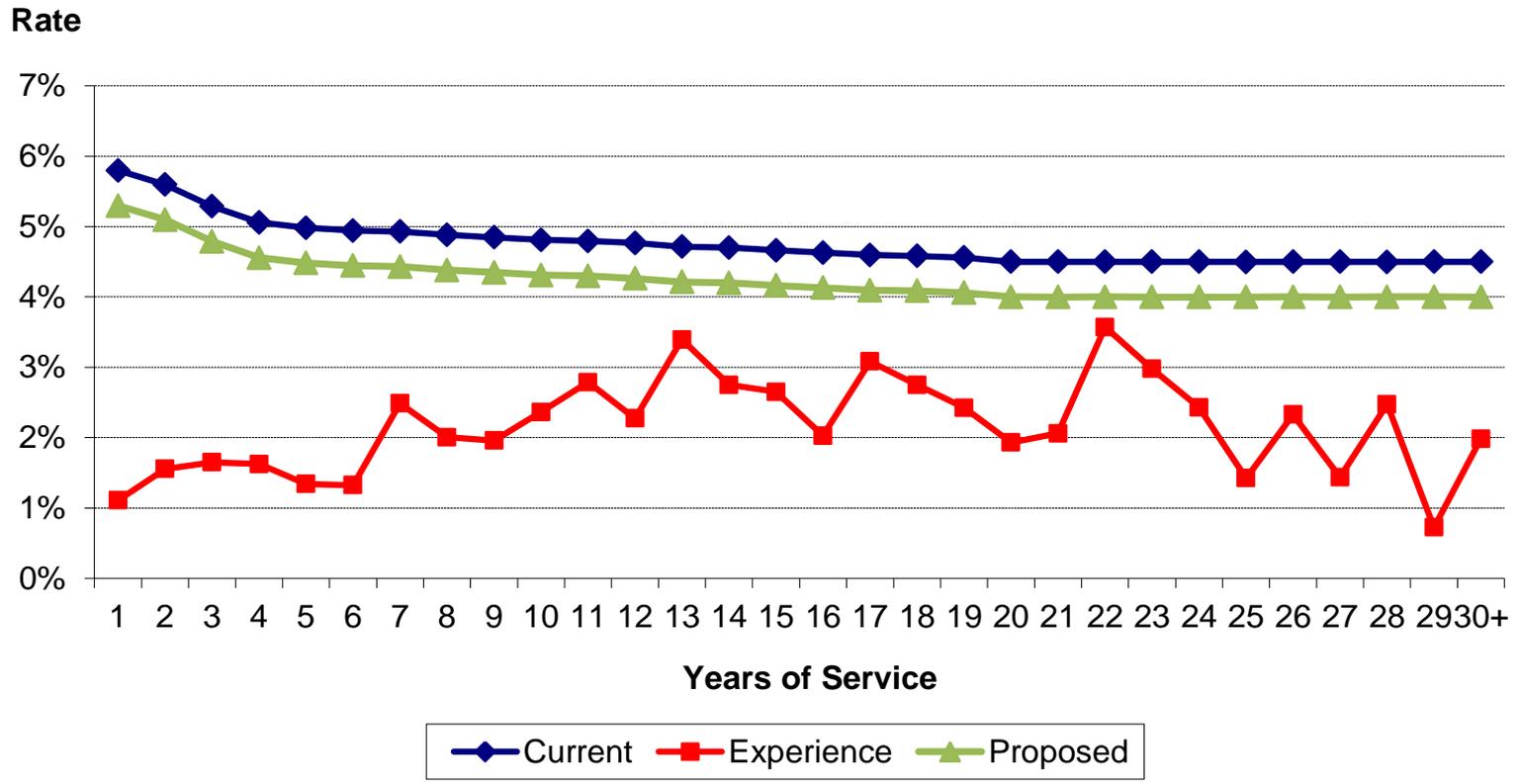
State Cash Balance Benefit

- **Graphs of Current and Proposed Demographic Assumptions**
- **Summary of Proposed Economic and Demographic Changes**
- **Summary of Impact of Economic and Demographic Changes**

State Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Salary Increases (includes Inflation)

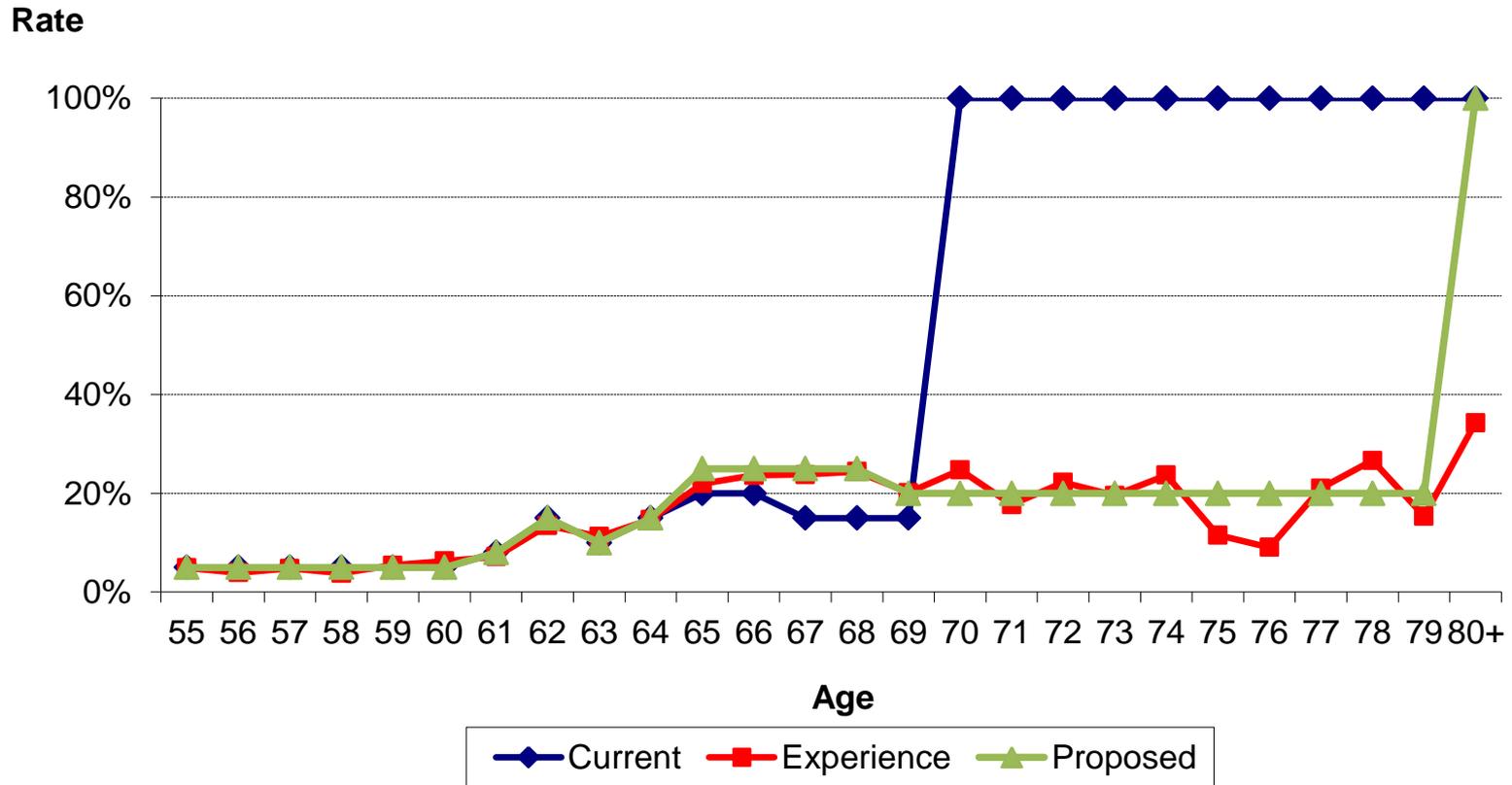


Current % A/E: 38% Proposed % A/E: 42%

State Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Retirement Rates (55/5)

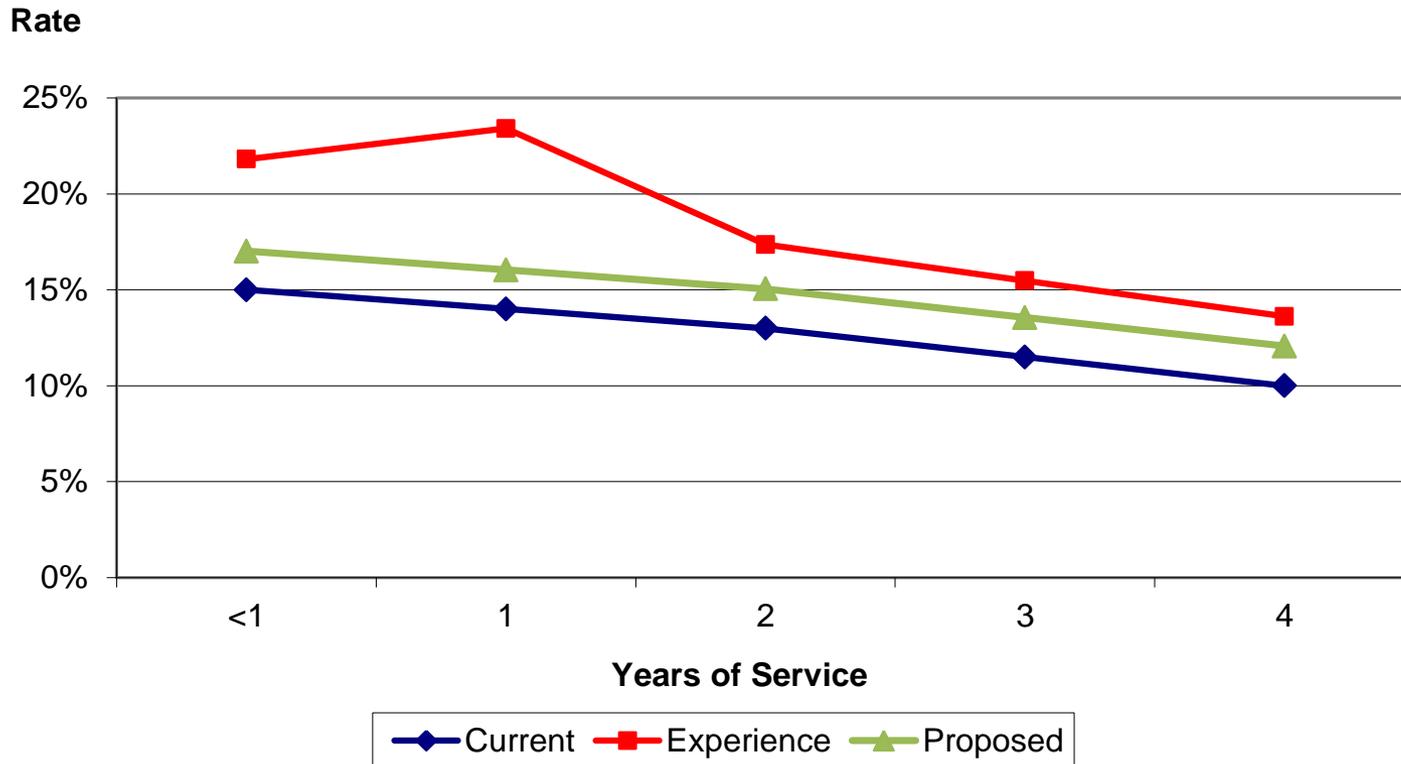


Experience - Actual retirements: 1,075 Expected retirements: 1,389 Current % A/E: 77% Proposed % A/E: 94%

State Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Withdrawal Rates (Select Rates Shown)

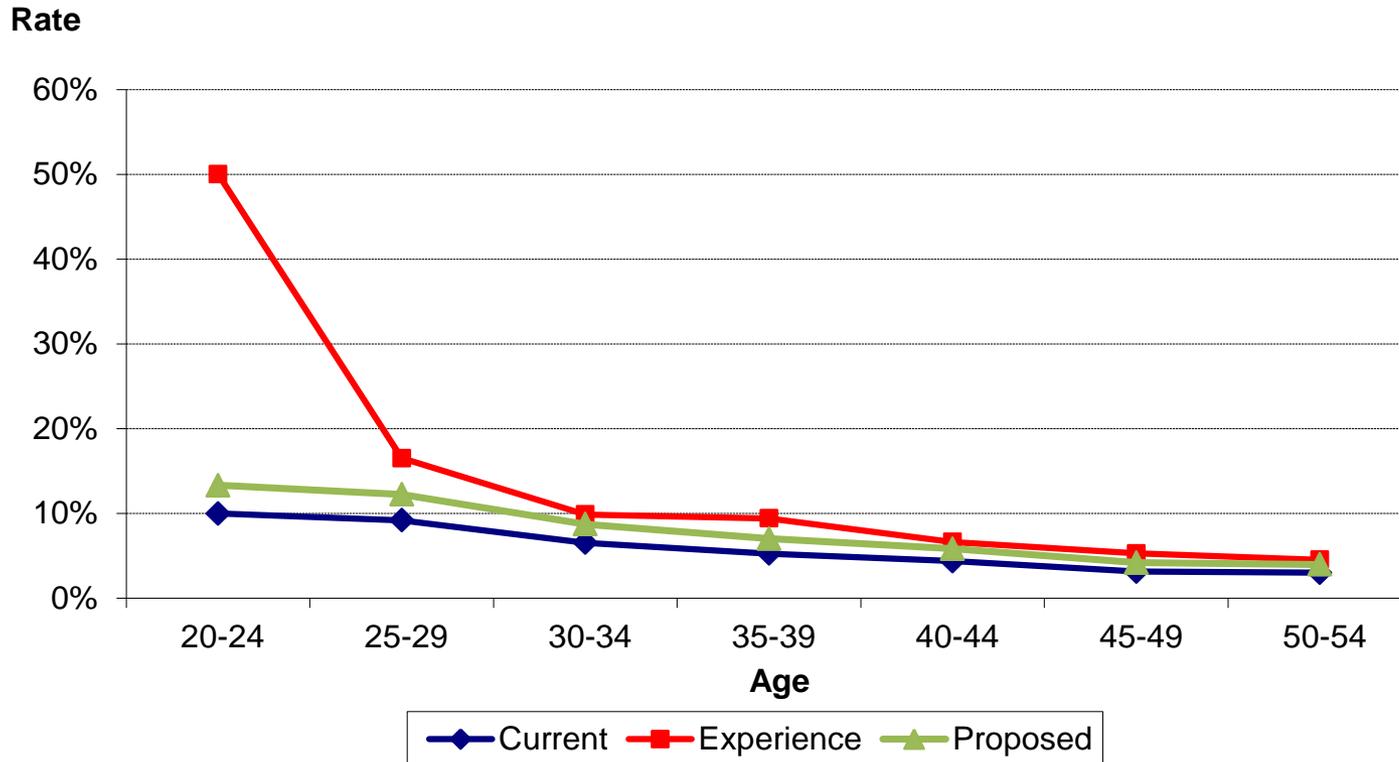


Experience - Actual turnover: 5,817 Expected turnover: 3,966 Current % A/E: 147% Proposed % A/E: 127%

State Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Withdrawal Rates (Ultimate Rates Shown)

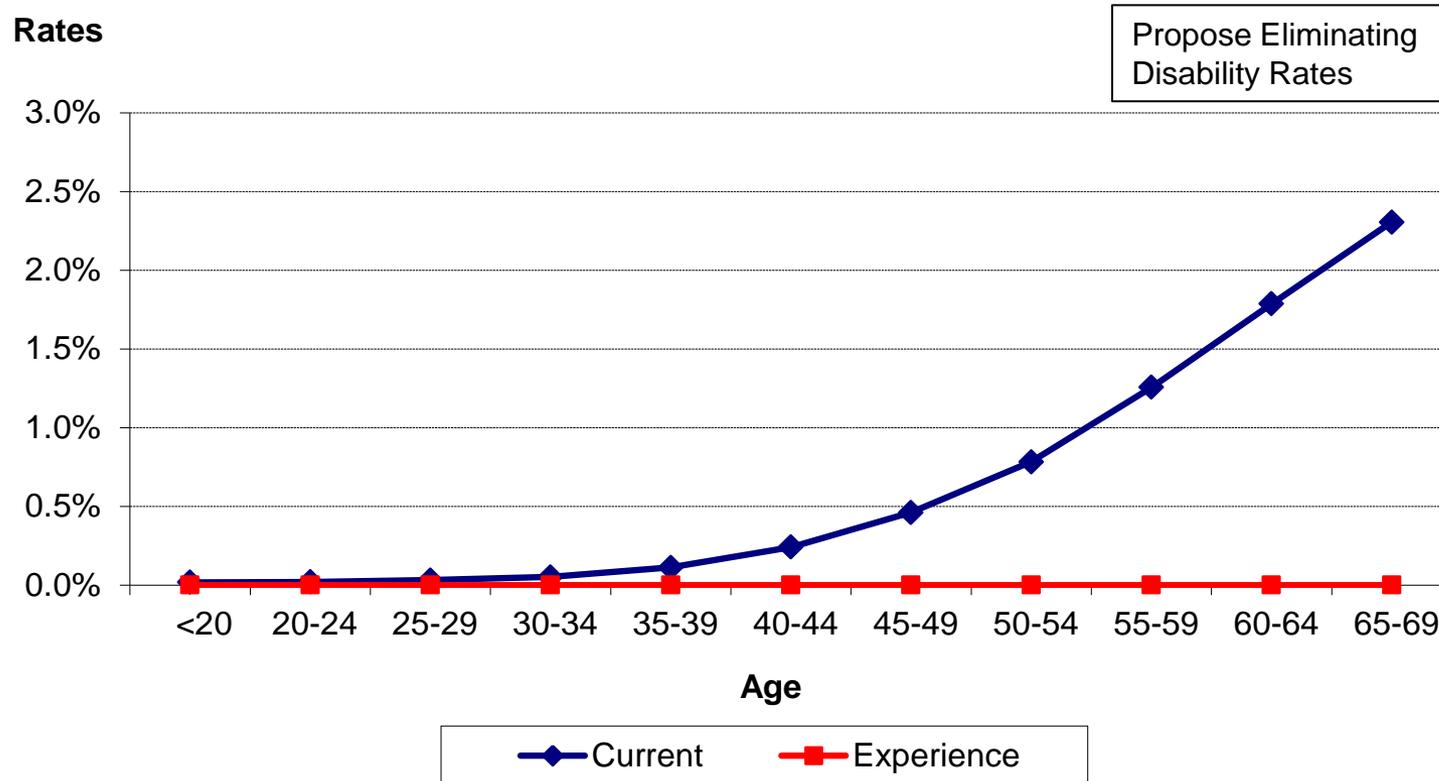


Experience - Actual turnover: 834 Expected turnover: 517 Current % A/E: 161% Proposed % A/E: 121%

State Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Disability Rates



Experience - Actual disabilities: 0 Expected disabilities: 333 Current % A/E: 0%

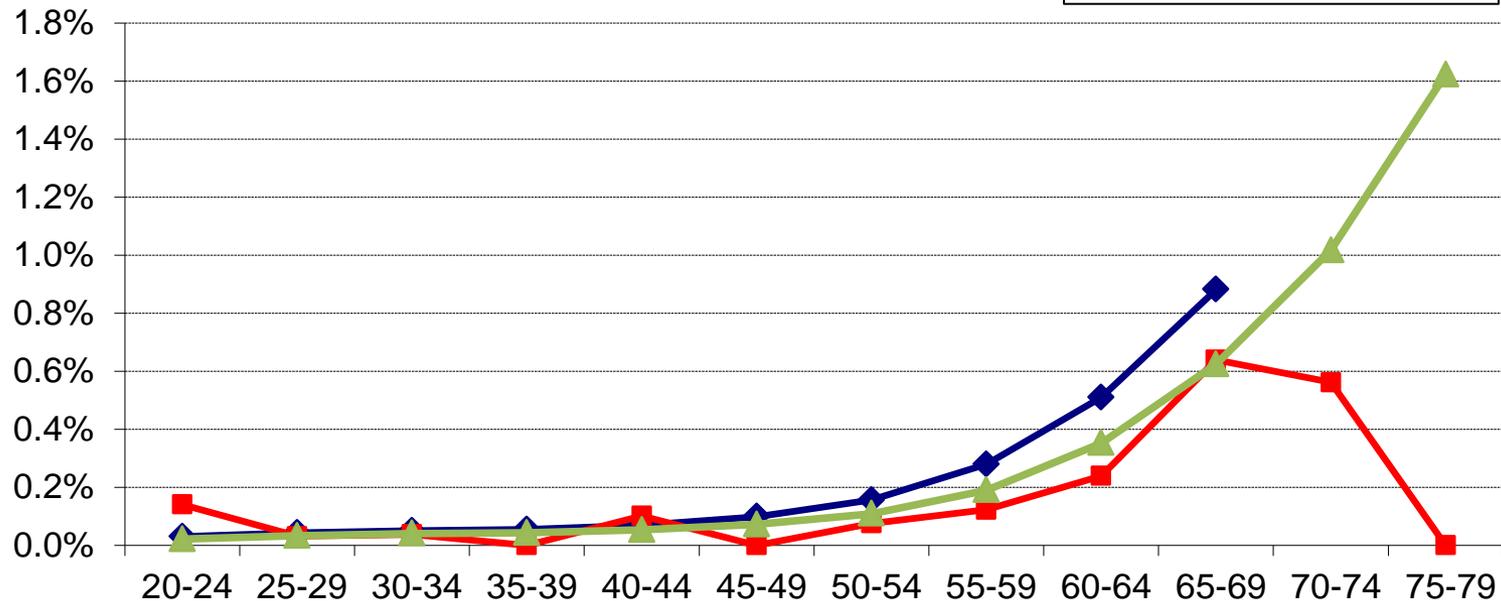
State Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Pre-retirement Mortality - Males

Rate

Proposed Table:
55% of 1994 GAM, 1 year
setback, projected to 2015



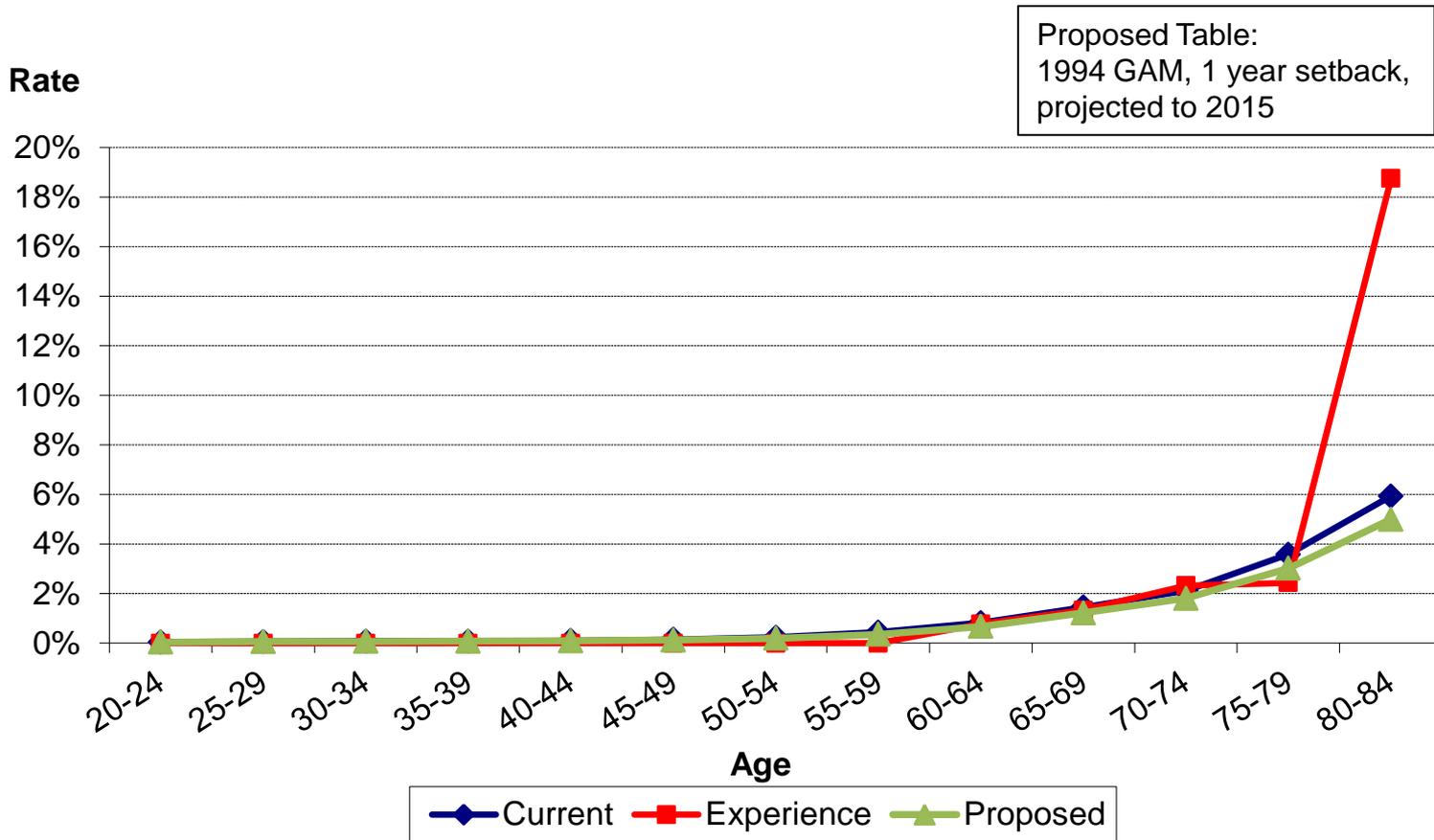
◆ Current ■ Experience ▲ Proposed

Experience - Actual deaths: 24 Expected deaths: 40.66 Current % A/E: 59% Proposed % A/E: 77%

State Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Post-retirement Mortality - Males

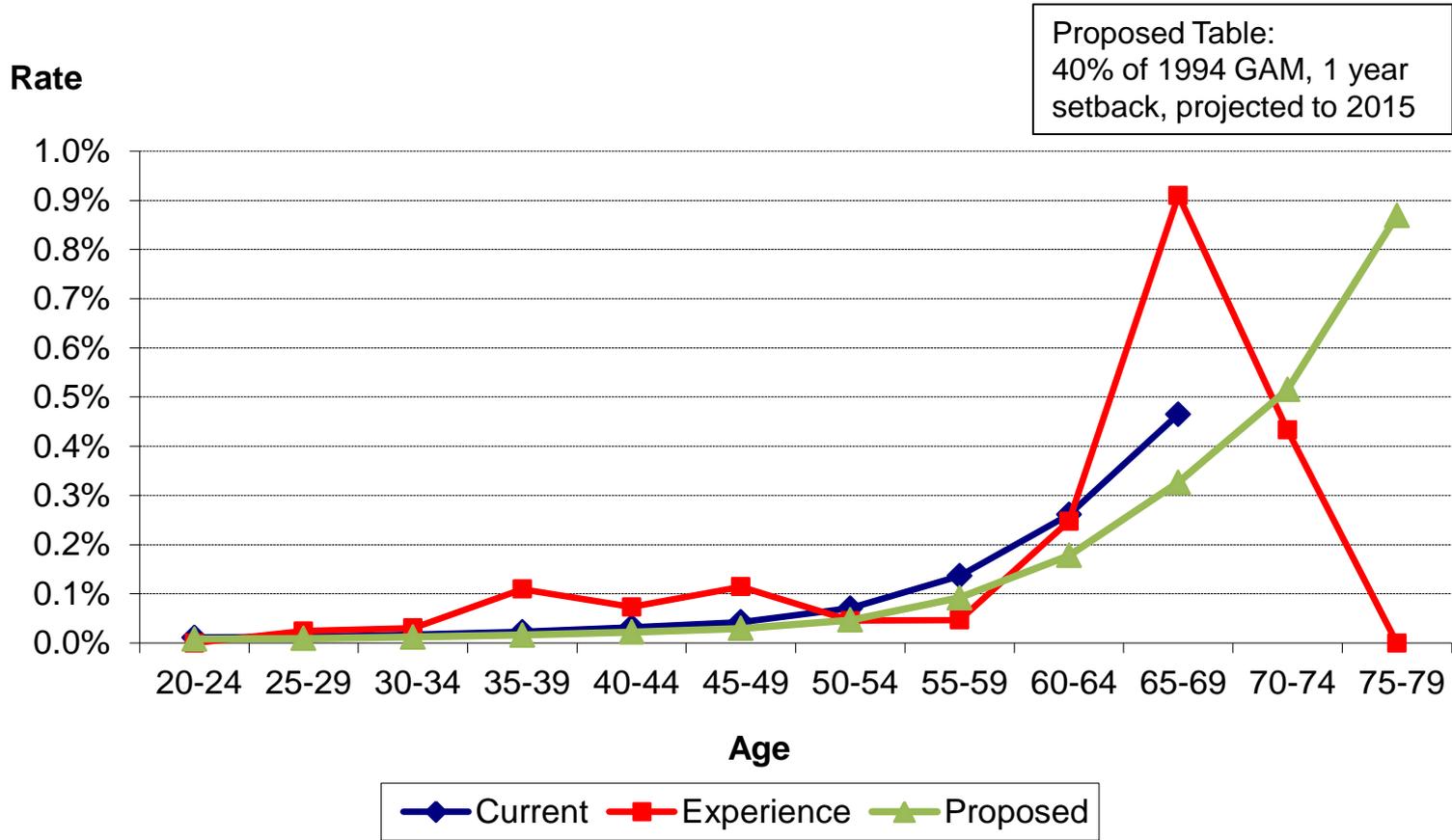


Experience - Actual deaths: 24 Expected deaths: 27.87 Current % A/E: 86% Proposed % A/E: 102%

State Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Pre-retirement Mortality - Females

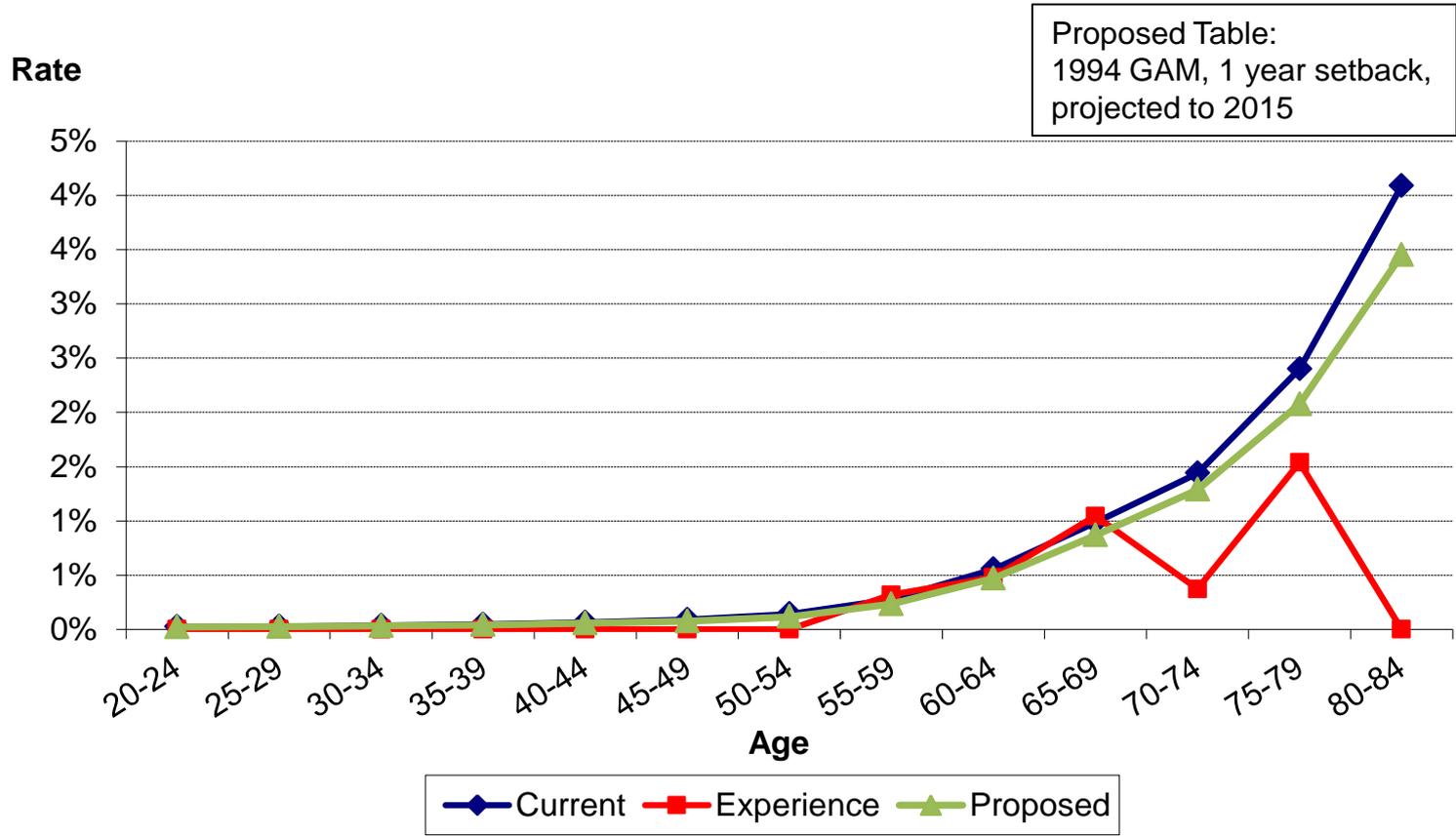


Experience - Actual deaths: 31 Expected deaths: 24.73 Current % A/E: 125% Proposed % A/E: 166%

State Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Post-retirement Mortality - Females



Experience - Actual deaths: 14 Expected deaths: 20.65 Current % A/E: 68% Proposed % A/E: 78%

State Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Summary of Economic and Demographic Assumption Recommendations

	Current	Proposed	Impact on Liabilities
Investment Return	7.75%/year	No Change	None
Salary Increases	Service based: 5.9% for <1 year, grading down to 4.5% at 20 years and thereafter	Service based: 5.4% for <1 year, grading down to 4.0% at 20 years and thereafter	Decrease
Retirement Rates	Various rates, ages 55 to 70	Increase ages 65-69, Extend 100% retirement to age 80	Decrease
Mortality			
➤ Healthy Pre-Retirement	1994 GAM, Proj to 2010, 65% of male and 50% of female rates	1994 GAM, 1 Year Setback, Proj to 2015, 55% of male and 40% of female rates	Increase
➤ Healthy Post-Retirement	1994 GAM, Proj to 2010	1994 GAM, 1 Year Setback, Proj to 2015	Increase
Withdrawal	Select rates in first 5 years, ultimate rates by age from year 5 and thereafter	Increase select and ultimate rates	Decrease
Disability	.02% at age 20, grading to 2.6% at age 70	Remove	Decrease

State Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Impact of Proposed Assumptions

(\$ in millions)

Projected Funding	July 1, 2011	
	Current Assumptions	Proposed Assumptions
1. Actuarial Accrued Liability	\$ 813.3	\$ 805.5
2. Actuarial Value of Assets	<u>744.0</u>	<u>744.0</u>
3. Unfunded Actuarial Accrued Liability/(Reserve)	\$ 69.3	\$ 61.5
4. Funded Ratio	91%	92%
5. Annual Actuarial Contribution		
- Normal Cost	\$ 47.4	\$ 46.0
- Amortization of Unfunded	<u>6.3</u>	<u>5.6</u>
- Total Contribution	\$ 53.7	\$ 51.6
- % of Pay	11.70%	11.29%
6. Benefit Improvement Threshold Rate	11.06%	11.06%
7. Rate Available for Benefit Improvements	0.00%	0.00%

County Cash Balance Benefit

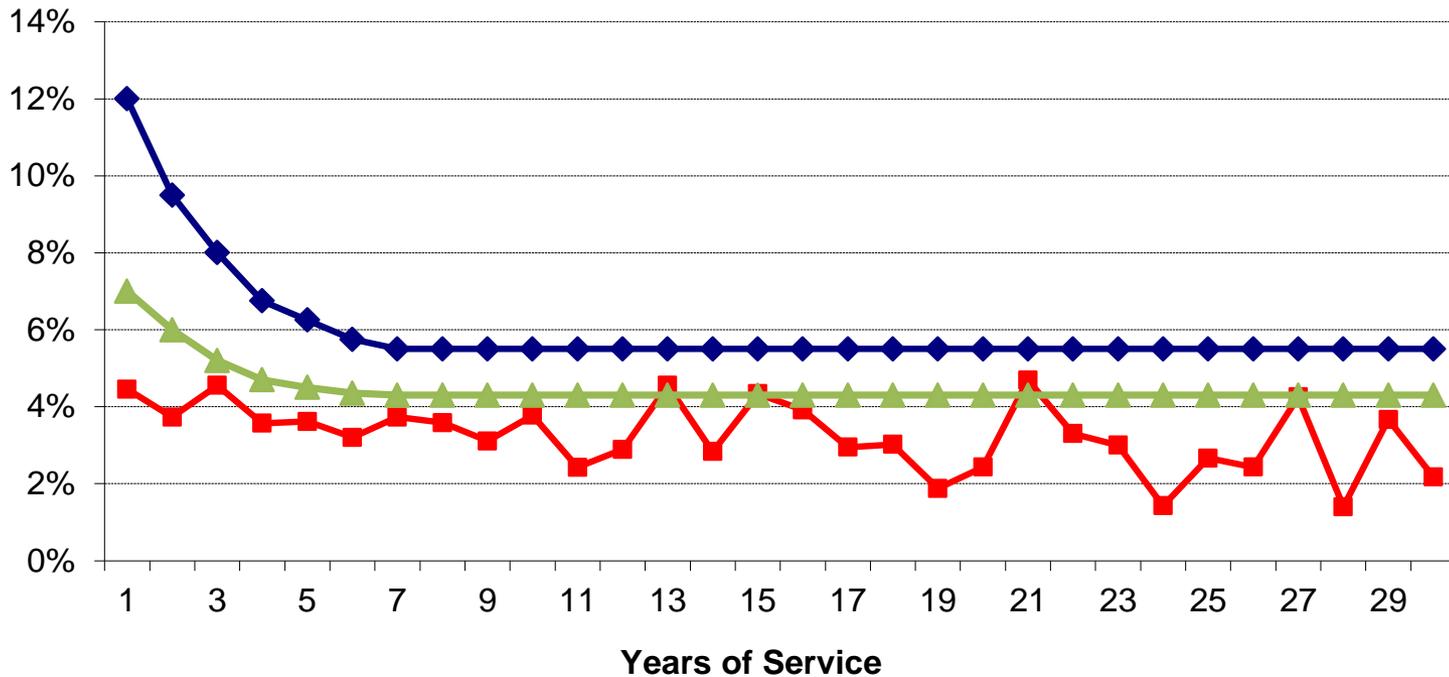
- **Graphs of Current and Proposed Demographic Assumptions**
- **Summary of Proposed Economic and Demographic Changes**
- **Summary of Impact of Economic and Demographic Changes**

County Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Salary Increases (includes Inflation)

Rates



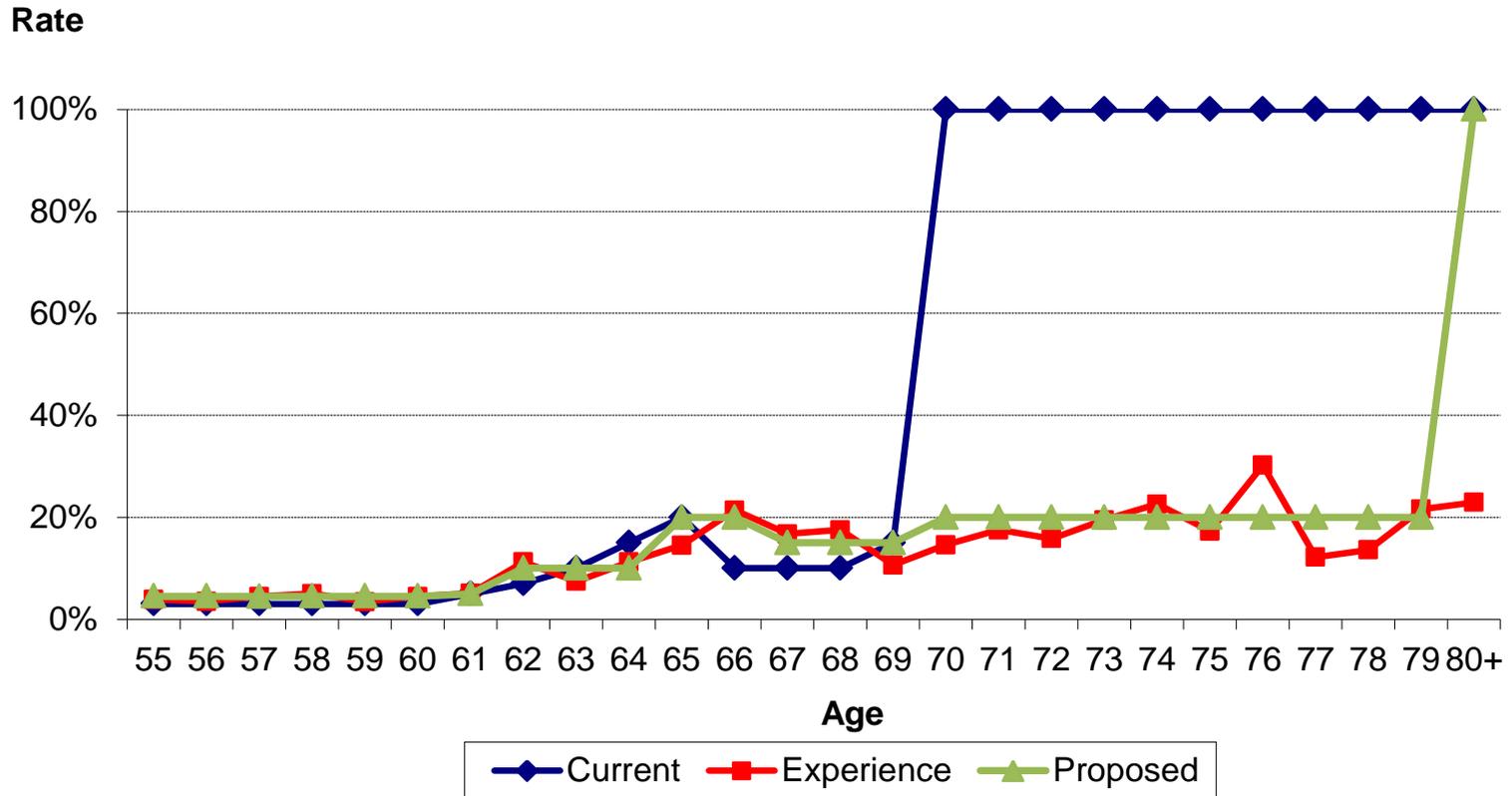
◆ Current
 ■ Experience
 ▲ Proposed

Current % A/E: 50% Proposed % A/E: 72%

County Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Retirement Rates (55/5)



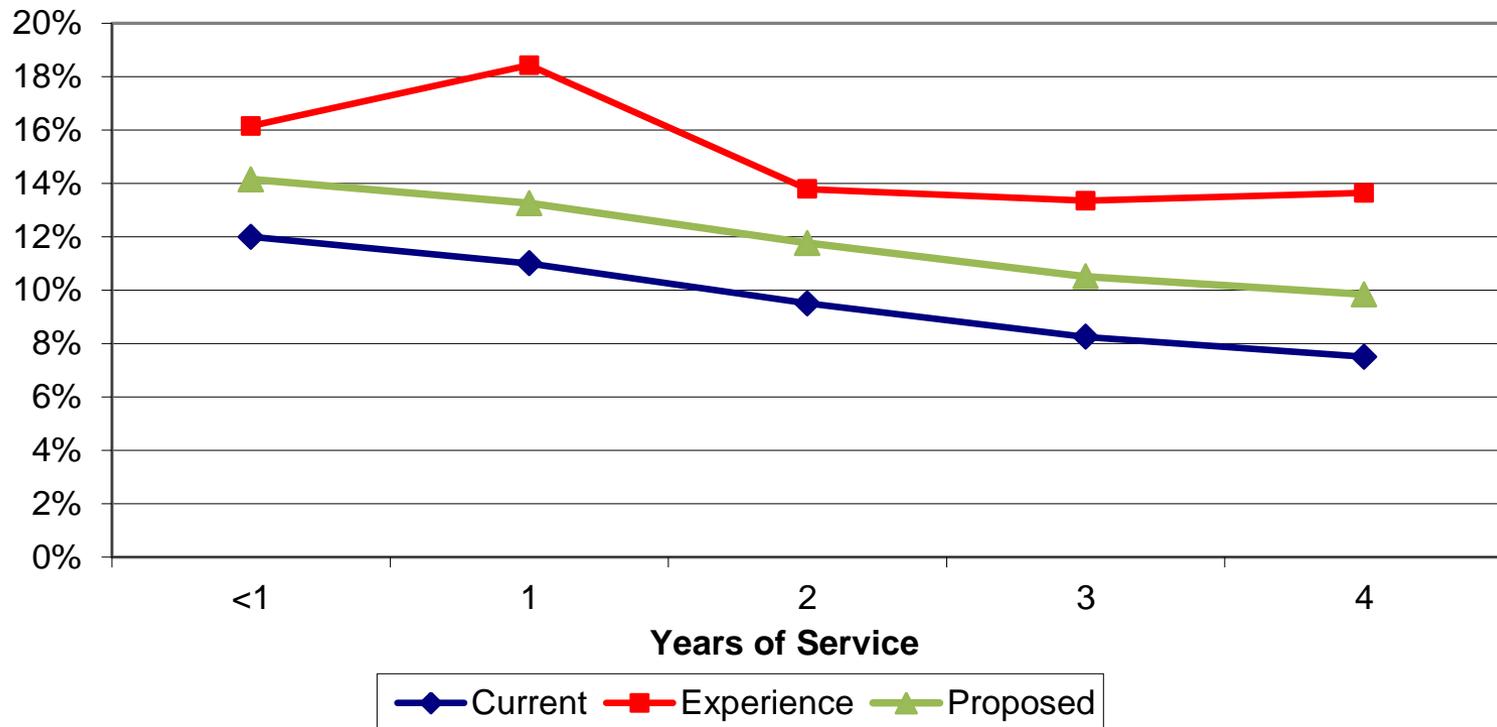
Experience - Actual retirements: 563 Expected retirements: 1,173 Current % A/E: 48% Proposed % A/E: 83%

County Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Withdrawal Rates (Select Rates Shown)

Rate



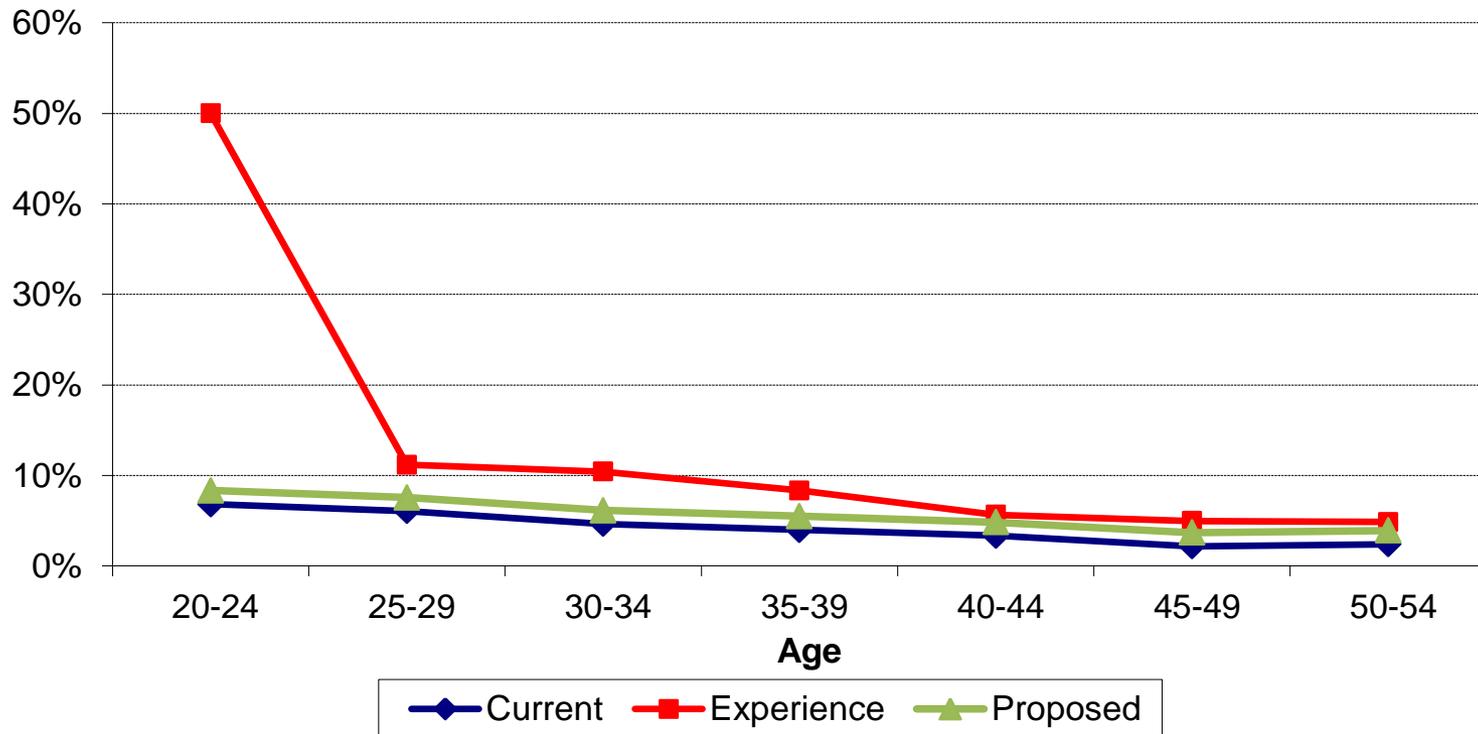
Experience - Actual turnover: 2,159 Expected turnover: 1,376 Current % A/E: 157% Proposed % A/E: 128%

County Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Withdrawal Rates (Ultimate Rates Shown)

Rate

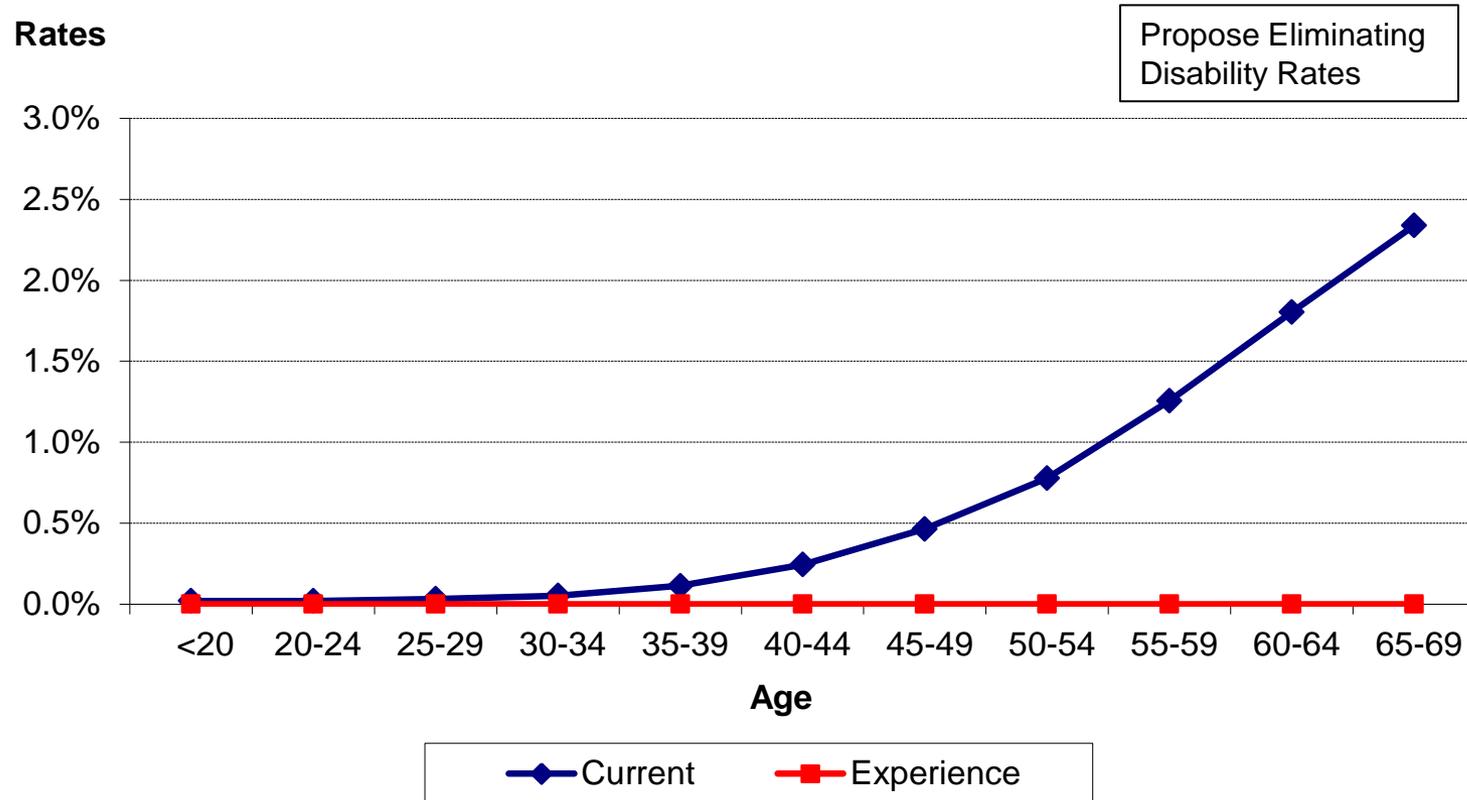


Experience - Actual turnover: 339 Expected turnover: 165 Current % A/E: 205% Proposed % A/E: 137%

County Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Disability Rates

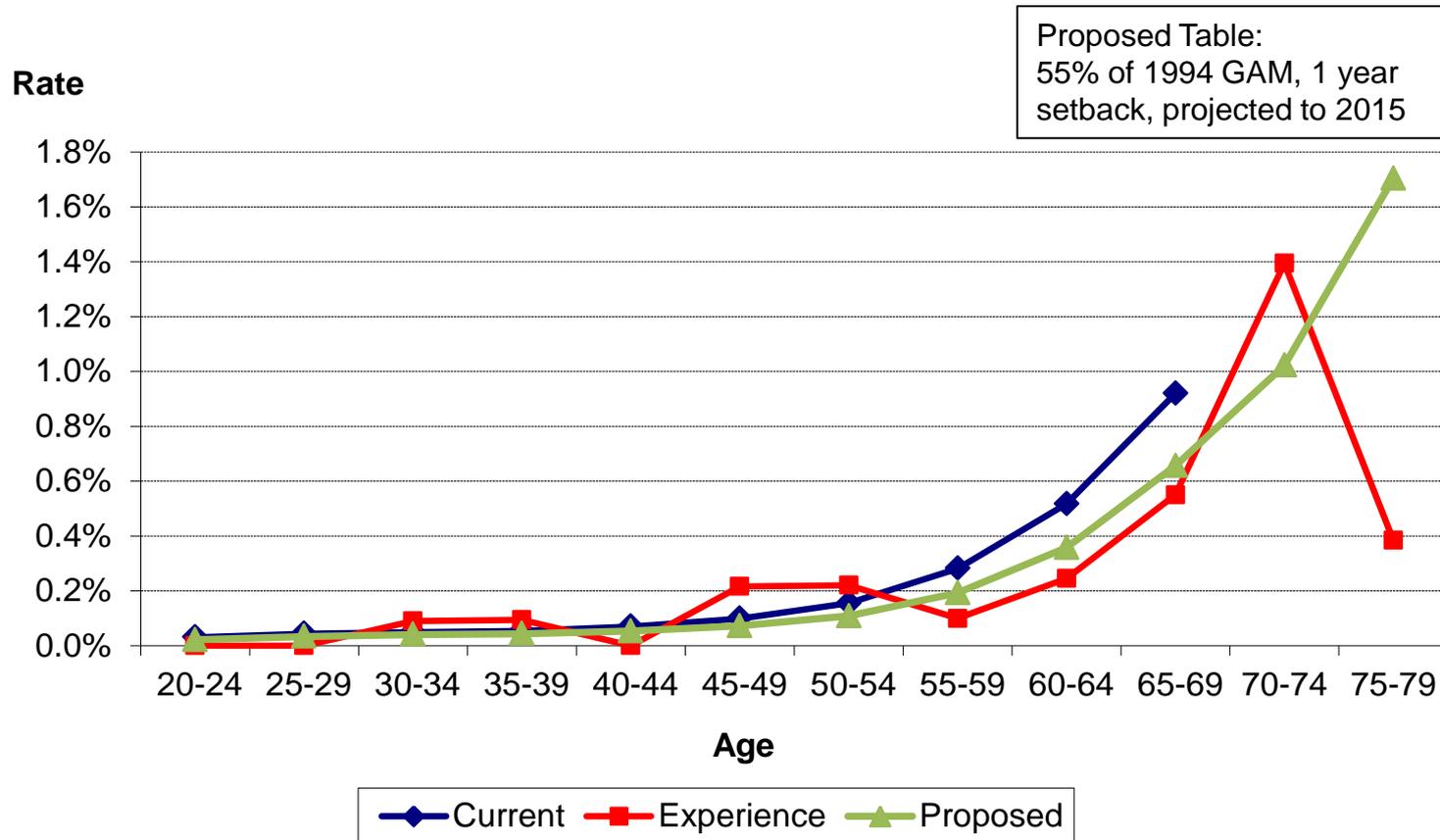


Experience - Actual disabilities: 0 Expected disabilities: 180 Current % A/E: 0%

County Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Pre-retirement Mortality - Males

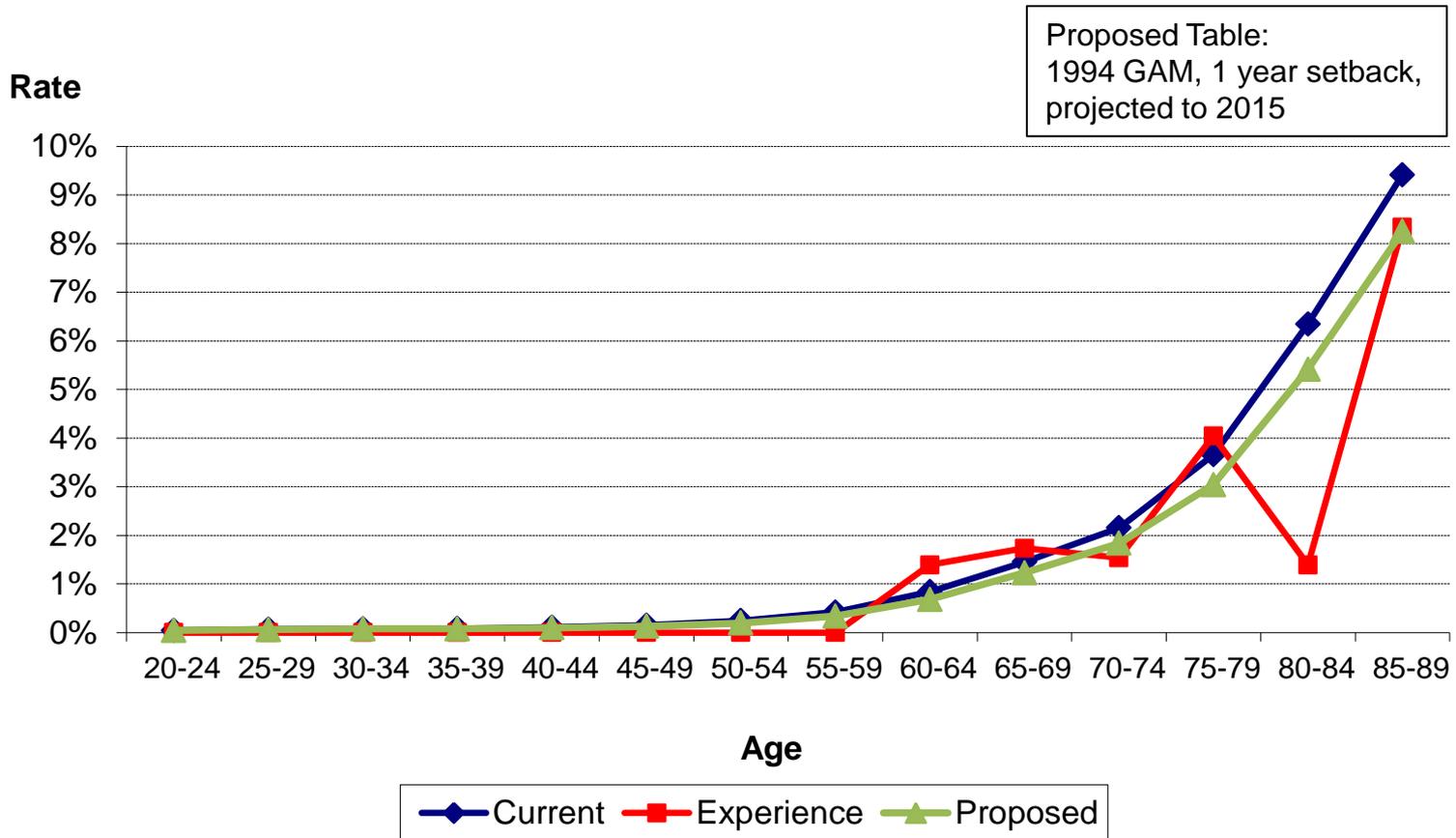


Experience - Actual deaths: 31 Expected deaths: 29.20 Current % A/E: 106% Proposed % A/E: 103%

County Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Post-retirement Mortality - Males

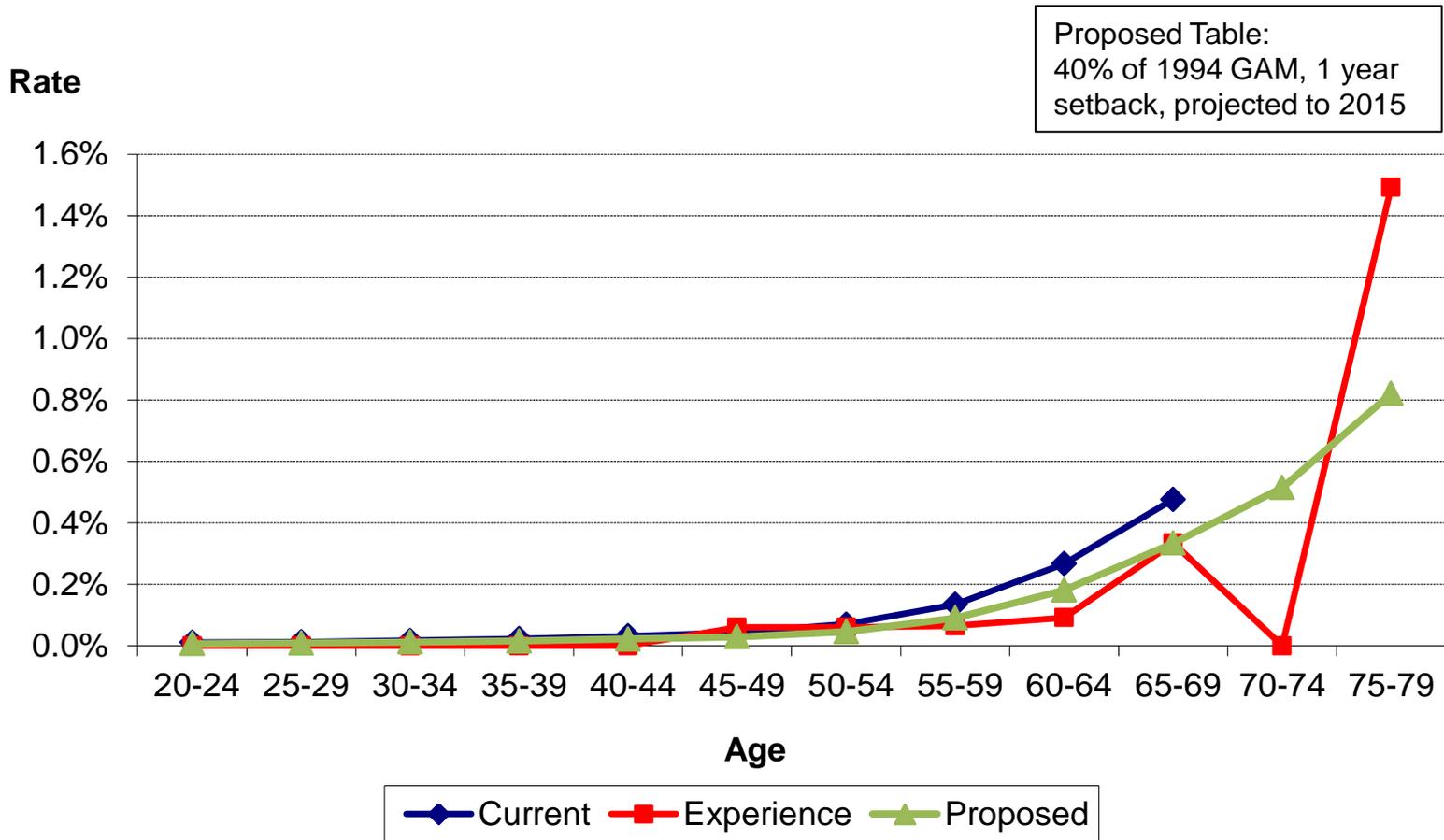


Experience - Actual deaths: 18 Expected deaths: 22.58 Current % A/E: 80% Proposed % A/E: 94%

County Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Pre-retirement Mortality - Females



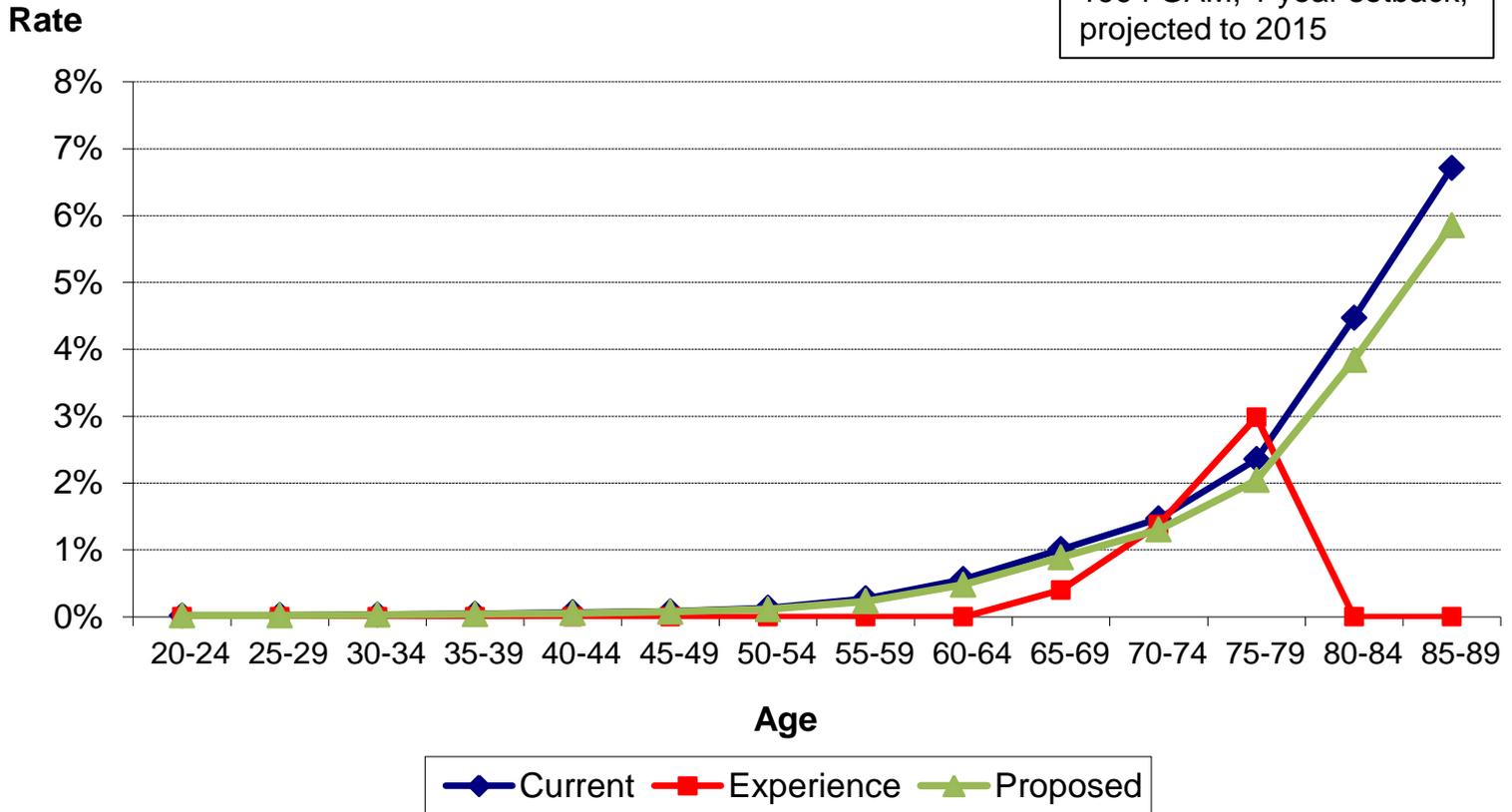
Experience - Actual deaths: 7 Expected deaths: 10.76 Current % A/E: 65% Proposed % A/E: 78%

County Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Post-retirement Mortality - Females

Proposed Table:
1994 GAM, 1 year setback,
projected to 2015



Experience - Actual deaths: 5 Expected deaths: 10.13 Current % A/E: 49% Proposed % A/E: 57%

County Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Summary of Economic and Demographic Assumption Recommendations

	Current	Proposed	Impact on Liabilities
Investment Return	7.75%/year	No Change	None
Salary Increases	Service based: 15.0% for <1 year, grading down to 5.5% at 7 years and thereafter	Service based: 8.5% for <1 year, grading down to 4.3% at 7 years and thereafter	Decrease
Retirement Rates	Various rates, ages 55 to 70	Increase ages 55-60, Increase age 62, Decrease age 64, Increase ages 66-68, Extend 100% retirement to age 80	Decrease
Mortality			
➤ Healthy Pre-Retirement	1994 GAM, Proj to 2010, 65% of male and 50% of female rates	1994 GAM, 1 Year Setback, Proj to 2015, 55% of male and 40% of female rates	Increase
➤ Healthy Post-Retirement	1994 GAM, Proj to 2010	1994 GAM, 1 Year Setback, Proj to 2015	Increase
Withdrawal	Select rates in first 5 years, ultimate rates by age from year 5 and thereafter	Increase select and ultimate rates	Decrease
Disability	.02% at age 20, grading to 2.6% at age 70	Remove	Decrease

County Cash Balance Benefit

2012 Experience Analysis (2007-2012)

Impact of Proposed Assumptions

(\$ in millions)

Projected Funding	July 1, 2011	
	Current Assumptions	Proposed Assumptions
1. Actuarial Accrued Liability	\$ 240.2	\$ 235.9
2. Actuarial Value of Assets	<u>220.7</u>	<u>220.7</u>
3. Unfunded Actuarial Accrued Liability/(Reserve)	\$ 19.5	\$ 15.2
4. Funded Ratio	92%	94%
5. Annual Actuarial Contribution		
- Normal Cost	\$ 18.8	\$ 18.0
- Amortization of Unfunded	<u>1.8</u>	<u>1.4</u>
- Total Contribution	\$ 20.6	\$ 19.4
- % of Pay	10.65%	10.31%
6. Benefit Improvement Threshold Rate	10.45%	10.45%
7. Rate Available for Benefit Improvements	0.00%	0.14%

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