

# 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

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# Economic Assumptions

# 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.

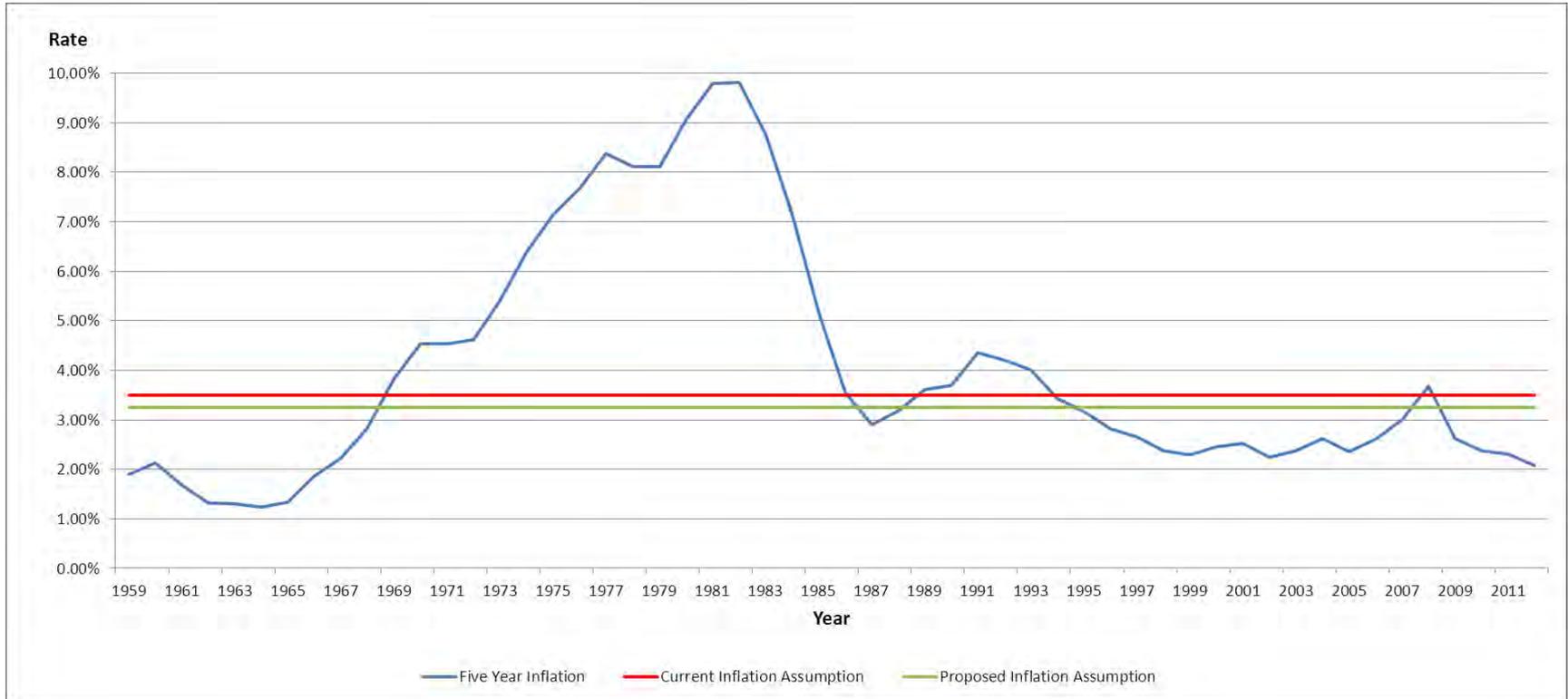
# Actual Economic Experience 1994 - 2011

Year Ending June 30 <sup>th</sup>	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 30<sup>th</sup>)



### 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.

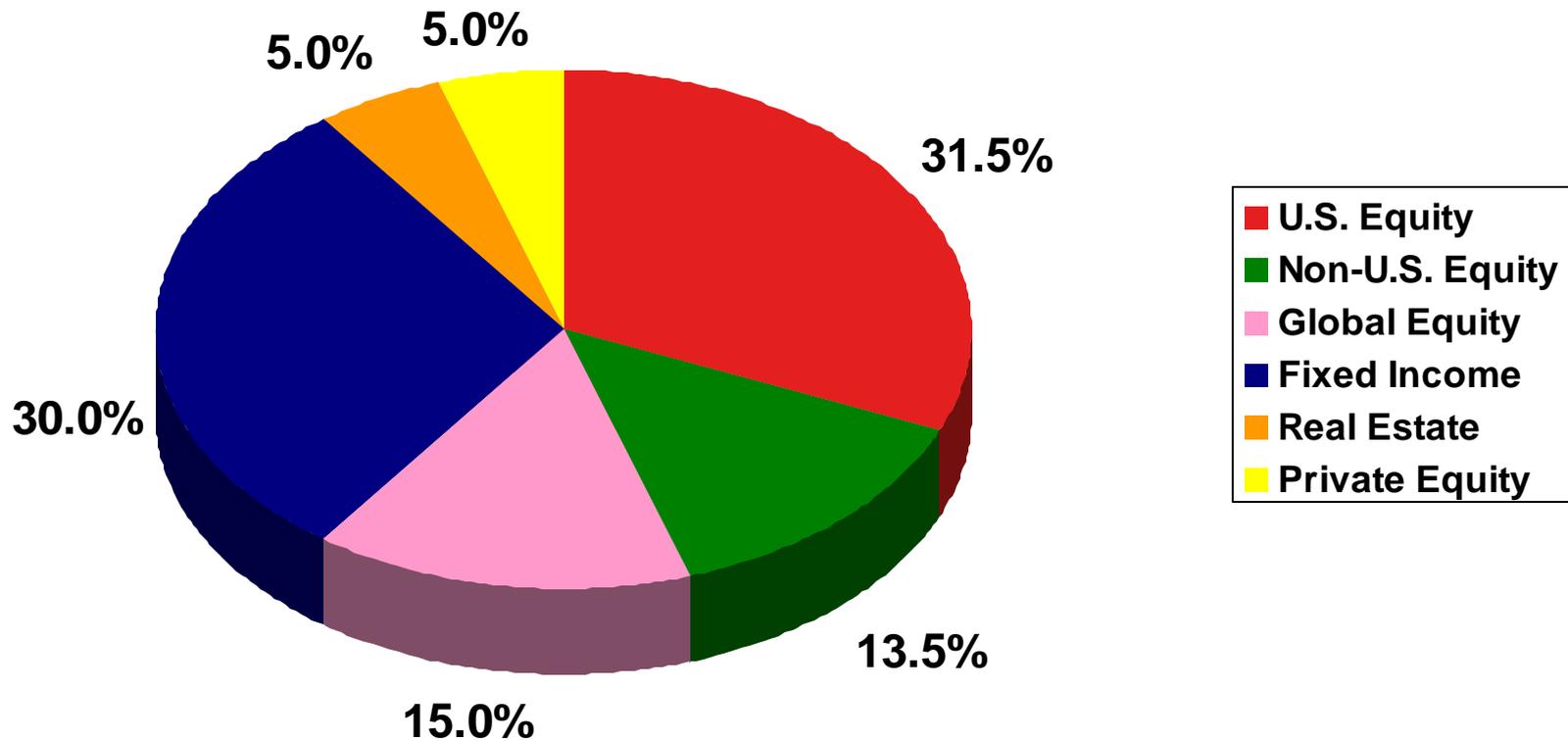
# Development of Investment Return Assumption

- 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

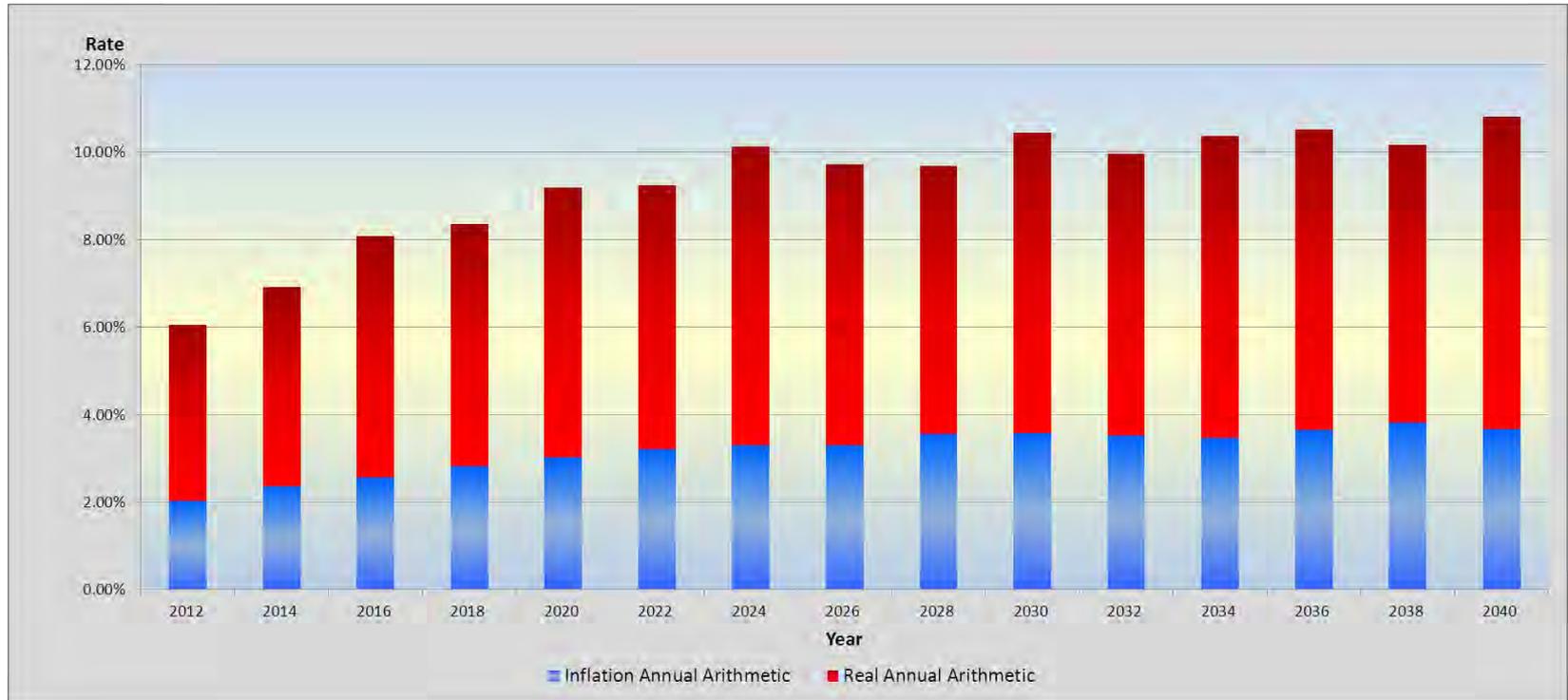
December 31, 2011

Attachment L  
4171Z1



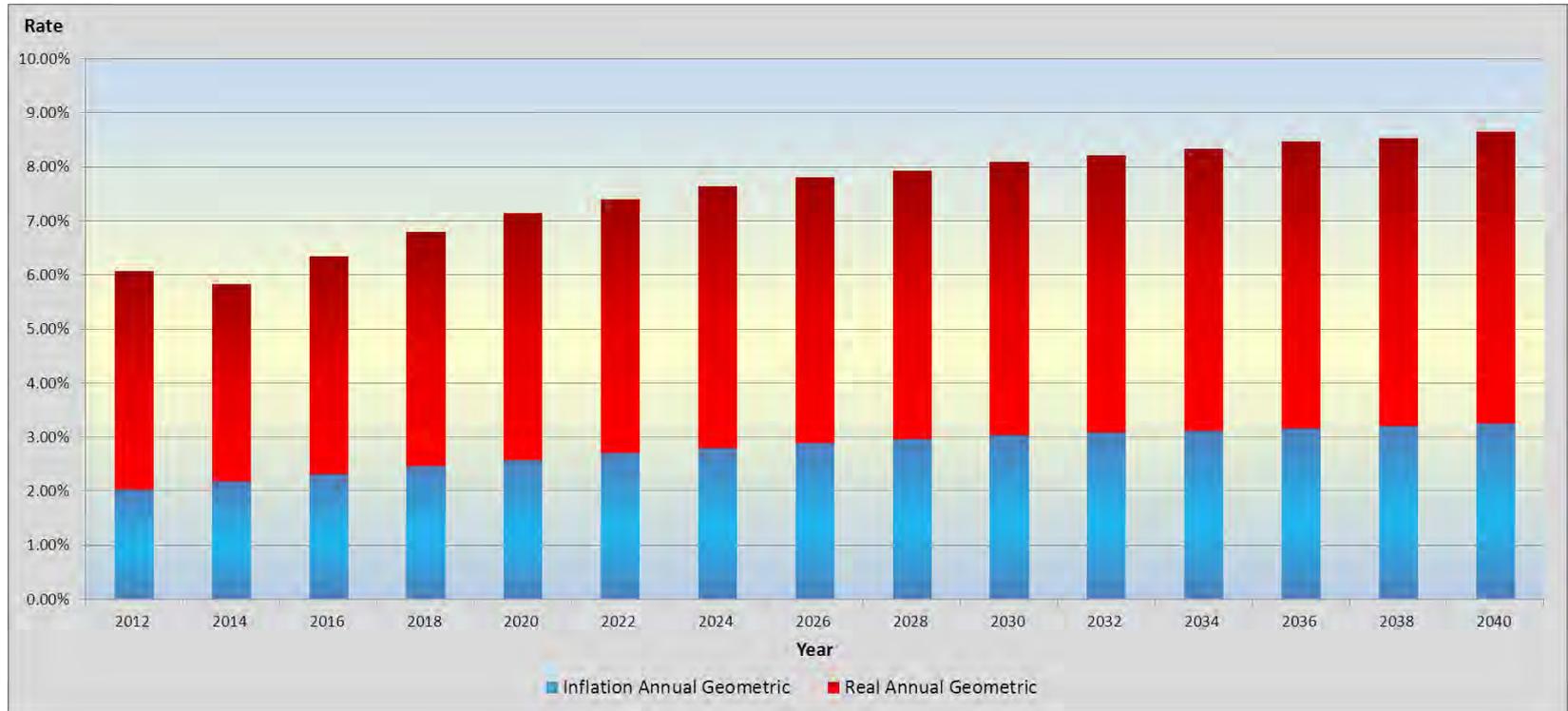
# Nebraska PERS

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

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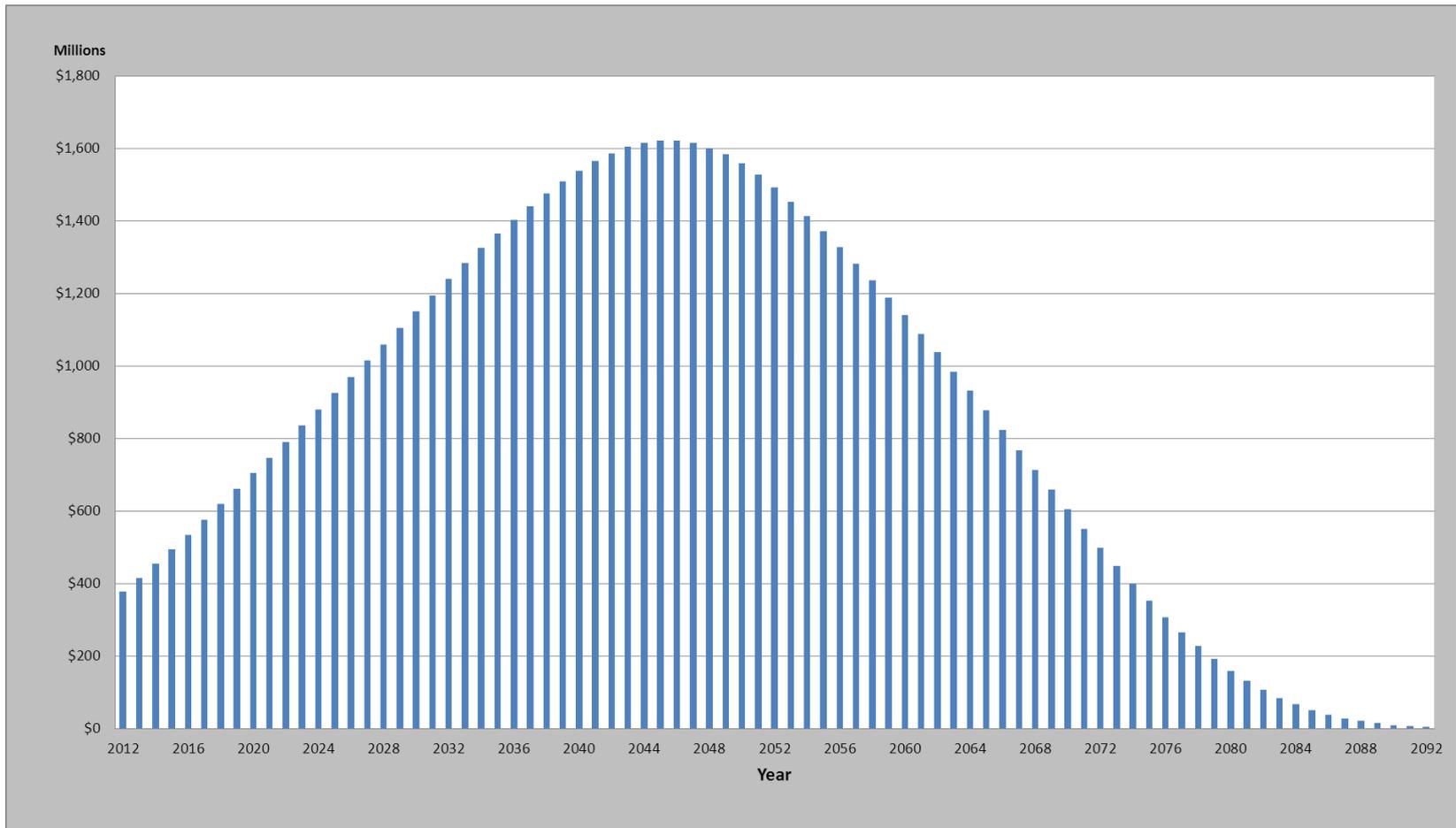
# Nebraska PERS

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



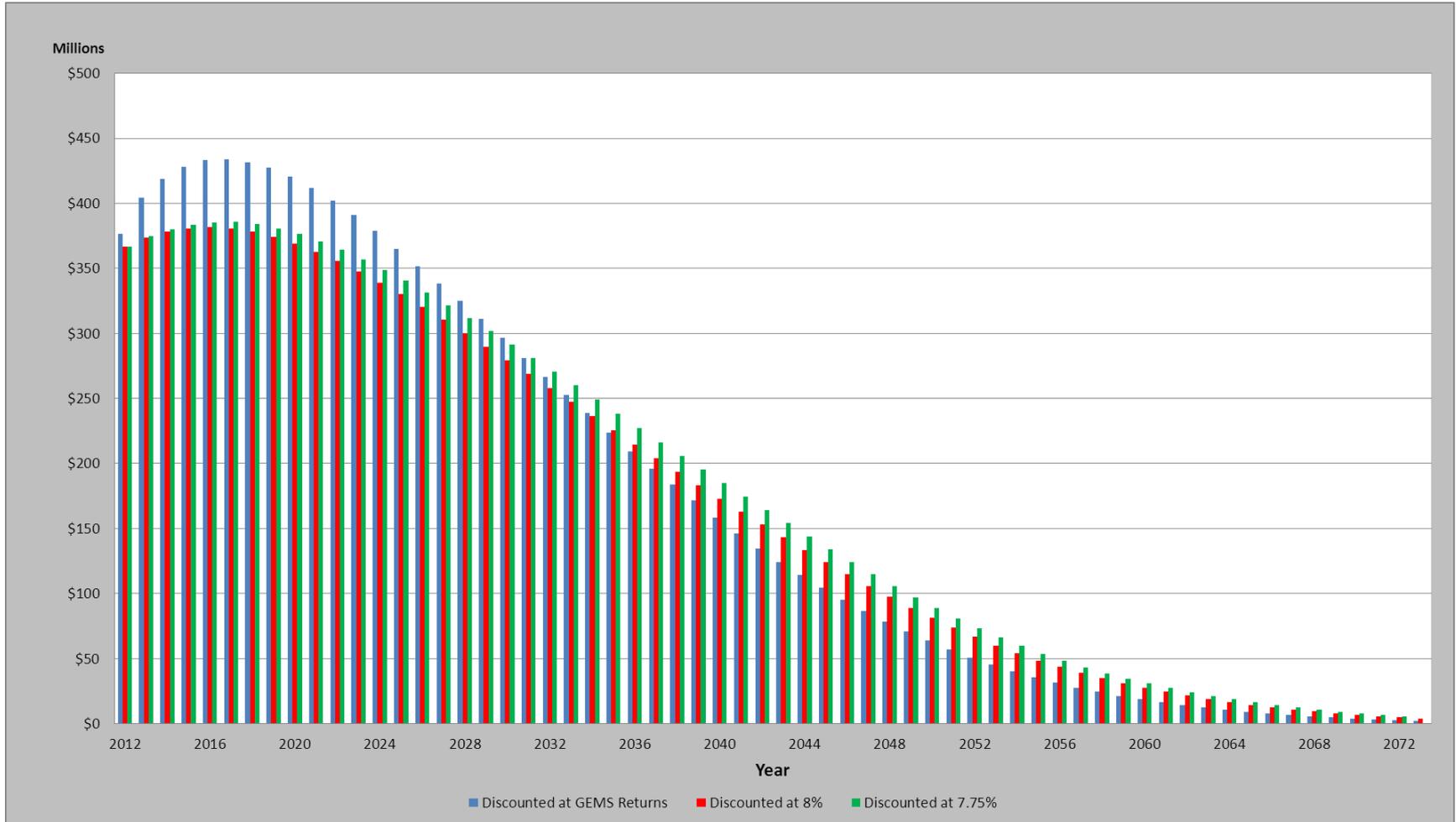
# Nebraska School Retirement System Projected Annual Benefit Payments – Current Members 2012-2092

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# Nebraska School Retirement System Discounted Values of Benefit Payments – Current Members 2012-2072

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# 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 4.0% to 3.75%
- 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%

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# Demographic Assumptions

## 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

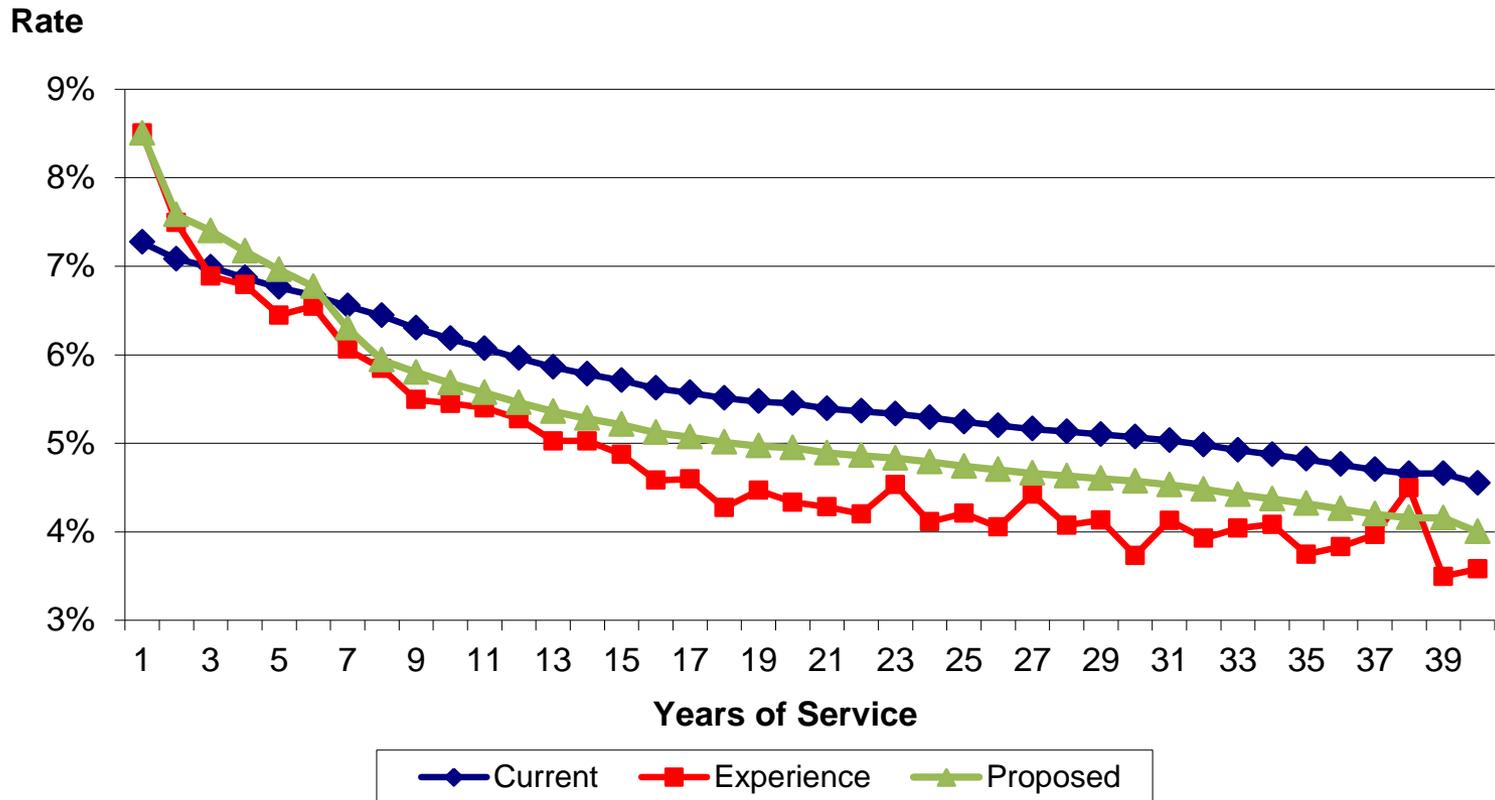
# School Retirement System

- **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)

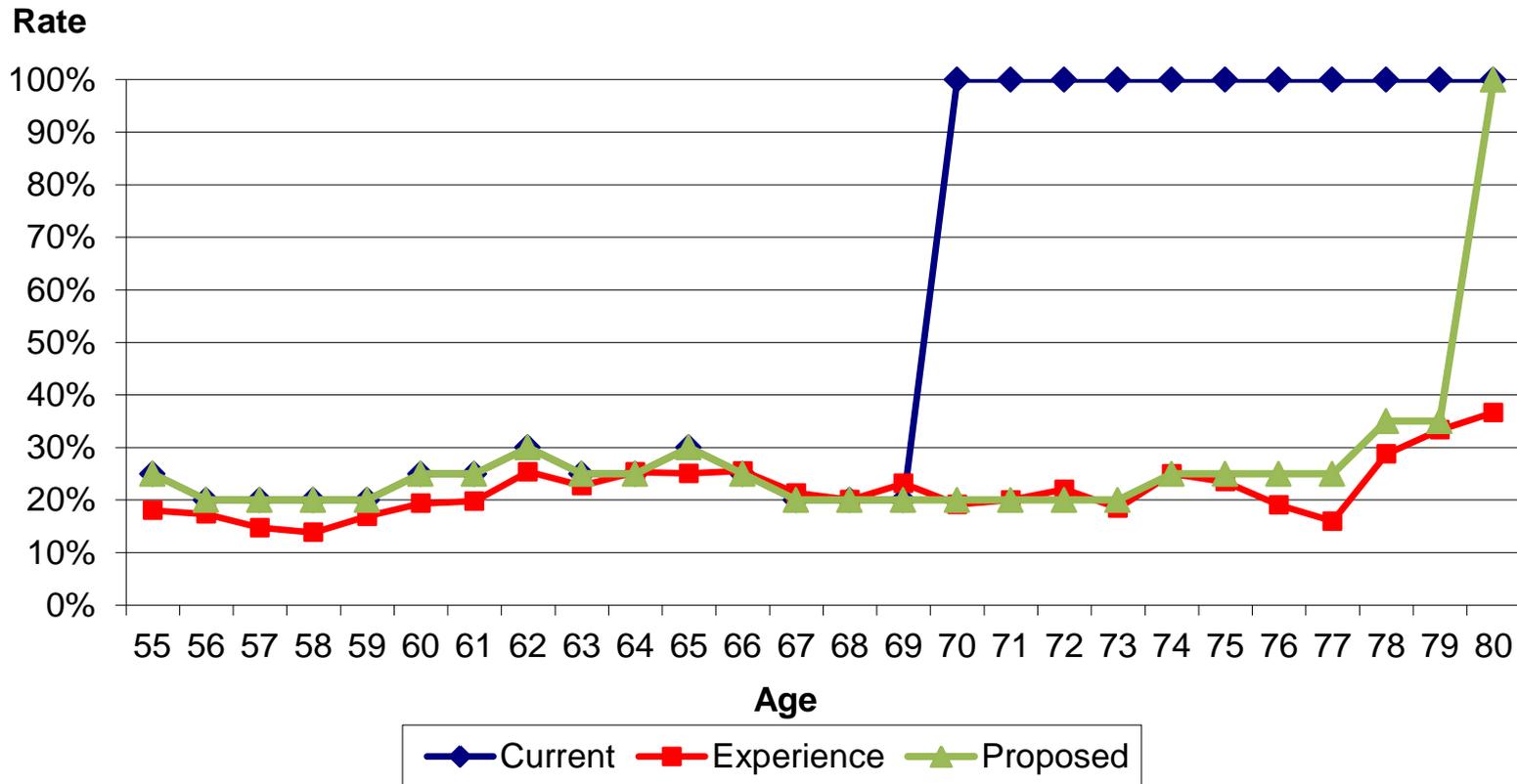


Current % A/E: 90%    Proposed % A/E: 94%

# School Retirement System

## 2012 Experience Analysis (2006-2011)

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

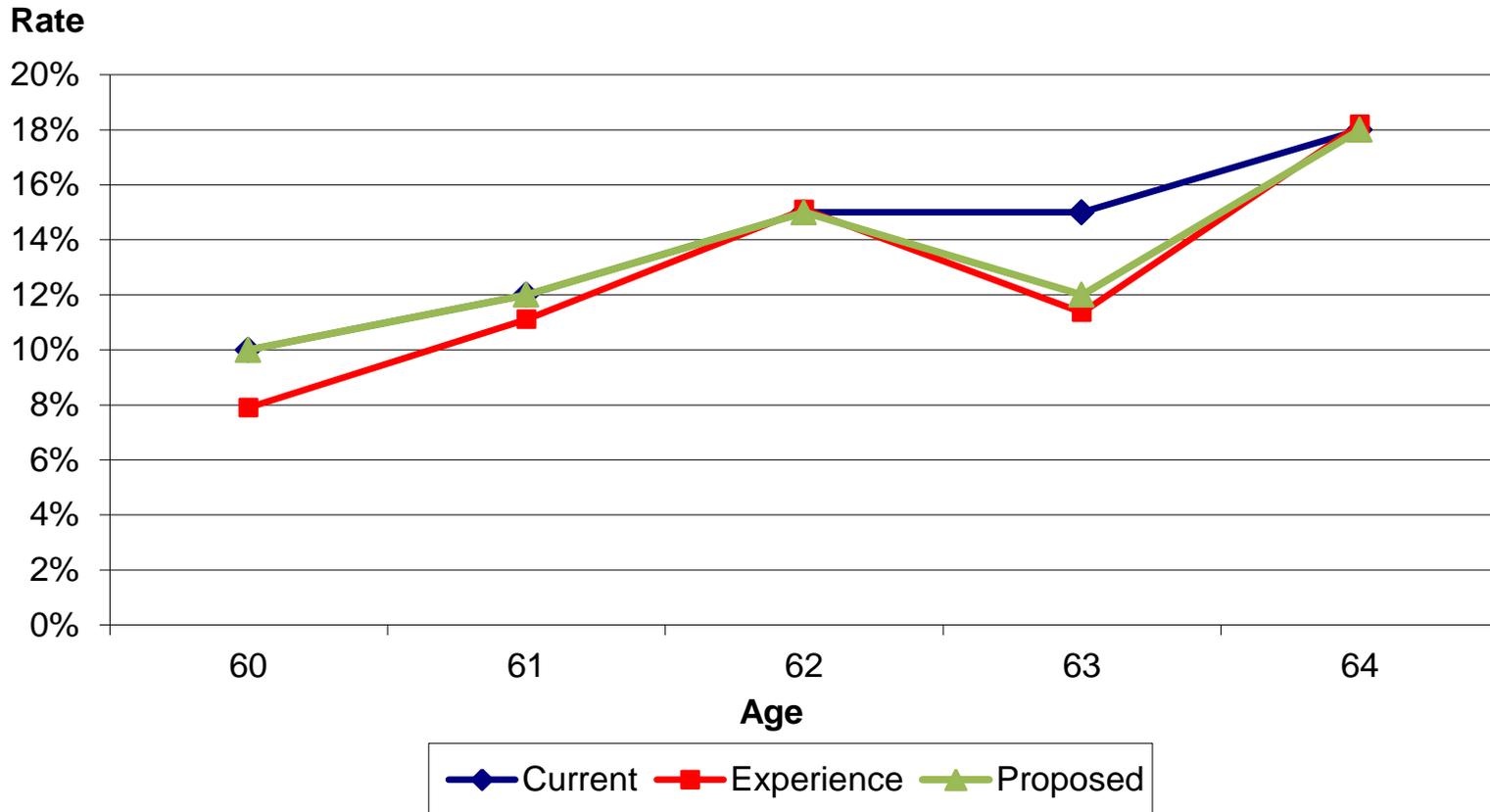


Experience - Actual retirements: 4,096    Expected retirements: 6,553    Current % A/E: 63%    Proposed % A/E: 85%

# School Retirement System

## 2012 Experience Analysis (2006-2011)

### Retirement Rates - Reduced Early Benefit (60/5)

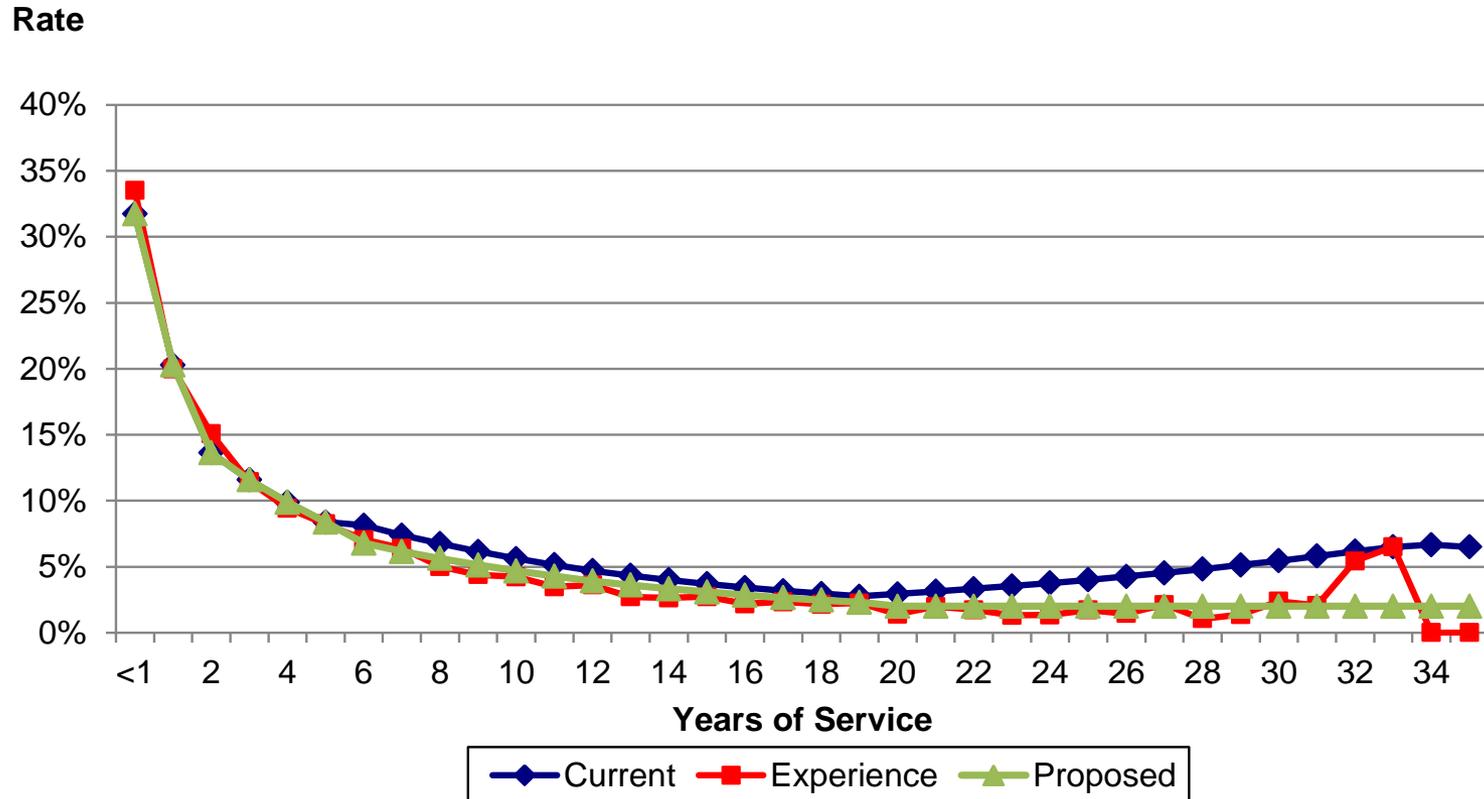


Experience - Actual retirements: 956    Expected retirements: 1,065    Current % A/E: 90%    Proposed % A/E: 93%

# School Retirement System

## 2012 Experience Analysis (2006-2011)

### Withdrawal Rates - Females

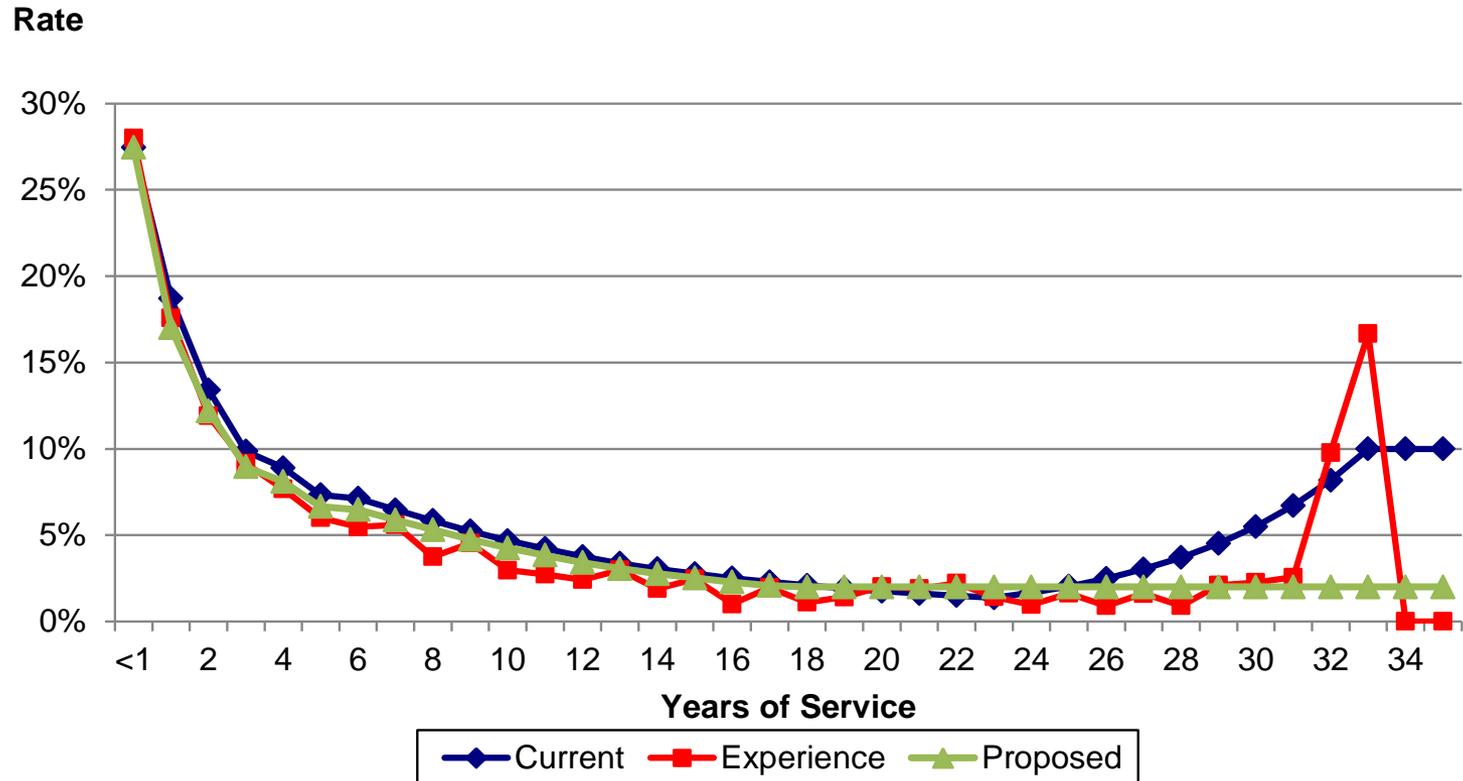


Experience - Actual turnover: 9,861    Expected turnover: 10,900    Current % A/E: 90%    Proposed % A/E: 98%

# School Retirement System

## 2012 Experience Analysis (2006-2011)

### Withdrawal Rates - Males

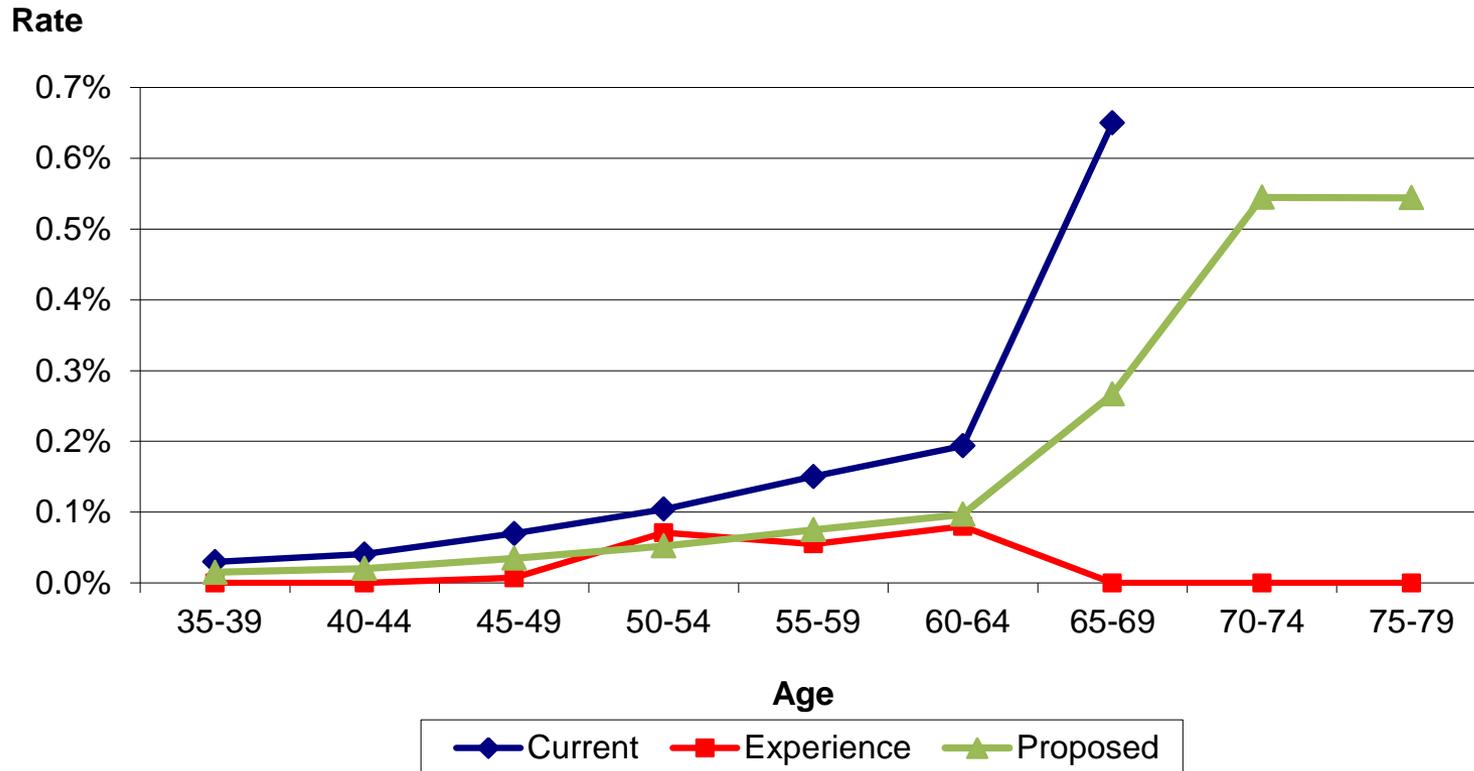


Experience - Actual turnover: 2,436    Expected turnover: 2,847    Current % A/E: 86%    Proposed % A/E: 95%

# School Retirement System

## 2012 Experience Analysis (2006-2011)

### Disability Rates

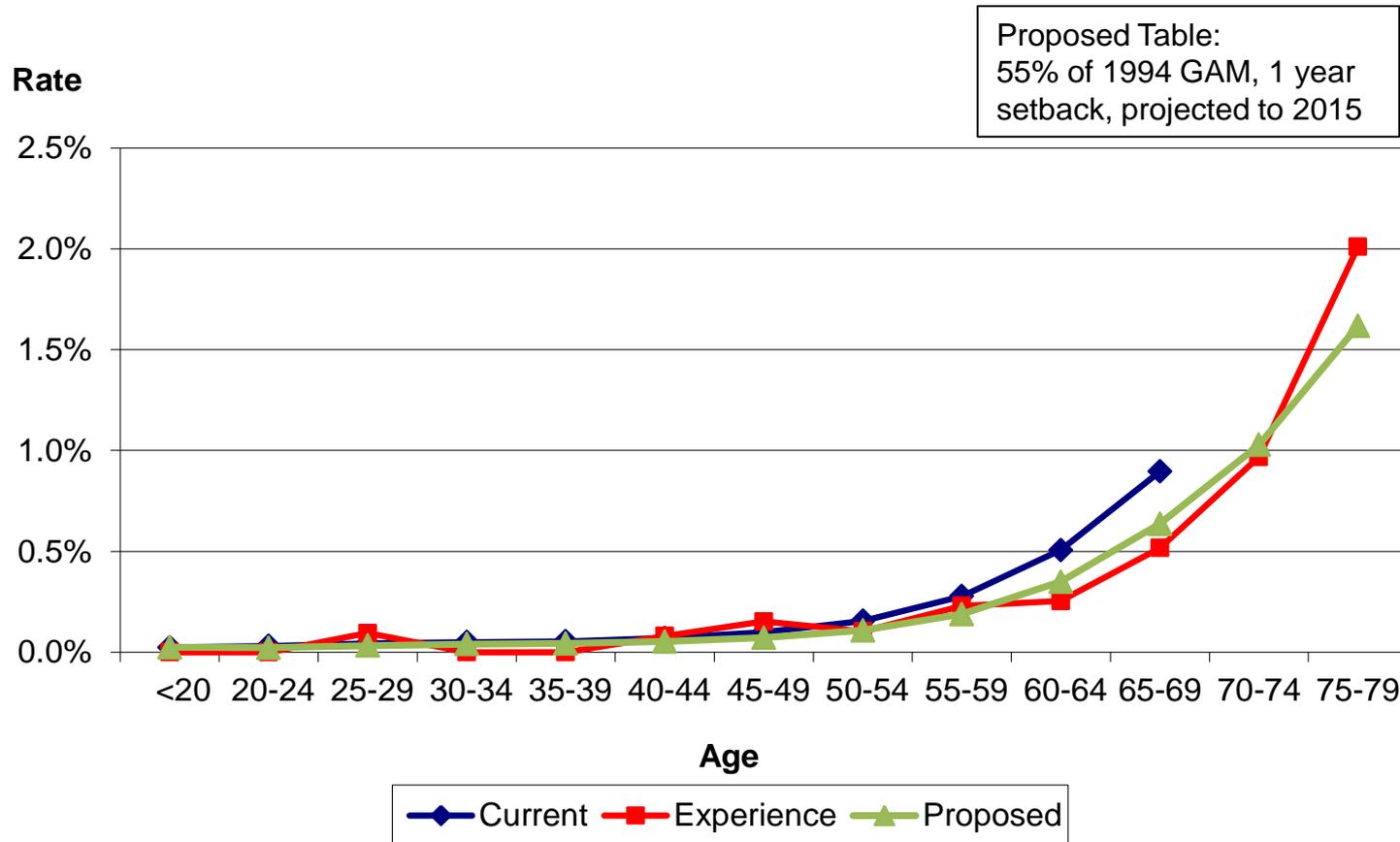


Experience - Actual disabilities: 53    Expected disabilities: 166    Current % A/E: 32%    Proposed % A/E: 56%

# School Retirement System

## 2012 Experience Analysis (2006-2011)

### Pre-retirement Mortality - Males



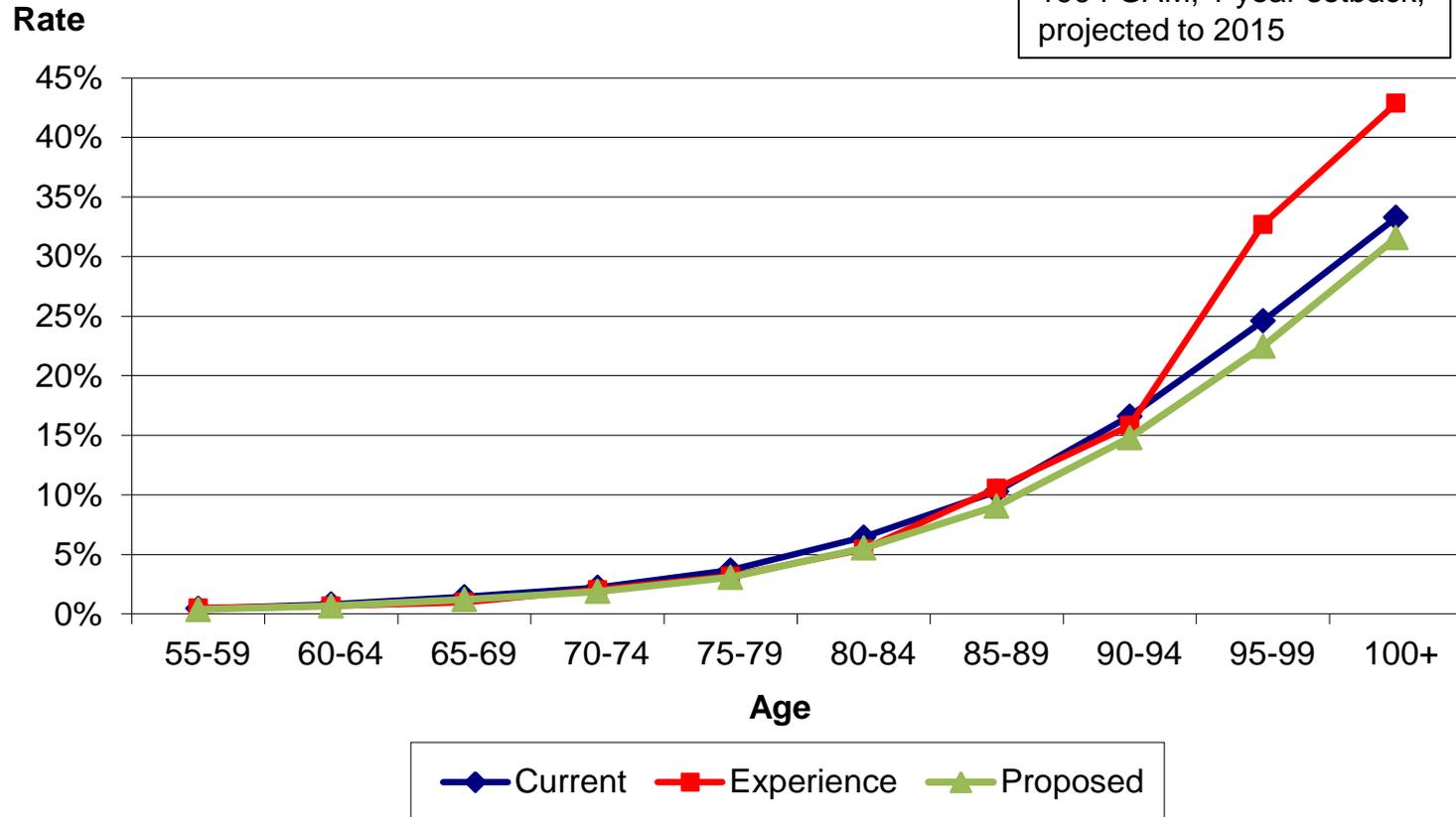
Experience - Actual deaths: 70    Expected deaths: 84    Current % A/E: 83%    Proposed % A/E: 102%

# School Retirement System

## 2012 Experience Analysis (2006-2011)

### Post-retirement Mortality - Males

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

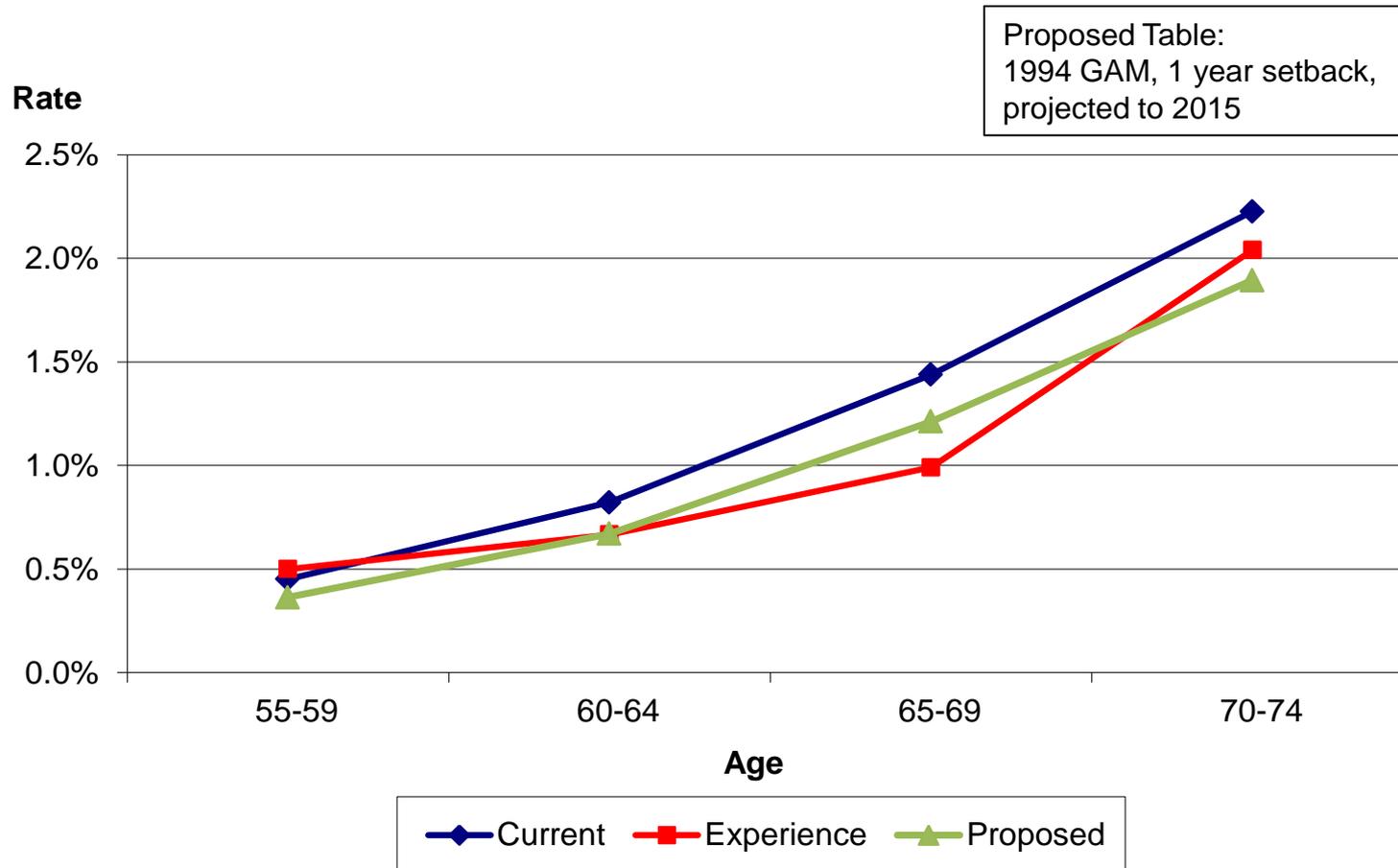


Experience - Actual deaths: 662    Expected deaths: 737    Current % A/E: 90%    Proposed % A/E: 105%

# School Retirement System

## 2012 Experience Analysis (2006-2011)

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

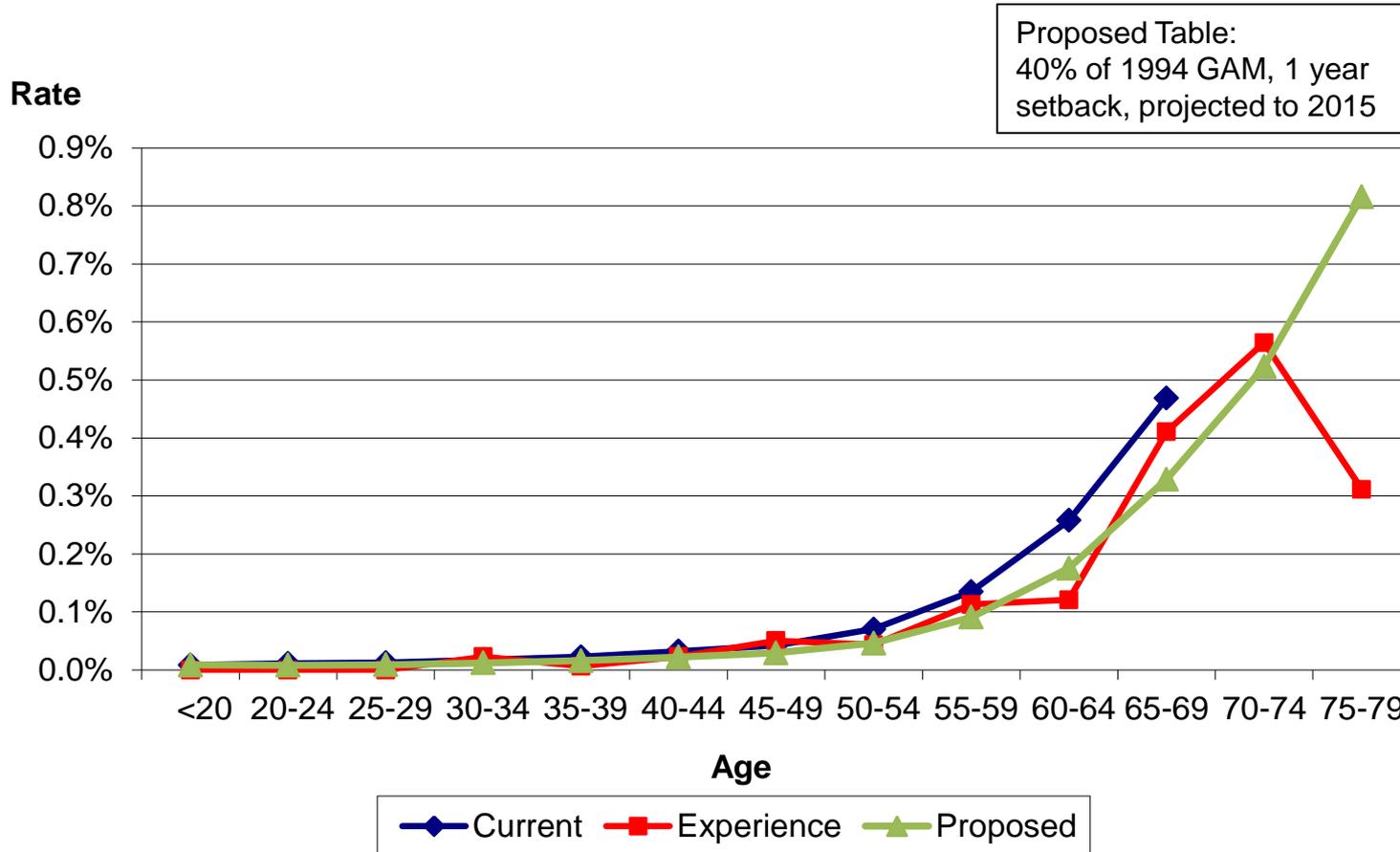


Experience - Actual deaths: 662    Expected deaths: 737    Current % A/E: 90%    Proposed % A/E: 105%

# School Retirement System

## 2012 Experience Analysis (2006-2011)

### Pre-retirement Mortality - Females

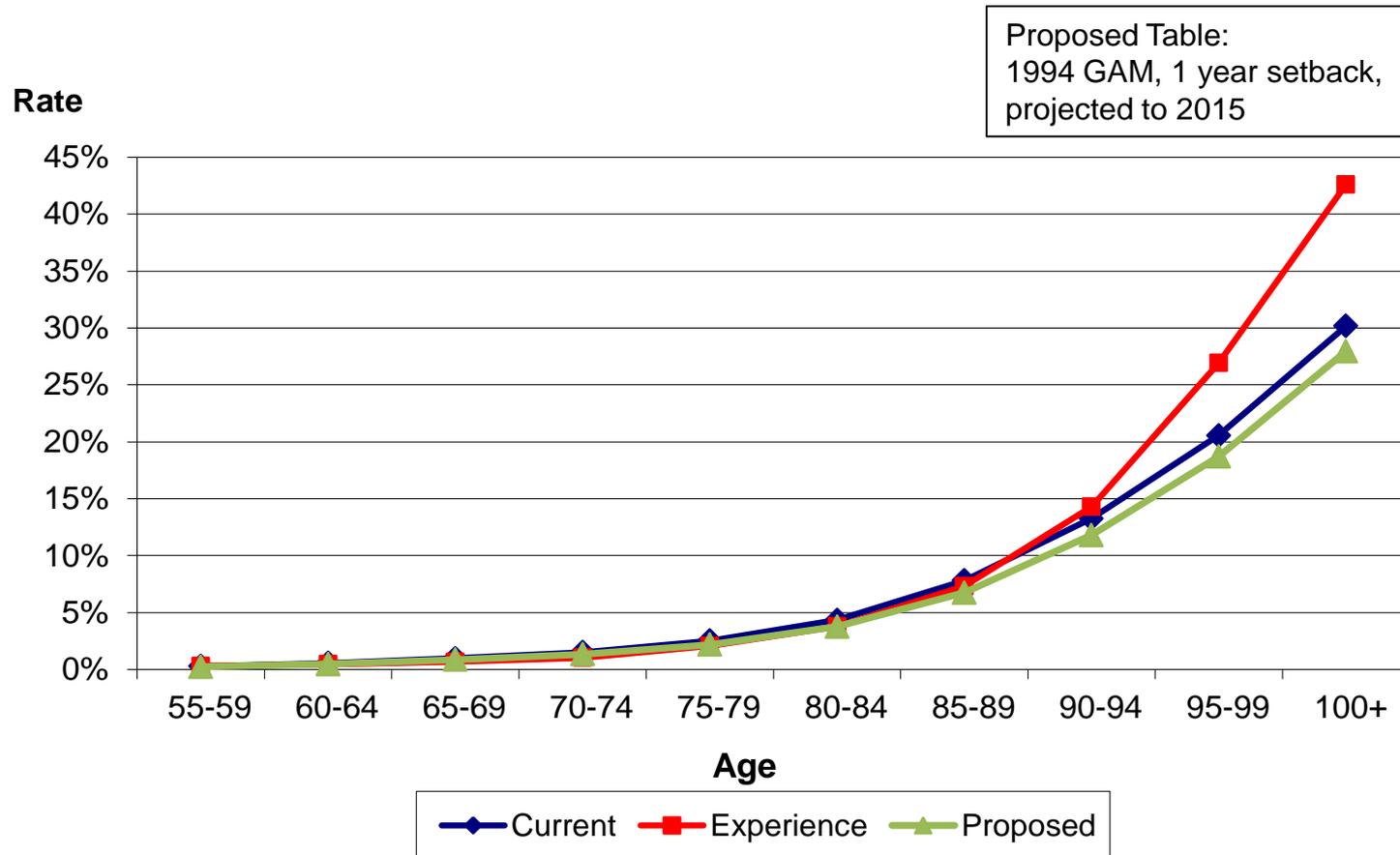


Experience - Actual deaths: 88    Expected deaths: 113    Current % A/E: 78%    Proposed % A/E: 103%

# School Retirement System

## 2012 Experience Analysis (2006-2011)

### Post-retirement Mortality - Females



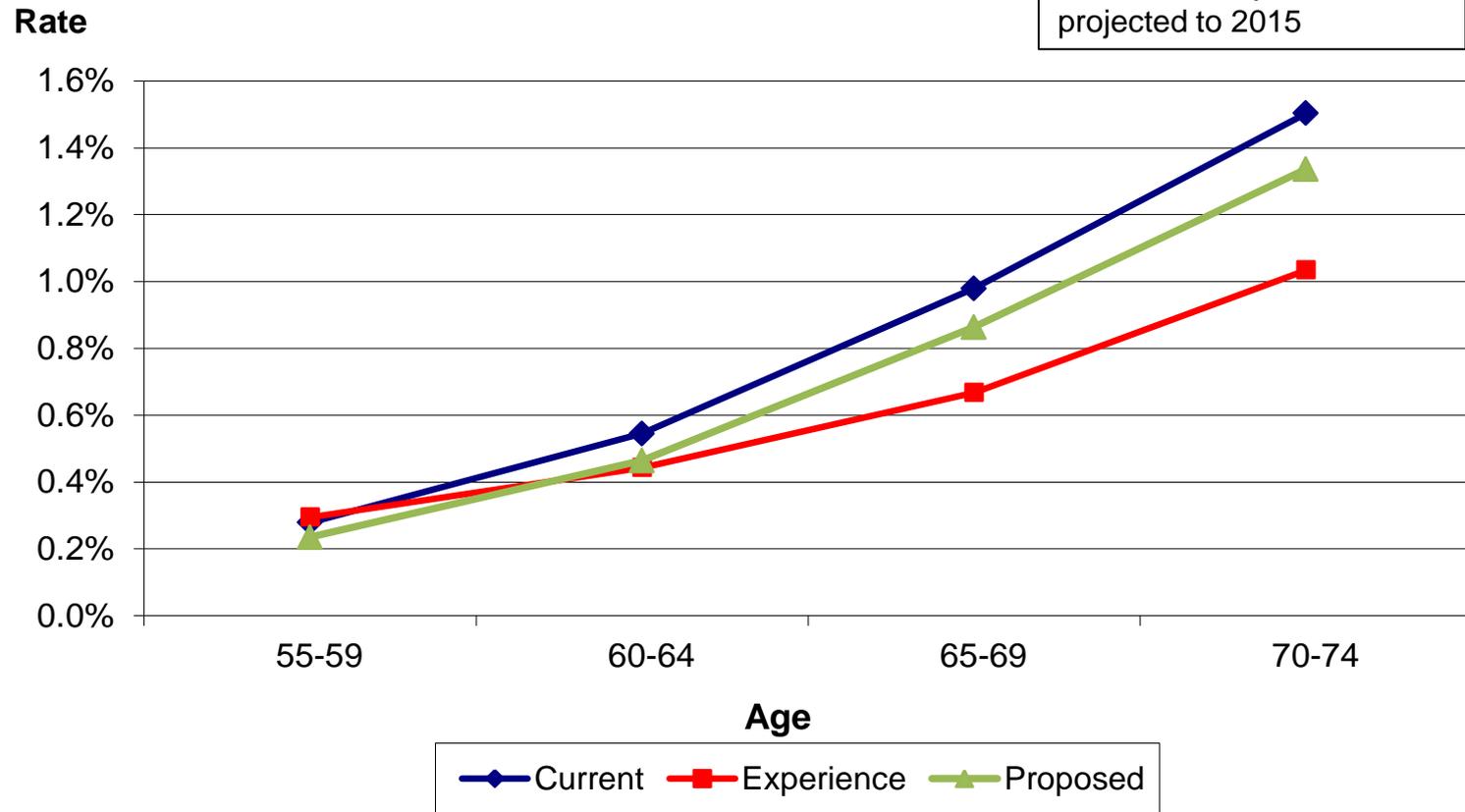
Experience - Actual deaths: 1,502    Expected deaths: 1,579    Current % A/E: 95%    Proposed % A/E: 109%

# School Retirement System

## 2012 Experience Analysis (2006-2011)

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

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



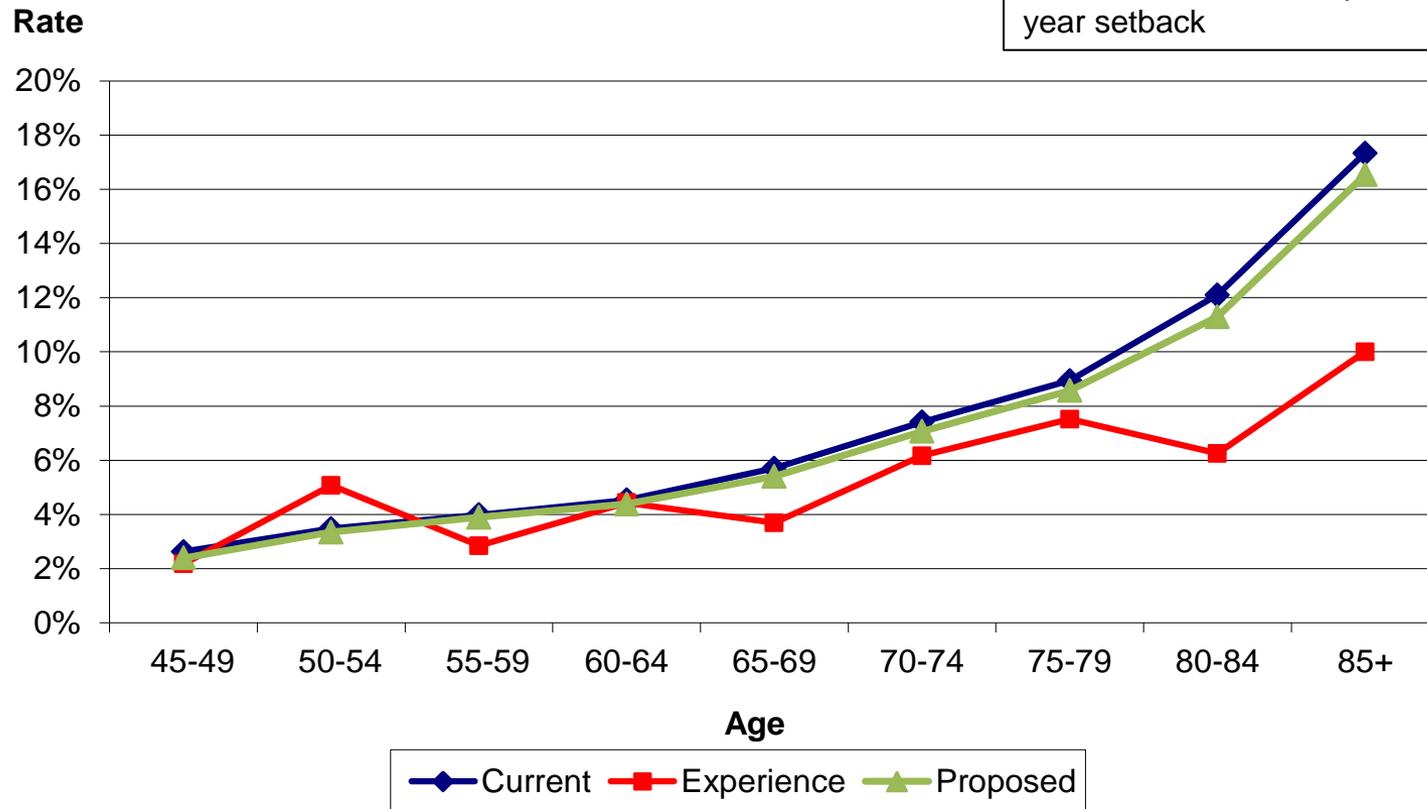
Experience - Actual deaths: 1,502    Expected deaths: 1,579    Current % A/E: 95%    Proposed % A/E: 109%

# 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

Attachment L  
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## 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%

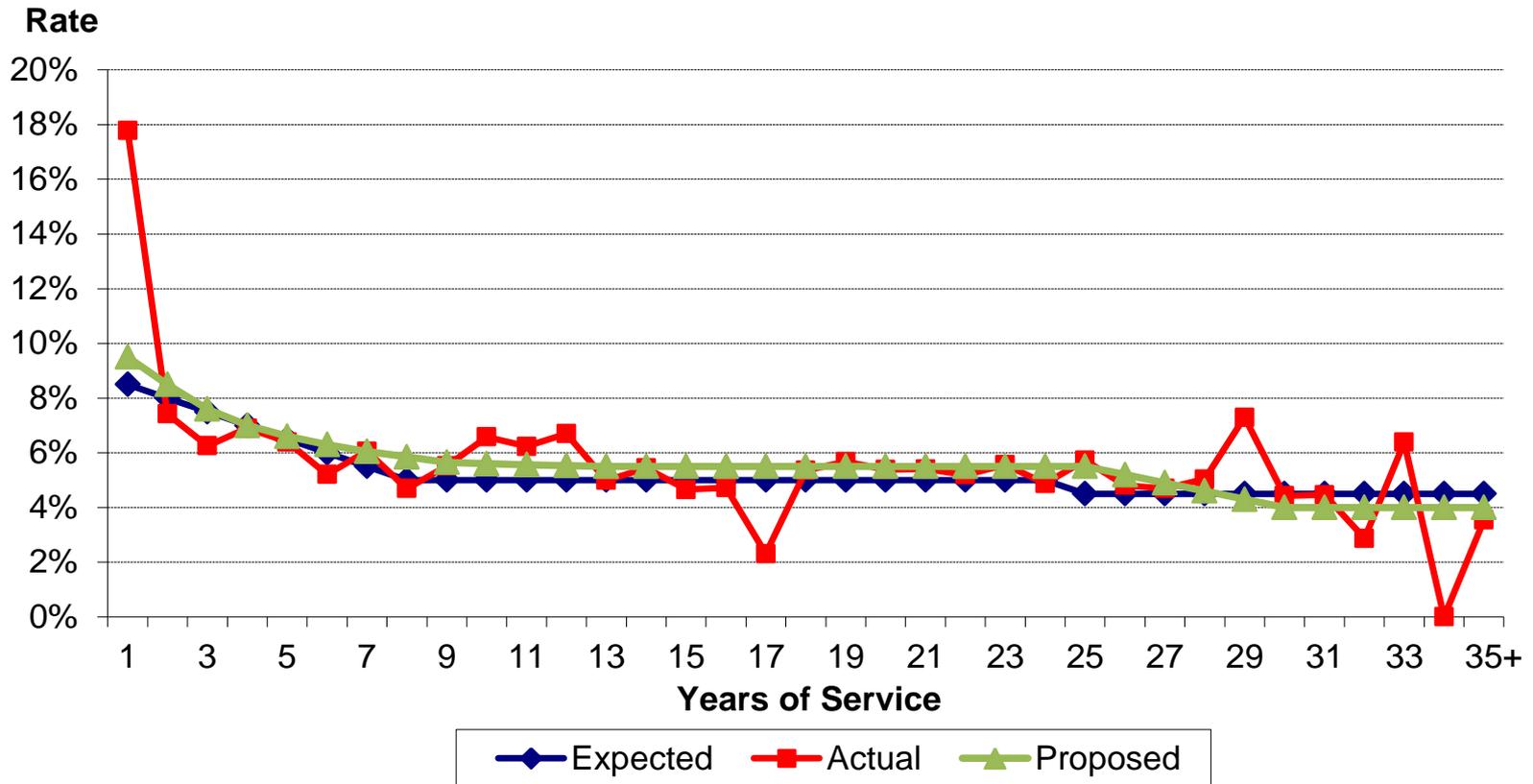
# State Patrol Retirement System

- **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)

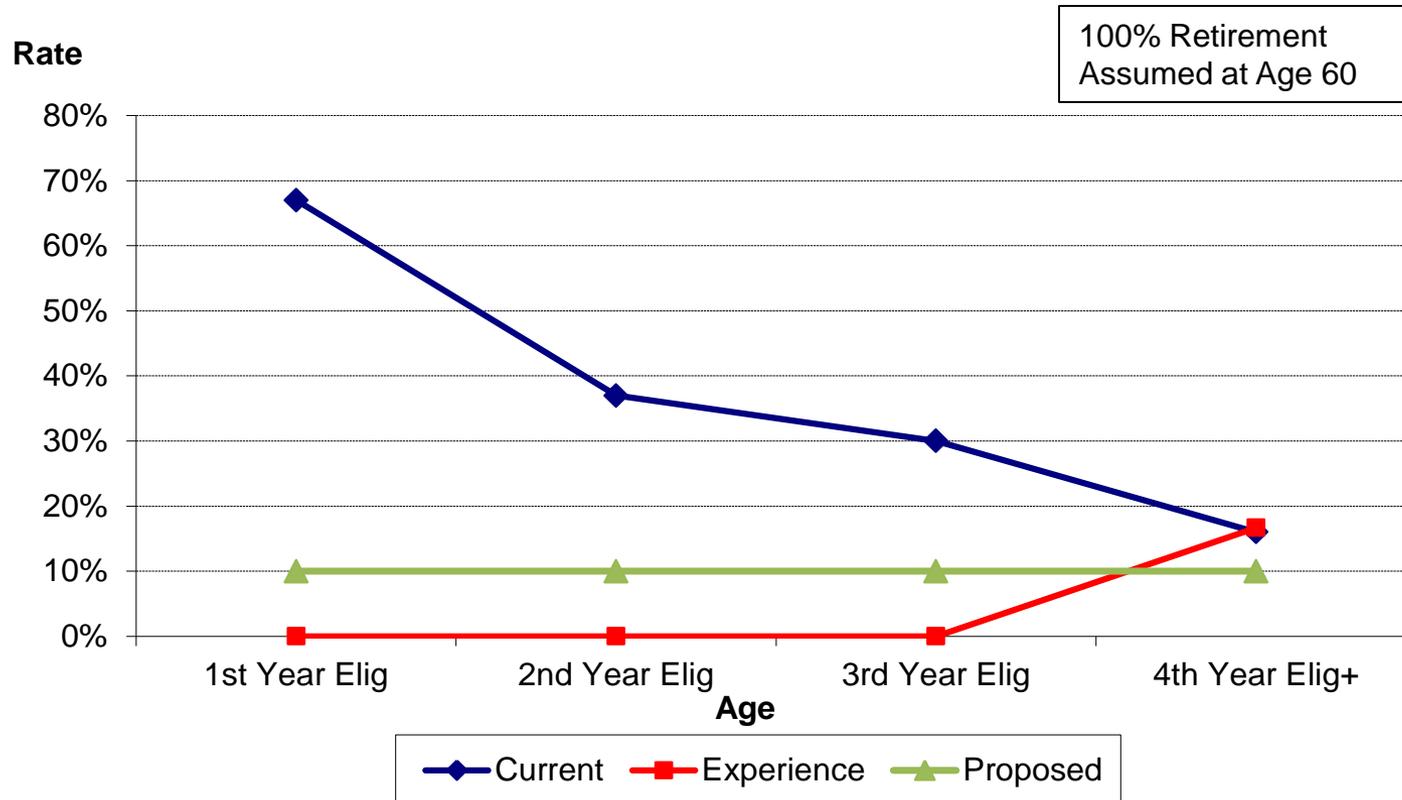


Current % A/E: 106%    Proposed % A/E: 98%

# State Patrol Retirement System

## 2012 Experience Analysis (2006-2011)

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

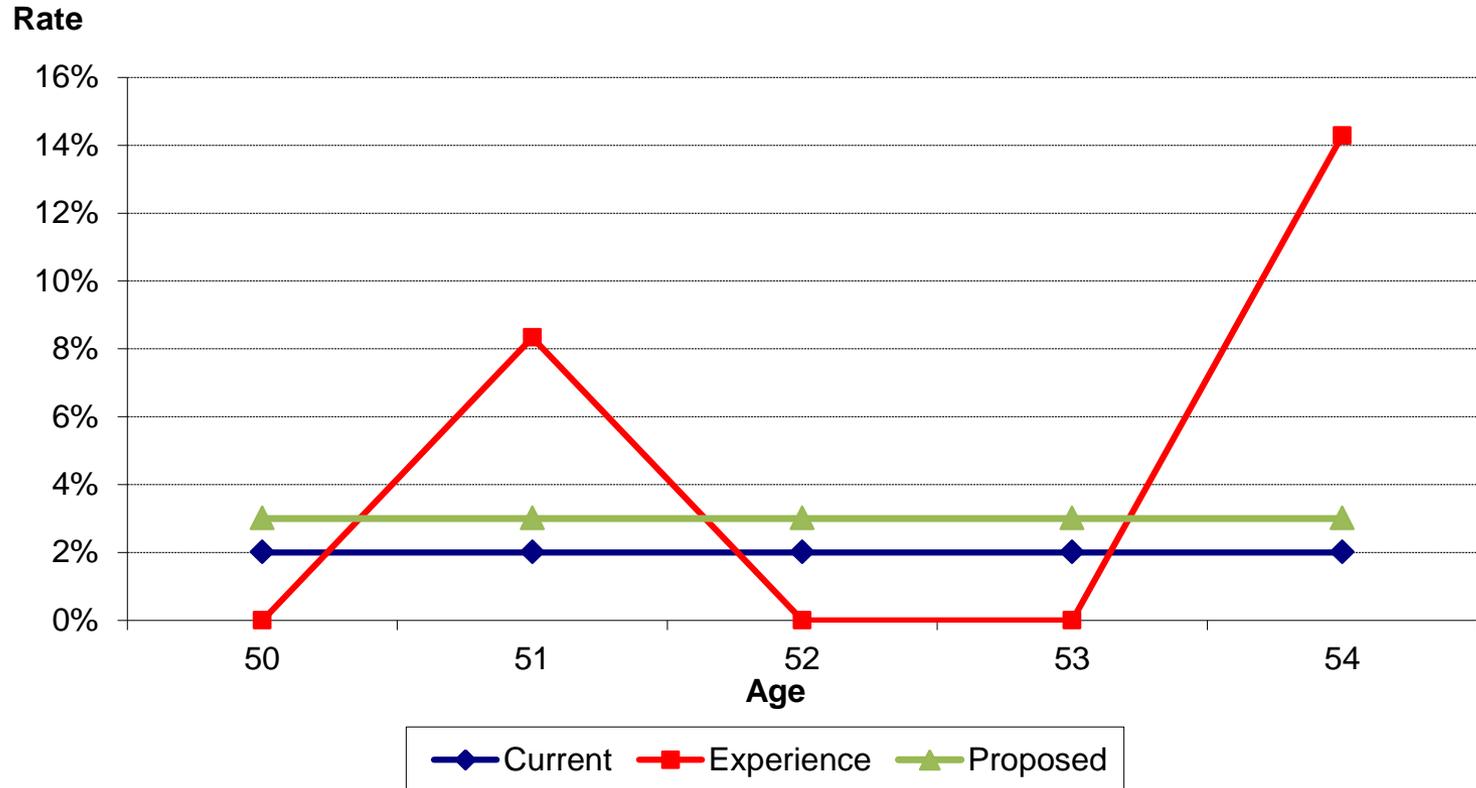


Experience - Actual retirements: 4    Expected retirements: 12.81    Current % A/E: 31%    Proposed % A/E: 75%

# State Patrol Retirement System

## 2012 Experience Analysis (2006-2011)

### Reduced Non-DROP Retirement Rates (50/10)

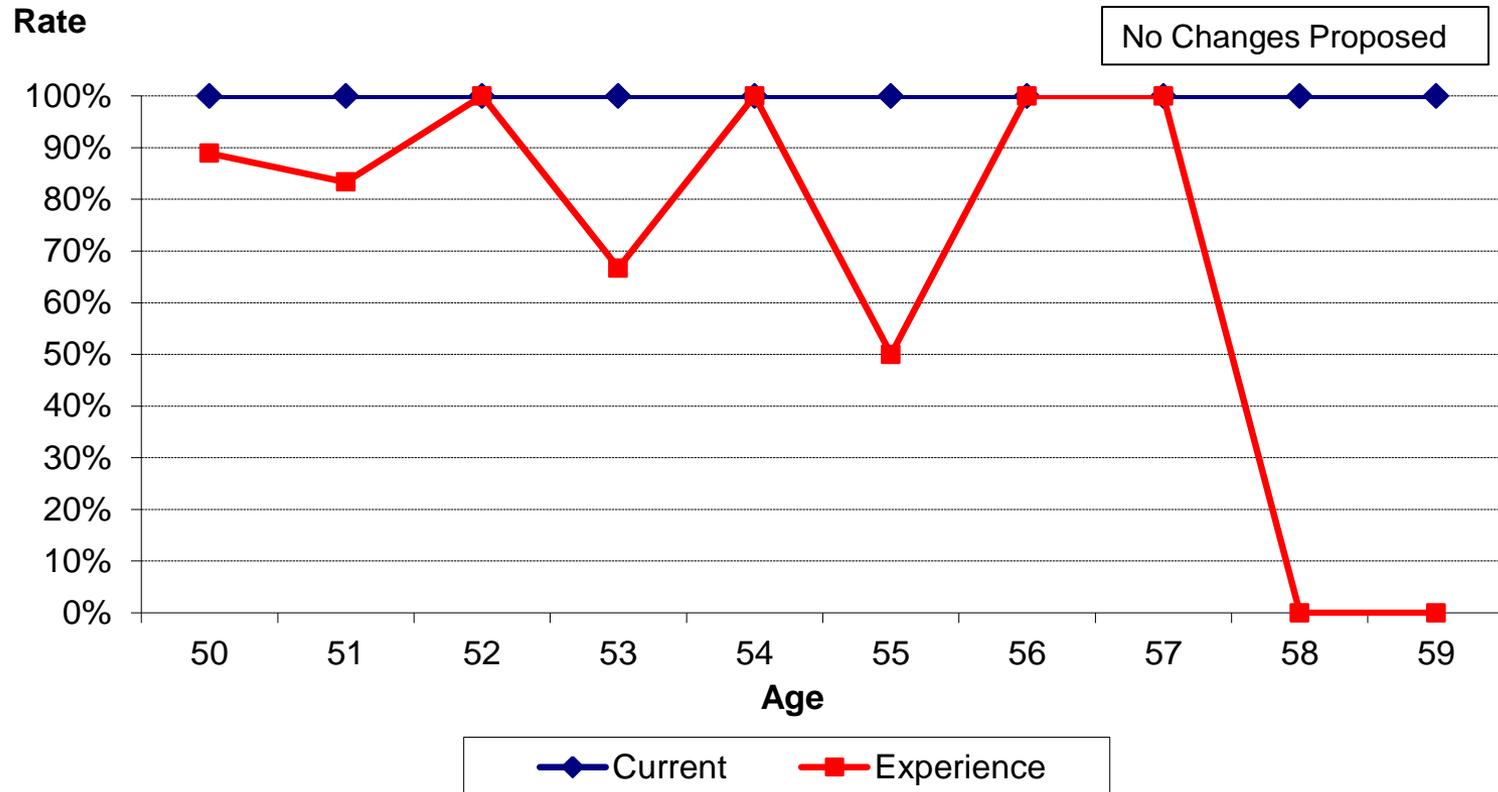


Experience - Actual retirements: 4    Expected retirements: 1.96    Current % A/E: 204%    Proposed % A/E: 136%

# State Patrol Retirement System

## 2012 Experience Analysis (2009-2011)

### Unreduced DROP Retirement Rates (50/25)

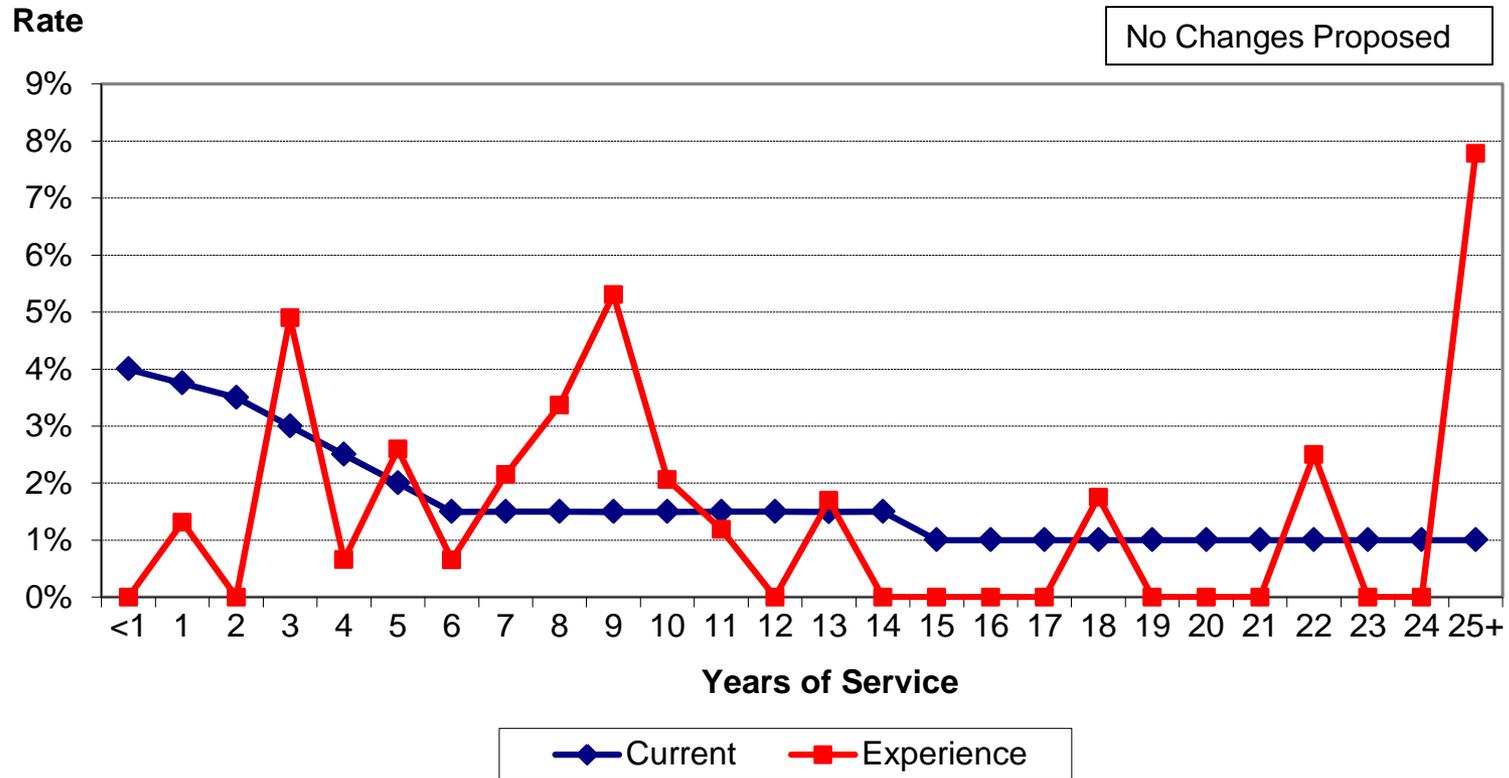


Experience - Actual retirements: 22    Expected retirements: 26    Current % A/E: 85%

# State Patrol Retirement System

## 2012 Experience Analysis (2006-2011)

### Withdrawal Rates

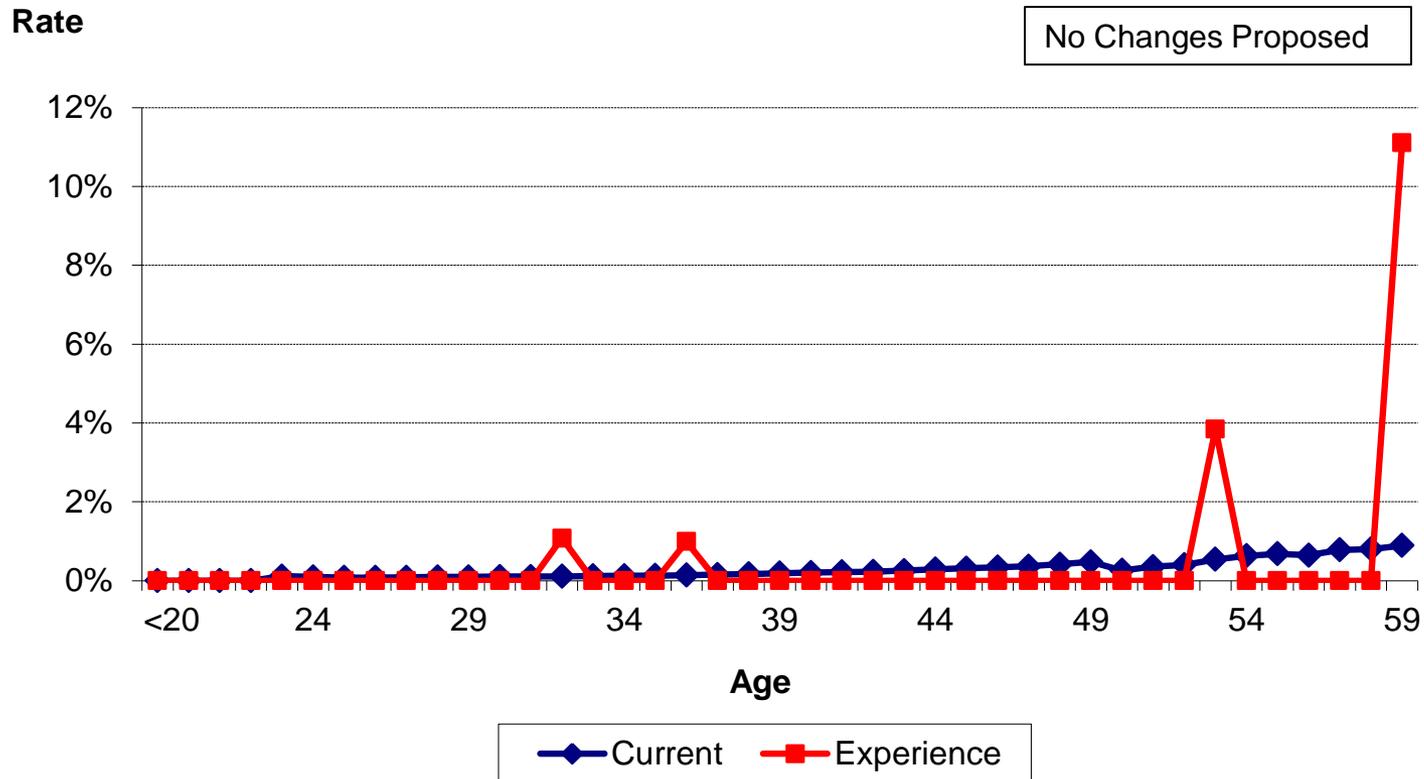


Experience - Actual turnover: 41    Expected turnover: 36.31    Current % A/E: 113%

# State Patrol Retirement System

## 2012 Experience Analysis (2006-2011)

### Disability Rates

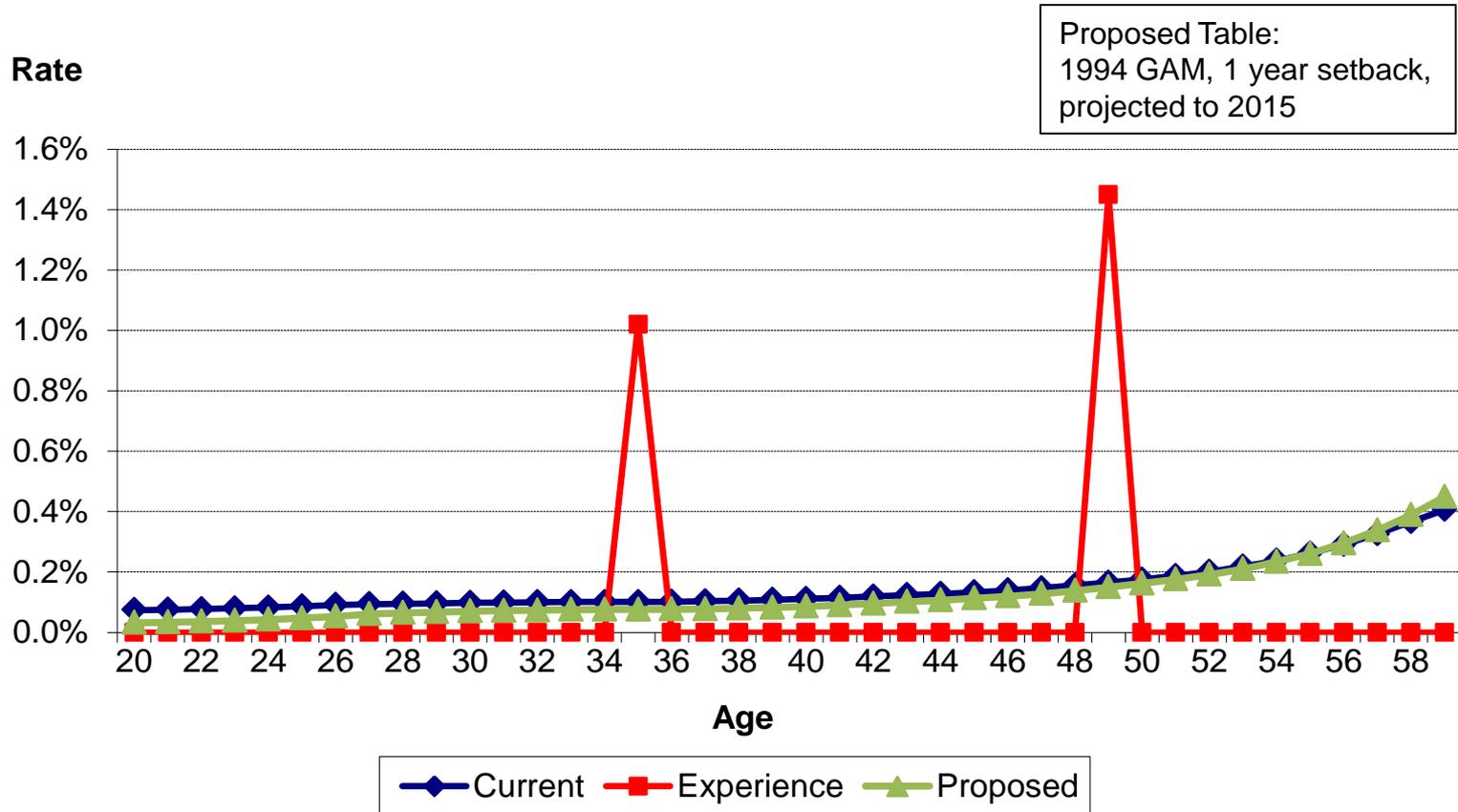


Experience - Actual disabilities: 4    Expected disabilities: 5.36    Current % A/E: 75%

# 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%

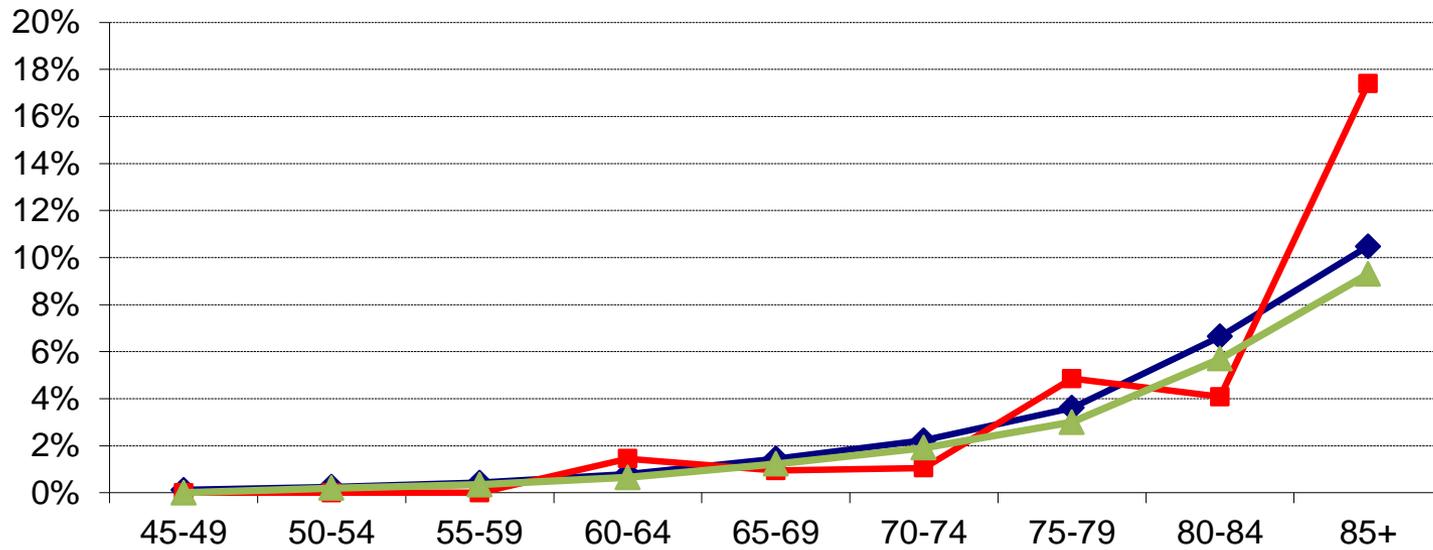
# State Patrol Retirement System

## 2012 Experience Analysis (2006-2011)

### Post-retirement Mortality - Males

Rate

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



Age

◆ Current   
 ■ Experience   
 ▲ Proposed

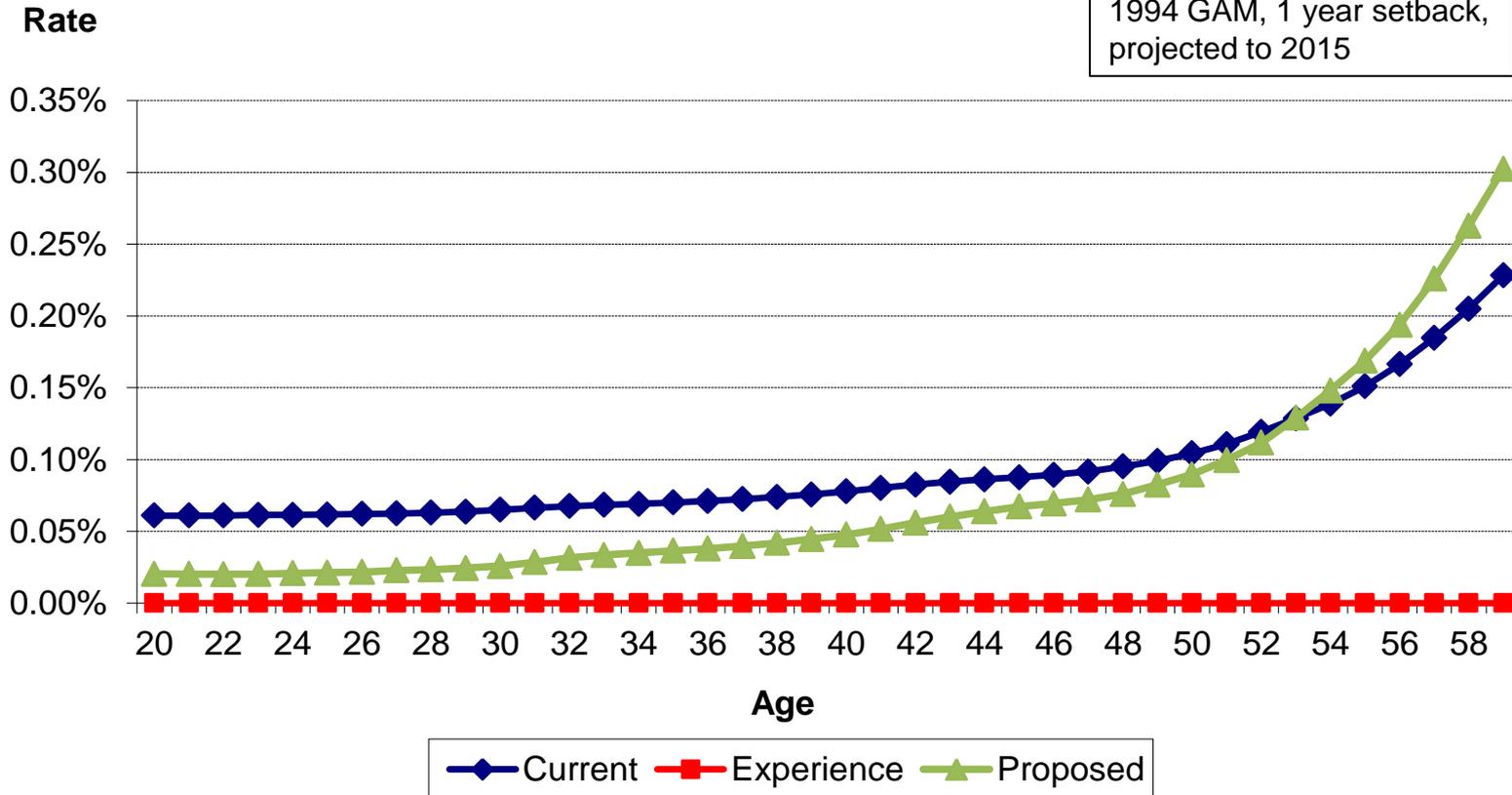
Experience - Actual deaths: 25    Expected deaths: 26.36    Current % A/E: 95%    Proposed % A/E: 112%

# State Patrol Retirement System

## 2012 Experience Analysis (2006-2011)

### Pre-retirement Mortality - Females

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



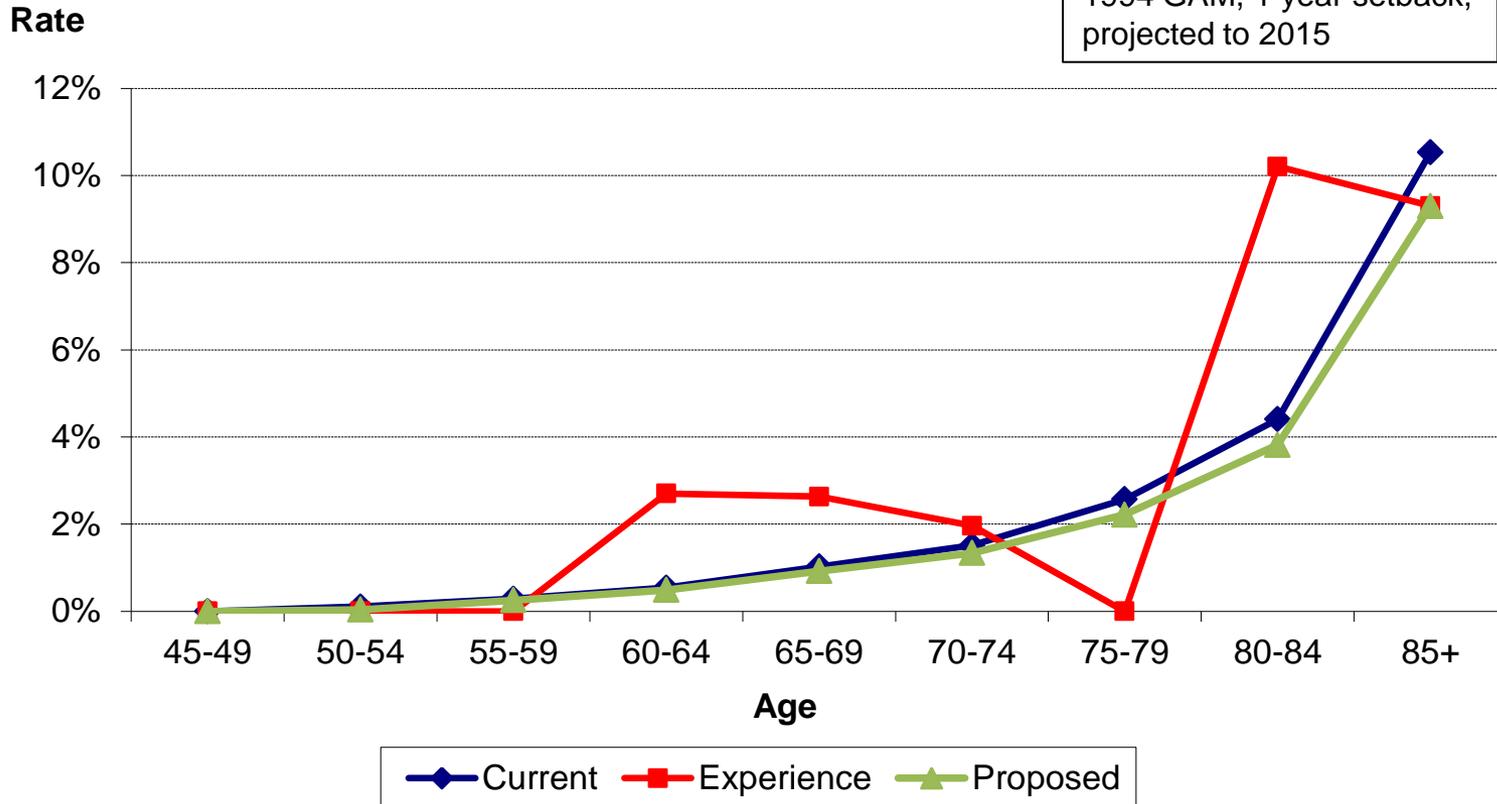
Experience - Actual deaths: 0    Expected deaths: 0.02    Current % A/E: 0%    Proposed % A/E: 0%

# 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 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> & 4 <sup>th</sup> 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

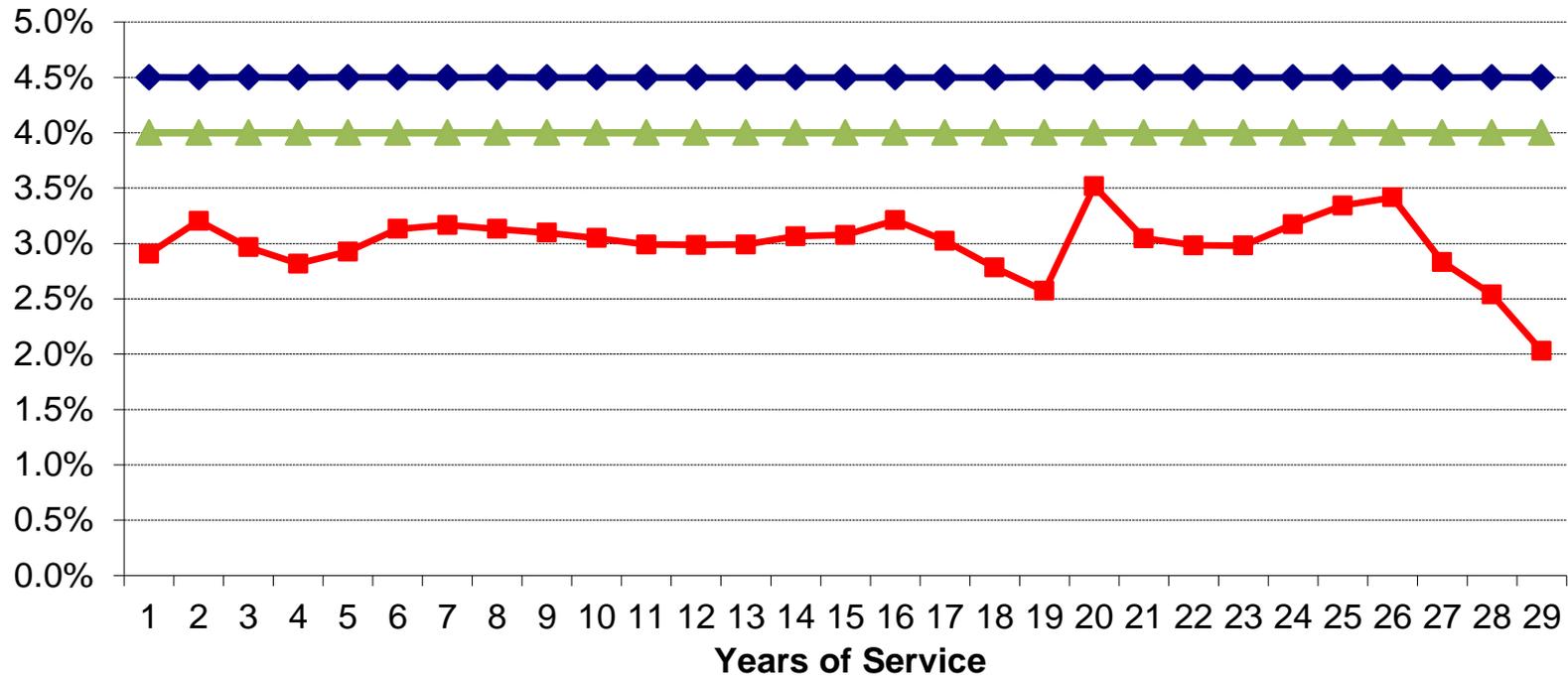
- **Graphs of Current and Proposed Demographic Assumptions**
- **Summary of Proposed Economic and Demographic Changes**
- **Summary of Impact of Economic and Demographic Changes**

# Judges' Retirement System

## 2012 Experience Analysis (2006-2011)

### Salary Increases (includes Inflation)

Rate



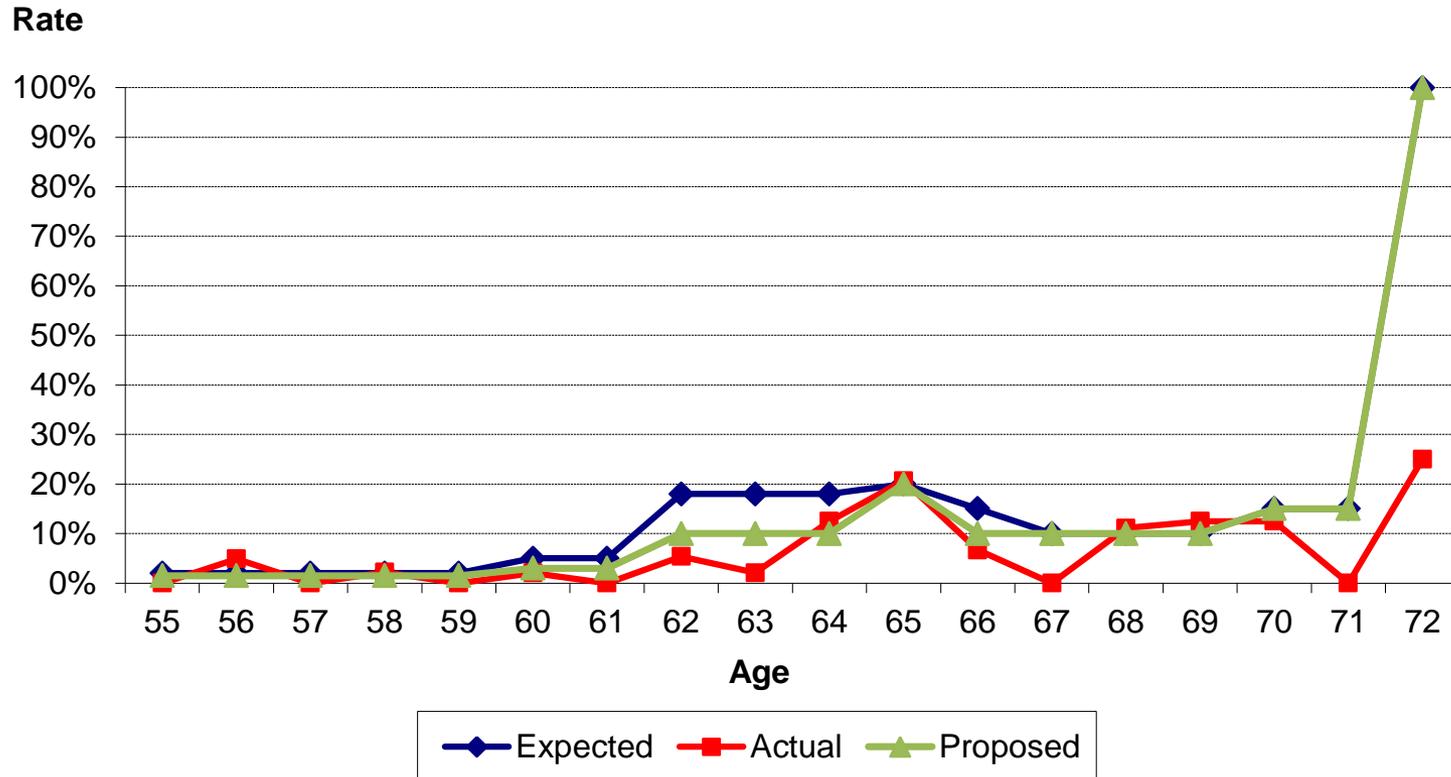
◆ Current   
 ■ Experience   
 ▲ Proposed

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

# Judges' Retirement System

## 2012 Experience Analysis (2006-2011)

### Retirement Rates

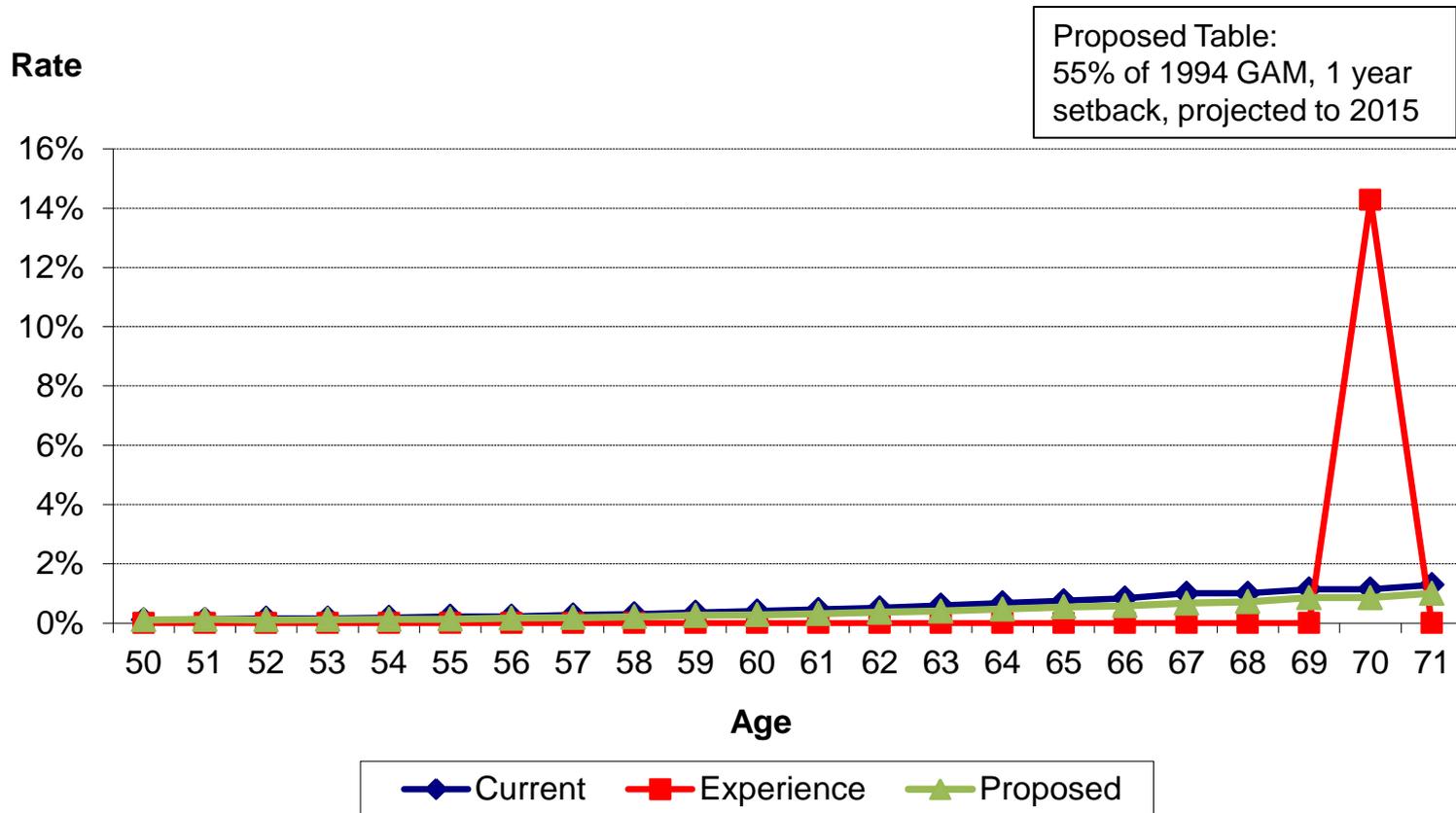


Experience - Actual retirements: 25    Expected retirements: 56.10    Current % A/E: 45%    Proposed % A/E: 61%

# Judges' Retirement System

## 2012 Experience Analysis (2006-2011)

### Pre-retirement Mortality - Males

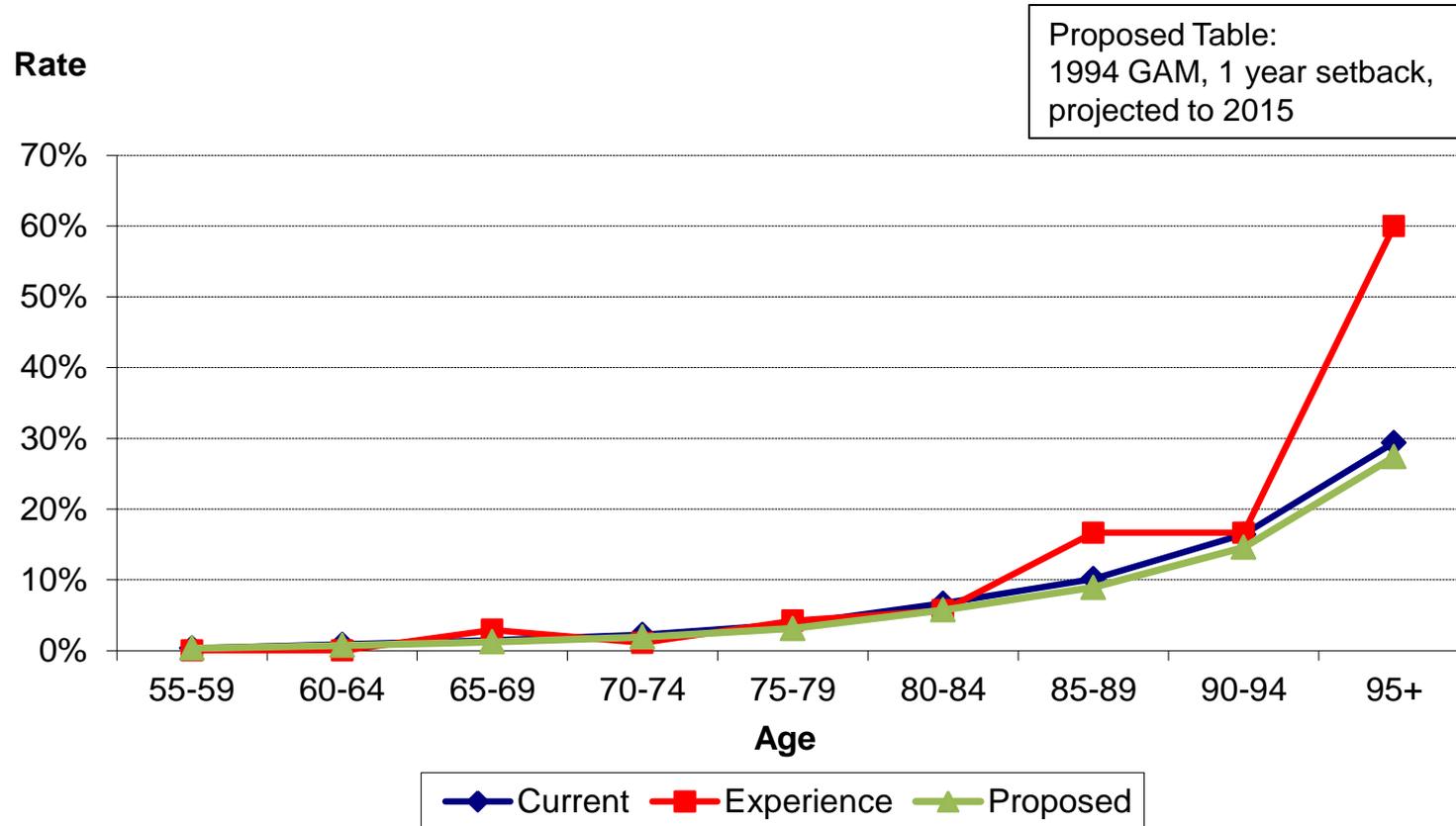


Experience - Actual deaths: 2    Expected deaths: 2.59    Current % A/E: 43%    Proposed % A/E: 61%

# Judges' Retirement System

## 2012 Experience Analysis (2006-2011)

### Post-retirement Mortality - Males



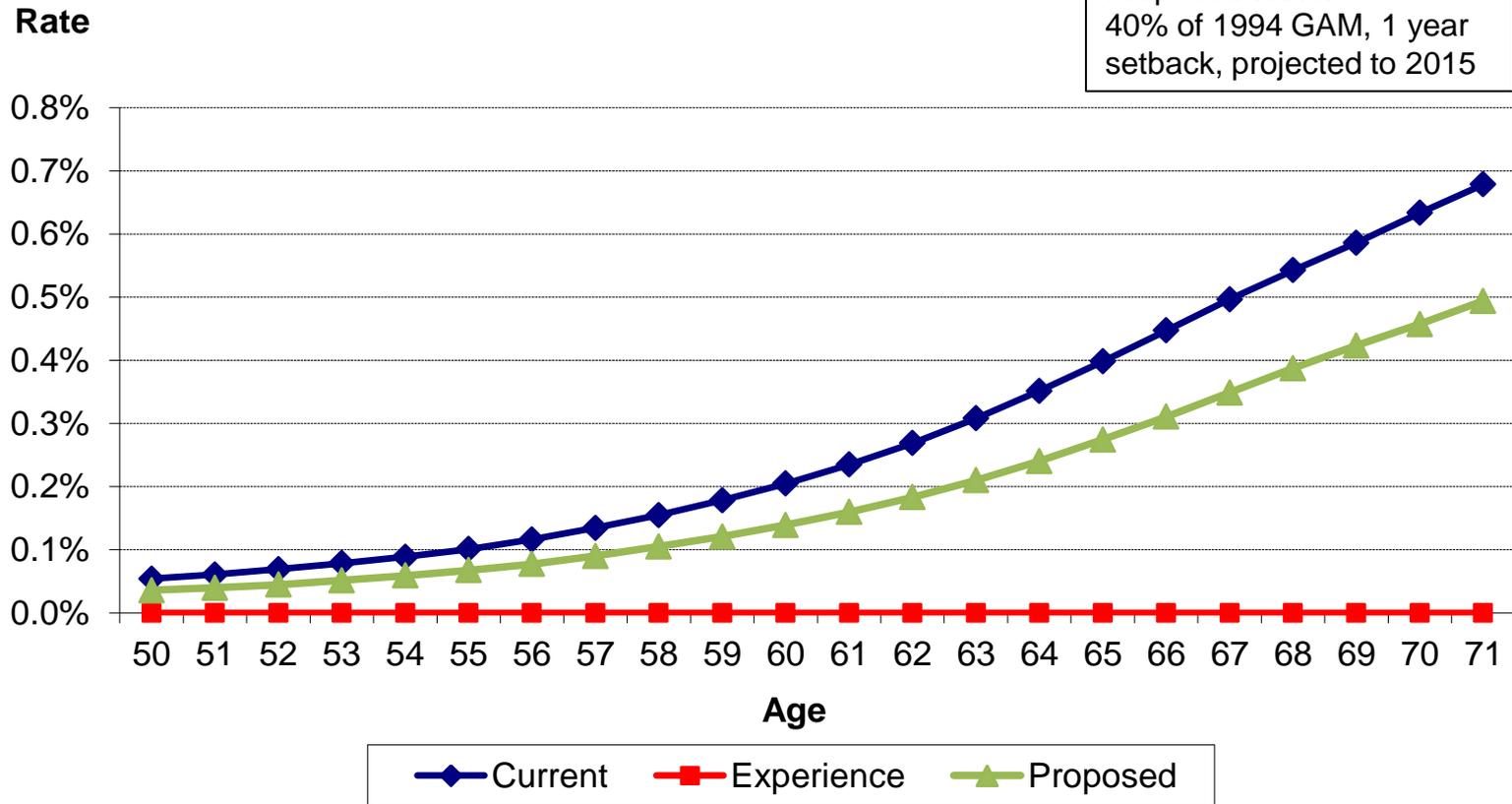
Experience - Actual deaths: 29    Expected deaths: 23.64    Current % A/E: 123%    Proposed % A/E: 141%

# Judges' Retirement System

## 2012 Experience Analysis (2006-2011)

### Pre-retirement Mortality - Females

Proposed Table:  
40% of 1994 GAM, 1 year  
setback, projected to 2015

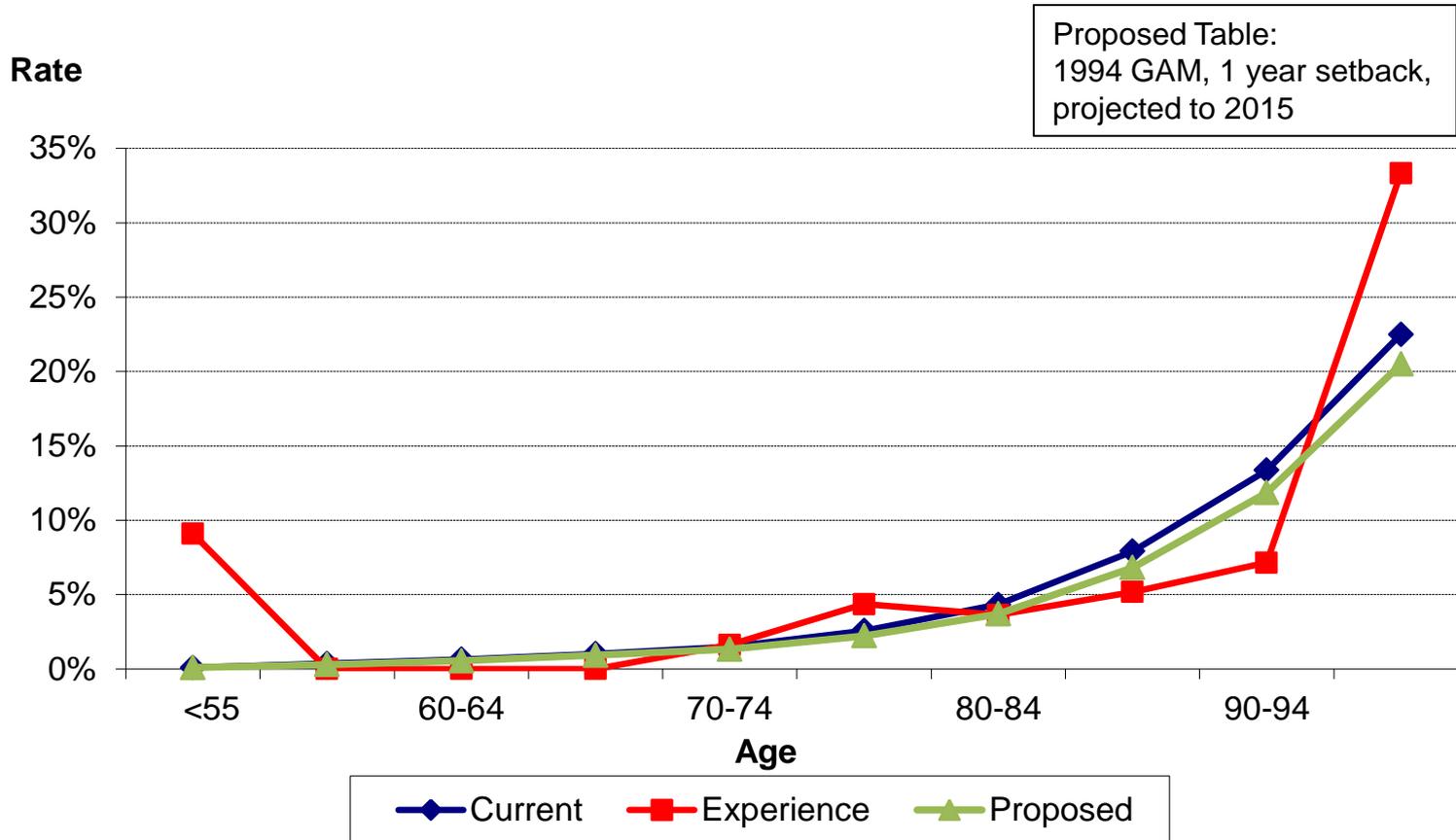


Experience - Actual deaths: 0    Expected deaths: 0.36    Current % A/E: 0%    Proposed % A/E: 0%

# 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)

Attachment L  
4171Z1

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%)

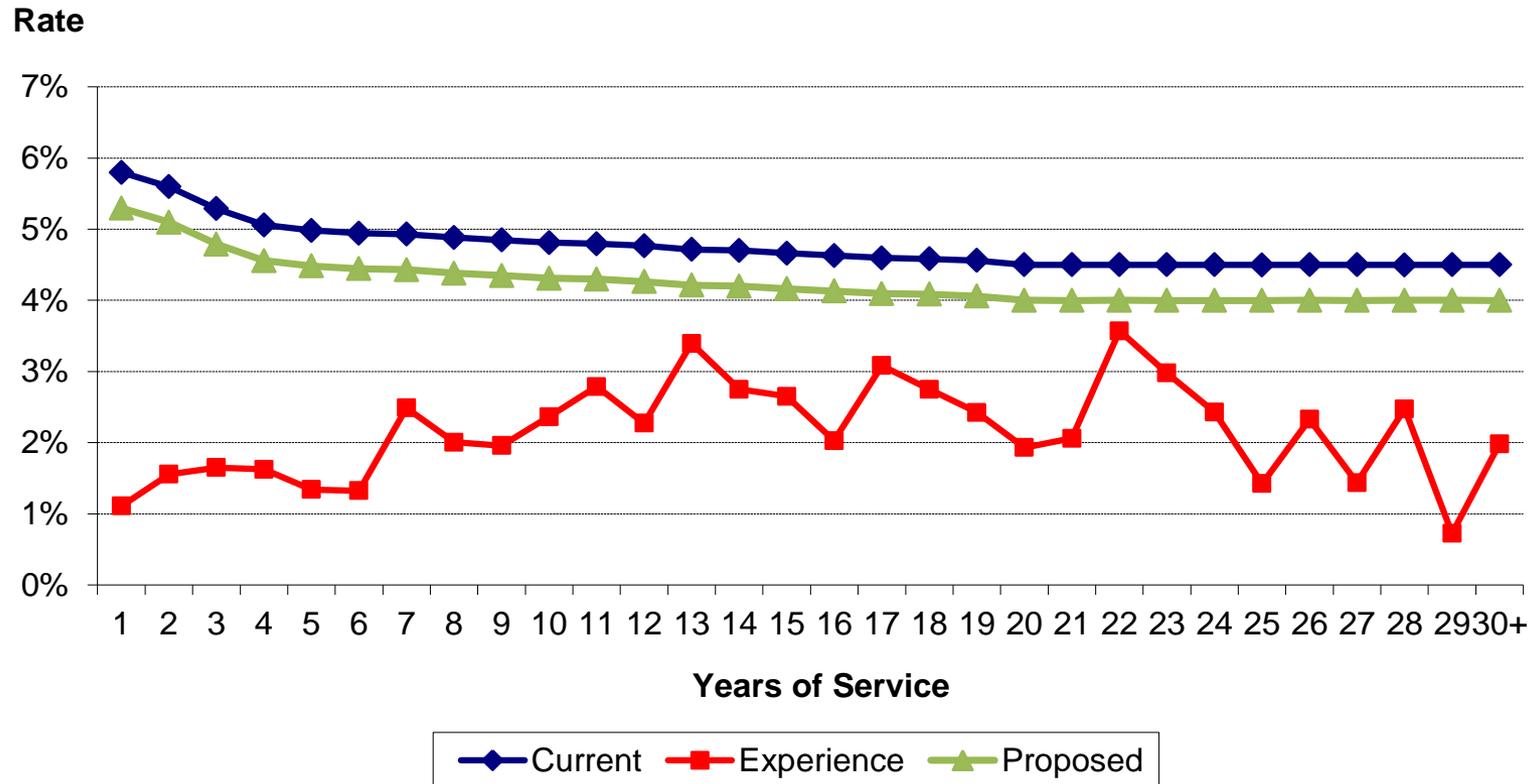
# State Cash Balance Benefit

- **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)

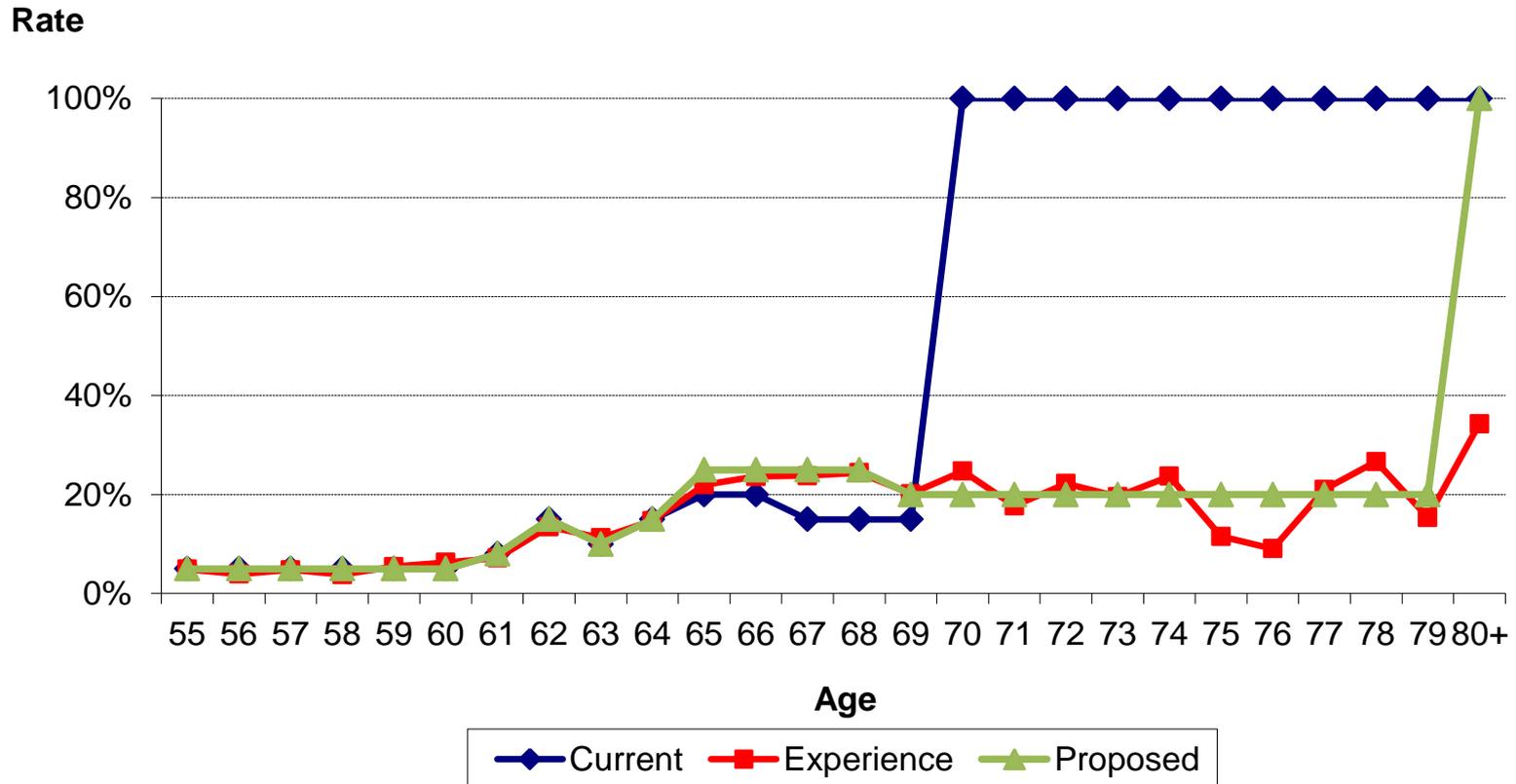


Current % A/E: 38%    Proposed % A/E: 42%

# State Cash Balance Benefit

## 2012 Experience Analysis (2007-2012)

### Retirement Rates (55/5)

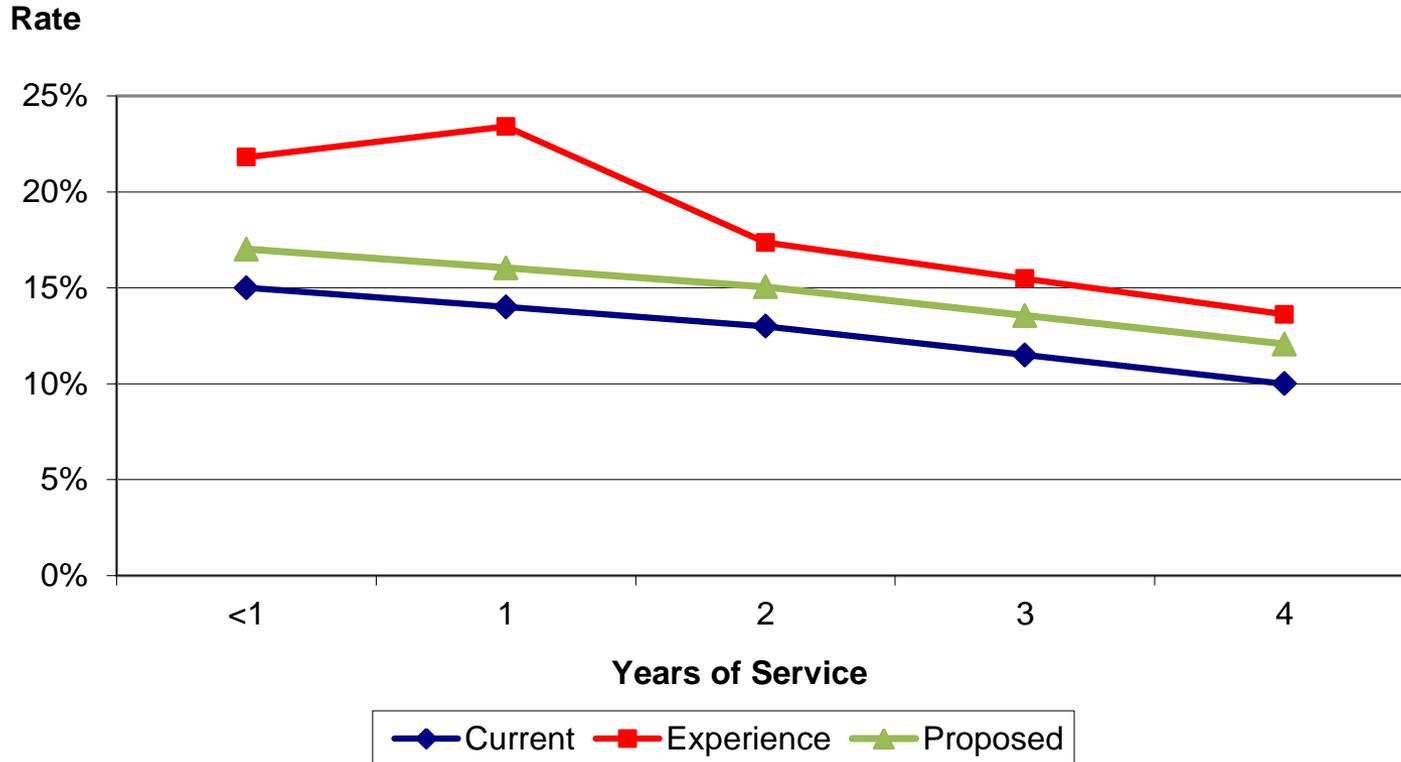


Experience - Actual retirements: 1,075    Expected retirements: 1,389    Current % A/E: 77%    Proposed % A/E: 94%

# State Cash Balance Benefit

## 2012 Experience Analysis (2007-2012)

### Withdrawal Rates (Select Rates Shown)

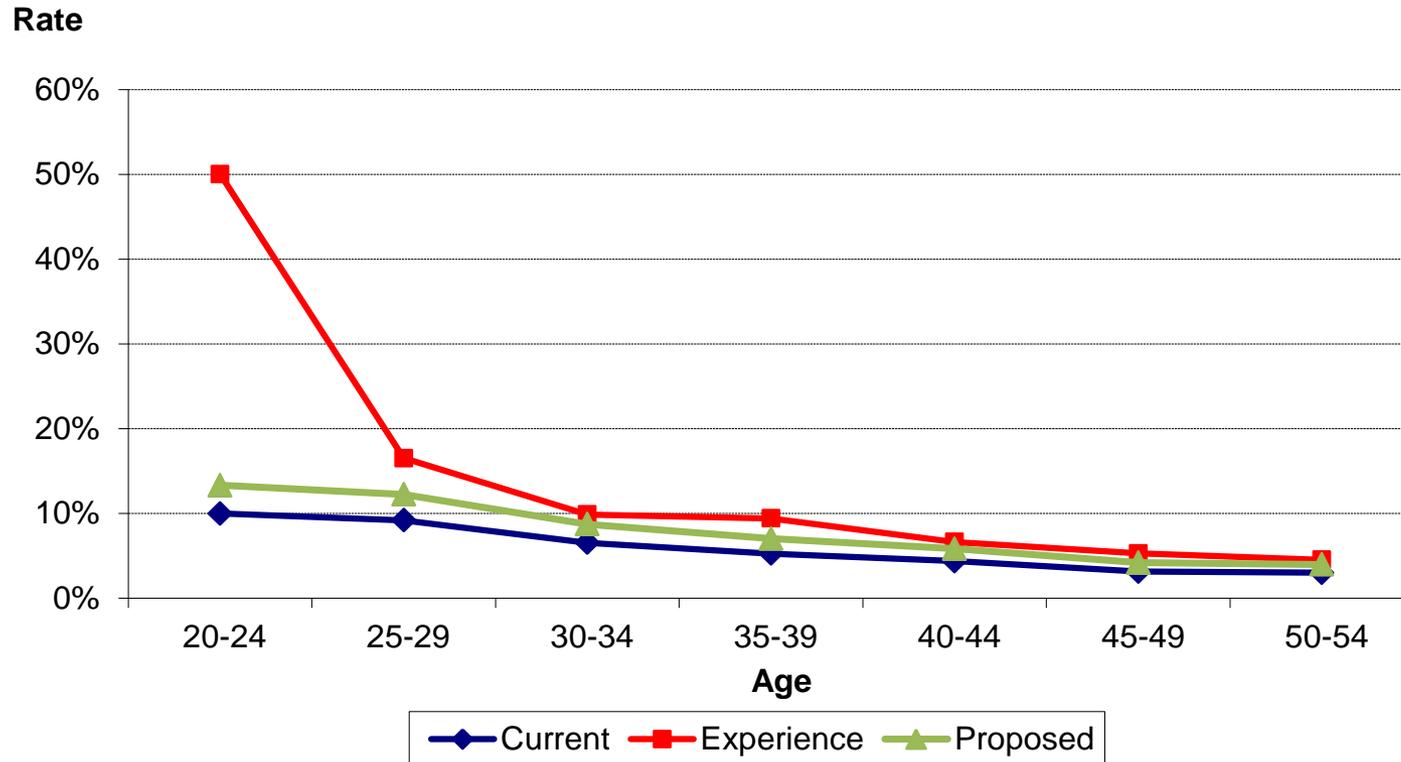


Experience - Actual turnover: 5,817    Expected turnover: 3,966    Current % A/E: 147%    Proposed % A/E: 127%

# State Cash Balance Benefit

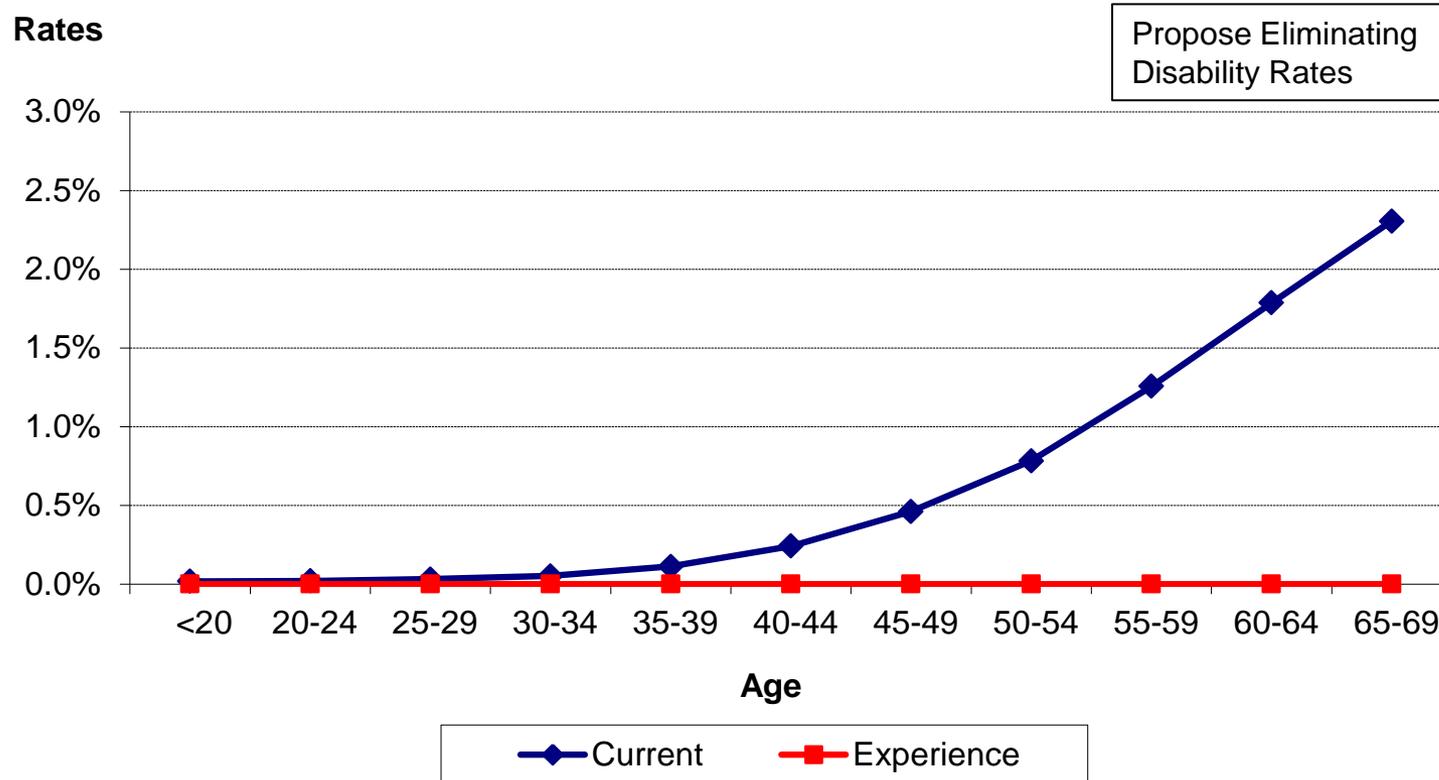
## 2012 Experience Analysis (2007-2012)

### 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%

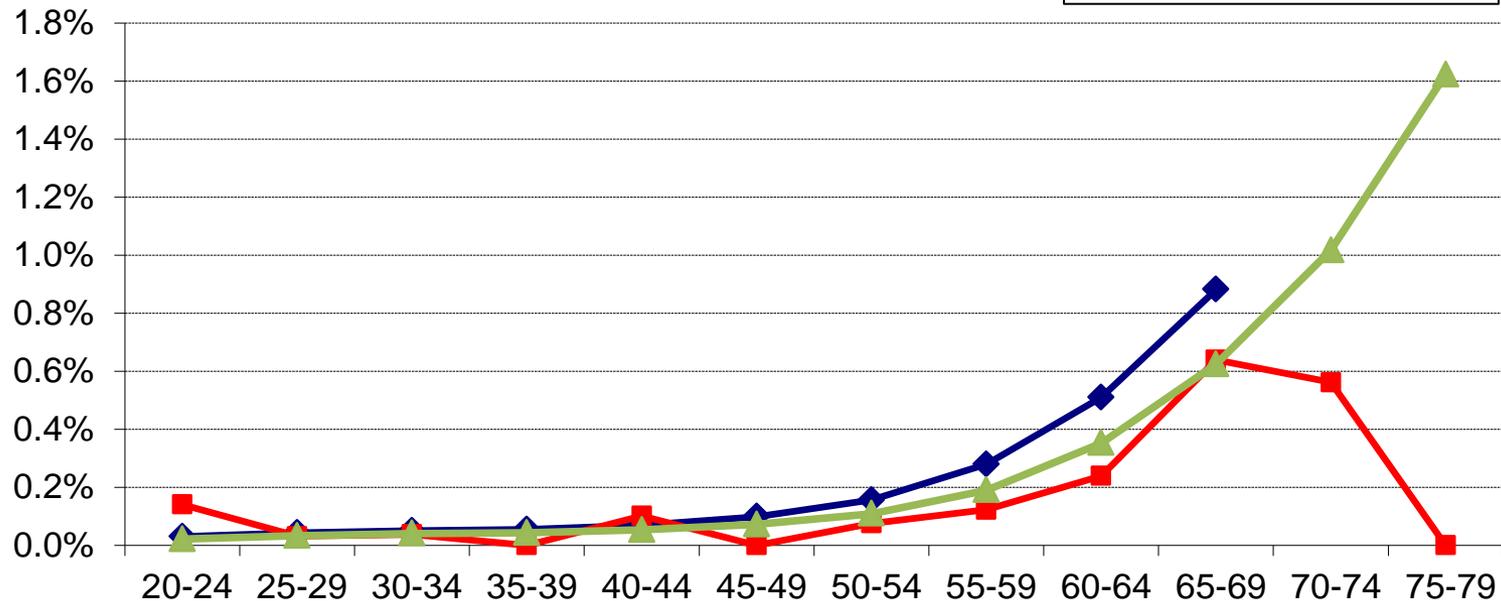
# State Cash Balance Benefit

## 2012 Experience Analysis (2007-2012)

### Pre-retirement Mortality - Males

Rate

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



Age

◆ Current    ■ Experience    ▲ Proposed

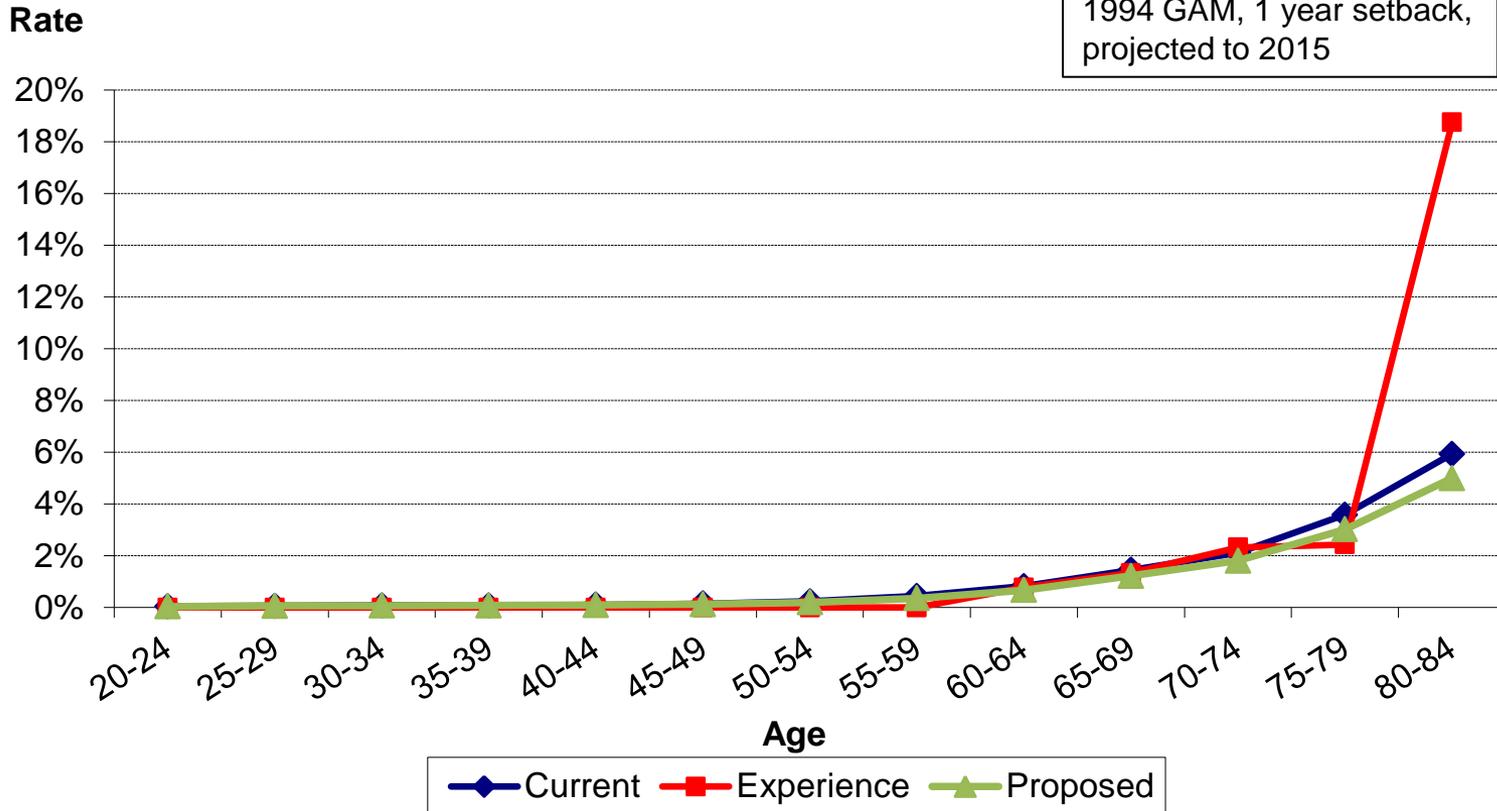
Experience - Actual deaths: 24    Expected deaths: 40.66    Current % A/E: 59%    Proposed % A/E: 77%

# State Cash Balance Benefit

## 2012 Experience Analysis (2007-2012)

### Post-retirement Mortality - Males

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

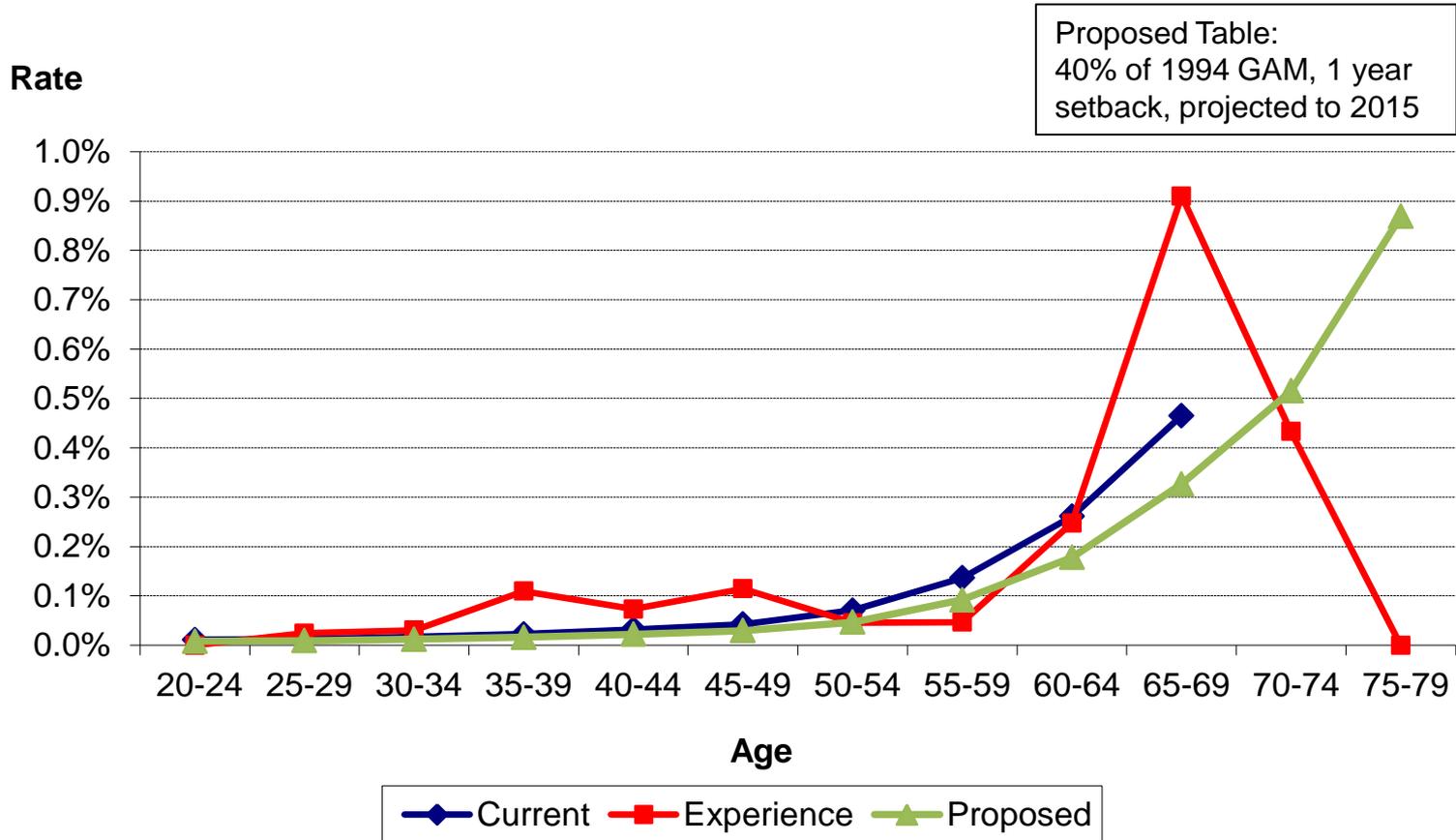


Experience - Actual deaths: 24    Expected deaths: 27.87    Current % A/E: 86%    Proposed % A/E: 102%

# State Cash Balance Benefit

## 2012 Experience Analysis (2007-2012)

### Pre-retirement Mortality - Females

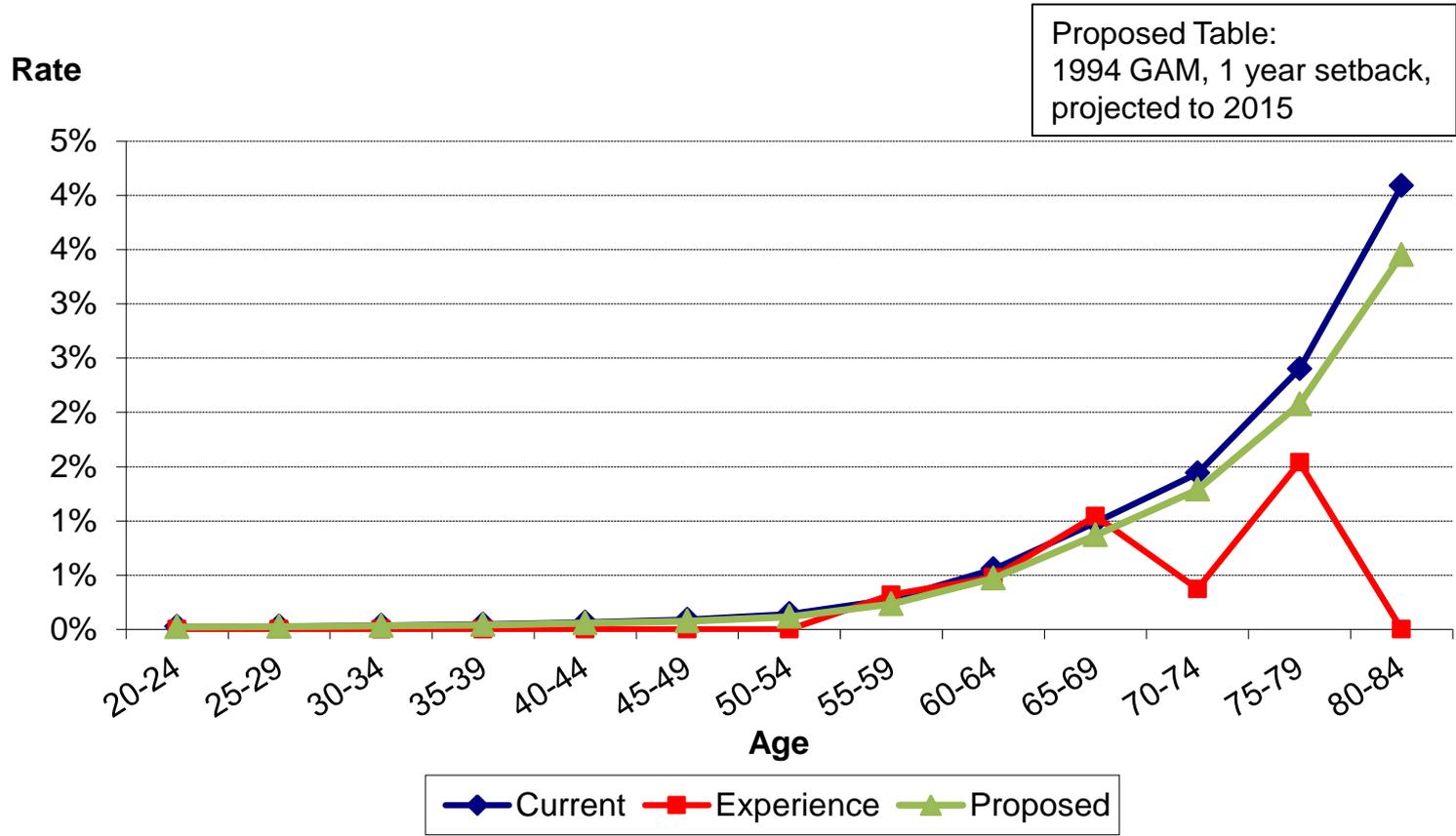


Experience - Actual deaths: 31    Expected deaths: 24.73    Current % A/E: 125%    Proposed % A/E: 166%

# 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%

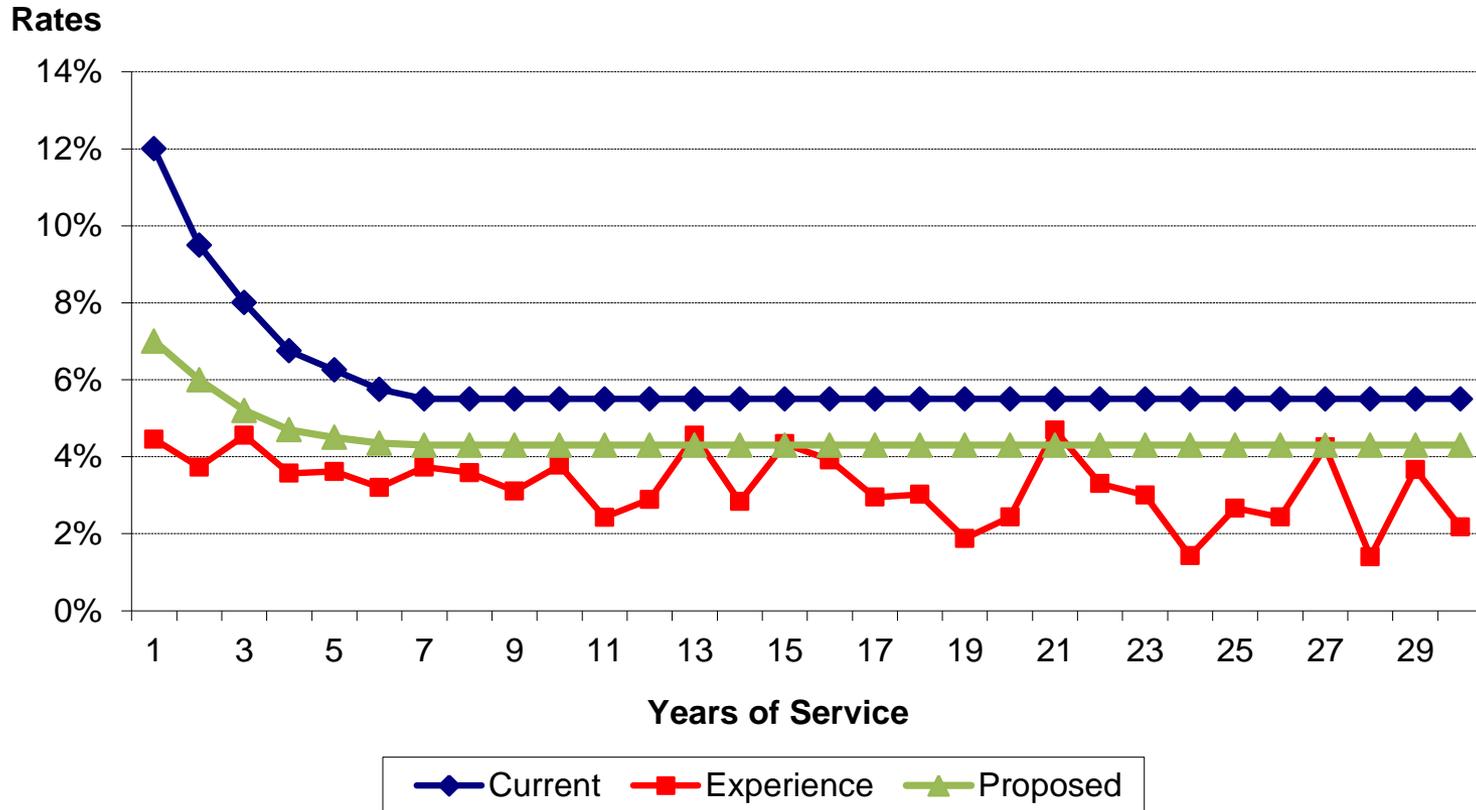
# County Cash Balance Benefit

- **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)

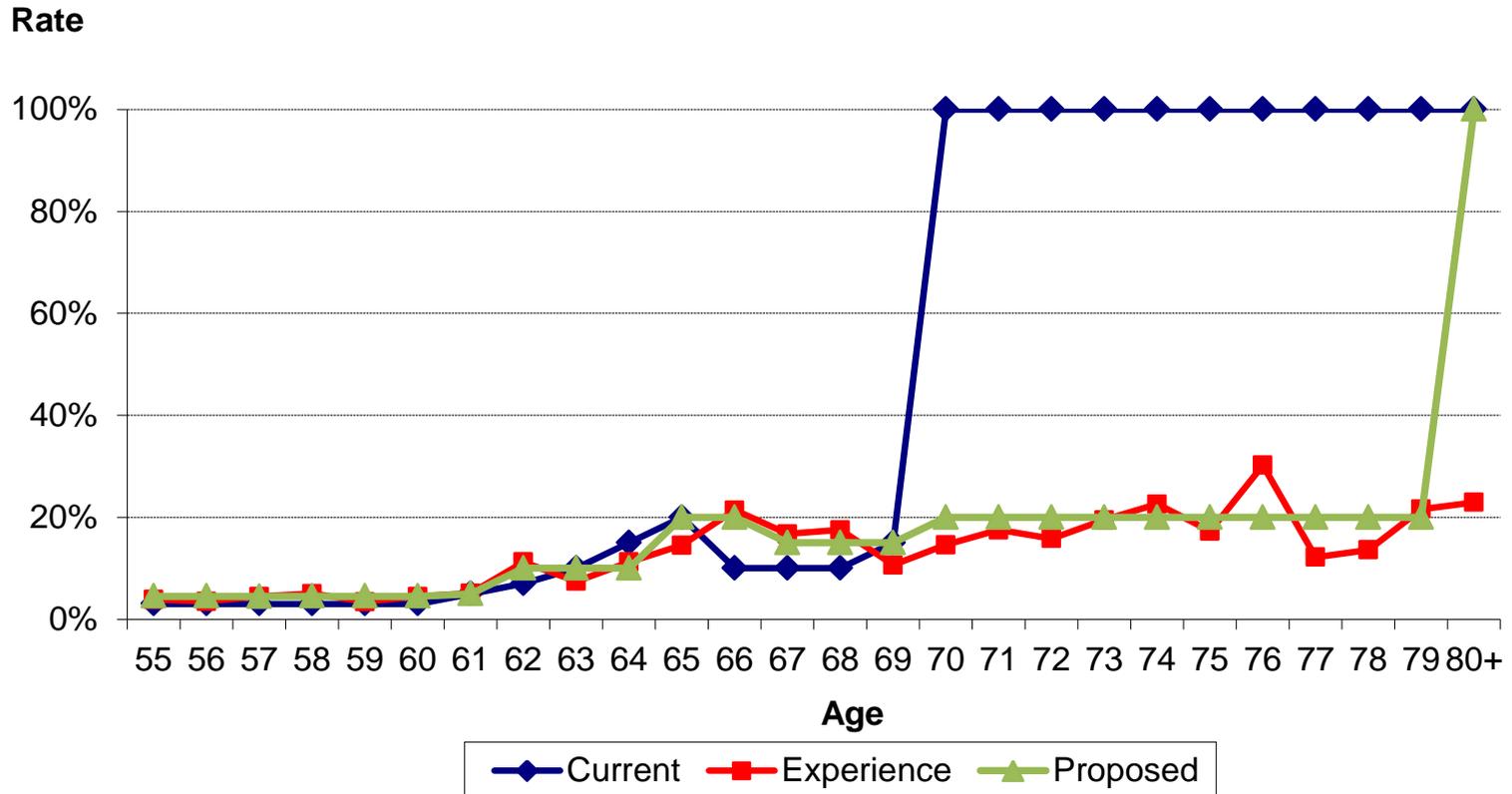


Current % A/E: 50%    Proposed % A/E: 72%

# County Cash Balance Benefit

## 2012 Experience Analysis (2007-2012)

### Retirement Rates (55/5)

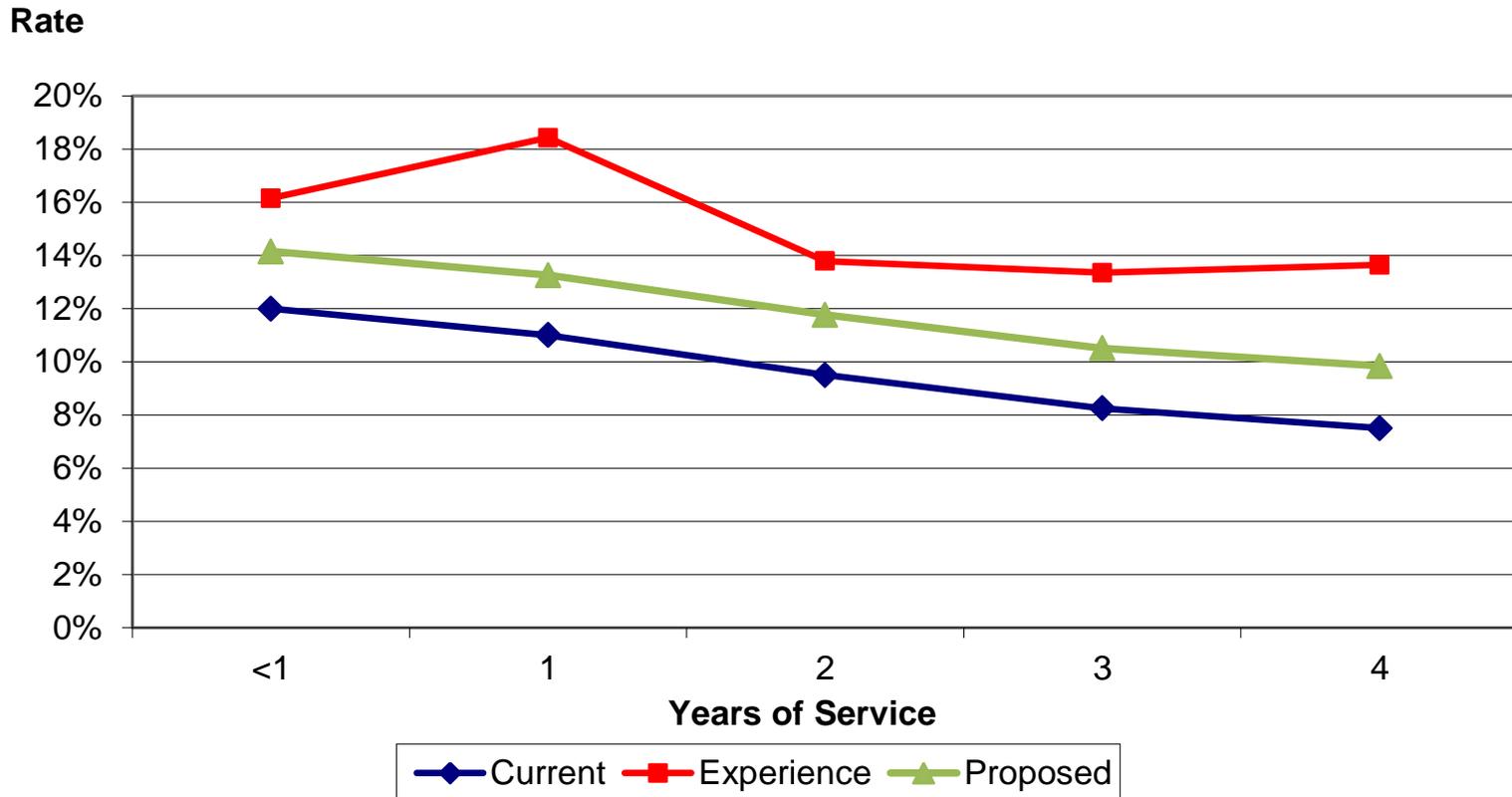


Experience - Actual retirements: 563    Expected retirements: 1,173    Current % A/E: 48%    Proposed % A/E: 83%

# County Cash Balance Benefit

## 2012 Experience Analysis (2007-2012)

### Withdrawal Rates (Select Rates Shown)

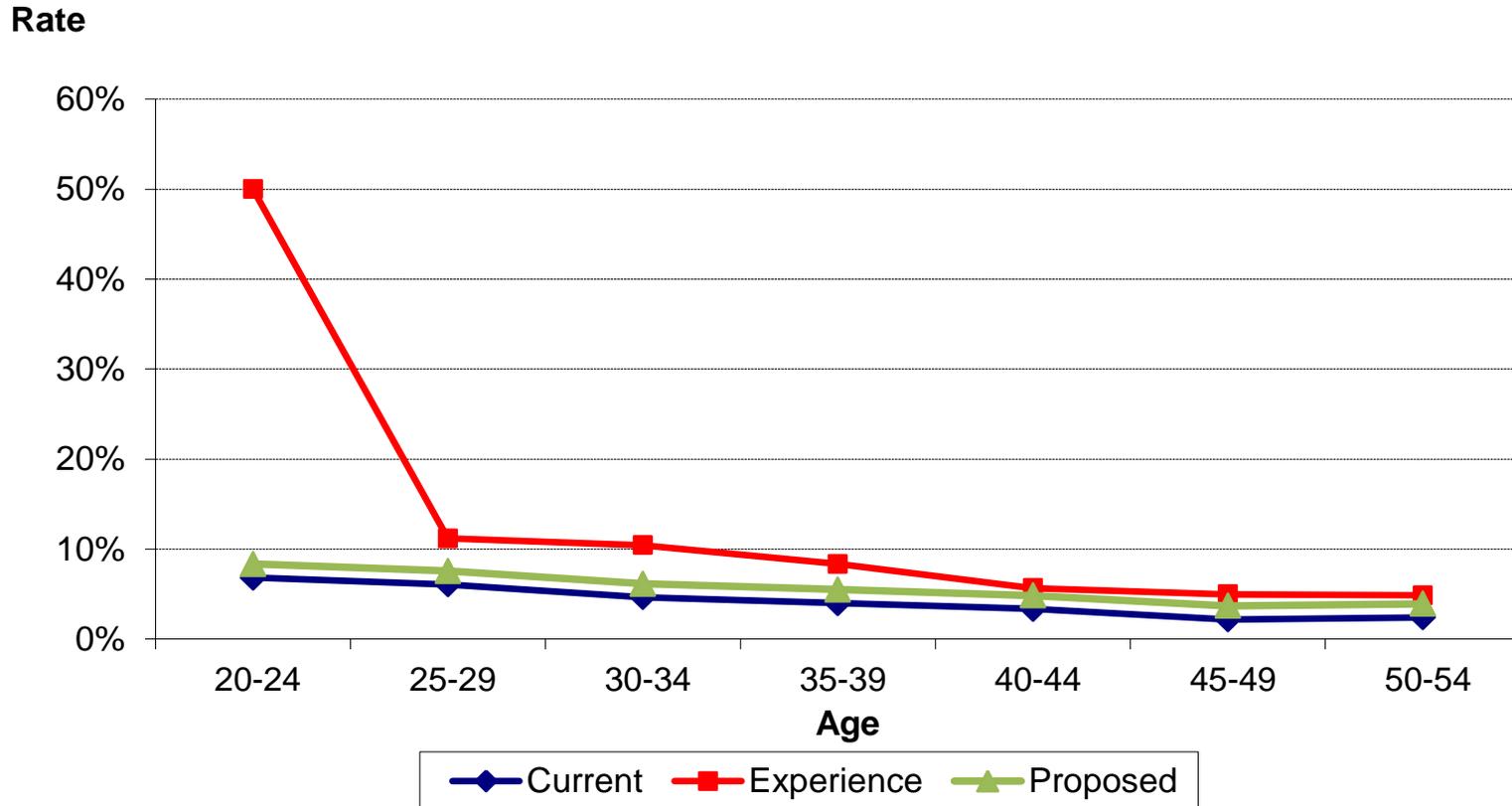


Experience - Actual turnover: 2,159    Expected turnover: 1,376    Current % A/E: 157%    Proposed % A/E: 128%

# County Cash Balance Benefit

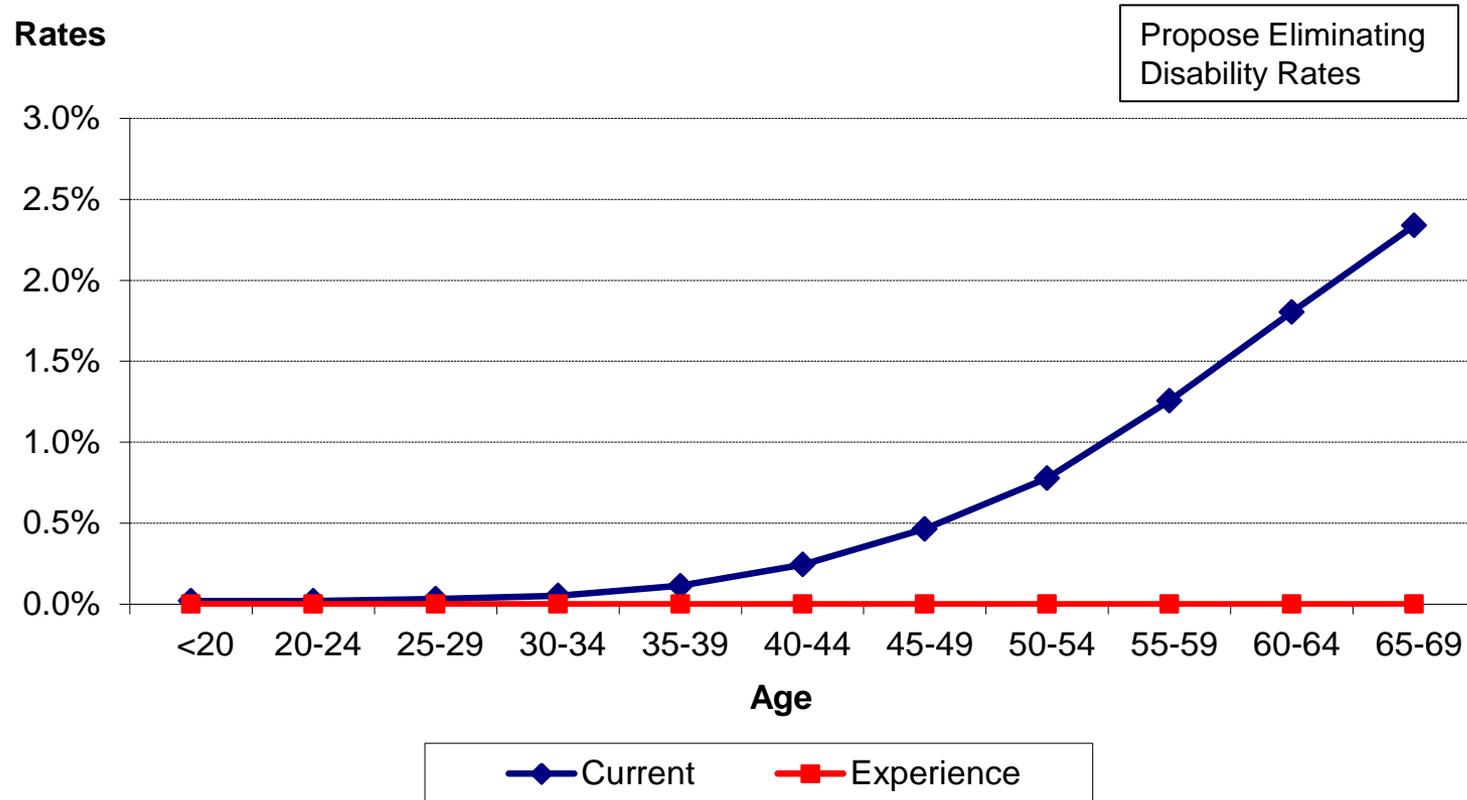
## 2012 Experience Analysis (2007-2012)

### Withdrawal Rates (Ultimate Rates Shown)



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

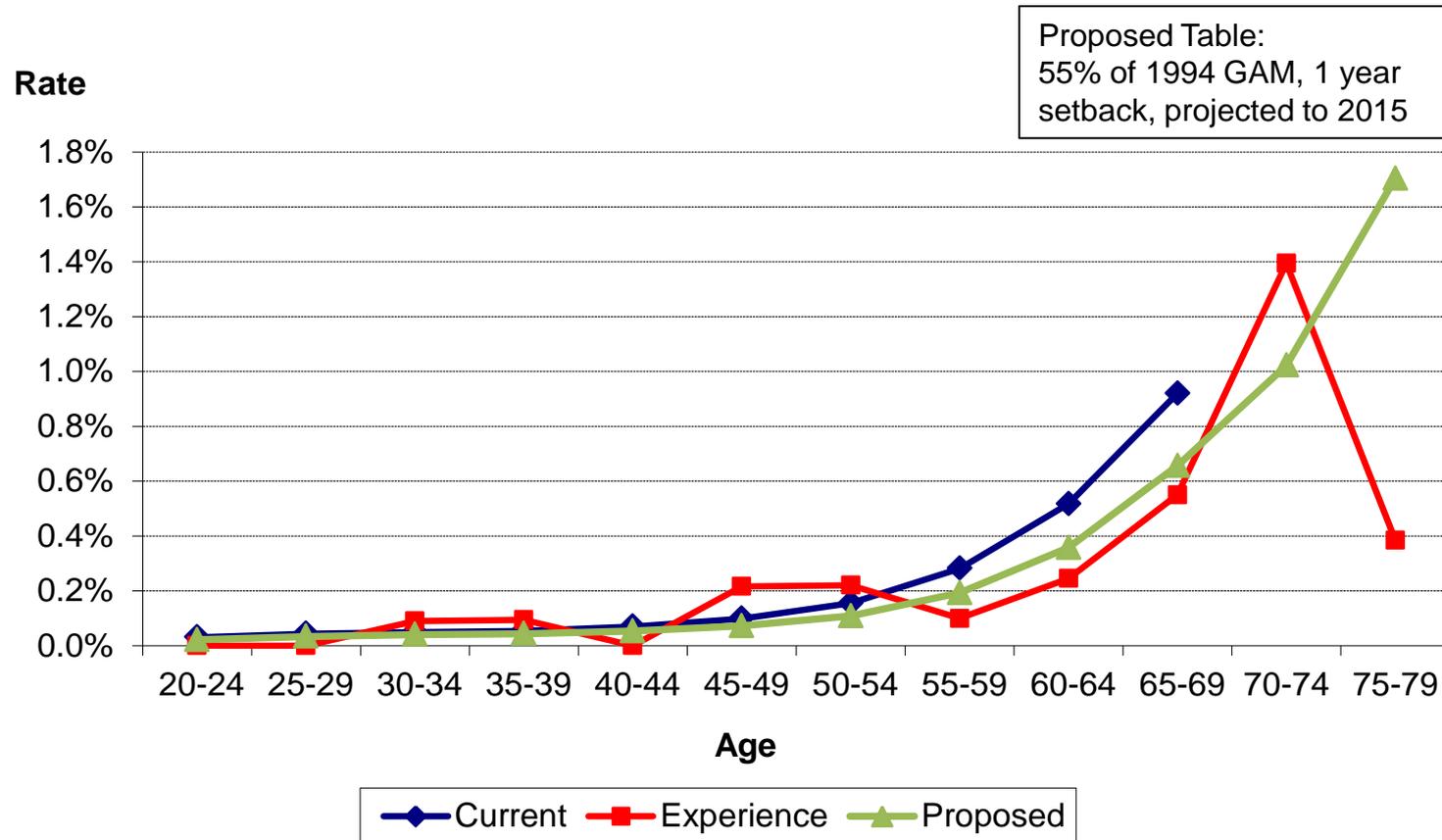


Experience - Actual disabilities: 0    Expected disabilities: 180    Current % A/E: 0%

# County Cash Balance Benefit

## 2012 Experience Analysis (2007-2012)

### Pre-retirement Mortality - Males

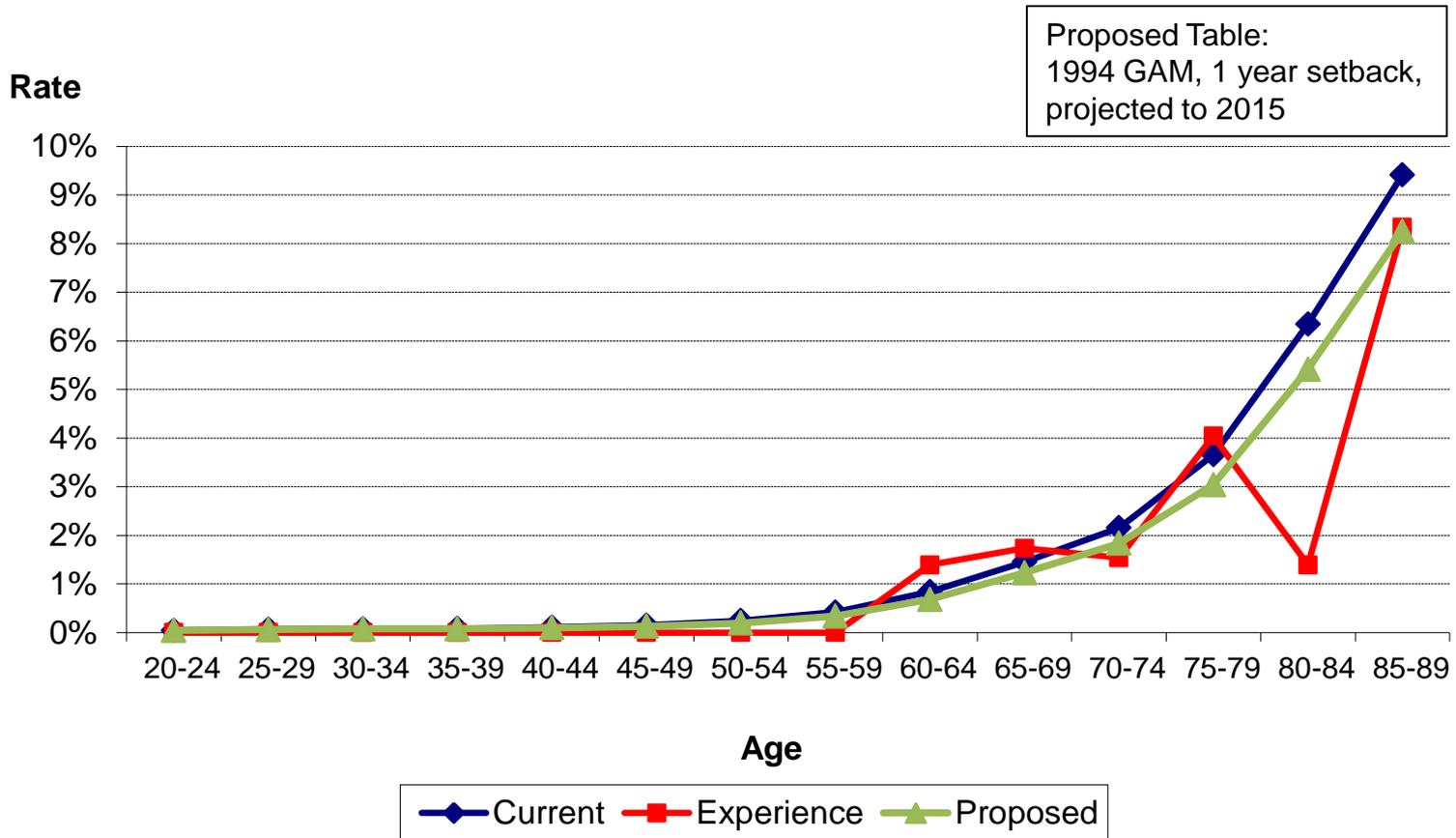


Experience - Actual deaths: 31    Expected deaths: 29.20    Current % A/E: 106%    Proposed % A/E: 103%

# 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%

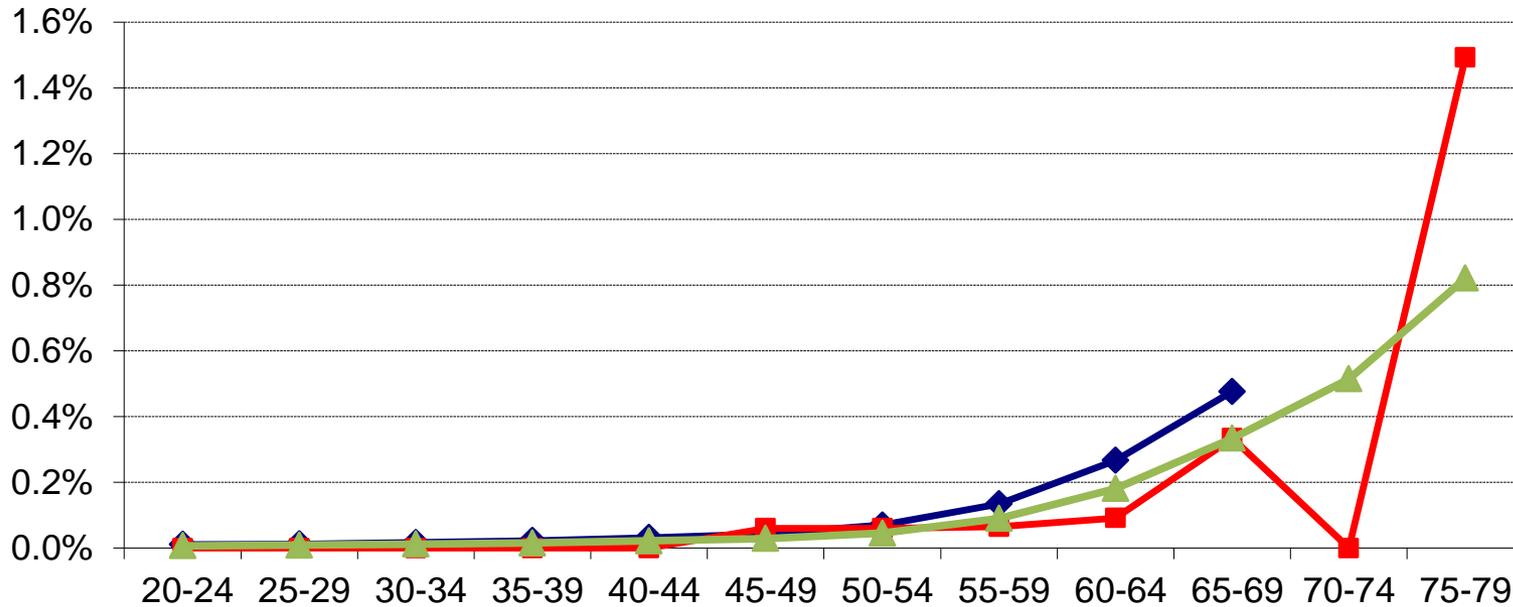
# County Cash Balance Benefit

## 2012 Experience Analysis (2007-2012)

### Pre-retirement Mortality - Females

Proposed Table:  
40% of 1994 GAM, 1 year  
setback, projected to 2015

Rate



Age

◆ Current    ■ Experience    ▲ Proposed

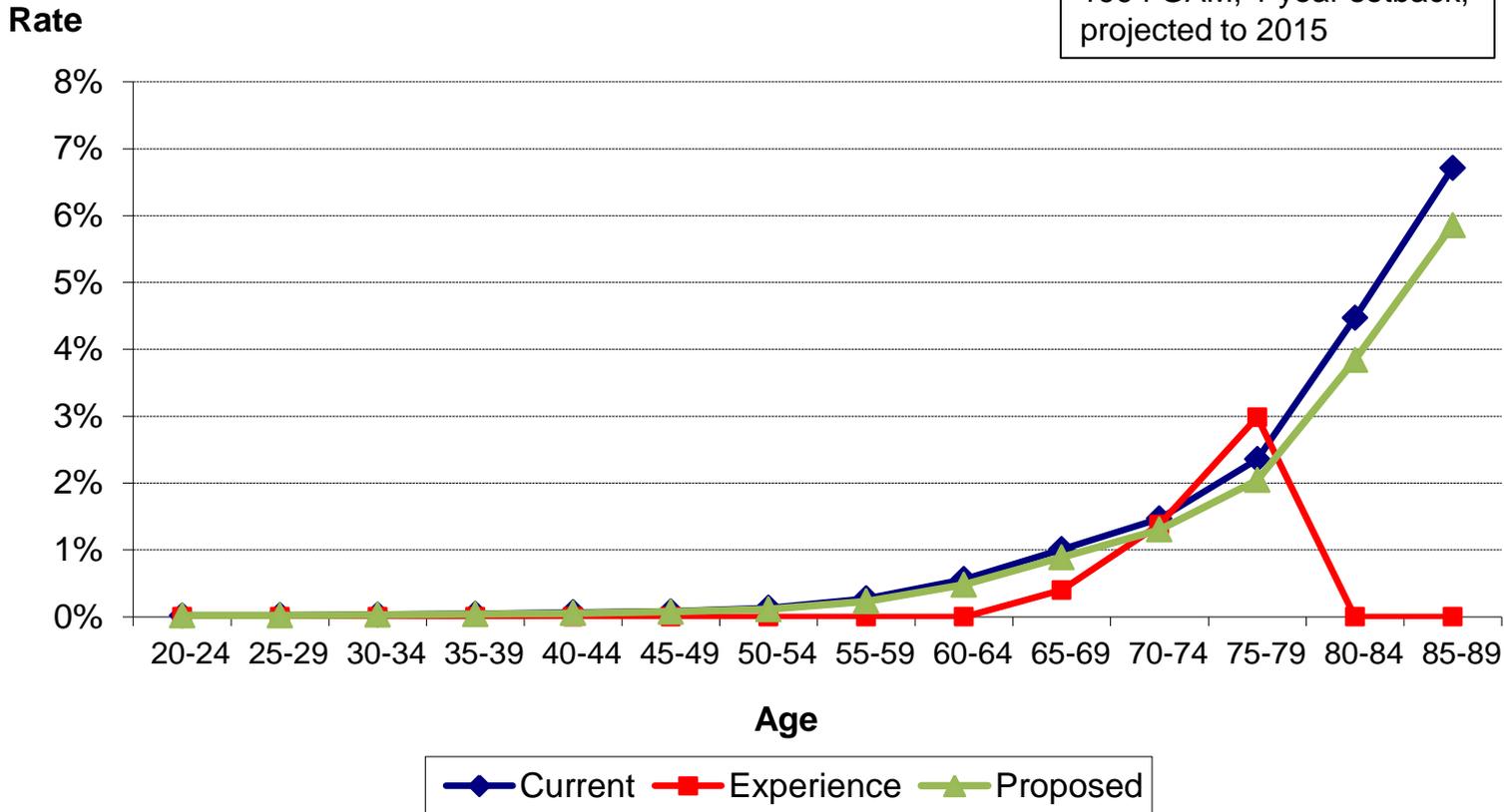
Experience - Actual deaths: 7    Expected deaths: 10.76    Current % A/E: 65%    Proposed % A/E: 78%

# 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%

BUCK

Questions?