

**July 1, 2004 to June 30, 2007 Experience Study  
Oklahoma Public Employees  
Retirement System**

**Prepared by:**

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May 12, 2008

Board of Trustees  
Oklahoma Public Employees Retirement System  
5801 N. Broadway Extension, Suite 400  
Oklahoma City, OK 73152-3007

Dear Members of the Board:

It is a pleasure to submit this report of our investigation of the experience of the Oklahoma Public Employees Retirement System (OPERS) and the Uniform Retirement System for Judges and Justices (URSJJ) for the period beginning July 1, 2004 and ending June 30, 2007. The study was based on the data submitted by the System for the annual valuations of the System. In preparing our report we relied, without audit, on the data provided.

The purpose of this report is to communicate the results of our review of the actuarial methods and the economic and demographic assumptions to be used in the completion of future valuations. Several of our recommendations represent changes from the prior methods or assumptions and are designed to better anticipate the emerging experience of the System.

We have provided financial information showing the estimated impact of the recommended assumptions, if they had been reflected in the July 1, 2007 actuarial valuation. We believe the recommended assumptions provide a reasonable estimate of anticipated experience affecting OPERS and URSJJ. Nevertheless, the emerging costs will vary from those presented in this report to the extent that actual experience differs from that projected by the actuarial assumptions. Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as the following:

- Plan experience differing from the actuarial assumptions,
- Future changes in the actuarial assumptions,
- Increases or decreases expected as part of the natural operation of the methodology used for these measurements, and
- Changes in the plan provisions or accounting standards.

Due to the scope of this assignment, we did not perform an analysis of the potential range of such measurements.

In preparing this report, we relied without audit on information (some oral and some in writing) supplied by OPERS' staff. This information includes, but is not limited to, statutory provisions, employee data, and financial information. In our examination, after discussion with OPERS, we have found the data to be reasonably consistent and comparable with data used for other purposes. Since the experience study results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete or missing. It should be noted that if any data or other information is inaccurate or incomplete, our determinations might need to be revised.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the principles prescribed by the Actuarial Standards Board (ASB) and the Code of Professional Conduct and Qualification Standards for Public Statements of Actuarial Opinion of the American Academy of Actuaries.

We further certify that the assumptions developed in this report satisfy ASB Standards of Practice, in particular, No. 27 (Selection of Economic Assumptions for Measuring Pension Obligations) and No. 35 (Selection of Demographic and Other Non-economic Assumptions for Measuring Pension Obligations).

Milliman's work product was prepared exclusively for OPERS for a specific and limited purpose. It is a complex, technical analysis that assumes a high level of knowledge concerning OPERS' operations, and uses OPERS' data, which Milliman has not audited. It is not for the use or benefit of any third party for any purpose. Any third recipient of Milliman's work product who desires professional guidance should not rely upon Milliman's work product, but should engage qualified professionals for advice appropriate to its own specific needs.

We would like to acknowledge the help in the preparation of the data for this investigation given by the OPERS staff.

We look forward to reviewing the results of our study with you at the next Board meeting.

I, Patrice A. Beckham, F.S.A., am a member of the American Academy of Actuaries and a Fellow of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

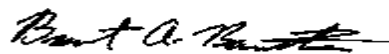
I, Brent A. Banister, F.S.A., am a member of the American Academy of Actuaries and a Fellow of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully Submitted,

MILLIMAN, INC.



Patrice A. Beckham, F.S.A.  
Consulting Actuary



Brent A. Banister, F.S.A.  
Consulting Actuary

Enclosure

## TABLE OF CONTENTS

### Letter of Transmittal

#### Section

1.	Executive Summary	Page 1
2.	Introduction	Page 9
3.	Actuarial Methods	Page 11
4.	Economic Assumptions	Page 18
5.	Demographic Assumptions	Page 31
6.	Retiree Mortality	Page 33
7.	Death from Active Status	Page 36
8.	Retirement	Page 37
9.	Disability	Page 40
10.	Termination of Employment	Page 41
11.	Probability of Refund Election by Vested Members	Page 43
12.	Merit Salary Scale	Page 44
13.	Financial Impact	Page 47

### APPENDICES

A – Current and Proposed Assumptions (OPERS)

B – Current and Proposed Assumptions (URSJJ)

C – Supporting Documentation

# OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM

## JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY

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### Section 1

## EXECUTIVE SUMMARY

#### Overview

Any actuarial valuation is based on certain underlying assumptions. Determining the actuarial contribution rate is highly dependent on the assumptions that the actuary uses to project the future benefit payments and then to discount the value of future benefits to determine the present values. Thus, the assumptions are critical in assisting the system in adequately pre-funding for the benefits prior to retirement.

To assess the reasonableness of the assumptions used in the valuation, they should be studied regularly. This process is called an investigation of experience (or experience study).

#### Summary of Results

This section describes the key findings of this investigation of experience of the Oklahoma Public Employees Retirement System (OPERS) and the Uniform Retirement System for Justices and Judges (URSJJ) for the period July 1, 2004 through June 30, 2007. The experience study includes analysis of both the actuarial methods and assumptions used in the valuation. We are recommending changes to the assumptions and one change to the actuarial methodology. We will refer to our recommended assumptions as the “proposed” assumptions.

The key actuarial methods used in the valuation are the actuarial cost method, the asset smoothing method and the amortization methodology. We reviewed the cost method and asset smoothing method and concluded they are still appropriate.

While the current amortization method and period are reasonable, they result in a decreasing UAAL contribution as a percent of payroll. The Systems are financed by statutory contribution rates, which increase for a number of years and then remain at that fixed level. Because the System’s financing is based on contribution rates that apply to covered payroll we believe it is consistent with the funding mechanism to develop the UAAL payment as a level percent of payroll. In addition, the level dollar amortization approach makes it difficult to evaluate the sufficiency of the scheduled contribution rates and the long-term cost of the System. We recommend the amortization period be retained, but the methodology be changed to the level percent of payroll method.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**OPERS**

The following table shows a summary of the results of the study.

Assumption	Recommendation
Inflation	Increase from 2.5% to 3.0%
Investment Return	No change
Wage Growth	New assumption introduced: 4.25%
Retiree Mortality	No change
Death while Active	No change
Retirement	Modify for regular, elected & HD
Disability	No change
Termination	Extend select period to 10 years
Probability of Refund	Introduce new assumption for regular members only
Merit Salary Scale	No change

If adopted, the new assumptions would result in an increase in the Unfunded Actuarial Accrued Liability and the actuarial contribution rate. This is discussed further in the Financial Impact section at the end of the Executive Summary.

**Economic Assumptions**

Section 4 discusses the economic assumptions: price inflation, general wage growth (includes price inflation and productivity), cost of living adjustment, and the investment return assumption. We have recommended several changes.

We recommend increasing the long-term assumed inflation rate, which will be used to build the net investment return and wage growth assumptions, to 3.00% per year. Social Security projections use a range between 1.80% and 3.80%, and we believe this is reasonable for an actuarial valuation of a retirement system. Our recommendation, within that range, is 3.00% per year.

As part of determining the Systems' contribution rate, we are recommending the unfunded actuarial accrued liability be amortized with payments that are a level percent of payroll. The general wage increase assumption is used to project covered payroll in future years which determines the amortization payment of the UAAL.

The excess of wage growth over price inflation (real wage growth) represents the increase in the standard of living, also called productivity growth. We believe that a range between 0.50% and 1.75% is reasonable for the assumed increase in real wages. Based on our judgment and the underlying inflation assumption of 3.00%, we recommend that the long-term assumed wage inflation rate be set to 4.25% per year. As a result the UAAL amortization payments will increase 4.25% per year.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

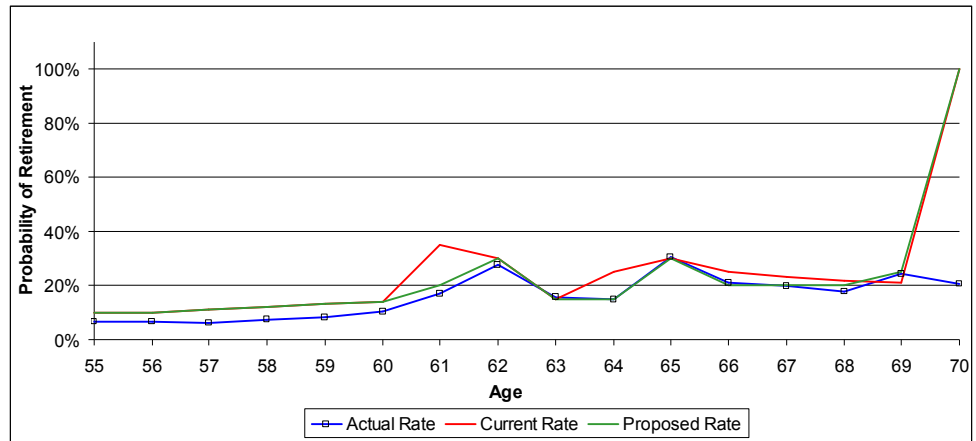
**Retiree Mortality** Overall, the actual number of deaths for retirees was higher than expected, as indicated by an actual-to-expected ratio above 100%. It is prudent to have a “margin”, produced by using lower mortality rates than are actually occurring, which provides for future mortality improvements. The current margin is sufficient and we are not recommending any change to this assumption.

Retire Deaths			
	Actual	Expected	Actual/Expected
Males	1,114	847	132%
Females	936	779	120%

**Death While Active** Overall, the actual number of deaths from active status was less than expected, i.e. the actual-to-expected ratio was 83%. Given that active mortality may be impacted by members terminating or becoming disabled before death, this result is acceptable. We are not recommending any change to this assumption.

Deaths While Active		
Actual	Expected	Actual / Expected
161	193	83%

**Retirement** Overall, the actual number of retirements was less than the assumptions predicted for both early (reduced) and normal (unreduced) retirements. The following graph shows the results for all regular members eligible for unreduced retirement.



Although the actual-to-expected ratio was 89%, there were more retirements before age 55 and fewer than expected after age 60. We are recommending changes to the rates of retirement to better fit the actual observed experience.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

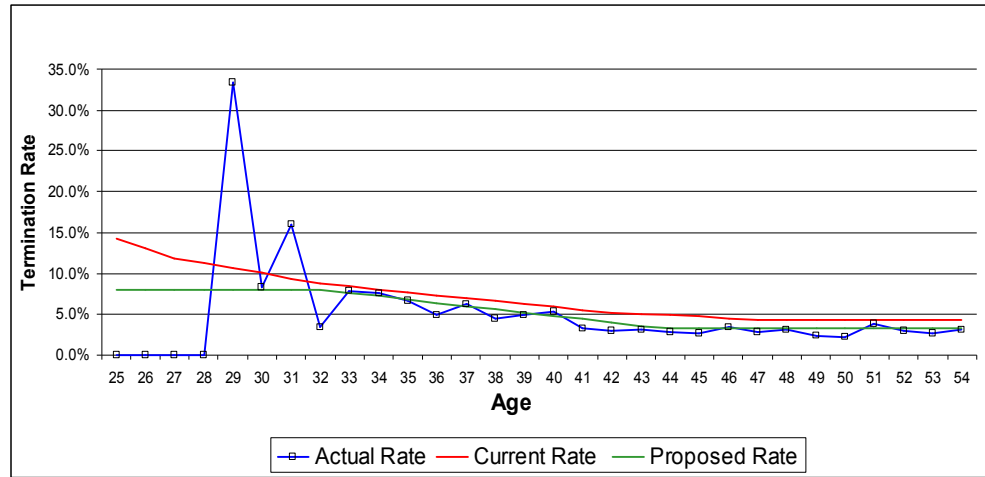
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**Disability**

Over the three-year study period, there were 217 disability retirements compared to 342 expected, resulting in an A/E ratio of 63%. Rates were increased significantly in the last experience study. The resulting A/E ratios at that time were around 108%. Given the dramatic drop in the actual/expected ratio, we recommend the current assumption be retained and a decision be made in the next experience study when more data will be available. We are not recommending a change at this time.

**Termination of Employment**

The current assumption utilizes a five year select period, where a different assumption is used for each of the first five years of employment and another table of rates applies for all members with five or more years of service. We are recommending the select period be extended to ten years. The result creates lower termination rates for members with ten or more years of service, as shown below.



Overall, the actual number of terminations was close to what the assumptions predicted; however, for longer-service members (10 or more years of service), the actual rates were less than expected. We are recommending extending the select period to ten years and revising rates to reflect this as shown above (males and females combined).

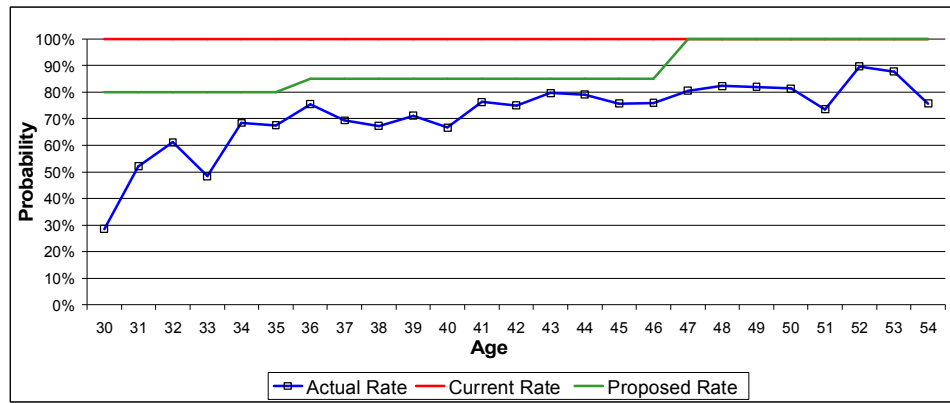


**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Probability of Refund upon Vested Termination**

Currently a specific assumption is not used to anticipate vested members taking a refund of their employee balance and forfeiting their right to a monthly benefit. The study showed that about 25% of vested members who terminate employment elect to receive a refund. Although electing a refund may not always be in the member's best financial interest, this does happen in most large systems. We are recommending a specific assumption regarding this election be included in the valuation process. Since this is a new assumption we recommend the assumption be set on a conservative basis and adjusted as more experience becomes available.

**Probability of Contributions Remaining with the System**



**Individual Salary Increases due to Promotion and Longevity (Merit)**

Section 12 discusses the individual salary increases due to promotion and longevity – the merit component of salaries. The salary data for the study period showed increases for State members above the expected increase, despite very low general wage increases by the State. The data suggests that the low general wage increases were offset by higher merit scale increases.

Given the limited data available (three years) and the challenge in trying to identify the true “merit scale”, we are not comfortable recommending any change. We propose that we continue to study the salary increases granted by the State and other participating employers on both an age and service basis and aggregate the experience from the current study with that in the next study to produce more credible results. A recommendation can then be made at that time.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**URSJJ**

Assumption	Recommendation
Inflation	Increase from 2.5% to 3.0%
Investment Return	Increase from 7.25% to 7.50%
Wage Growth	New assumption introduced: 4.25%
Salary Scale	No change
Mortality	Reflect lower mortality rates by using a one year age setback
Retirement	Increase rates pre-age 65 and generally lower rates post-age 67
Termination	No change

**Economic Assumptions**

The recommended changes to the inflation rate and the general wage growth assumption for OPERS are also recommended for URSJJ.

Currently the asset allocation for URSJJ is different than OPERS, and the investment return assumption is different (7.5% for OPERS and 7.25% for URSJJ). At the April, 2008 meeting, the Board took action to make the asset allocation the same for OPERS and URSJJ. Based on that asset allocation, the expected investment return for URSJJ is higher than under the current allocation. We are recommending the rate of return for URSJJ be increased from 7.25% to 7.50%.

**Retiree Mortality**

There is little retired data for healthy male retirees and no credible data for females. The A/E ratio was 92% for males although this only represented 12 actual deaths versus 13 expected over the three year study period. A small change in the number of deaths could have a dramatic impact on the A/E ratio. Therefore, little credibility is assigned to this data.

Studies indicate that there is a strong correlation between education/income levels and mortality. In light of this and experience in other systems, we believe it would be prudent to introduce more conservatism in the mortality assumption for the Judges. We recommend using the RP-2000 Combined Table projected to 2010 for Judges with a one year age setback (e.g. a 65 year old is assumed to exhibit the mortality of a 64 year old).

**Death While Active**

We recommend the same assumption be adopted for active mortality as for retired mortality, i.e. RP 2000 Combined Table Projected to 2010 with a one year age set back.

## OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY

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<b>Retirement</b>	<p>The A/E ratio was 116% (36 actual vs. 31 expected). However, the pattern of retirements we observed was very different than the current assumption. Therefore, we are recommending some adjustments to the current assumption to better reflect the pattern of the observed experience. The revised A/E Ratio, using the recommended assumption, remains at 116% but represents a better fit to the experience.</p>
<b>Merit Salary Scale</b>	<p>Salary experience during the study period was higher than assumed (7.9% vs. 5.5%), mostly due to large increases in FY07 resulting from a change in the process for determining wages for Judges are made. The actual salary experience during the study period is of little value because the new approach for setting compensation was implemented during the study period.</p> <p>Given the new process, changes in judicial compensation can be expected to occur every other year, but the amount of the increase is unknown. More data is needed before any reliable analysis can be done. The current assumption of 5.5% appears to be reasonable given the lack of credible data. We recommend no change be made at this time. As additional experience under the new process is gathered, we can consider whether changes are appropriate in the future.</p>
<b>Termination of Employment</b>	<p>Termination from employment for reasons other than death, disability or retirement is uncommon in a Judges' retirement system. We recommend the current assumption be retained.</p>
<b>Financial Impact of Recommended Assumptions</b>	<p>The following exhibits are designed to give the reader an idea of how the proposed changes would affect OPERS and URSJJ as a whole.</p> <p>The financial impact was evaluated by performing additional valuations with the July 1, 2007 valuation data and reflecting the proposed assumption changes. This allows us to assess the relative financial impact of the various proposed changes. Note that the relative impact of the various assumption changes by component is somewhat dependent on the order in which they are evaluated.</p>

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

<b>OPERS</b>	<b>Normal Cost %</b>	<b>UAL Contribution</b>	<b>Funding Ratio</b>
<b>July 1, 2007 Valuation</b>	12.34%	13.39%	72.6%
<b>Economic Changes</b>	0.00%	0.00%	0.0%
<b>Demographic Assumptions</b>			
Rates of Retirement	(0.08%)	(0.09%)	0.2%
Termination Rates	0.18%	0.40%	(0.6%)
Probability of Refund	<u>(0.04%)</u>	<u>(0.01%)</u>	<u>0.0%</u>
Subtotal Demographic Change	0.06%	0.30%	(0.4%)
<b>Combined Change</b>	0.06%	0.30%	(0.4%)
<b>Amortization Change</b>	0.00%	(3.80%)	0.0%
<b>July 1, 2007 Valuation with Changes</b>	12.40%	9.89%	72.2%

<b>URSJJ</b>	<b>Normal Cost %</b>	<b>UAL Contribution</b>	<b>Funding Ratio</b>
<b>July 1, 2007 Valuation</b>	30.28%	0.72%	98.9%
<b>Economic Changes</b>			
Investment Return	(1.34%)	(1.64%)	2.5%
<b>Demographic Assumptions</b>			
Mortality	0.75%	1.70%	(2.6%)
Rates of Retirement	<u>0.67%</u>	<u>1.11%</u>	<u>(1.6%)</u>
Subtotal Demographic Change	1.42%	2.81%	(4.2%)
<b>Combined Change</b>	0.08%	1.17%	(1.7%)
<b>Amortization Change</b>	0.00%	(0.53%)	0.0%
<b>July 1, 2007 Valuation with Changes</b>	30.36%	1.36%	97.2%

# OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM

## JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY

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### Section 2

## INTRODUCTION

### Purpose of Study

The purpose of an actuarial valuation is to provide a timely best estimate of the ultimate costs of a retirement system. Actuarial valuations of OPERS and URSJJ (herein after referred to collectively as OPERS) are prepared annually to determine the employer contribution rate required to fund the System on an actuarial reserve basis, i.e. the current assets plus future contributions, along with investment earnings will be sufficient to provide the benefits promised by the System. The valuation requires the use of certain assumptions with respect to the occurrence of future events, such as rates of death, termination of employment, retirement age and salary changes to estimate the obligations of the System.

The basic purpose of an experience study is to determine whether the actuarial assumptions currently in use have adequately projected actual emerging experience. This information, along with the professional judgment of System personnel and advisors, is used to evaluate the appropriateness of continued use of the current actuarial assumptions. When analyzing experience and assumptions, it is important to realize that actual experience is reported short term while assumptions are intended to be long term estimates of experience.

At the request of the Board of Trustees, Milliman, Inc. performed a study of the experience of the Oklahoma Public Employees Retirement System (OPERS) and the Uniform Retirement System for Judges and Justices (URSJJ) for fiscal years 2005, 2006, and 2007. This report presents the results and recommendations of our study, which if approved by the Board, will be implemented in the July 1, 2008 actuarial valuation of the System.

### Scope of the Study

Actuarial valuations utilize various methods and procedures and two different types of assumptions. Economic assumptions are related to the general economy and its impact on OPERS/URSJJ, while demographic assumptions are based on the emergence of the specific experience of OPERS/URSJJ members.

All of the methods and assumptions that will be used in the 2008 and later actuarial valuations have been reviewed in this Study. The remainder of this report is organized in the following manner:

- Section 3            Actuarial Methods
- Section 4            Economic Assumptions
- Sections 5-12       Demographic Assumptions
- Section 13           Financial Impact

These assumptions have been developed in accordance with generally recognized and accepted actuarial principles and practices that are consistent with the applicable Standards of Practice adopted by the Actuarial Standards Board of the American Academy of Actuaries.

## OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY

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### *Funding and Valuation Principles*

Just as certain investment choices have an associated “investment risk”, choices in actuarial assumptions have an associated “liability risk”. Our responsibility is to always consider the impact our work will have on both the current and future funding of OPERS and URSJJ. The determination of actuarial contribution rates is dependent upon the assumptions used to project the future benefit payments and then to discount the value of future benefits to determine the present values. Thus, it is important for the Board to understand the sensitivity of the actuarial calculations to the underlying assumptions.

As an example, consider the assumption for investment return a very significant assumption. Since actuarial assumptions are set for the long term, it is expected that in the short term there will be years in which the actual investment return will exceed the actuarial assumed rate, and there will be years when the actual experience will not meet the assumed rate. It is the expected long term rate of return that is used to project and finance the retirement benefits.

It should be recognized that a higher investment return assumption will tend to lower required contributions in the short term, while a lower investment return assumption will tend to require higher contributions. In the public environment, any move back from a higher return assumption to a lower return assumption could result in significantly higher contribution rates and potentially higher taxes. Using a slightly lower assumption gives a greater assurance of having actuarial experience gains in the future, whereas using a slightly higher assumption implies a willingness to assume a greater “liability risk” of future experience losses.

While the investment return assumption is the most critical assumption in the valuation process, there is a range of reasonableness for each actuarial assumption. Within that range, the selection of the assumption can be conservative or aggressive. Ultimately, the Board must decide what liability risk it is willing to accept in the overall set of actuarial assumptions they adopt.

### *Our Philosophy*

Similar to an actuarial valuation, the calculation of actual and expected experience is a fairly mechanical process. From one actuary to another, you would expect to see very little difference. However, the setting of assumptions is a different story, as it is more art than science. In this report, we have recommended changes to certain assumptions. To provide a better understanding into our thought process, we offer a brief summary of our philosophy:

- **Don't Overreact:** When we see significant changes in experience, we generally do not adjust our rates to reflect the entire difference. We will typically recommend rates somewhere between the old rates and the new experience. If the experience during the next study period shows the same result, we will probably recognize the trend at that point in time or at least move further in the direction of the observed experience. On the other hand, if experience returns closer to its prior level, we will not have overreacted, thus avoiding unnecessary volatility in the actuarial contribution rates.
- **Anticipate Trends:** If there is an identified trend that is expected to continue, we believe that this should be recognized. An example is the retiree mortality assumption. People living longer is an established trend; therefore, we prefer to anticipate this in valuing liabilities.
- **Simplify:** In general, we attempt to identify which factors are significant and eliminate or ignore the ones that do not materially improve the accuracy of the liability projections.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Section 3

**ACTUARIAL METHODS**

This section describes the actuarial methods that are used to process the data and determine the funding requirements of each System.

<i>Actuarial Cost Method</i>	
OPERS	Entry Age Normal
URSJJ	Entry Age Normal
<i>Asset Valuation Method</i>	
OPERS	Five year smoothing of expected vs. actual returns
URSJJ	Five year smoothing of expected vs. actual returns
<i>Amortization Method</i>	
OPERS	Level dollar amount over a closed 40 year period beginning July 1, 1987
URSJJ	Level dollar amount over a closed 40 year period beginning July 1, 1987

The following pages provide a brief explanation of each of the methods. We are recommending that the amortization methodology be changed from the level dollar method to the level percent of pay method, and all other methods remain unchanged.

## OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY

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### Actuarial Cost Method

The systematic financing of a pension plan requires that contributions be made in an orderly fashion while a member is actively employed, so that the accumulation of these contributions, together with investment earnings should be sufficient to provide promised benefits and cover administration expenses. The actuarial valuation is the process used to determine when and how much money should be contributed; i.e., as part of the budgeting process.

The actuarial valuation will not impact the amount of benefits paid or the actual cost of those benefits. In the long run, actuaries cannot change the costs of the pension plan, regardless of the funding method used or the assumptions selected. However, actuaries **will** influence the incidence of costs by their choice of methods and assumptions.

The valuation or determination of the present value of all future benefits to be paid by the System reflects the assumptions that best seem to describe anticipated future experience. The choice of a funding method does not impact the determination of the present value of future benefits. The funding method determines only the incidence of cost. In other words, the purpose of the funding method is to allocate the present value of future benefits determination into annual costs. In order to do this allocation, it is necessary for the funding method to “break down” the present value of future benefits into two components: (1) that which is attributable to the past (2) and that which is attributable to the future. The excess of that portion attributable to the past over the plan assets is then amortized over a period of years. Actuarial terminology calls the part attributable to the past the “past service liability” or the “actuarial accrued liability”. The portion of the present value of future benefits allocated to the future is commonly known as “the present value of future normal costs”, with the specific piece of it allocated to the current year being called “the normal cost”. The difference between the plan assets and actuarial liability is called the “unfunded actuarial accrued liability”.

Two key points should be noted. First, there is no single “correct” funding method. There are various actuarial cost methods, each of which has different characteristics, advantages and disadvantages. Second, the allocation of the present value of future benefits and hence cost to the past for amortization and to the future for annual normal cost payments is not necessarily in a one-to-one relationship with service credits earned in the past and future service credits to be earned.

For both OPERS and URSJJ, the cost of benefits is allocated to years of active service by the Entry Age Normal Actuarial cost method. The actuarial present value of projected benefits for each individual member included in the valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages. The portion of this actuarial present value allocated to a valuation year is called the Normal Cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future Normal Costs is called the Actuarial Accrued Liability. The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets is called the Unfunded Actuarial Accrued Liability. If the Actuarial Value of Assets exceeds the Actuarial Accrued Liability, the difference is called the Actuarial Surplus.

**Recommendation:** The Entry Age Normal method develops a normal cost rate that tends to be very stable. For this reason it is used by about 75% of all large public retirement systems. Thus, we recommend the Entry Age Normal actuarial cost method be retained.



**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**Asset Valuation Method**

The audited financial statements are created as of June 30 each year. The financial statements reflect the fair value of assets, sometimes referred to as the market value, or fair market value.

The valuation of assets for an actuarial valuation of a defined benefit pension plan may be thought of in a different light than the value of assets for a retirement system's financial statement. The purpose in a financial statement disclosure is to make a representation of the current value of the assets on a fair value basis. Because the underlying calculations in the actuarial valuation are long-term in nature, and one of the goals of the actuarial valuation process is to measure the funding stability of the System, it can be advantageous to smooth out short-term fluctuations in the fair value of assets.

The actuary does not have complete freedom in assigning this value. For example, GASB requirements and basic actuarial principles promulgated by the American Academy of Actuaries require any methodology used in assessing the value of assets to:

- Take into account fair market value,
- Produce a result which is not consistently above or below the fair market value, and
- Produce a value that is within a reasonable corridor of actual market value (private sector only).

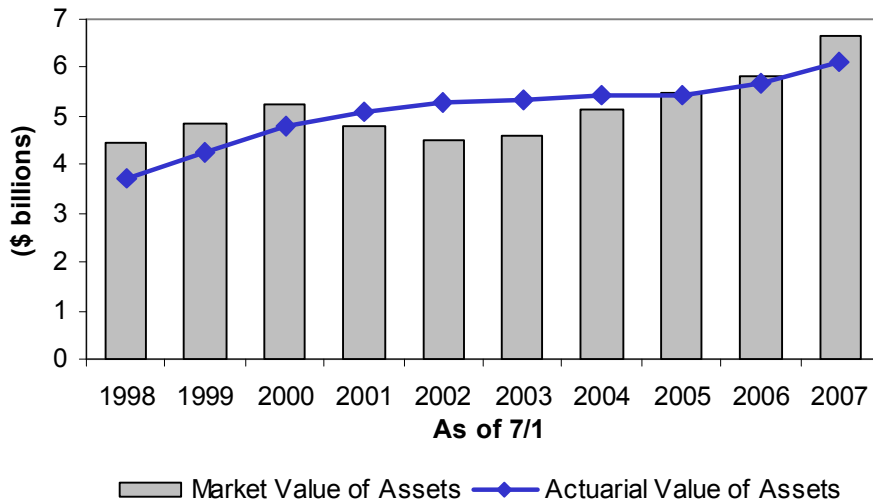
These rules or principles prevent the asset valuation methodology from being used to distort annual funding patterns. No matter what asset valuation method is used, it is important to note that, like a funding method or actuarial assumptions, the asset valuation method does not affect the true cost of the plan; it only impacts the incidence of cost.

Like the majority of large public retirement systems, OPERS and URSJJ use an asset smoothing method to determine the Actuarial Value of Assets. The assets are valued using a method that recognizes investment gains or losses over a five year period.

The following chart shows a history of the Actuarial Value of Assets compared to the Fair Market Value of Assets. You can see that, after relatively poor investment years, the Actuarial Value of Assets is often greater than the Fair Market Value and after sustained periods of high returns, the Actuarial Value lags the Market Value.

<i>(\$Millions)</i>	Fair Market Value of Assets	<i>Estimated Annual Return</i>	Actuarial Value of Assets	Ratio of Actuarial to Market
June 30				
<b>1999</b>	<b>\$ 4,831</b>	<b>9.2%</b>	<b>\$ 4,262</b>	<b>88.2%</b>
<b>2000</b>	<b>5,246</b>	<b>9.9</b>	<b>4,786</b>	<b>91.2</b>
<b>2001</b>	<b>4,815</b>	<b>-6.0</b>	<b>5,110</b>	<b>106.1</b>
<b>2002</b>	<b>4,486</b>	<b>-5.3</b>	<b>5,300</b>	<b>118.1</b>
<b>2003</b>	<b>4,619</b>	<b>5.4</b>	<b>5,355</b>	<b>115.9</b>
<b>2004</b>	<b>5,126</b>	<b>14.0</b>	<b>5,412</b>	<b>105.6</b>
<b>2005</b>	<b>5,504</b>	<b>10.3</b>	<b>5,451</b>	<b>99.0</b>
<b>2006</b>	<b>5,817</b>	<b>7.9</b>	<b>5,654</b>	<b>97.2</b>
<b>2007</b>	<b>6,640</b>	<b>16.3</b>	<b>6,110</b>	<b>92.0</b>

## OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY



**Smoothing Periods:** The general range for smoothing periods is three to five years. A few systems smooth over longer periods. OPERS uses a five year smoothing period, which is very common. Subsequent to periods of good returns, more smoothing will produce lower actuarial values and after periods of poor returns, while more smoothing will produce higher actuarial values.

**Corridor:** It is common practice for an asset smoothing method to apply a corridor limit to ensure the actuarial value will not deviate too far from the actual market value. We believe that applying a corridor limit is a good idea, although it is expected to apply infrequently. OPERS currently applies a corridor where the actuarial value of assets can be no less than 80% of market value and no more than 120% of market value.

**Recommendation:** The current method is widely used by public retirement systems. It effectively smoothes actual market returns, and is not biased toward over or understatement compared to market value. We recommend the current asset valuation method, including the 80-120% corridor, be continued.

### Amortization of UAAL

As described earlier, actuarial accrued liabilities are the portion of the actuarial present value of future benefits that are not included in future normal costs. Thus it represents the liability that, in theory, should have been funded through historical normal costs. Unfunded actuarial accrued liabilities (UAAL) exist when actuarial accrued liabilities exceed plan assets. These deficiencies can result from (i) plan improvements that have not been completely paid for, (ii) experience not being as favorable as expected, (iii) assumption changes or (iv) contributions less than the actuarial rate.

## OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY

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There are a variety of different methods that can be used to amortize the UAAL. Each results in a different payment stream and therefore has cost implications. For each methodology, there are three characteristics:

- The period over which the UAAL is amortized,
- The rate at which the amortization amount increases, and
- The number of components of UAAL with separate amortization bases.

Statement No. 25 of the Governmental Accounting Standards Board (GASB) sets parameters for all of these characteristics. The maximum period permitted is 30 years. The annual amortization amount can be a level dollar amount or a level percentage of payroll. The UAAL may be amortized as one amount or components may be amortized separately.

All non-public pension plans, pursuant to the Internal Revenue Code, must use level dollar amortization to pay off their unfunded actuarial liability for purposes of IRS funding. This is similar to the method in which a homeowner pays off a mortgage. The liability, once calculated, is financed by a constant fixed dollar amount, based on a predetermined number of years, until the liability is extinguished. This results in the liability steadily decreasing while the payments, though remaining level in dollar terms, are anticipated to decrease as a percentage of payroll. (Even if a plan sponsor's population is not growing or even slightly diminishing, inflationary increases will usually be sufficient to increase the aggregate payroll).

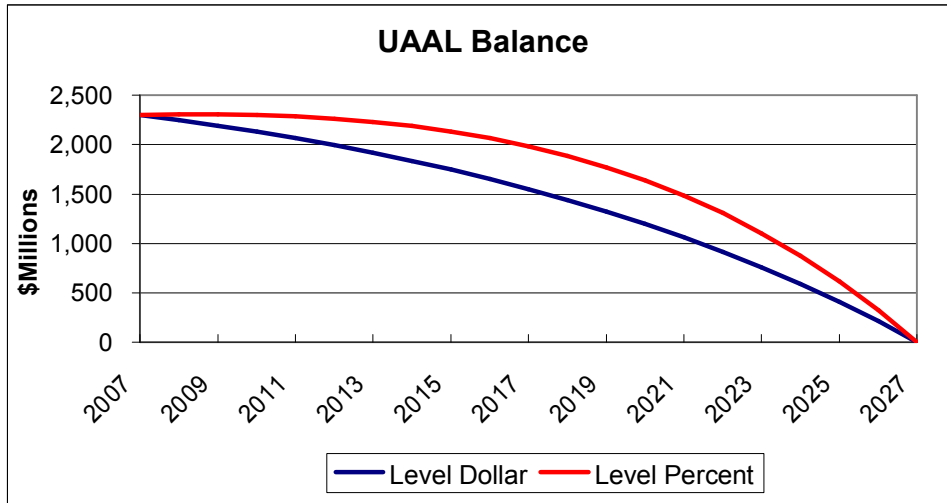
The rationale behind the level percentage of payroll amortization method is that since normal costs are calculated to be a percentage of pay, unfunded actuarial accrued liabilities should be paid off in the same manner. When this method of amortizing the unfunded actuarial accrued liability is adopted, the initial amortization payments are lower than they would be under a level dollar amortization payment method but the payments are then scheduled to increase at a fixed rate generally equal to the assumed payroll growth, so that ultimately the annual payment far exceeds the level dollar payment. Presumably, total payroll is increasing as rapidly so that the amortization payments will remain constant, as a percentage of payroll. In the initial years, the level percentage of payroll amortization payment is often less than the interest accruing on the unfunded actuarial accrued liability meaning that even if there are no experience losses, the unfunded actuarial accrued liability will grow. If the plan sponsor is paying off the unfunded actuarial accrued liability over a long period such as 30 years, it is likely that the UAAL will grow for the first 20 years, gradually reduce so that in the 25<sup>th</sup> year the UAAL is equal to the initial UAAL, and still be completely paid off by the 30<sup>th</sup> year. The increasing UAAL may be troubling to various interested parties, but should not be worrisome unless the remaining UAAL is actually increasing as a percentage of total covered payroll.

Currently, the Unfunded Actuarial Accrued Liability is amortized over a closed 40-year period measured from July 1, 1987. This is a fixed or closed amortization period which means it declines each year. As of July 1, 2007 there were 20 years left in the amortization period for both OPERS and URSJJ. Alternatively, the amortization period can also be an open or rolling period, where the amortization period does not decline but is reset each year.

Use of the level percentage of payroll amortization has its advantages and disadvantages. From a budgetary standpoint, it makes sense to develop UAAL contribution rates that are level as a percentage of payroll. However, this approach clearly results in slower funding of the UAAL. A comparison of the level dollar and level percent of pay amortization methods, based on OPERS unfunded actuarial accrued liability at July 1, 2007, is shown on the following page.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**COMPARISON OF AMORTIZATION METHODS**



Date	Level Dollar			Level Percent		
	Balance	Payment	% of pay	Balance	Payment	% of pay
7/1/2007	\$ 2,303	\$ 218	13.39%	\$ 2,303	\$ 161	9.87%
7/1/2008	2,250	218	12.88%	2,309	167	9.87%
7/1/2009	2,193	218	12.38%	2,309	174	9.87%
7/1/2010	2,131	218	11.91%	2,302	181	9.87%
7/1/2011	2,065	218	11.45%	2,288	188	9.87%
7/1/2012	1,994	218	11.01%	2,265	195	9.87%
7/1/2013	1,918	218	10.59%	2,232	203	9.87%
7/1/2014	1,836	218	10.18%	2,189	211	9.87%
7/1/2015	1,747	218	9.79%	2,134	220	9.87%
7/1/2016	1,653	218	9.41%	2,066	229	9.87%
7/1/2017	1,551	218	9.05%	1,984	238	9.87%
7/1/2018	1,441	218	8.70%	1,886	247	9.87%
7/1/2019	1,323	218	8.37%	1,772	257	9.87%
7/1/2020	1,197	218	8.04%	1,638	267	9.87%
7/1/2021	1,060	218	7.73%	1,484	278	9.87%
7/1/2022	914	218	7.44%	1,307	289	9.87%
7/1/2023	757	218	7.15%	1,105	301	9.87%
7/1/2024	587	218	6.88%	876	313	9.87%
7/1/2025	406	218	6.61%	617	325	9.87%
7/1/2026	210	218	6.36%	326	338	9.87%
7/1/2027	-	-		-	-	

Amounts shown in millions

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM**  
**JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**Recommendation:** While the current amortization and period are reasonable, they result in a UAAL contribution that is decreasing as a percent of payroll. The Systems are financed by statutory contribution rates, which increase for a number of years and then remain at the fixed level. Because the Systems' financing is based on contribution rates that apply to covered payroll, we believe it is consistent with the funding mechanism to develop the UAAL payment as a level percent of payroll. In addition, the level dollar amortization approach makes it difficult to evaluate the sufficiency of the scheduled contribution rates and the long-term cost of the Systems. We recommend the amortization period be retained, but the methodology be changed to the level percent of payroll method.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**Section 4**

**ECONOMIC ASSUMPTIONS**

Actuarial Standard of Practice (ASOP) No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*, provides guidance to actuaries giving advice on selecting economic assumptions for measuring obligations under defined benefit plans. Because no one knows what the future holds, the best an actuary can do is to use professional judgment to estimate possible future economic outcomes. These estimates are based on a mixture of past experience, future expectations, and professional judgment. The actuary should consider a number of factors, including the purpose and nature of the measurement, and appropriate recent and long-term historical economic data. However, the standard explicitly advises the actuary not to give undue weight to recent experience.

Recognizing that there is not one “right answer”, the standard calls for the actuary to develop a best estimate range for each economic assumption, and then recommend a specific point within that range. The best estimate range may be broader than what the actuary considers a reasonable range. Each economic assumption should individually satisfy this standard. Furthermore, with respect to any particular valuation, each economic assumption should be consistent with every other economic assumption over the measurement period.

In our opinion, the economic assumptions recommended in this report have been developed in accordance with ASOP No. 27. The following table shows our recommendations.

	<b>OPERS</b>		<b>URSJJ</b>	
	<b>Current</b>	<b>Recommended</b>	<b>Current</b>	<b>Recommended</b>
Consumer Price Inflation	2.50%	3.00%	2.50%	3.00%
Net Real Rate of Return	<u>5.00%</u>	<u>4.50%</u>	<u>4.75%</u>	<u>4.50%</u>
Investment Return	7.50%	7.50%	7.25%	7.50%
Consumer Price Inflation	2.50%	3.00%	2.50%	3.00%
Productivity	<u>N/A</u>	<u>1.25%</u>	<u>N/A</u>	<u>1.25%</u>
Wage Growth	N/A	4.25%	N/A	4.25%
COLA	2.00%	2.00%	2.00%	2.00%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**CONSUMER PRICE INFLATION**

**Use in the Valuation:** When we refer to inflation in this report, we are referring to price inflation. The future price inflation assumption has an indirect impact on the results of the actuarial valuation through the development of the assumptions for investment returns and wage growth.

The long-term relationship between inflation and investment return has long been recognized by economists. The basic principle is that the investors demand a “real return” which is the excess of actual investment returns over inflation. If inflation rates are expected to be high, investors will demand expected investment returns that are also expected to be high enough to exceed inflation, while lower inflation rates will result in lower demanded expected investment returns, at least in the long run.

The current assumption for inflation is 2.50% per year.

**Historical Perspective:** We have used certain published economic statistics that have been accumulated on a monthly basis over the last 75 years. The data for inflation is based on the Consumer Price Index, US City Average, All Urban Consumers (CPI). The data for periods ending in June of each year is documented in Table 1 at the end of this section.

Although economic activities in general and inflation in particular, do not lend themselves to prediction on the basis of historical analysis, historical patterns and long-term trends are a factor to be considered in developing the inflation assumption.

There are numerous ways to review this data, with significantly differing results. The tables below show the compounded annual inflation rate for various ten-year periods and for longer periods ended in June of 2007.

Period	CPI
1997-2007	2.66%
1987-1997	3.51
1977-1987	6.46
1967-1977	6.19
1957-1967	1.71

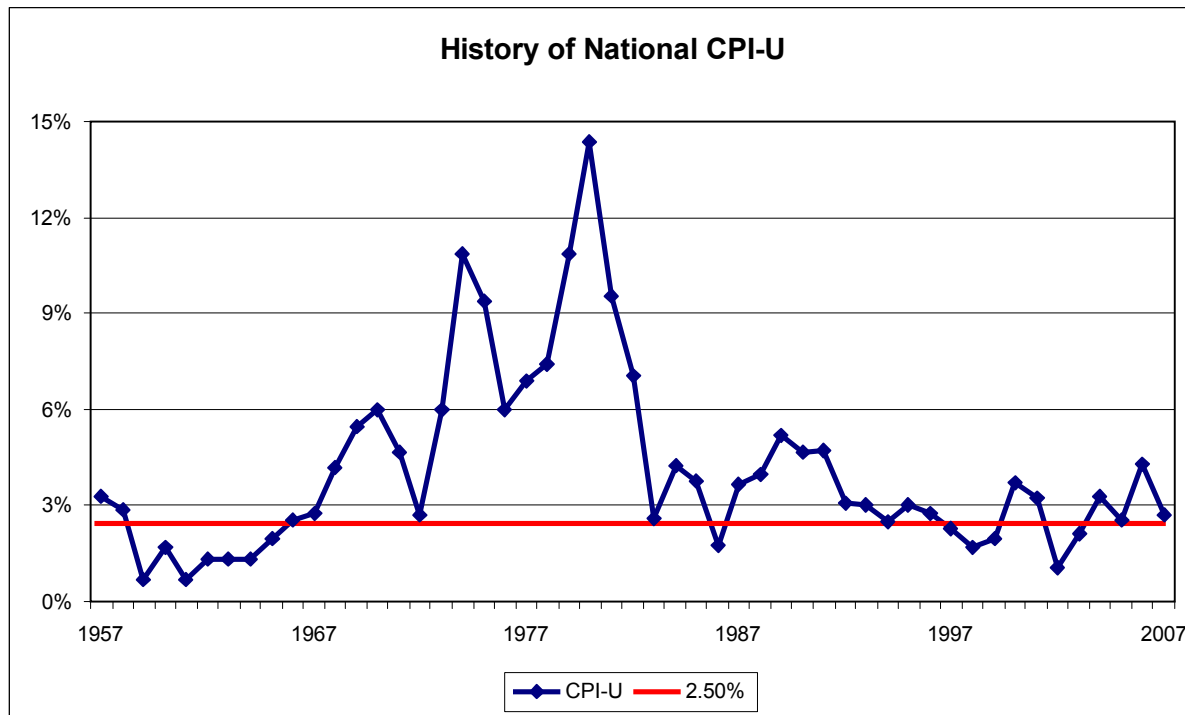
Period	CPI
1997-2007	2.66%
1987-2007	3.08
1977-2007	4.20
1967-2007	4.69
1957-2007	4.09
75 Years	3.71%

The following chart shows the 25<sup>th</sup>, 50<sup>th</sup>, and 75<sup>th</sup> percentile of the national CPI over 25, 50, and 75 year periods.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

<i>National CPI</i>	<u>25 Years</u>	<u>50 Years</u>	<u>75 Years</u>
25 <sup>th</sup> Percentile	2.49%	2.35%	1.82%
50 <sup>th</sup> Percentile - Median	3.04%	3.17%	3.00%
75 <sup>th</sup> Percentile	3.76%	5.05%	4.93%

The following graph shows the historical national CPI increases (June to June) compared to the current assumption of 2.50% per year. Note that the actual CPI increases have been in a relatively narrow range over the last 25 years.



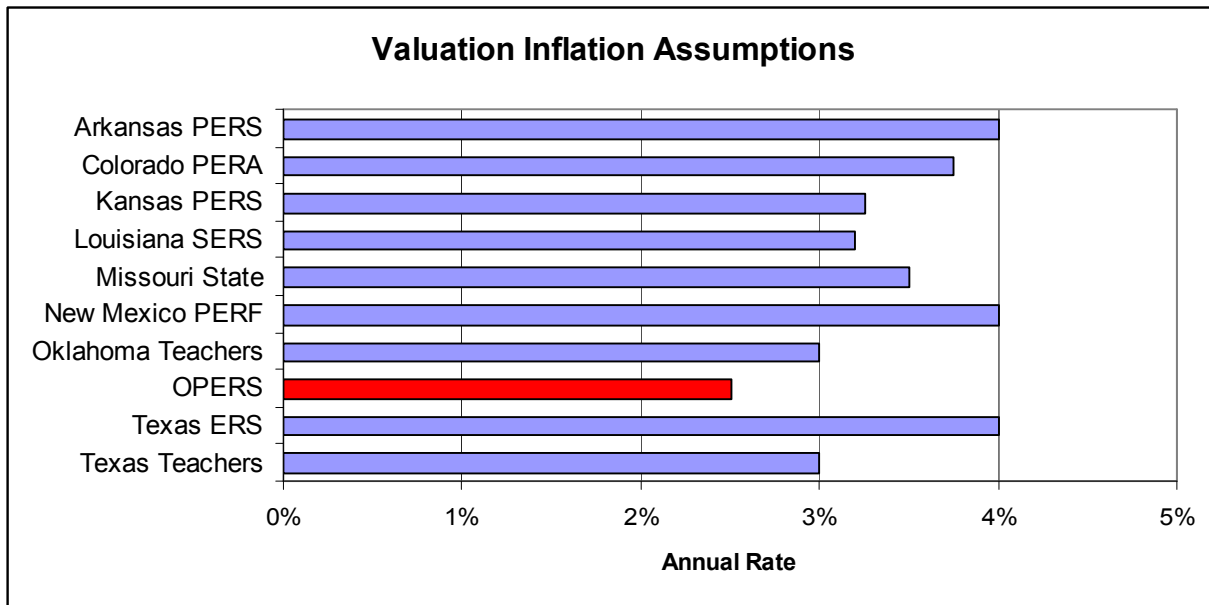
**Forecasts of Inflation:** We recognize that most investment consultants are setting their own capital market assumptions with a low inflation assumption. For example, SIS is using an inflation assumption of 2.3% and Milliman’s investment practice is currently using 2.50% as the inflation component. However, investment consultants are rarely looking at a time horizon more than five or ten years, let alone the generations that we are using in a pension valuation.

To find an economic forecast with a comparable time frame to our valuation, we looked at the expected increase in the CPI by the Office of the Chief Actuary for the Social Security Administration. In the 2007 Trustees Report, the projected average annual increase in the CPI over the next 30 years under the intermediate cost assumptions was 2.80%. The reasonable range was stated as 1.80% to 3.80%.



**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Peer Group Comparison:** Actuarial inflation assumptions have been declining in recent years due to the pattern of inflation previously shown. The following chart shows the latest inflation assumptions for a group of ten large public retirement systems. Of these systems, four have an assumption greater than 3.5% and only OPERS has an assumption less than 3.0%. The median inflation rate of the 125 plans in the NASRA's Public Fund Survey was 3.50%. We believe the current inflation assumption of 2.50% is on the low end of the reasonable range.



**Recommendation**

We recommend increasing the long-term assumed inflation rate to 3.00% per year, which will be used to build the net investment return and wage growth assumptions. We agree with the Social Security projections that a range between 1.80% and 3.80% is appropriate for an actuarial valuation of a retirement system. We believe that an assumption of 3.00% per year is reasonable.

<i>Consumer Price Inflation</i>	
Current Assumption	2.50%
Best Estimate Range	2.00% - 4.00%
Recommended Assumption	3.00%

## OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY

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### *COST OF LIVING ADJUSTMENT (COLA)*

The statutory benefit provisions of OPERS and URSJJ do not contain a provision for an automatic COLA. However, the Oklahoma legislature has provided an ad hoc COLA on a fairly regular schedule, typically every other year. As a result, a COLA assumption is included in the valuation. The current assumption is 2.0% per year.

**Recommendation:** Including a COLA assumption is a prudent way for the system to pre-fund the ad hoc COLAs provided by the Legislature. In operation, the COLAs granted are not necessarily likely to be directly related to inflation. The expectation is that the cost of the ad hoc COLA actually granted by the Legislature will be around the cost anticipated by the System's funding. Therefore, if a 2% annual COLA is assumed and funded, ad hoc COLA of similar value, regardless of how it is allocated to retirees, will be granted. We recommend the current assumption be retained.

Another reason to maintain a 2% COLA assumption for OPERS and the URSJJ is the passage of the Oklahoma Pension Legislation Actuarial Analysis Act ("OPLAAA") in 2006. It is codified at 62 Oklahoma Statutes §§ 3101 et seq. This legislation requires the Oklahoma Legislature to provide adequate funding for any OPERS or URSJJ legislation that has "fiscal impact." However the definition of "fiscal impact" under OPLAAA excludes bills that only grant COLAs up to the amount assumed by each System immediately prior to the passage of OPLAAA. Since both OPERS and URSJJ had a 2% COLA assumption at that time, it is highly unlikely that the Legislature will grant any COLA in excess of the 2% assumption as it would require an increase in contribution rates or an appropriation of funds.

### *INVESTMENT RETURN*

**Use in the Valuation:** The investment return assumption is one of the primary determinants in the calculation of the expected cost of the System's benefits, providing a discount of the future benefit payments reflecting the time value of money. This assumption has a direct impact on the calculation of the Actuarial Accrued Liability and Normal Costs. In the past, URSJJ and OPERS have had different asset allocation policies. However, the Board took action at the April 2008 meeting to modify the asset allocation and use the same allocation for OPERS and URSJJ.

The current investment return assumption for OPERS is 7.50% and for URSJJ is 7.25%, net of all investment-related expenses.

**Historical Perspective:** One of the inherent problems with analyzing historical data is that the results can look significantly different depending on the time frame used if the year-to-year results tend to vary widely. The asset allocation also has a critical role in returns, so results achieved under other allocations are not meaningful. Furthermore, the approach we used to predict inflation does not necessarily reflect current expectations for the capital markets. Even though history provides a valuable perspective for setting this assumption, we prefer to concentrate on a prospective approach.

**Projection Model using Capital Market Assumptions:** We have projected the best-estimate range for the investment return assumption based upon a model developed by Milliman's investment practice. This model is used to provide the range of assumptions appropriate for compliance with Actuarial Standard of Practice No. 27, "Selection of Economic Assumptions for Measuring Pension Obligations." The Standard defines

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

the Best-Estimate Range as “the narrowest range within which the actuary reasonably anticipates that the actual results, compounded over the measurement period, are more likely than not to fall.”

By assuming the portfolio is re-balanced annually and that annual returns are lognormally distributed and independent from year to year, we can develop expected percentiles for the long-term distribution of annualized returns. Using properties of the lognormal distribution, we calculate the 25<sup>th</sup> and 75<sup>th</sup> percentiles of the long-term total return distribution. This becomes our best-estimate range because 50% of the outcomes are expected to fall within this range and it is centered about the mean.

Capital market assumptions set by the System’s advisors were combined with an asset allocation to generate expected real rates of returns (total return less assumed inflation) which were then added to the recommended inflation assumption of 3.00%. The real rate of return is subject to significant year-to-year volatility as measured by the standard deviation. Volatility over time will lower the mean real rate of return but diversification by asset class will reduce the volatility and narrow the range of expected total returns for the entire portfolio.

As inputs to our model we have utilized SIS’ current capital market assumptions which are documented in Table 3 at the end of this section. The asset allocation adopted by the Board in April 2008 is shown below:

<b>Allocation by Asset Class</b>	
US Large Cap	35%
US Small Cap	5
International Equities	24
Core Fixed Income	36
Total Portfolio	100%

The capital market assumptions were combined with the System’s asset allocation policy to generate expected returns. The expected real rate of return of the portfolio allocated according to new asset allocation is 5.91% for one year, or 8.91% including an assumed inflation rate of 3.00%. However, the return is subject to significant year-to-year volatility as evidenced by the standard deviation. Volatility over time will lower the mean rate of return, but diversification by asset class often narrows the range of expected returns. We modeled the compound rate of return over longer periods of time to provide a reasonable range for the expected real return. The results are summarized below, showing expected real rates of return up to 30 years.

<b>Horizon in Years</b>	<b>Mean</b>	<b>Std Dev</b>	<b>Percentile Results for Real Rate of Return</b>				
			<b>5th</b>	<b>25<sup>th</sup></b>	<b>50th</b>	<b>75th</b>	<b>95th</b>
1	5.9%	10.1%	-9.9%	-1.1%	5.4%	12.4%	23.3%
5	5.5	4.5	-1.7	2.5	5.4	8.5	13.1
10	5.5	3.2	0.4	3.3	5.4	7.6	10.8
20	5.5	2.2	1.8	3.9	5.4	7.0	9.2
30	5.5	1.8	2.5	<b>4.2</b>	<b>5.4</b>	<b>6.7</b>	8.5

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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For one year, the mean real return is 5.9%, but due to the volatility associated with the asset allocation, the range of probable outcomes is quite large. For example, for one year there is a 5% chance the real rate of return will be less than -9.9% and a 5% chance it will be greater than 23.3%. As the time horizon lengthens, the range of cumulative average results narrows.

Over a thirty-year time horizon, there is a 25% chance the rate of return will be less than 4.2% and a 25% chance the return will be greater than 6.7% (bold numbers on the bottom line in the table above). Therefore, we can say the real rate of return is just as likely to be within the range from 4.2% to 6.7% as not. The median real return over thirty years is expected to be 5.4%.

For a slightly different perspective, we utilized the current capital market assumptions produced by Milliman's investment practice. In this case, the range of results was 3.2% at the 25<sup>th</sup> percentile to 6.1% at the 75<sup>th</sup> percentile with a median real return of 4.6%.

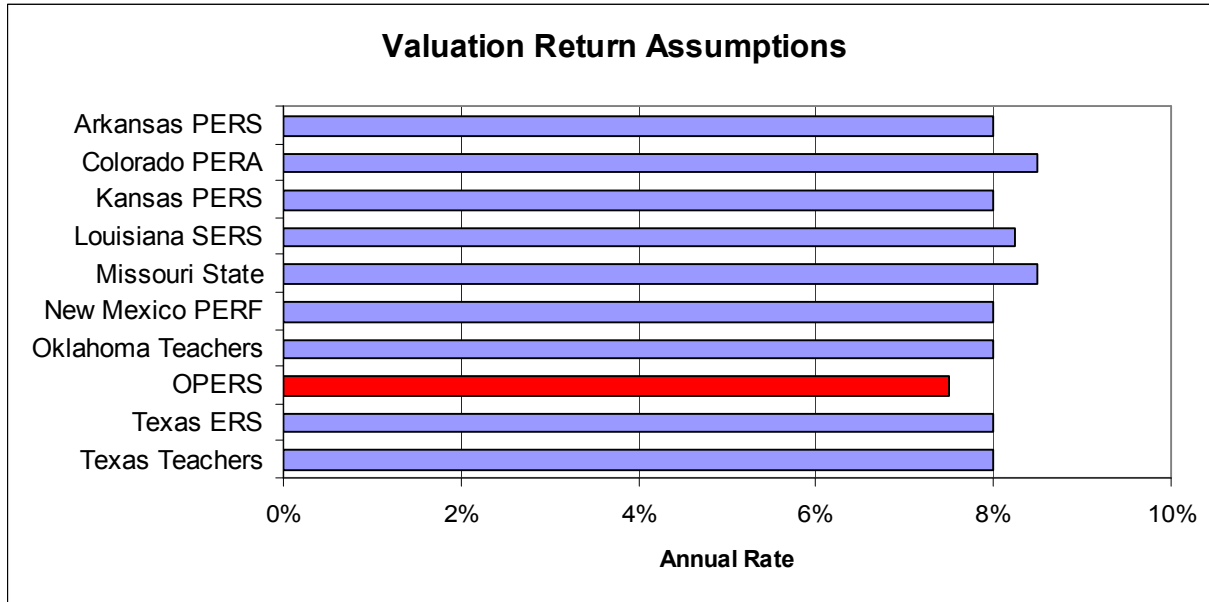
**Administrative and Investment-Related Expenses:** Administrative expenses are directly reflected as a separate component in the calculation of the contribution rate. However, the investment return is assumed to be net of all investment-related expenses. The table below shows the ratio of expenses to the OPERS Plan assets over the last five years. The expense ratio is calculated as the total expense divided by the ending asset balance at fair market value.

(\$million)	Plan Assets	Investment	
		Expense	Ratio
2003	\$ 4,619	\$ 5.5	0.11%
2004	5,126	6.3	0.12
2005	5,504	6.8	0.12
2006	5,817	6.1	0.10
2007	6,640	6.2	0.09

This assumption does not have a direct impact on the actuarial valuation results, but it does provide a measure of gross return on investments that will be needed to meet the actuarial assumption used for the valuation. For example, if the investment return assumption is set equal to 7.50%, then OPERS would need to earn a gross return on its assets of about 7.6% in order to meet the 7.50% for funding purposes.

**Peer Group Comparison:** Actuarial return assumptions have remained steady in recent years even though there has been significant volatility in the markets. This is likely because actuaries view this assumption as very long term in nature. The following chart shows the latest return assumptions for the same peer group we looked at previously. The asset allocation for other systems may vary from OPERS which could impact the assumed rate of return. As the chart shows, OPERS is in the main stream for the investment return assumption.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**



**Recommendations:** Based on the ASOP No. 27 guidelines, we conclude that the best estimate range is the expected real rates of return between the 25<sup>th</sup> and 75<sup>th</sup> percentile projected out 30 years, plus the assumed inflation rate, less investment-related expenses. If inflation in the short term is closer to that suggested by SIS, the median expected return drops to 7.6%. We recommend a rate of return of 7.5% be used for both OPERS and URSJJ.

Components of Return	Percentile Results		
	25th	50th	75th
Real Rate of Return	4.22%	5.44%	6.69%
Assumed Inflation	3.00	3.00	3.00
Expenses	<u>(0.10)</u>	<u>(0.10)</u>	<u>(0.10)</u>
Net Investment Return	7.12%	<b>8.34%</b>	9.59%

**WAGE GROWTH**

**Use in the Valuation:** Estimates of future salaries are based on two types of assumptions. Rates of increase in the general wage level of the membership are directly related to inflation while individual salary increases due to promotion and longevity (referred to as the merit scale) occur even in the absence of inflation. The merit scale will be reviewed with the other demographic assumptions.

As part of determining the System’s funding, we are recommending the unfunded actuarial accrued liability be amortized with payments that are a level percent of payroll. The general wage increase assumption is used to project covered payroll in future years which determines the amortization payment of the UAAL. The prior actuary did not disclose the wage growth assumption separately from the merit scale. Therefore, we cannot identify the current wage growth assumption.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Historical Perspective:** We have used statistics from the Social Security Administration on the National Average Wage back to 1951 (please note that 2006 is the most recent published data). This data shows a compounded annual increase from 1951 through 2006 of 4.8%. Price inflation during the same period was 3.7%.

The excess of wage growth over price inflation represents the increase in the standard of living, also called productivity growth.

There has been debate on the issue of whether public sector employees will receive, over the long term, the same rewards for productivity as employees in the private sector, where productivity is more readily measurable. To our knowledge, no definitive research has been completed on this topic. Nevertheless, it is our opinion that public sector employees will eventually be rewarded, even if there is a time lag, with the same productivity increases as those participating in the remainder of the economy.

The following table shows the compounded wage growth over the last 50 or more years, along with the comparable inflation rate for the same period. The difference represents the rate of real wage growth.

Decade	Wage Growth	CPI Incr.	Real Wages	Period	Wage Growth	CPI Incr.	Real Wages
1996-2006	4.08%	2.62%	1.46%	1996-2006	4.08%	2.62%	1.46%
1986-1996	4.11	3.65	0.46	1986-2006	4.09	3.13	0.96
1976-1986	6.50	6.78	(0.28)	1976-2006	4.89	4.34	0.56
1966-1976	6.45	5.77	0.68	1966-2006	5.28	4.69	0.59
1956-1966	3.41	1.76	1.64	1956-2006	4.90	4.10	0.80
				55 Years	4.80	3.74	1.06

Resources: Social Security National Average Wage from 1951 to 2006; Inflation as measured by the CPI-U.

**Forecasts of Future Wages:** The wage index we used for the historical analysis has been projected forward by the Office of the Chief Actuary of the Social Security Administration. In a report in April, 2007, the annual increase in the National Average Wage Index over the next 30 years under the intermediate cost assumptions was forecast to be 3.9%, 1.1% higher than the Social Security intermediate inflation assumption of 2.8% per year. The range of the assumed real wage inflation in the 2007 Trustees report was 0.6% to 1.6% per year.

**Recommendation:** Based on our judgment and the underlying inflation assumption of 3.00%, we believe that a range between 0.50% and 1.75% is reasonable for the assumed increase in real wages. We recommend that the long-term assumed wage inflation rate be set to 4.25% per year.

<b>Wage Growth</b>	
Current Assumption	Not Applicable
Best Estimate Range Real Growth Rate	0.50% - 1.75%
Recommended Assumption	1.25%
Assumed Inflation	3.00%
Total Wage Growth	4.25%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM**  
**JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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***GROWTH IN MEMBERSHIP***

We propose continuing the assumption that no future growth in membership will occur. This assumption affects the amortization payment rate, which is the portion of the total contributions used to liquidate the unfunded actuarial accrued liability. With no assumed growth in membership, future salary growth due only to general wage increases is being anticipated. If increases should occur not only because of wage increases but also because of additional members, there will be a larger pool of salaries over which to spread the unfunded actuarial accrued liability which would result in lower UAAL payments as a percent of payroll. The short-term pattern of the past indicates that such growth might be anticipated. The uncertainties in light of current conditions in public employment and the national economy argue against anticipating any increase in membership for funding purposes.

Furthermore, GASB Statement No. 25 will not accept a growth in membership assumption as meeting its required parameters. Thus, if a growth assumption were to be used for funding purposes, a different set of calculations and results would be needed for accounting disclosure purposes.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Table 1  
Consumer Price Index**

<b>June of:</b>	<b>Index</b>	<b>Increase</b>	<b>June of:</b>	<b>Index</b>	<b>Increase</b>
<b>1932</b>	13.6				
<b>1933</b>	12.7	(6.6)%	<b>1973</b>	44.2	6.0%
<b>1934</b>	13.4	5.5	<b>1974</b>	49.0	10.9
<b>1935</b>	13.7	2.2	<b>1975</b>	53.6	9.4
<b>1936</b>	13.8	0.7	<b>1976</b>	56.8	6.0
<b>1937</b>	14.4	4.3	<b>1977</b>	60.7	6.9
<b>1938</b>	14.1	(2.1)	<b>1978</b>	65.2	7.4
<b>1939</b>	13.8	(2.1)	<b>1979</b>	72.3	10.9
<b>1940</b>	14.1	2.2	<b>1980</b>	82.7	14.4
<b>1941</b>	14.7	4.3	<b>1981</b>	90.6	9.6
<b>1942</b>	16.3	10.9	<b>1982</b>	97.0	7.1
<b>1943</b>	17.5	7.4	<b>1983</b>	99.5	2.6
<b>1944</b>	17.6	0.6	<b>1984</b>	103.7	4.2
<b>1945</b>	18.1	2.8	<b>1985</b>	107.6	3.8
<b>1946</b>	18.7	3.3	<b>1986</b>	109.5	1.8
<b>1947</b>	22.0	17.6	<b>1987</b>	113.5	3.7
<b>1948</b>	24.1	9.5	<b>1988</b>	118.0	4.0
<b>1949</b>	23.9	(0.8)	<b>1989</b>	124.1	5.2
<b>1950</b>	23.8	(0.4)	<b>1990</b>	129.9	4.7
<b>1951</b>	25.9	8.8	<b>1991</b>	136.0	4.7
<b>1952</b>	26.5	2.3	<b>1992</b>	140.2	3.1
<b>1953</b>	26.8	1.1	<b>1993</b>	144.4	3.0
<b>1954</b>	26.9	0.4	<b>1994</b>	148.0	2.5
<b>1955</b>	26.7	(0.7)	<b>1995</b>	152.5	3.0
<b>1956</b>	27.2	1.9	<b>1996</b>	156.7	2.8
<b>1957</b>	28.1	3.3	<b>1997</b>	160.3	2.3
<b>1958</b>	28.9	2.8	<b>1998</b>	163.0	1.7
<b>1959</b>	29.1	0.7	<b>1999</b>	166.2	2.0
<b>1960</b>	29.6	1.7	<b>2000</b>	172.4	3.7
<b>1961</b>	29.8	0.7	<b>2001</b>	178.0	3.2
<b>1962</b>	30.2	1.3	<b>2002</b>	179.9	1.1
<b>1963</b>	30.6	1.3	<b>2003</b>	183.7	2.1
<b>1964</b>	31.0	1.3	<b>2004</b>	189.7	3.3
<b>1965</b>	31.6	1.9	<b>2005</b>	194.5	2.5
<b>1966</b>	32.4	2.5	<b>2006</b>	202.9	4.3
<b>1967</b>	33.3	2.8	<b>2007</b>	208.4	2.7
<b>1968</b>	34.7	4.2			
<b>1969</b>	36.6	5.5			
<b>1970</b>	38.8	6.0			
<b>1971</b>	40.6	4.6			
<b>1972</b>	41.7	2.7			



**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Table 2  
National Average Wage Index**

	<b>Index</b>	<b>Increase</b>		<b>Index</b>	<b>Increase</b>
<b>1951</b>	\$2,799.16				
<b>1952</b>	2,973.32	6.2%			
<b>1953</b>	3,139.44	5.6	<b>1983</b>	\$15,239.24	4.9%
<b>1954</b>	3,155.64	0.5	<b>1984</b>	16,135.07	5.9
<b>1955</b>	3,301.44	4.6	<b>1985</b>	16,822.51	4.3
<b>1956</b>	3,532.36	7.0	<b>1986</b>	17,321.82	3.0
<b>1957</b>	3,641.72	3.1	<b>1987</b>	18,426.51	6.4
<b>1958</b>	3,673.80	0.9	<b>1988</b>	19,334.04	4.9
<b>1959</b>	3,855.80	5.0	<b>1989</b>	20,099.55	4.0
<b>1960</b>	4,007.12	3.9	<b>1990</b>	21,027.98	4.6
<b>1961</b>	4,086.76	2.0	<b>1991</b>	21,811.60	3.7
<b>1962</b>	4,291.40	5.0	<b>1992</b>	22,935.42	5.2
<b>1963</b>	4,396.64	2.5	<b>1993</b>	23,132.67	0.9
<b>1964</b>	4,576.32	4.1	<b>1994</b>	23,753.53	2.7
<b>1965</b>	4,658.72	1.8	<b>1995</b>	24,705.66	4.0
<b>1966</b>	4,938.36	6.0	<b>1996</b>	25,913.90	4.9
<b>1967</b>	5,213.44	5.6	<b>1997</b>	27,426.00	5.8
<b>1968</b>	5,571.76	6.9	<b>1998</b>	28,861.44	5.2
<b>1969</b>	5,893.76	5.8	<b>1999</b>	30,469.84	5.6
<b>1970</b>	6,186.24	5.0	<b>2000</b>	32,154.82	5.5
<b>1971</b>	6,497.08	5.0	<b>2001</b>	32,921.92	2.4
<b>1972</b>	7,133.80	9.8	<b>2002</b>	33,252.09	1.0
<b>1973</b>	7,580.16	6.3	<b>2003</b>	34,064.95	2.4
<b>1974</b>	8,030.76	5.9	<b>2004</b>	35,648.55	4.6
<b>1975</b>	8,630.92	7.5	<b>2005</b>	36,952.94	3.7
<b>1976</b>	9,226.48	6.9	<b>2006</b>	38,651.41	4.6
<b>1977</b>	9,779.44	6.0	<b>2007</b>	Not yet available	
<b>1978</b>	10,556.03	7.9			
<b>1979</b>	11,479.46	8.7			
<b>1980</b>	12,513.46	9.0			
<b>1981</b>	13,773.10	10.1			
<b>1982</b>	14,531.34	5.5			

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Table 3  
Capital Market Assumptions  
(provided by SIS)**

	US Large Cap	US Small Cap	US Fixed Income	Int'l Equities (Developed)	Int'l Equity (Emerging)	Real Estate	Private Equity	TIPS	Inflation
Arithmetic Mean	8.3%	8.9%	5.5%	8.4%	8.9%	6.1%	10.8%	4.7%	2.3%
Standard Deviation	14.3%	23.0%	6.0%	17.0%	33.0%	8.5%	35.0%	3.2%	1.5%
Correlation Coefficients:									
US Large Cap	1.00								
US Small Cap	0.77	1.00							
US Fixed Income	0.04	0.03	1.00						
Int'l Equities (Developed)	0.72	0.65	0.01	1.00					
Int'l Equity (Emerging)	0.60	0.60	0.00	0.67	1.00				
Real Estate	0.29	0.40	0.27	0.33	0.31	1.00			
Private Equity	0.61	0.58	0.00	0.46	0.45	0.19	1.00		
TIPS	0.03	0.06	-0.12	0.10	0.24	0.15	0.02	1.00	
Inflation	0.03	0.01	-0.12	0.08	0.22	0.07	0.02	0.71	1.00

# OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM

## JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY

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### Section 5

#### DEMOGRAPHIC ASSUMPTIONS

Actuarial Standard of Practice (ASOP) No. 35 provides guidance to actuaries regarding the selection of demographic assumptions for measuring pension obligations. ASOP 35 states that the actuary should use professional judgment to estimate possible future outcomes based on past experience and future expectations, and select assumptions based upon application of that professional judgment. The actuary should select reasonable demographic assumptions in light of the particular characteristics of the defined benefit plan that is the subject of the measurement. A reasonable assumption is one that is expected to appropriately model the contingency being measured and is not anticipated to produce significant cumulative actuarial gains or losses over the measurement period.

The purpose of a study of demographic experience is to compare what actually happened to the individual members of the System during the study period (July 1, 2004 through June 30, 2007) with what was expected to happen based on the actuarial assumptions. Three years is a relatively short observation period for Retirement System experience, so we have considered the results of the prior Experience Study when practical to do so.

Studies of demographic experience generally involve three steps:

- First, the number of members changing membership status, called decrements, during the study is tabulated by age, duration, sex, group, and membership class (active, retired, etc.).
- Next, the number of members expected to change status is calculated by multiplying certain membership statistics, called exposure, by the expected rates of decrement.
- Finally, the number of actual decrements is compared with the number of expected decrements. The comparison is called the actual to expected ratio (A/E Ratio).

In general, if the actual experience differs significantly from the overall expected results, or if the pattern of actual decrements, or rates of decrement, by age, sex, or duration deviates significantly from the expected pattern, new assumptions are considered. Recommended revisions are normally not an exact representation of the experience during the observation period. Judgment is required to predict future experience from past trends and current evidence, including a determination of the amount of weight to assign to the most recent experience.

Revised rates of decrement are tested by using them to recalculate the expected number of decrements during the study period, and the results are shown as revised A/E Ratios.

Salary adjustments, other than the economic assumption for wage inflation, are treated as demographic assumptions. However, the method of investigation needed for salaries is different from that used for the decrements. This is discussed later in the report.

It takes a fair amount of data to perform a credible study of demographic assumptions. Because the membership or certain subsets of the membership are relatively small, some assumptions have been selected based more on our professional judgment of reasonable future outcomes than actual experience.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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The following list shows the major demographic assumptions we reviewed.

	<b>Recommended Revisions</b>	
	<b>OPERS</b>	<b>URSJJ</b>
Mortality		
Healthy Retired Members	no	yes
Beneficiaries	no	yes
Active Members	no	yes
Disabled Members	no	yes
Service Retirement		
Retirement from Active Membership	yes	yes
Retirement from Vested Membership	no	no
Disability	no	no
Other Terminations of Membership		
Withdrawal	yes	no
Probability of Refund	yes	no
Merit Scale Salary Adjustments	no	no

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM**  
**JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**Section 6**

**RETIREE MORTALITY**

One of the most important demographic assumptions is mortality because this assumption projects when retirement payments will stop. If members live longer than expected, the true cost of future benefit obligations will be understated.

It is commonly recognized that rates of mortality have been declining throughout the century, which means people, in general, are living longer. This trend is expected to continue.

Because of potential differences in mortality, we study healthy retirees, disabled retirees and active members separately, as well as males and females.

**OPERS**

This assumption applies to the post-retirement period only. The mortality assumption was changed in the last experience study to the RP-2000 Combined Table projected to 2010. Based on this table, the A/E Ratio at that time for males was 141% and for females was 130%, indicating a significant margin for mortality improvements.

It is an established trend that people are living longer. As a result, we believe it is appropriate to include some reflection of future mortality improvements in the valuation process. Sometimes this is accomplished by including a “margin” in the rates (using mortality rates that predict fewer deaths than are actually occurring in the present experience). This results in a ratio of actual to expected deaths of over 100%. Another way to take the trends in long term mortality improvements into account is to use generational mortality improvements. The “generational” mortality table approach selects mortality rates for a given age from a series of static tables based on the year in which an individual reaches the specified age.

Although our usual preference is to use the generational approach, it is not feasible for OPERS and URSJJ because the mortality table used in the valuation process must also be used for purposes of the definition of “actuarial equivalence”. This impacts optional form factors and service purchase costs. To use generational mortality for these purposes would add unnecessary administrative complexity. Therefore, we recommend that OPERS continue to use a static mortality table, set to provide a comfortable margin for future mortality improvements, i.e. an A/E Ratio above 100%.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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The summary results of our study are shown below:

<b>Healthy Retirees</b>	<b>2004-2007 Observations</b>		
	<u>Actual</u>	<u>Expected</u>	<u>A/E Ratio</u>
<b>Males</b>			
Ages 55-70	253	167	157%
Ages 71-90	<u>861</u>	<u>680</u>	127%
<b>Total</b>	<b>1,114</b>	<b>847</b>	<b>132%</b>
<b>Females</b>			
Age 55-70	169	150	113%
Age 71-90	<u>767</u>	<u>629</u>	122%
<b>Total</b>	<b>936</b>	<b>779</b>	<b>120%</b>

Although the A/E Ratios decreased by 10% from those observed in the last experience study, actual deaths during the three year study period were significantly higher than those expected, based on current assumptions. When the analysis is studied further by sub groups (ages 55 to 70 and ages 71 to 90) there is a significant difference in the A/E ratio for males, particularly from ages 55 to 70.

Based on the actuarial work we perform for other statewide public retirement systems in the region, we did not expect to see such a high A/E Ratio based on the current assumption. Research into the mortality experience for the state of Oklahoma indicated that mortality rates in Oklahoma are indeed higher than for other midwest states like Kansas, Iowa and Nebraska. The report we reviewed (*Causes of Premature Death from University of Oklahoma College of Public Health*) stated that 75% of the difference between Oklahoma and the nation can be explained by heart disease. It also stated that the mortality experience in Oklahoma was similar to states in the southeast such as Arkansas, Mississippi, and Louisiana. Therefore, we reviewed the mortality assumption used by those state systems. The mortality assumption used by Arkansas Public Employees Retirement System is the 1983 Group Annuity Mortality Table. The Mississippi Employees Retirement System is also using the 1983 Group Annuity Mortality Table (with a one year set-forward for females). To give the Board some idea of comparability of these assumptions with OPERS, the following is a summary of the cost of providing \$1 of monthly income at the given ages using a 7.50% interest rate and a 2% COLA.

<b>Males</b>	<u>OPERS</u>	<u>Arkansas PERS</u>	<u>Mississippi PERS</u>
Age 55	166.22	157.44	125.07
Age 60	150.92	142.05	115.54
Age 65	133.59	124.46	103.76
Age 70	114.84	106.09	90.68
Age 75	94.67	87.78	76.90

<b>Females</b>	<u>OPERS</u>	<u>Arkansas PERS</u>	<u>Mississippi PERS</u>
Age 55	172.02	174.73	172.25
Age 60	157.99	161.39	158.44
Age 65	142.07	148.64	142.19
Age 70	124.73	127.40	123.52
Age 75	106.24	107.77	103.85

## OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY

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Although this information on other systems is interesting, it does not tell the whole story as we do not know the margin, if any, produced by using the assumption. It does however, confirm that mortality rates in Oklahoma are higher than states to the north and west of Oklahoma and are more similar to Arkansas and Mississippi.

**Recommendation:** Based on this information we are satisfied that the mortality experience exhibited in the study period is representative of the mortality of the State of Oklahoma and may be relied upon in setting this assumption. There is sufficient margin in the mortality rates currently being used. We recommend the current assumption be retained.

**Beneficiaries:** The mortality of beneficiaries applies to the survivors of members who have elected a joint and survivor option. There are a relatively small number of members receiving benefits under the joint and survivor options which results in volatility in the observed mortality rates. In addition, there is no requirement that a joint annuitant's death be reported if the joint annuitant dies before the member. Based on these factors, we prefer to follow standard convention and set the mortality of beneficiaries equal to the mortality of retired members. Therefore, we recommend the current assumption be retained.

**Disabled Retirees:** The current assumption is the RP-2000 Combined Table Projected to 2010 with a 15 year set forward (for example, a 50 year old is assumed to exhibit the mortality of a 65 year old). Based on this assumption, the A/E ratio was 99% (82 actual versus 83 expected). We recommend the current assumption be retained.

### URSJJ

The RP-2000 Combined Table Projected to 2010 using Scale AA is used for the Judges' valuation. Although we studied actual mortality experience, there was not enough data to fully rely on actual experience in setting this assumption. The A/E Ratios for males was 92%, (12 deaths versus 13 expected), indicating fewer deaths than expected. There was very little data for retired female Judges so it was not analyzed. Studies indicate that there is a strong correlation between education/income levels and mortality. In light of this and the observed experience, we believe it would be prudent to introduce more conservatism in the mortality assumption for the Judges. We recommend using a one year age setback with the RP-2000 Combined Table projected to 2010 for Judges. The revised A/E ratio using the recommended assumption is 100%.

**Beneficiaries:** As discussed above, we prefer to follow standard convention and set the mortality of beneficiaries equal to the mortality of retired members. Therefore we recommend using the RP-2000 Combined Table Projected to 2010 with a 1 year setback (for example, a 65 year old is assumed to exhibit the mortality of a 64 year old).

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**Section 7**

**DEATH FROM ACTIVE STATUS**

This assumption models eligibility for death benefits prior to retirement, rather than the expected lifetime for pension payments. Therefore, it has a much smaller impact on the valuation results than the post-retirement mortality assumption.

The observed A/E Ratios for active OPERS members are shown in the following chart.

Active Deaths	2004-2007 Observations		
	Actual	Expected	A/E Ratio
Male	87	102	85%
Female	74	91	81%
<b>Total</b>	161	193	83%

Rates of mortality among active members may be impacted by active members first terminating or moving to disabled status before death. Therefore, we believe the current A/E Ratios are reasonable and recommend keeping the current assumption.

**Judges**

This group is too small to provide credible data. We recommend the same assumption be adopted for actives as for retirees, i.e. RP-2000 Combined Table Projected to 2010 with a one year age setback.

**Miscellaneous Assumptions**

**Marriage Assumption:** This assumption only has an impact in valuing pre-retirement death benefits. The data contains no information on the marital status of active members so we cannot study OPERS experience. Instead, we utilize a standard assumption in the valuation for the percent of members married. We recommend that assumption (85% for OPERS and Judges) remain unchanged.

**Spouse Age:** Again, since data on active members is not available, we reviewed retiree data. For new retirees who elect to receive benefits under a Joint and Survivor option, there was an age difference of 4 years when the member was a male and 2 years when the member was a female. We recommend our current assumption of 4 years for the difference in ages continue to be used. Please note this affects only the valuation of preretirement death benefits.



**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Section 8**

**RETIREMENT**

Service retirement measures the change in status from active membership directly to retirement. This assumption does not include the retirement patterns of the retirees who terminated from active membership prior to their retirement.

**OPERS**

The Oklahoma Public Employees Retirement System provides for a normal retirement benefit (unreduced benefits) upon the earlier of (a) age 62 and six years of service or (b) “Rule of 80” (if hired prior to July 1, 1992) or Rule of 90 (if hired on or after July 1, 1992).

A member is eligible for early retirement after attaining age 55 and completing ten years of credited service. Under the provisions for early retirement, the benefit is reduced 1/15th for each of the first five years and 1/30th per year for the next two years.

Retirement rates anticipate the percentage of employees eligible to retire who will elect to retire at each age. It is particularly important to anticipate early retirement when there are subsidized benefits, i.e. the reductions for early commencement are less than pure “actuarial equivalence”. Although there is some subsidization in the early retirement factors, the more critical benefit to value is the Rule of 80/90 where unreduced benefits are paid.

Currently, OPERS uses a separate retirement table depending on whether a member is eligible for unreduced or reduced retirement benefits.

**Non-Elected (Regular) Members**

<b>Regular Members</b>				
	<b><u>Actual</u></b>	<b><u>Expected</u></b>	<b><u>A/E Ratio</u></b>	<b><u>Proposed A/E Ratio</u></b>
Early				
State	420	445	94%	N/A
Local	75	109	69%	N/A
<b>Total</b>	<b>495</b>	<b>554</b>	<b>89%</b>	<b>N/A</b>
Normal				
State	1,881	2,031	93%	93%
Local	402	529	76%	82%
<b>Total</b>	<b>2,283</b>	<b>2,560</b>	<b>89%</b>	<b>91%</b>

Overall, the A/E Ratio for normal retirement was 89%. However, there were more retirements before age 55 than expected and fewer than expected after age 60 so the fit was not as good as the A/E ratio might indicate. Therefore, we are recommending some adjustments to the retirement rates to better fit the observed experience. The revised A/E ratio for normal retirement based on the recommended assumption is 91%.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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We studied experience in aggregate and separately for State (non-elected and non-HD) and Local members. We observed a difference in retirement patterns, i.e. the A/E Ratio for State was 93% and for Local was 76%. Although we did observe a difference, one three-year period is a small amount of data to use to develop a new assumption. We would prefer to study it again in the next experience study and make a recommendation at that time.

**Elected Officials**

Elected officials may retire with unreduced benefits on or after the earlier of (a) member’s age 60 and six years of service or (b) meeting “Rule of 80” criteria.

A member is eligible for early retirement after attaining age 55 and completion of ten years of credited service. Benefits are reduced by 6% per year before age 60.

Currently, the same retirement rates are used for elected officials as are used for non-elected officials.

The experience analysis indicated more members elected early retirement than were anticipated by the assumption (A/E ratio of 211%). We recommend increasing the early retirement rate to 10% at all ages, with a resulting A/E ratio of 106%.

The A/E ratio for unreduced retirement was 98% (138 actual vs. 141 expected). Although the A/E Ratio is close to 100%, the assumption was not a good fit, i.e. retirements were higher than expected before age 59 and lower than expected after age 60 with an offsetting impact. We recommend making some adjustments to better fit experience (see Exhibit 11). The A/E Ratio based on the recommended assumption is 91%.

**Hazardous Duty**

Members in the Hazardous Duty group are eligible to retire at the earliest of (1) 20 years of service, (2) age 62 or (3) Rule of 90 (80 for members hired before July 1, 1992).

Early retirement benefits are available at age 55 and completion of ten years of credited service. The benefit is reduced 1/15th per year for the first five years before age 62 and 1/30th per year for the next two years.

<b>Hazardous Duty</b>				
<b><u>Retirement</u></b>	<b><u>Actual</u></b>	<b><u>Expected</u></b>	<b><u>A/E Ratio</u></b>	<b><u>Proposed A/E Ratio</u></b>
Early	20	15	133%	N/A
Normal (20+ YOS)	64	112	57%	81%
Normal (<20 YOS)	21	25	84%	N/A

The fit of actual and expected rates is relatively good between 20 and 30 years of service. We are recommending some adjustments to better fit observed experience. In addition, rather than assuming 100% of the members with 30 years of service retire, we recommend extending the retirement rates to 35 years of service. The revised A/E ratio using the recommended assumption is 81%.

## OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY

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### Inactive Vested Members

Currently, inactive vested members who leave their contributions with the System are assumed to retire on the date provided by OPERS, which is the member's earliest unreduced retirement date. Current active members assumed to terminate employment in the future, are assumed to commence benefits at age 62 (non-elected) or age 60 (elected members). We recommend this assumption be retained.

### URSJJ

Unreduced benefits are available to a member at (a) age 65 with eight years of service, (b) age 60 with ten years of service, or (c) Rule of 80 (age plus service equals or exceeds 80). Early retirement (reduced) benefits are not provided. Although the size of the membership in the Judges system is small and therefore results are not totally credible, we did review actual experience. Actual retirements during the study period were higher than expected. The A/E ratio was 116% (36 actual vs. 31 expected). The pattern of retirements we observed was very different than the current assumption, i.e. with much higher retirement rates at ages before 62. While we do not expect future experience to remain as high as the rates observed in this period, we do believe the current rates are very low at the younger ages. We are recommending some small adjustments to the current assumption, which will recognize some but not all of the observed experience. The revised A/E Ratio, using the recommended assumption, remains 116%. However, the proposed rates are a better fit to the actual experience.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**Section 9**

**DISABILITY**

This assumption is used to value the disability benefit that might become payable to current active members in future years. In order to qualify for disability benefits, the member must have at least eight years of service and qualify for federal Social Security disability benefits.

**OPERS**

Separate disability rates are used for male and female members as the actual experience of each group typically varies. The table below indicates the number of actual and expected disabilities during the study period and the resulting A/E Ratios.

	<b>2004-07 Observations</b>		
	<b><u>Actual</u></b>	<b><u>Expected</u></b>	<b><u>A/E Ratio</u></b>
Male	95	179	53%
Female	122	211	58%
<b>Total</b>	217	390	56%

We also studied disability experience by group. We found there was not a significant difference between the State and Local experience. As might be expected, the disability rates for Hazardous Duty members were higher than for regular members. However, limited data makes the experience data less than fully credible. Our results are shown below:

	<b>2004-07 Observations</b>		
	<b><u>Actual</u></b>	<b><u>Expected</u></b>	<b><u>A/E Ratio</u></b>
State	169	295	57%
Local	34	73	47%
Elected Officials	2	9	22%
Hazardous Duty	12	13	92%
<b>Total</b>	217	390	56%

In the last experience study, disability rates at ages 50 and up were increased rather significantly. The resulting A/E Ratios based on the revised assumption were 111% and 106% according to the 2004 Experience Study report. Given the dramatic drop in the A/E Ratio, we recommend we continue to use the current assumption and make adjustments if needed, after the next study. The additional experience over the next three years will verify the appropriateness of the current assumption or the need to lower the rates.

**URSJJ**

No disability assumption is currently used for the valuation of URSJJ. We recommend no change be made to this assumption.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**Section 10**

**TERMINATION OF EMPLOYMENT  
(Withdrawal)**

This section of the report summarizes the results of our study of terminations of employment for reasons other than death, retirement, or disability. This assumption is used to value the benefit payable to active members if they terminate covered employment. Rates of termination can vary by both age and years of service, as well as gender. In general rates of termination are highest at younger ages and in the early years of employment.

The number of withdrawals in our study includes all members reported to have terminated employment other than death, disability or retirement. Some of these members subsequently receive refunds of contributions; some return to active membership and some leave their contributions with the System until retirement. Explicit assumptions are made regarding the elections made by vested members.

**OPERS**

The current rates are age-based on a select and ultimate basis, i.e. a different set of rates apply for the initial or select period (5 years in this case). The following chart shows the actual and expected number of terminations for causes other than death, retirement, or disablement, and the corresponding A/E Ratios. In general, terminations lower than expected increase the liabilities but in terms of the impact on the valuation, which members terminate can be more important than the number of terminations.

<b>Male</b>		<b>2004-2007 Observations</b>		
<u>Years of Service</u>	<u>Actual</u>	<u>Expected</u>	<u>A/E Ratio</u>	
< 2	1,786	1,473	121%	
2 – 3	423	395	107%	
3 – 4	360	327	110%	
4 – 5	279	253	110%	
5 +	1,321	1,361	97%	

<b>Female</b>		<b>2004-2007 Observations</b>		
<u>Years of Service</u>	<u>Actual</u>	<u>Expected</u>	<u>A/E Ratio</u>	
< 2	2,428	2,064	118%	
2 – 3	466	508	92%	
3 – 4	374	423	88%	
4 – 5	316	343	92%	
5 +	1,422	1,595	89%	

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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<b>Male &amp; Female</b>				
<u>Years of Service</u>	<u>2004-2007 Observations</u>			<u>2001-04</u>
	<u>Actual</u>	<u>Expected</u>	<u>A/E Ratio</u>	<u>A/E Ratio</u>
< 2	4,214	3,537	119%	104%
2-3	889	903	98%	97%
3-4	734	750	98%	89%
4-5	595	596	100%	102%
5 +	2,743	2,956	93%	100%

Overall the current assumption was a relatively good fit for the observed experience in the study period. We are recommending an adjustment to the rates for both years of service less than two and years of service equal to two. The resulting A/E ratio based on the recommended assumption is 107% and 98% respectively. We also analyzed the data in the “5+ Years of Service” further by reviewing the separate results for years of service six through nine and ten or more years of service. Our results are shown below.

<b>2004-2007 Observations</b>			
<u>Years of Service</u>	<u>Actual</u>	<u>Expected</u>	<u>A/E Ratio</u>
5-6	455	349	130%
6-7	388	309	126%
7-8	352	267	132%
8-9	252	213	118%
9-10	176	175	101%
10 +	1,120	1,644	68%

Based on this experience we recommend extending the select period to nine years and grouping members with five through eight years of service together for purposes of developing the termination of employment rates. Members with nine years will be in a separate group. The ultimate rates will apply to members with ten or more years of service (YOS). The revised A/E ratios, using the recommended assumption are 112% for YOS 5-8, 101% for 9 YOS and 90% for 10 or more YOS.

**URSJI**

Currently, the termination of employment rates are 2% at all ages. Termination from employment for reasons other than death, disability or retirement is uncommon in a Judges retirement system. We recommend the current assumption be retained.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**Section 11**

**PROBABILITY OF REFUND ELECTION BY VESTED MEMBERS**

Currently, we assume that all non-vested members receive a refund of their account balance at the time of termination, but that all vested members leave their money in the System and elect to receive a deferred benefit. However, a certain percentage of terminating vested members elect a distribution of their member account, thus forfeiting their vested right to their employer-provided benefits, even if the value of the deferred benefit has a greater present value than the refund. We recommend implementing an assumption in the valuation to reflect the probability of a terminating vested member electing to leave their contributions with the System.

**OPERS**

The following table shows the number of vested members who terminated and elected to leave their funds with the System along with the expected count.

<b>2004-2007 Observations</b>				<b>Proposed</b>
	<b>Actual</b>	<b>Expected</b>	<b>A/E Ratio</b>	<b>A/E</b>
Regular	1,046	1,390	75%	83%
Elected Official	50	61	82%	N/A
Hazardous Duty	49	93	53%	N/A

Given the benefit structure for elected officials and members of the Hazardous Duty group, we recommend keeping the assumption that all vested members will elect to receive a deferred benefit. For regular members, we recommend using an assumption to reflect the probability that terminated vested members will elect a refund in lieu of receiving a deferred benefit. While it would be more conservative to value a termination benefit equal to the greater of the refund or present value of the deferred benefit, we consistently observe members electing a refund despite the fact the deferred benefit has a higher value using the actuarial assumptions. There is a strong correlation between the age at termination and electing a refund. Therefore, we recommend an age-based assumption be used. The A/E ratio, using the proposed assumption, is 83%. Given this is a new assumption to the System and is based on only three years of experience, we recommend a high degree of conservatism be reflected in setting the assumption. Our recommended assumption is shown in Exhibit 27.

**URSJJ**

Given the demographic profile of the members and the benefit structure, it is rare for a vested member of URSJJ to elect a refund in lieu of a deferred benefit. Therefore, we believe the assumption should be that no one will elect a refund. Therefore, the current assumption should be maintained.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**Section 12**

**MERIT SALARY SCALE**

Estimates of future salaries are based on assumptions for two types of increases:

- Increases in each individual's salary due to promotion or longevity (often called merit scale), and
- Increases in the general wage level of the membership, which are directly related to price and wage inflation.

Earlier in this report, we recommended that the second of these rates, wage inflation, be set to 4.25% (3.00% price inflation and 1.25% real wage growth).

Data is reported as total salary for each plan year and so our analysis is based on total salary increases. We compared individual salary increases for all members active in any two consecutive periods in the study period (e.g. 2004 and 2005 valuations, 2005 and 2006 valuations, etc). The results are summarized by group below.

<u>Group</u>	<u>Actual</u>	<u>Expected</u>
Regular	6.3%	5.6%
Elected Official	4.6%	5.8%
Hazardous Duty	8.3%	6.0%

We also analyzed salary experience separately for State and Local employees.

<u>Year</u>	<u>State</u>		<u>Local</u>	
	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected</u>
2004-05	5.2%	5.6%	4.4%	5.7%
2005-06	7.5%	5.6%	5.2%	5.7%
2006-07	6.2%	5.6%	6.6%	5.7%
2004-07	6.3%	5.6%	5.5%	5.7%

The actual salary increases for the State were higher than expected, which was not our expectation given the level of actual CPI (around 2.3%) and wage inflation (about 4.3%). Typically we review the salary increases for members with more than 25 years of service to identify the general wage increase during the study period (assumes no merit after 25 years of service). This analysis indicated a very high general wage increase, which did not seem realistic given the budget issues facing most states.

We then tried to obtain relevant salary information for the State from a different source. We received a copy of the 2007 Annual Compensation Report published by the office of Personnel Management. This report included information on the general salary increases granted by the State for classified employees during the last nine years, as shown on the following page.



**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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<u>Effective Fiscal Year</u>	<u>Pay Increase for Classified Employees</u>	<u>Effective Date</u>
2000	0	N/A
2001	\$2,000	10/1/2000
2002	\$0	N/A
2003	\$0	N/A
2004	\$0	N/A
2005	\$1,400*	1/1/2005
2006	\$700**	7/1/2005
2007	5%***	10/1/2006
2008	0	N/A

\* This increase represented about a 2.2% increase in payroll for FY05.

\*\* This increase represented about a 2.1% increase in payroll for FY06.

\*\*\* This increase represented about a 3.75% increase in payroll for FY07.

The general wage increases granted by the State over the last 9 years have been lower than both price and wage inflation. In fact, no general wage increase was granted in 5 of the 9 years. This pattern of low or no increases for a number of years tends to create a situation where larger increases are granted in later years in order for wages paid to public sector employees to “catch up” with salaries paid in the private sector. The variability in the timing makes it difficult to evaluate the salary experience from year to year, particularly over a short study period like three years.

In addition, when increases are granted based on a dollar amount rather than a percent of salary increase, this tends to provide a higher percentage increase for lower paid employees and a lower percentage increase for higher paid individuals. Since the salary increase assumption used in the valuation is based on a percentage increase, the dollar increases do not translate easily into directly useable data for setting assumptions.

Using this data for the general wage increase for the 2004-07 study period resulted in a very low general wage increase and a very high merit scale, as shown below for only State employees:

<u>Year</u>	<u>Actual</u>	<u>General Wage</u>	<u>Implied Merit Scale</u>
2004-05	5.2%	2.2%	3.0%
2005-06	7.5%	2.1%	5.4%
2006-07	6.2%	3.8%	2.4%

Further research using the 2007 Annual Compensation report indicated that there was a dramatic increase in market-based adjustments. The total PMM (Pay Movement Mechanism) adjustments for 2005 were \$5.2 million. For 2006, the amount was \$9.0 million, a 73% increase. The largest single change was for market adjustment, which went from \$0.6 million in 2005 to \$3.6 million in 2006. The report even states, “The dramatic increase in market-based adjustments may be attributable to the lack of a general pay increase

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

---

authorized by the Legislature for FY2006”. This may explain part of the reason the merit scale for FY2006 appears to be so high.

Given the limited data available (three years) and the challenge in trying to identify the true “merit scale”, we are not comfortable recommending any change. For many of our clients, we are moving to a pure service based assumption since salary increases tend to be more strongly correlated to years of service than age. We also analyzed the salary information on this basis, but given the situation we prefer not to make any changes at this time. We propose that we continue to study the salary increases granted by the State and other participating employers on both an age and service basis and aggregate the experience from the current study with that in the next study to produce more credible data. A recommendation can then be made at that point in time.

We believe the current salary increase assumption is a reasonable assumption over the long term. We recommend that the total salary increase assumption remain unchanged and the merit scale be obtained by subtracting the 4.25% general wage increase from the total salary increase.

**URSJJ**

The salary experience for Judges during the study period is shown below:

	<u>Actual</u>	<u>Expected</u>
2004-05	-0.8%	5.5%
2005-06	8.9%	5.5%
2006-07	15.4%	5.5%
Total	7.9%	5.5%

Effective July 1, 2005, the Board of Judicial Compensation was created. This Board meets in September in every odd-numbered year. The Board reviews the compensation paid to member of the State Judiciary and, if necessary, adjusts compensation. In determining whether or not to adjust current pay levels, the Board considers various factors, including judicial compensation in other states, with an emphasis on states within the region, the value of comparable services performed in the private sector, compensation of attorneys in the private and public sectors, compensation of other state, county, and municipal public officials, and changes in the cost of living. Any change in judicial compensation is made by the Board not later than the third Tuesday of November in the odd-numbered year. The change becomes effective on July 1 of the following calendar year unless the increase is rejected by the Legislature.

Because of this change, recent history offers little guidance regarding future increases. We recommend that the total salary increase assumption remain unchanged and the merit scale be obtained by subtracting the 4.25% general wage increase from the total salary increase.

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Section 13**

**FINANCIAL IMPACT**

The financial impact was evaluated by performing additional valuations with the July 1, 2007 valuation data, reflecting the recommended assumption changes. This allows us to evaluate the relative financial impact of each recommended change. However, the relative impact of the various assumption changes by component is somewhat dependent on the order in which they are evaluated. Thus, the amount of the financial impact attributable to each change is often interrelated.

The costs in the following table(s) were based on the July 1, 2007 valuation using the recommended assumptions as discussed in this report. While we would expect the relative impact on the July 1, 2008 valuation to be similar (as a percentage), the actual impact may vary due to underlying changes in the composition of the membership.

A summary of the recommended assumption changes for each group are shown below, along with the estimated cost impact. Changes are cumulative from left to right.

	<b>OPERS</b>				
	<u>Current</u>	<u>Retirement</u>	<u>Termination</u>	<u>Probability of Refund</u>	<u>Amortization</u>
Actuarial Accrued Liability	\$8,413	\$8,397	\$8,466	\$8,464	\$8,464
Actuarial Assets	6,110	6,110	6,110	6,110	6,110
Unfunded Actuarial Liability	2,303	2,287	2,356	2,354	2,354
Normal Cost	12.34%	12.26%	12.44%	12.40%	12.40%
UAAL Amount	13.39	13.30	13.70	13.69	9.89
Expenses	<u>0.40</u>	<u>0.40</u>	<u>0.40</u>	<u>0.40</u>	<u>0.40</u>
Actuarial Contribution Rate	26.13%	25.96%	26.54%	26.49%	22.69
Member Rate	<u>4.02</u>	<u>4.02</u>	<u>4.02</u>	<u>4.02</u>	<u>4.02</u>
Employer Rate	22.11%	21.94%	22.52%	22.47%	18.67%

	<b>URSJJ</b>				
	<u>Current</u>	<u>Investment Return</u>	<u>Mortality</u>	<u>Retirement</u>	<u>Amortization</u>
Actuarial Accrued Liability	\$227	\$222	\$228	\$231	\$231
Actuarial Assets	225	225	225	225	225
Unfunded Actuarial Liability	2	(3)	3	6	6
Normal Cost	30.28%	28.94%	29.69%	30.36%	30.36%
UAAL Amount	0.72	(0.92)	0.78	1.89	1.36
Expenses	<u>0.66</u>	<u>0.66</u>	<u>0.66</u>	<u>0.66</u>	<u>0.66</u>
Actuarial Contribution Rate	31.66%	28.68%	31.13%	32.91%	32.38%
Member Rate	<u>8.00</u>	<u>8.00</u>	<u>8.00</u>	<u>8.00</u>	<u>8.00</u>
Employer Rate	23.66%	20.68%	23.13%	24.91%	24.38%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**APPENDICES**

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**APPENDIX A  
CURRENT AND PROPOSED ASSUMPTIONS (OPERS)**

**ECONOMIC ASSUMPTIONS**

	<u>Current Assumptions</u>	<u>Proposed Assumptions</u>																						
<b>Investment Return</b>	7.5% net of investment expenses per annum, compounded annually.	No Change																						
<b>Salary Increases</b>	Sample rates below (midpoint of range shown):	No Change																						
	<table border="0"> <thead> <tr> <th align="center"><u>Nearest Age</u></th> <th align="center"><u>% Increase</u></th> </tr> </thead> <tbody> <tr><td align="center">20 - 24</td><td align="center">9.0</td></tr> <tr><td align="center">25 - 29</td><td align="center">8.0</td></tr> <tr><td align="center">30 - 34</td><td align="center">6.7</td></tr> <tr><td align="center">35 - 39</td><td align="center">6.1</td></tr> <tr><td align="center">40 - 44</td><td align="center">5.8</td></tr> <tr><td align="center">45 - 49</td><td align="center">5.4</td></tr> <tr><td align="center">50 - 54</td><td align="center">5.1</td></tr> <tr><td align="center">55 - 59</td><td align="center">5.1</td></tr> <tr><td align="center">60 - 64</td><td align="center">5.1</td></tr> <tr><td align="center">65+</td><td align="center">5.1</td></tr> </tbody> </table>	<u>Nearest Age</u>	<u>% Increase</u>	20 - 24	9.0	25 - 29	8.0	30 - 34	6.7	35 - 39	6.1	40 - 44	5.8	45 - 49	5.4	50 - 54	5.1	55 - 59	5.1	60 - 64	5.1	65+	5.1	
<u>Nearest Age</u>	<u>% Increase</u>																							
20 - 24	9.0																							
25 - 29	8.0																							
30 - 34	6.7																							
35 - 39	6.1																							
40 - 44	5.8																							
45 - 49	5.4																							
50 - 54	5.1																							
55 - 59	5.1																							
60 - 64	5.1																							
65+	5.1																							
<b>Ad hoc benefit increase assumption</b>																								
Monthly benefits	2% per year.	No Change																						
Medical supplement	No increases assumed.	No Change																						
<b>Projection of 401(a)(17) compensation limit</b>	Projected with inflation at 2.5%.	Projected with inflation at 3.0%.																						
<b>Payroll growth</b>	No assumption	4.25%																						
<b>Inflation</b>	2.5%	3.0%																						

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**APPENDIX A  
CURRENT AND PROPOSED ASSUMPTIONS (OPERS)**

**DEMOGRAPHIC ASSUMPTIONS**

**Current Assumptions**

**Proposed Assumptions**

**Retirement age**

Non-elected members

Annual Rates of Retirement <u>Per 100 Eligible Members</u>			Annual Rates of Retirement <u>Per 100 Eligible Members</u>		
<u>Nearest Age</u>	<u>Unreduced Retirement</u>	<u>Early Retirement</u>	<u>Nearest Age</u>	<u>Unreduced Retirement</u>	<u>Early Retirement</u>
50	10	N/A	50	20	N/A
51	10	N/A	51	20	N/A
52	10	N/A	52	20	N/A
53	10	N/A	53	20	N/A
54	10	N/A	54	20	N/A
55	10	4	55	10	4
56	10	5	56	10	5
57	11	5	57	11	5
58	12	6	58	12	6
59	13	7	59	13	7
60	14	7	60	14	7
61	35	20	61	20	20
62	30	N/A	62	30	N/A
63	15	N/A	63	15	N/A
64	25	N/A	64	15	N/A
65	30	N/A	65	30	N/A
66	25	N/A	66	20	N/A
67	23	N/A	67	20	N/A
68	22	N/A	68	20	N/A
69	21	N/A	69	25	N/A
70	100	N/A	70	100	N/A

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**APPENDIX A  
CURRENT AND PROPOSED ASSUMPTIONS (OPERS)**

**DEMOGRAPHIC ASSUMPTIONS (CONTINUED)**

**Current Assumptions**

**Proposed Assumptions**

**Retirement age (continued)**

Elected members

Annual Rates of Retirement <u>Per 100 Eligible Members</u>			Annual Rates of Retirement <u>Per 100 Eligible Members</u>		
<u>Nearest Age</u>	<u>Unreduced Retirement</u>	<u>Early Retirement</u>	<u>Nearest Age</u>	<u>Unreduced Retirement</u>	<u>Early Retirement</u>
50	10	N/A	50	30	N/A
51	10	N/A	51	30	N/A
52	10	N/A	52	30	N/A
53	10	N/A	53	30	N/A
54	10	N/A	54	30	N/A
55	10	4	55	10	10
56	10	5	56	10	10
57	11	5	57	20	10
58	12	6	58	20	10
59	13	7	59	20	10
60	14	7	60	20	10
61	35	20	61	20	10
62	30	N/A	62	20	N/A
63	15	N/A	63	20	N/A
64	25	N/A	64	20	N/A
65	30	N/A	65	20	N/A
66	25	N/A	66	40	N/A
67	23	N/A	67	40	N/A
68	22	N/A	68	40	N/A
69	21	N/A	69	40	N/A
70	100	N/A	70	100	N/A

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**APPENDIX A  
CURRENT AND PROPOSED ASSUMPTIONS (OPERS)**

**DEMOGRAPHIC ASSUMPTIONS (CONTINUED)**

Retirement age (continued)	<u>Current Assumptions</u>				<u>Proposed Assumptions</u>			
	<u>Service</u>	<u>Rate</u>	<u>Nearest Age</u>	<u>Less than 20 Years of Service</u>	<u>Service</u>	<u>Rate</u>	<u>Nearest Age</u>	<u>Less than 20 Years of Service</u>
Hazardous Duty Members								
	20-21	25%	50	N/A	20	20%	50	N/A
	21-30	18	51	N/A	21-24	15	51	N/A
	30+	100	52	N/A	25-29	20	52	N/A
			53	N/A	30-34	25	53	N/A
			54	N/A	35	100	54	N/A
			55	4%			55	4%
			56	5			56	5
			57	5			57	5
			58	6			58	6
			59	7			59	7
			60	7			60	7
			61	20			61	20
			62	40			62	40
			63	22			63	22
			64	25			64	25
			65	40			65	40
			66	25			66	25
			67	23			67	23
			68	22			68	22
			69	21			69	21
			70	100			70	100

**Mortality Rates**

Active Participants and nondisabled pensioners	RP-2000 Combined Active/Retiree Healthy Mortality Table projected to 2010 using Scale AA.	No Change
Disabled pensioners	RP-2000 Combined Active/Retiree Healthy Mortality Table projected to 2010 using Scale AA set forward 15 years for disabled experience.	No Change



**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

---

**APPENDIX A  
CURRENT AND PROPOSED ASSUMPTIONS (OPERS)**

Hazardous Duty	For Department of Corrections officers, we assumed the mortality rate is 10% higher than the above table while the participant is active. This 10% is assumed to be in-line-of-duty.	No Change
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**DEMOGRAPHIC ASSUMPTIONS (CONTINUED)**

	<u>Current Assumptions</u>	<u>Proposed Assumptions</u>																		
<b>Disability Rates</b>	Disabled rates <u>Per 100 Members</u> Nearest	No Change																		
	<table border="0"> <thead> <tr> <th><u>Age</u></th> <th><u>Male</u></th> <th><u>Female</u></th> </tr> </thead> <tbody> <tr> <td>20</td> <td>.01</td> <td>.01</td> </tr> <tr> <td>30</td> <td>.02</td> <td>.03</td> </tr> <tr> <td>40</td> <td>.08</td> <td>.10</td> </tr> <tr> <td>50</td> <td>.41</td> <td>.31</td> </tr> <tr> <td>60</td> <td>.85</td> <td>.63</td> </tr> </tbody> </table>	<u>Age</u>	<u>Male</u>	<u>Female</u>	20	.01	.01	30	.02	.03	40	.08	.10	50	.41	.31	60	.85	.63	No Change
<u>Age</u>	<u>Male</u>	<u>Female</u>																		
20	.01	.01																		
30	.02	.03																		
40	.08	.10																		
50	.41	.31																		
60	.85	.63																		
<b>Withdrawal Rates</b>	5 Year Select and Ultimate (rates in data summary)	10 Year Select and Ultimate (rates in data summary)																		
<b>Probability of Electing Vested Benefit</b>	All members are assumed to not elect a return of contributions if they are vested.	Regular Members Only <u>Age</u> <u>Rate</u> under 35                      80% 36-46                         85% 47+                             100%																		
<b>Marital Status</b>																				
Percentage married	Males: 85%; Females: 85%	No Change																		
Age difference	Males are assumed to be four years older than spouses.	No Change																		

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

---

**APPENDIX A  
CURRENT AND PROPOSED ASSUMPTIONS (OPERS)**

<b>Children</b>	Special death benefits are provided upon the in-line-of-duty death of Department of Corrections employees who have young children. We have assumed the average age of the youngest child of such employees is nine and that 50% of such children will attend an institution of higher education to age 22.	No Change
<b>Form of Payment</b>	Participants are assumed to elect a life-only form of payment.	No Change

**OTHER ASSUMPTIONS**

	<b><u>Current Assumptions</u></b>	<b><u>Proposed Assumptions</u></b>
<b>Assumed age of commencement for deferred benefits</b>	Currently active members assumed to terminate in the future prior to retirement eligibility are assumed to benefits at age 62 (non-elected members) or age 60 (elected members). Currently inactive members with deferred benefits are assumed to commence benefits on a date provided by OPERS.	No Change
<b>Provision for expenses</b>	Administrative expenses, as budgeted by the Oklahoma Public Employees Retirement System.	No Change

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**APPENDIX B  
CURRENT AND PROPOSED ASSUMPTIONS (URSJJ)**

**ECONOMIC ASSUMPTIONS**

	<u>Current Assumptions</u>	<u>Proposed Assumptions</u>
<b>Investment Return</b>	7.25% net of investment expenses per annum, compounded annually.	7.50% net of investment expenses per annum, compounded annually.
<b>Salary Increases</b>	5.5% per year.	No Change
<b>Ad hoc benefit increase assumption</b>		
Monthly benefits	2% per year.	No Change
Medical supplement	No increases assumed.	No Change
<b>Projection of 401(a)(17) compensation limit</b>	Projected with inflation at 2.5%.	Projected with inflation at 3.0%.
<b>Payroll Growth</b>	No assumption	4.25%
<b>Inflation</b>	2.5%	3.0%

**DEMOGRAPHIC ASSUMPTIONS**

	<u>Current Assumptions</u>		<u>Proposed Assumptions</u>	
<b>Retirement age</b>				
Active Members		Annual Rates of Retirement Per 100		Annual Rates of Retirement Per 100
	<u>Attained Age</u>	<u>Eligible Members</u>	<u>Attained Age</u>	<u>Eligible Members</u>
	Below 62	5	Below 62	10
	62	30	62-65	25
	63 – 64	10	66-67	10
	65	40	68-69	30
	66 - 67	10	70	20
	68	30	71-74	10
	69	10	75+	100
	70	50		
	71 - 74	30		
	75+	100		

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

---

**APPENDIX B  
CURRENT AND PROPOSED ASSUMPTIONS (URSJJ)**

**Mortality Rates**

Active Participants and nondisabled pensioners	RP-2000 Combined Active/Retiree Healthy Mortality Table projected to 2010 using Scale AA.	RP-2000 Combined Active/Retiree Healthy Mortality Table projected to 2010 using Scale AA set back 1 year.
Disabled pensioners	RP-2000 Combined Active/Retired Healthy Mortality Table projected to 2010 using Scale AA set forward 15 years.	RP-2000 Combined Active/Retired Healthy Mortality Table projected to 2010 using Scale AA set forward 14 years.

**Separation Rates**

Separation for all reasons other than death	2% for all years of service.	No Change
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**Disability Rates**

0%	No Change
----	-----------

**Marital Status**

Age difference	Males are assumed to be four years older than spouses.	No Change
Percentage married	85%	No Change

**OTHER ASSUMPTIONS**

	<u>Current Assumptions</u>	<u>Proposed Assumptions</u>
<b>Form of payment</b>	Active members who were contributing 8% of pay as of August 31, 2005, are assumed to retire with an unreduced benefit payable as a 50% joint and survivor annuity. All other members are assumed to retire with a life-only annuity.	No Change
<b>Provision for expenses</b>	Administrative expenses budgeted for the Oklahoma Uniform Retirement System for Justices and Judges.	No Change

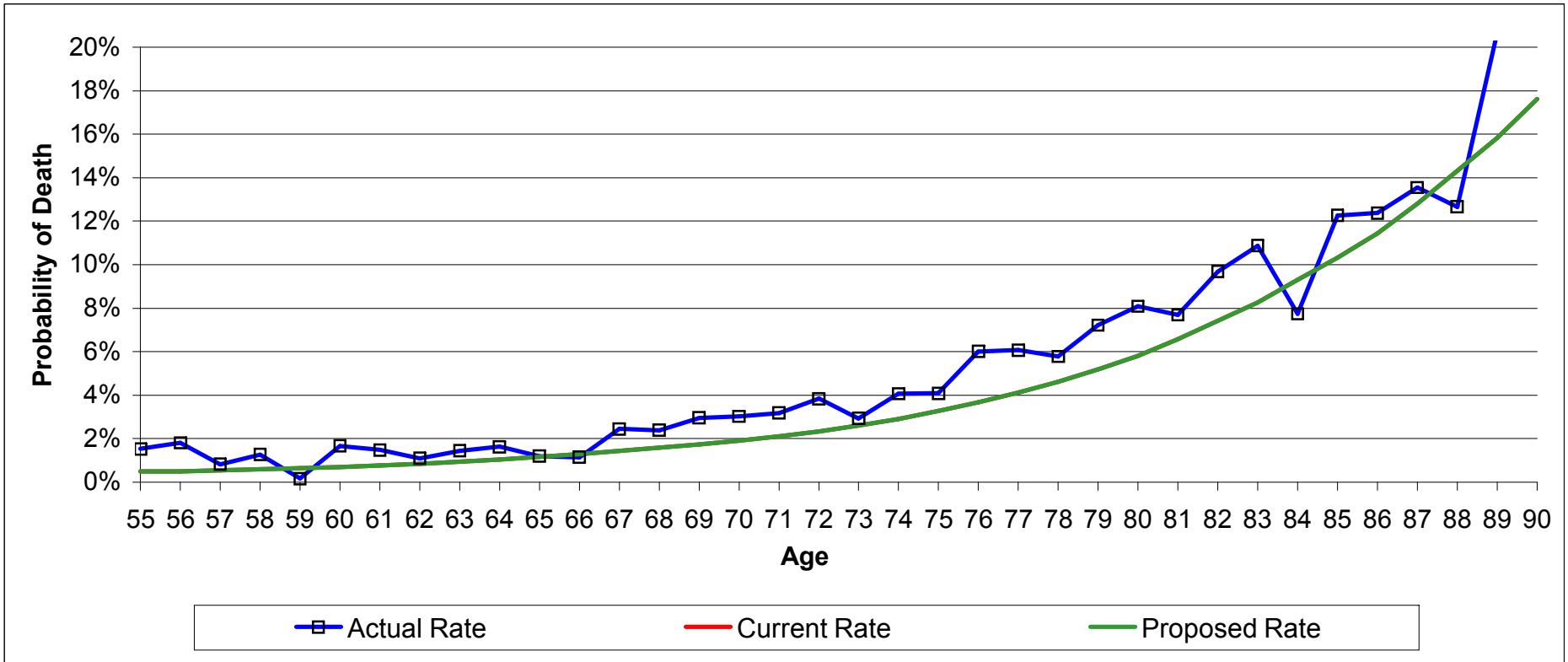
**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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**APPENDIX C**

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 1  
Probability of Death - Healthy Retirees  
OPERS - Males**



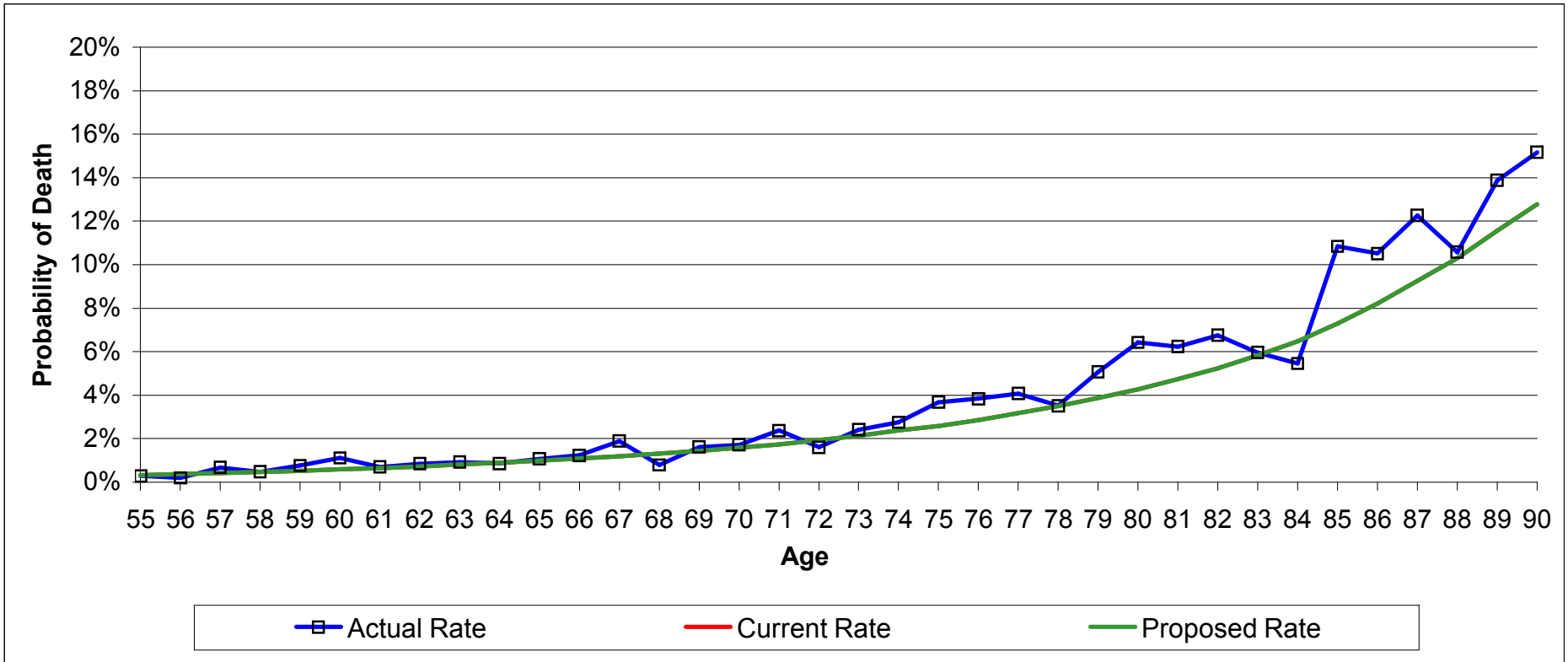
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	1,114	847	847
Actual/Expected		132%	132%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 2  
Probability of Death - Healthy Retirees  
OPERS - Females**



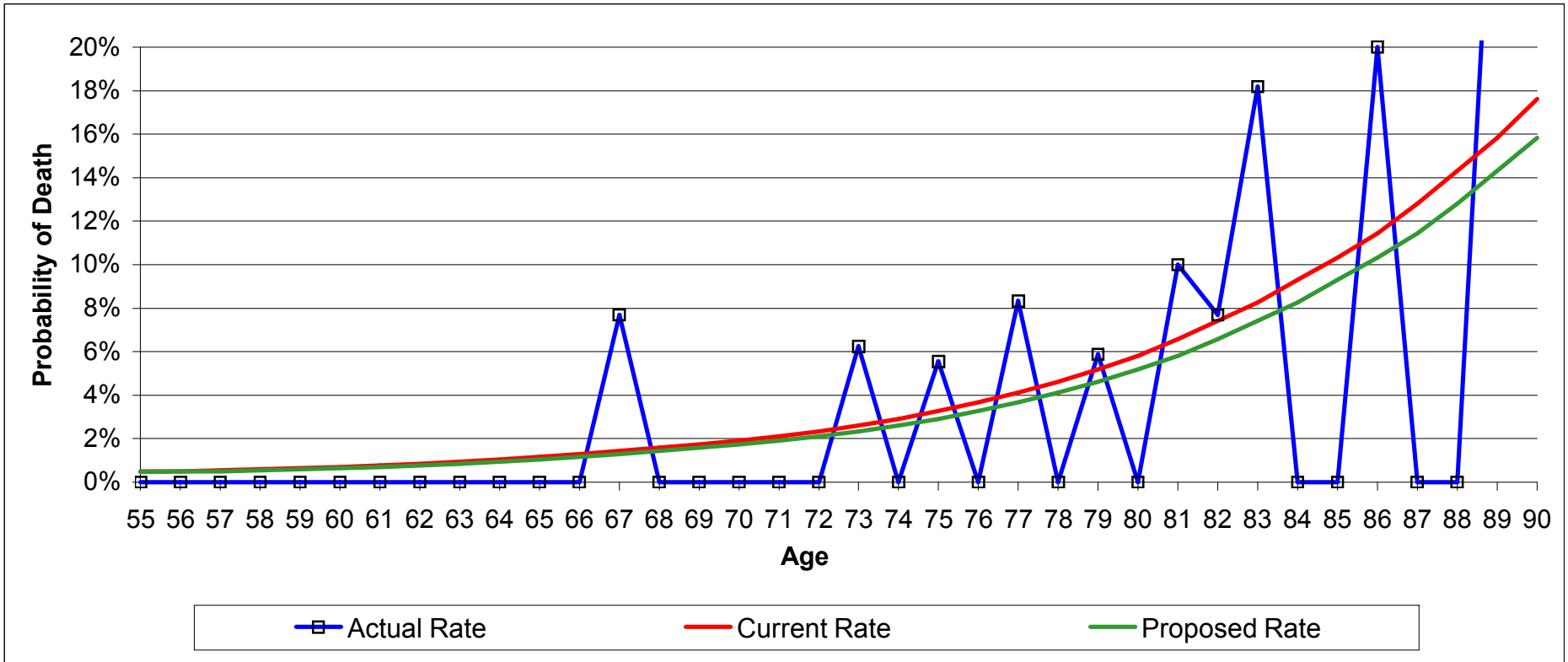
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	936	779	779
Actual/Expected		120%	120%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 3  
Probability of Death - Healthy Retirees  
URSJJ - Males**

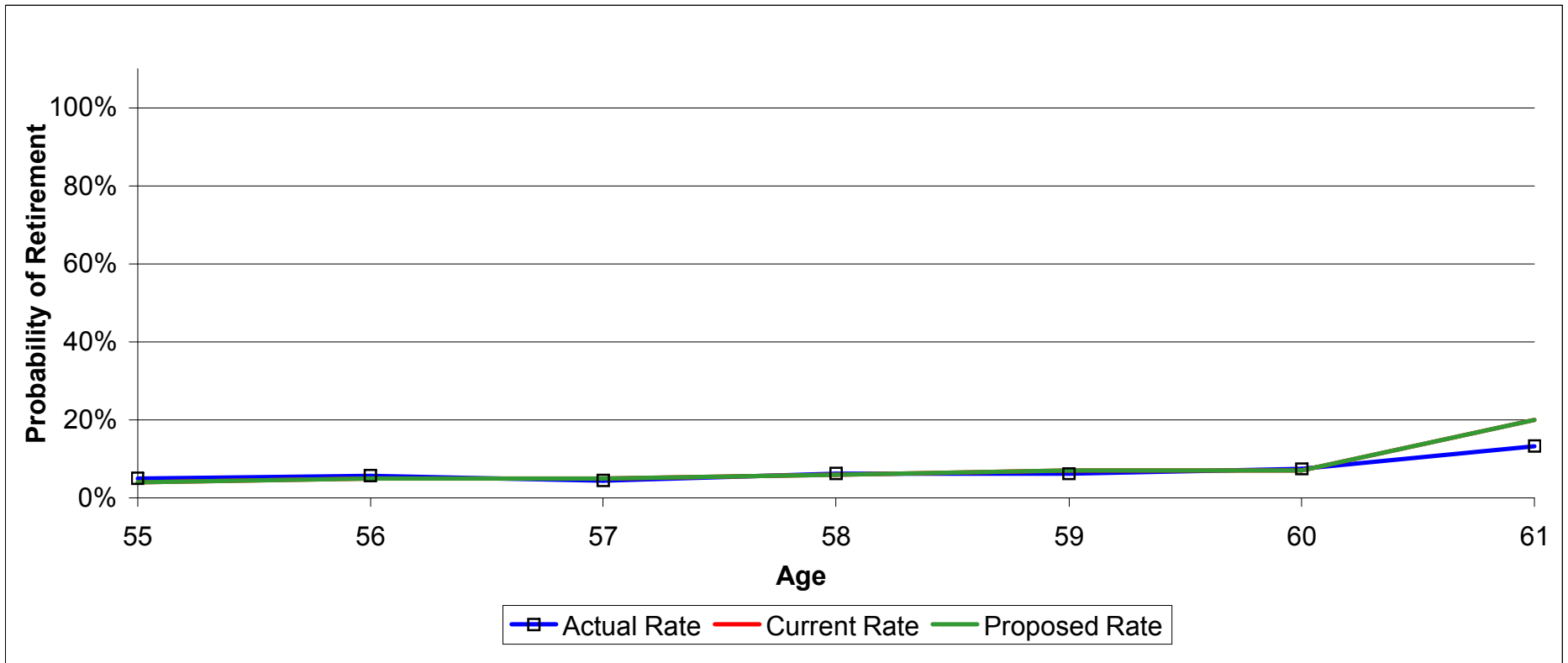


	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	12	13	12
Actual/Expected		92%	100%



**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 4  
Retirement Rates  
State - Early**



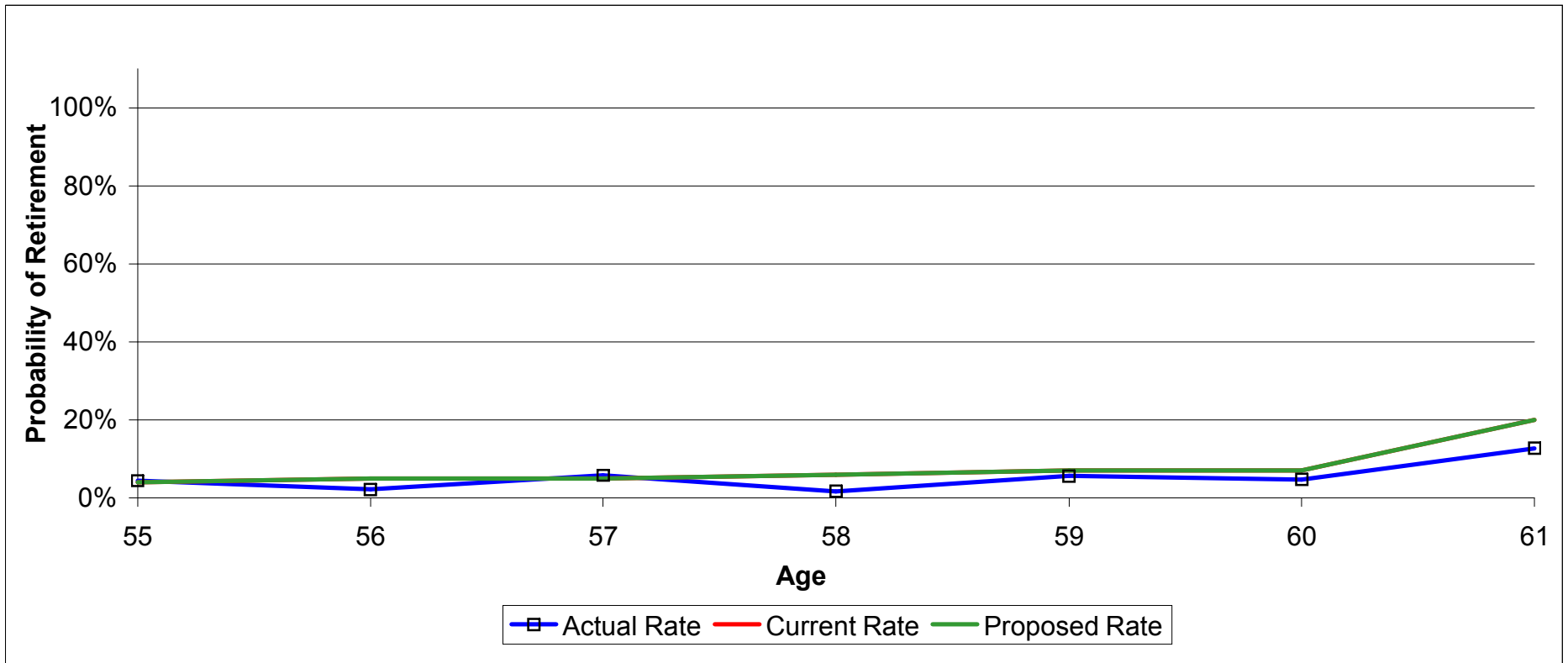
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	420	445	445
Actual/Expected		94%	94%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

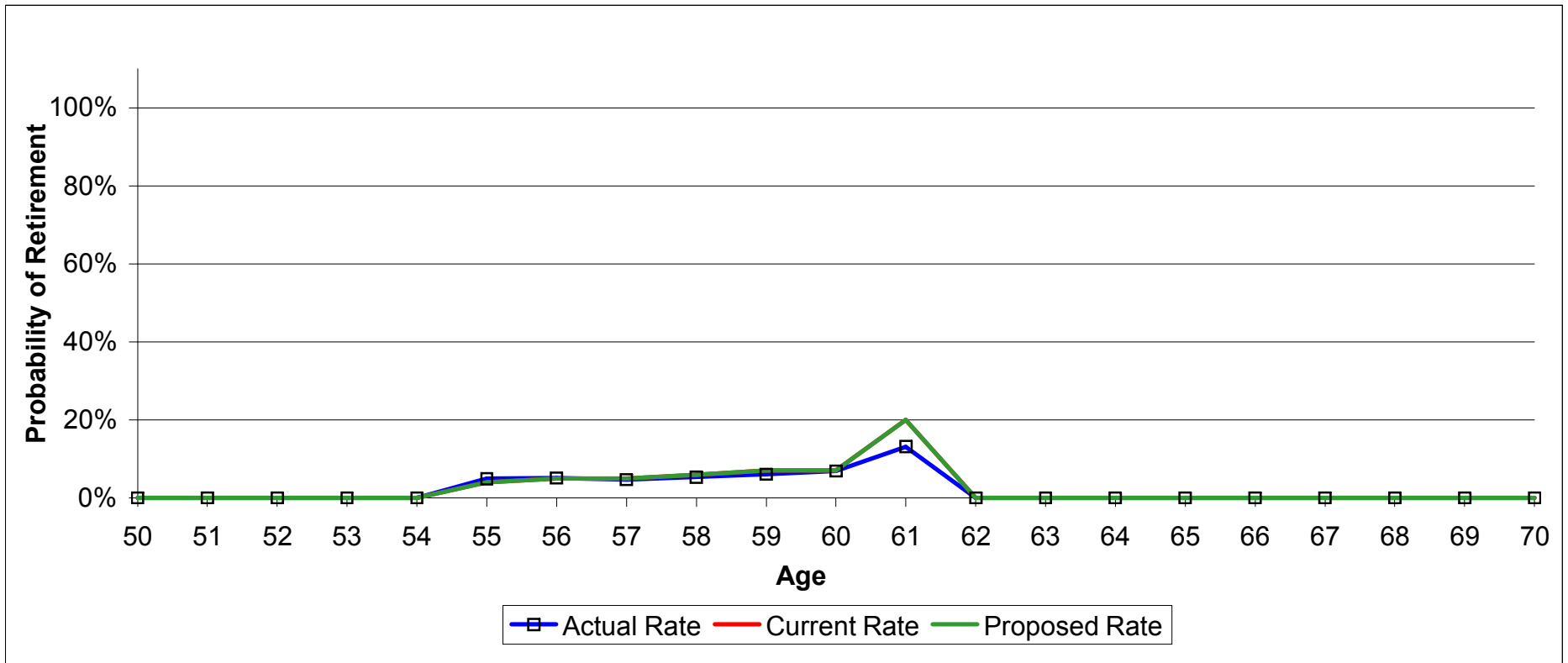
**Exhibit 5  
Retirement Rates  
Local - Early**



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	75	108	108
Actual/Expected		69%	69%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 6  
Retirement Rates  
Regular - Early**



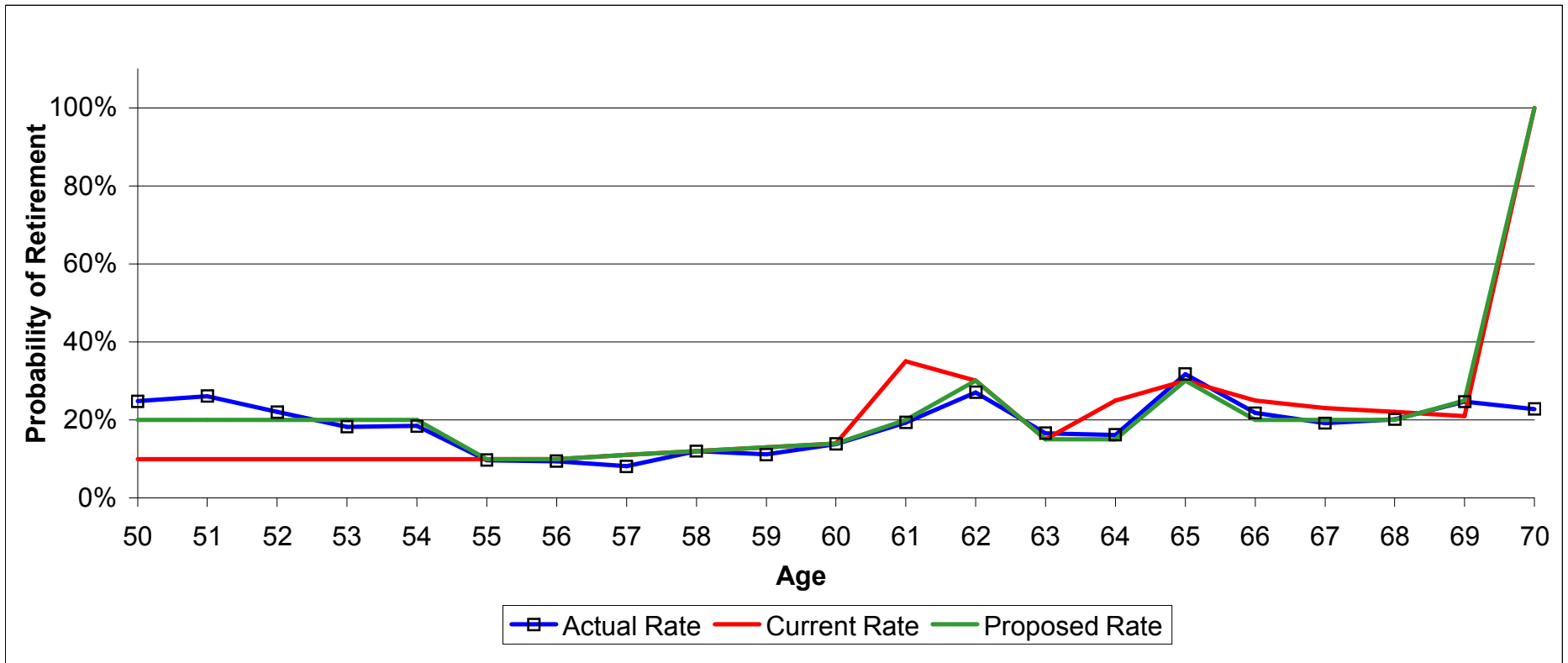
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	495	554	554
Actual/Expected		89%	89%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 7  
Retirement Rates  
State - Unreduced**



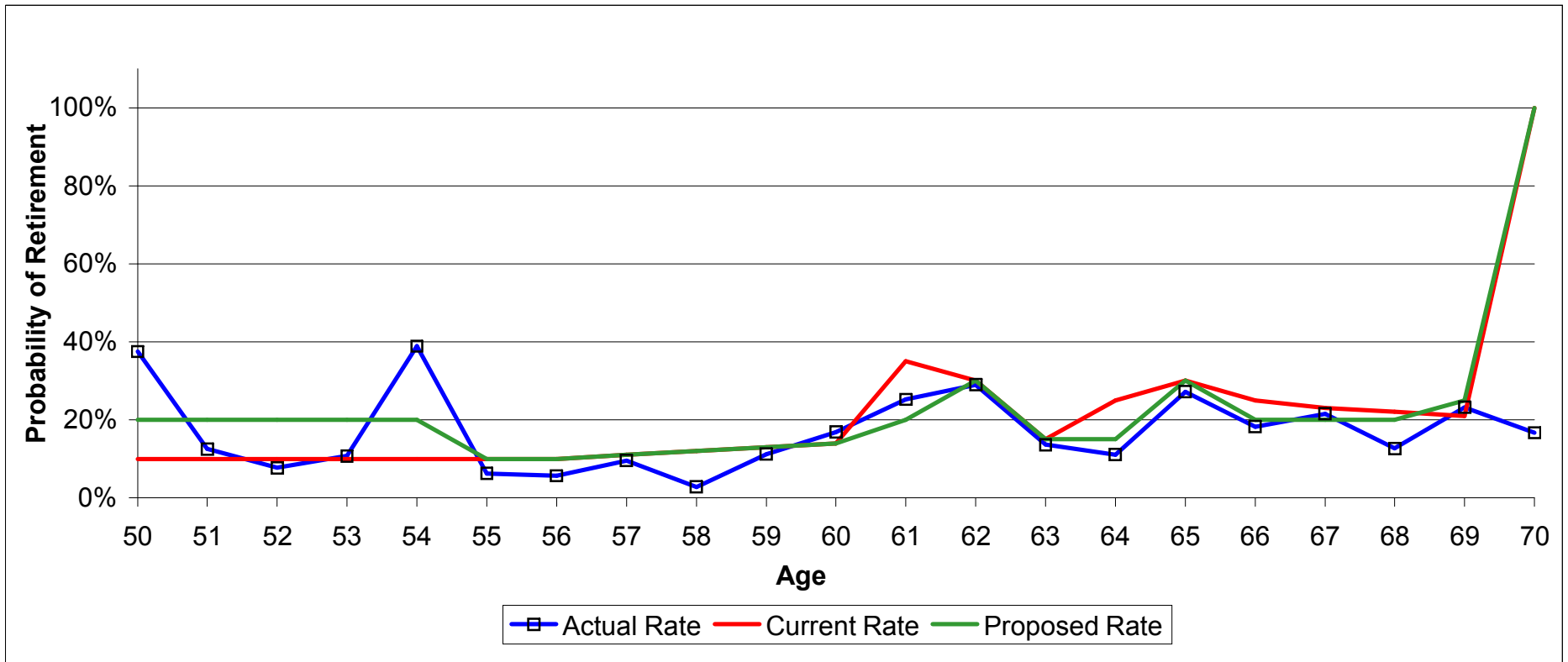
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	1,881	2,031	2,017
Actual/Expected		93%	93%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 8  
Retirement Rates  
Local - Unreduced**



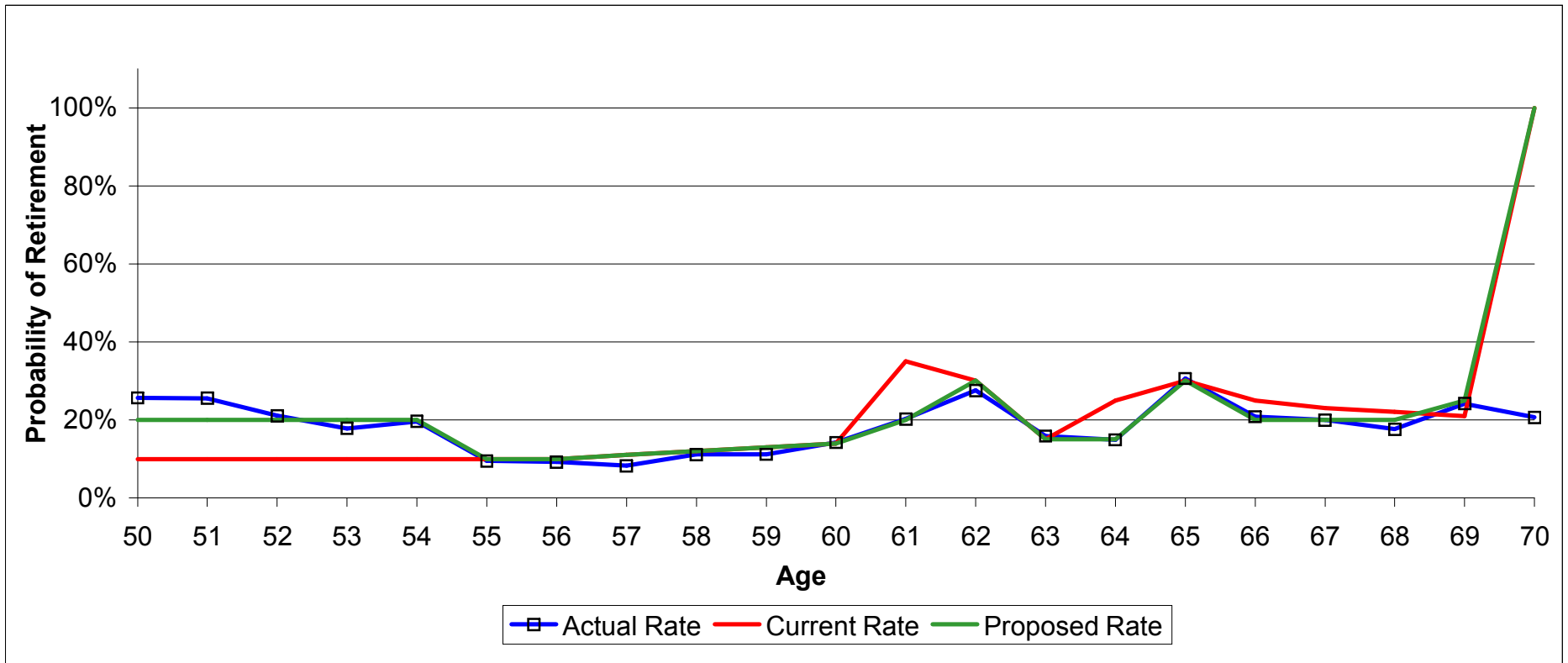
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	402	529	491
Actual/Expected		76%	82%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 9  
Retirement Rates  
Regular - Unreduced**



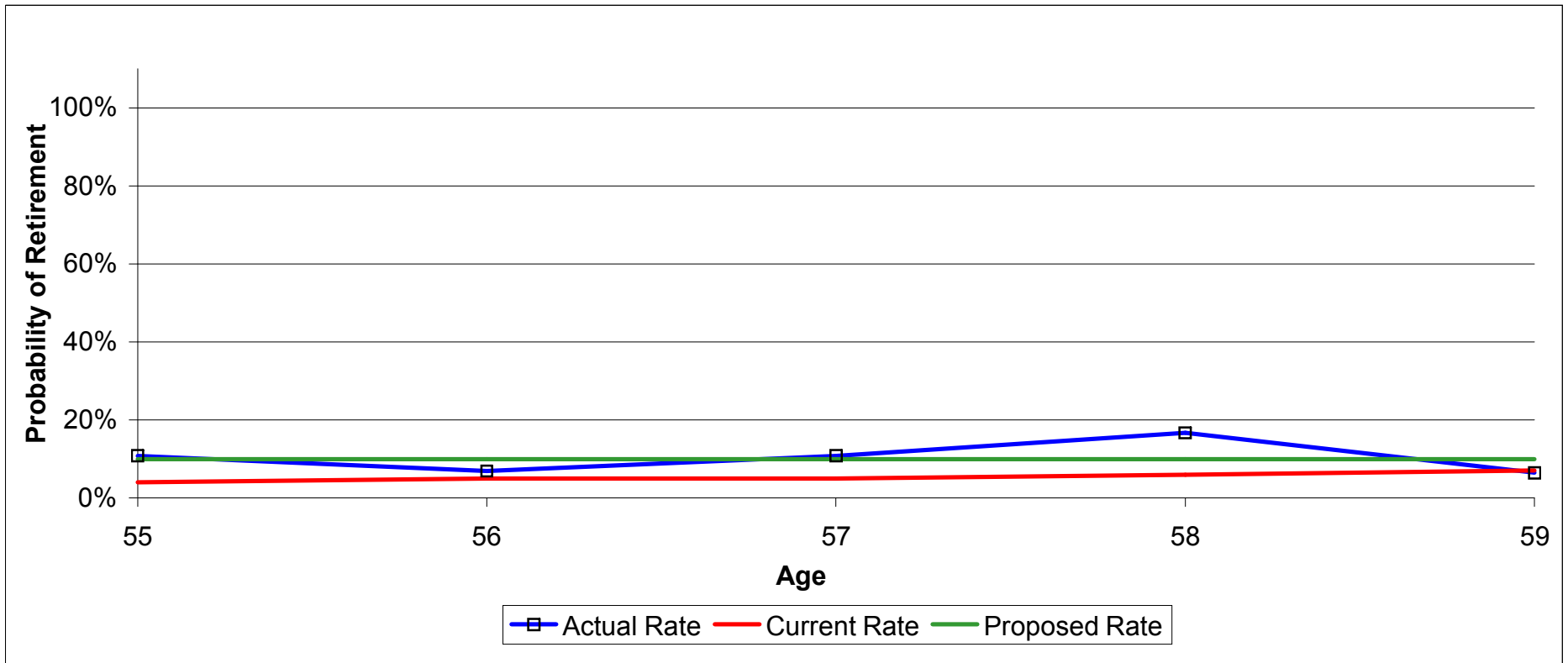
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	2,283	2,560	2,508
Actual/Expected		89%	91%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

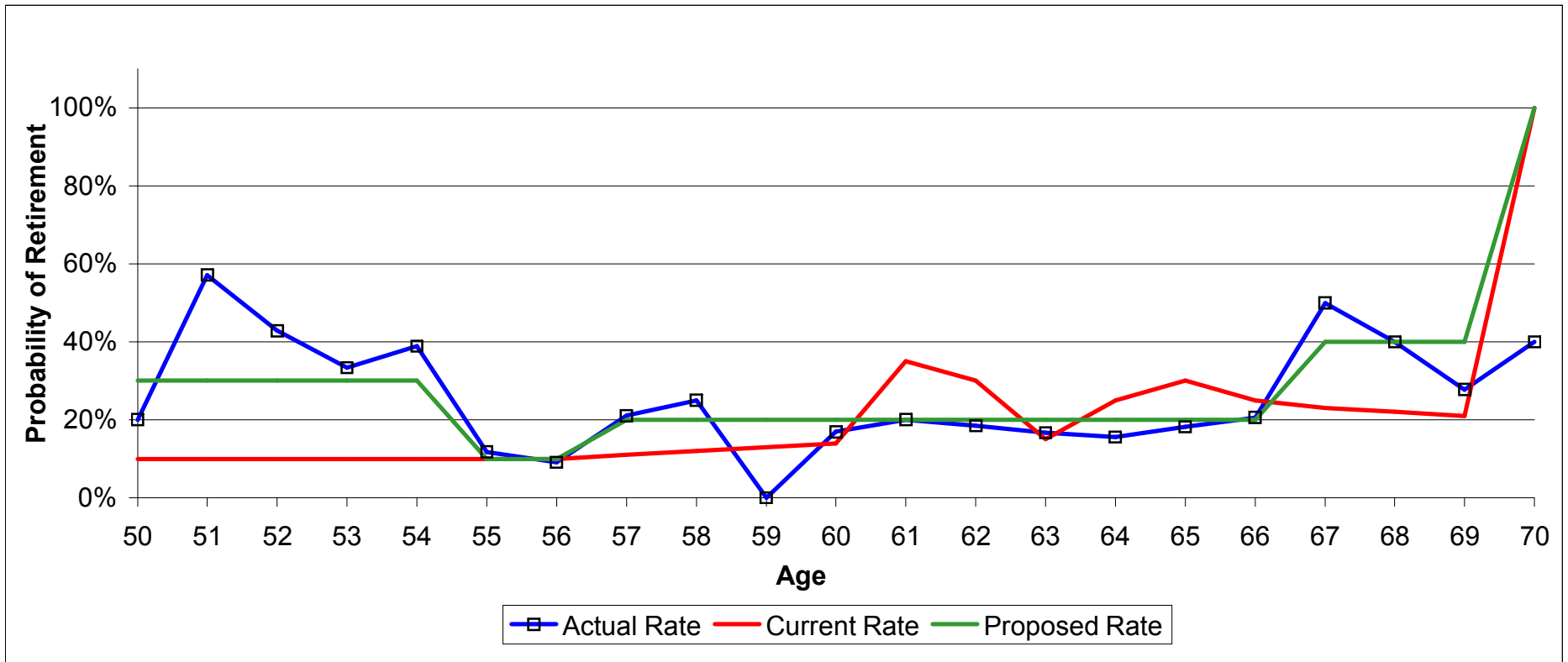
**Exhibit 10  
Retirement Rates  
Elected - Early**



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	19	9	18
Actual/Expected		211%	106%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 11  
Retirement Rates  
Elected - Unreduced**



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	138	141	152
Actual/Expected		98%	91%

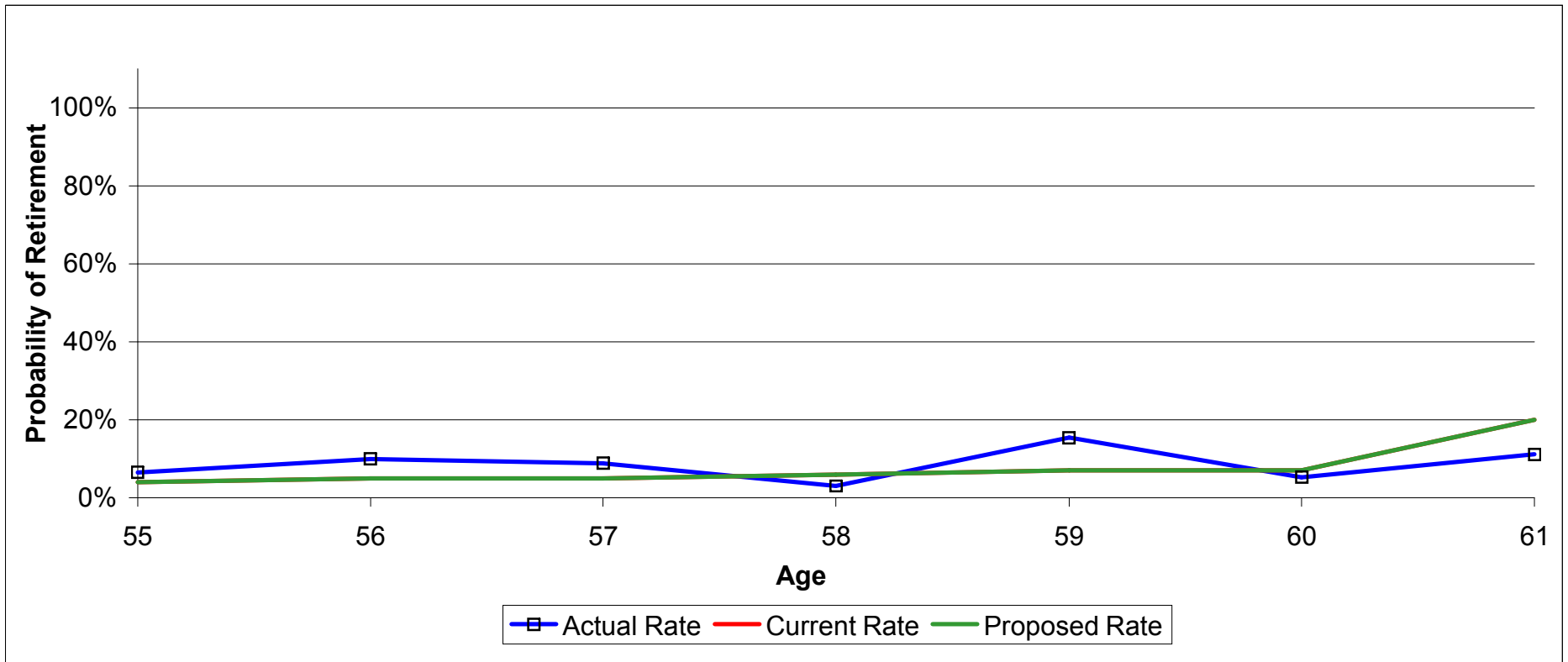


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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 12  
Retirement Rates  
Hazardous Duty - Early**



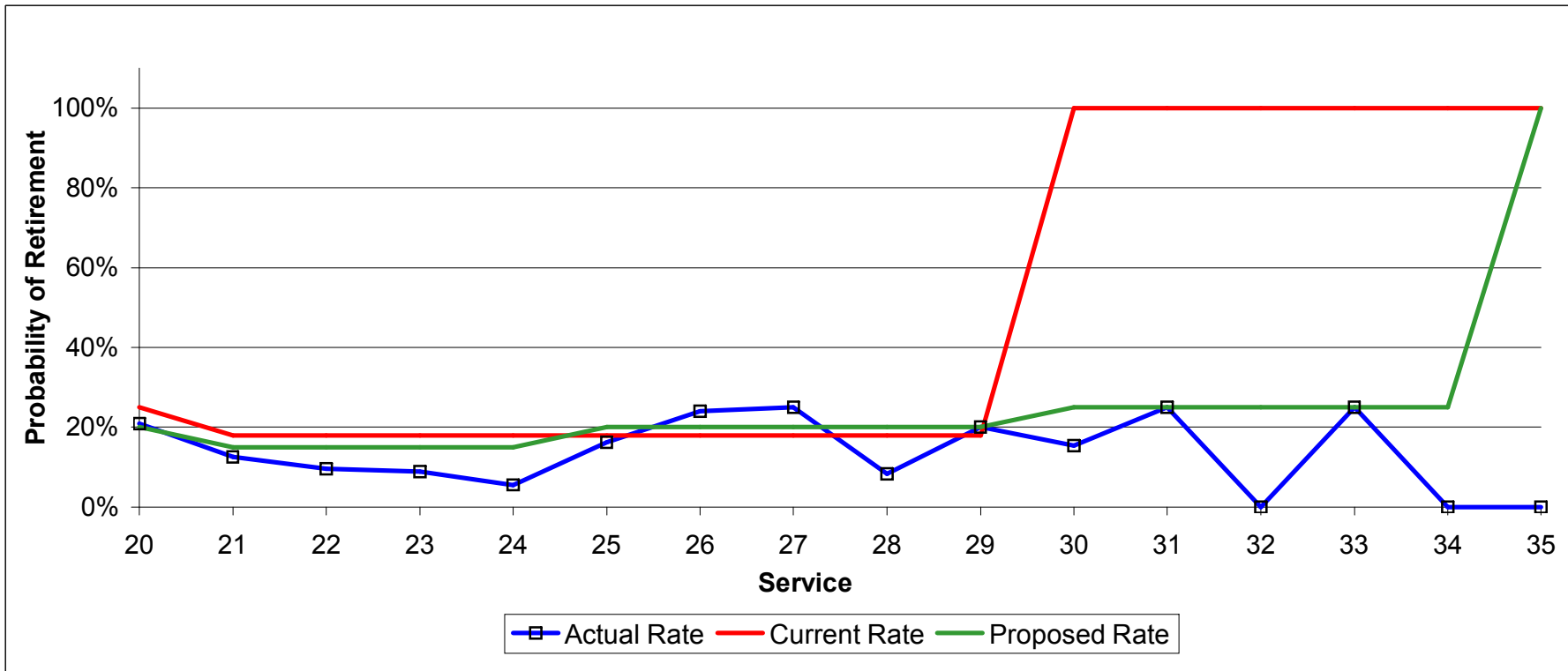
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	20	15	15
Actual/Expected		133%	133%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

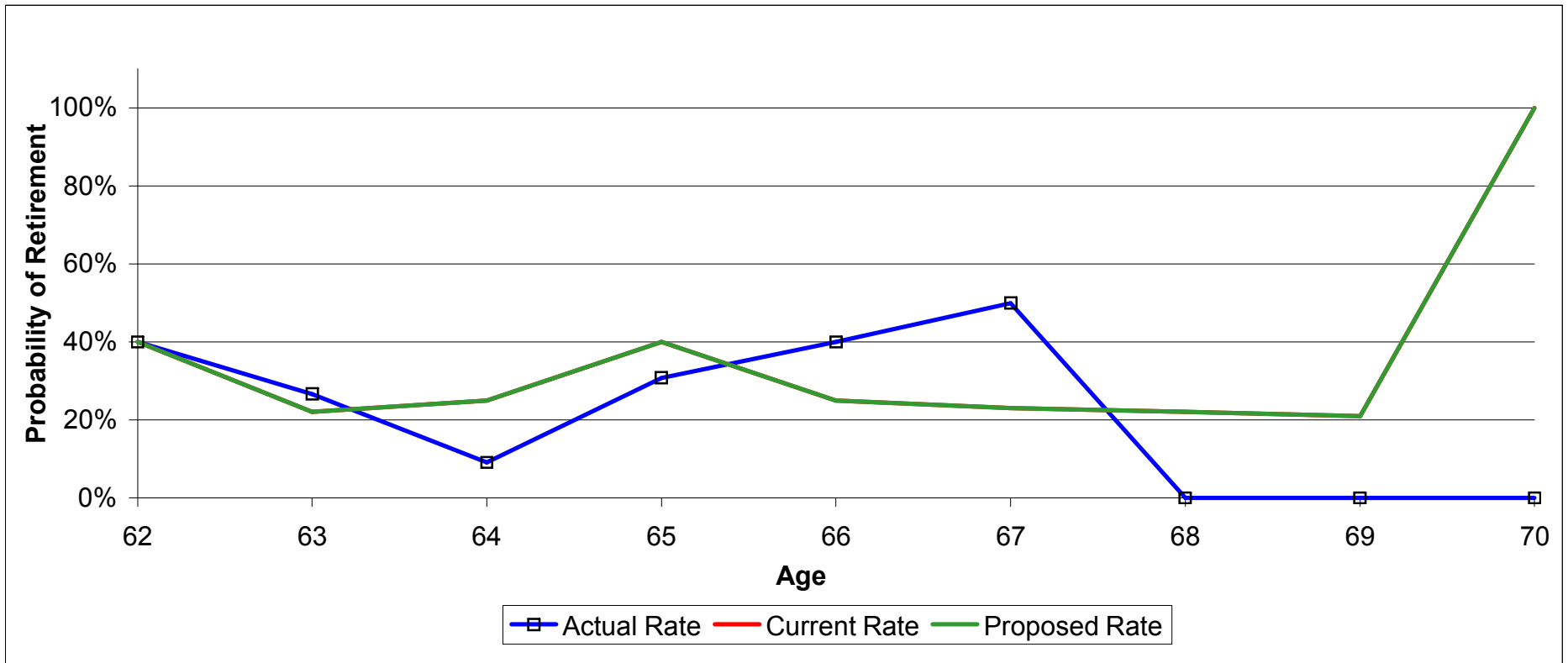
**Exhibit 13  
Retirement Rates  
Hazardous Duty - Unreduced**



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	64	112	79
Actual/Expected		57%	81%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 14  
Retirement Rates  
Hazardous Duty - Unreduced (Age)**



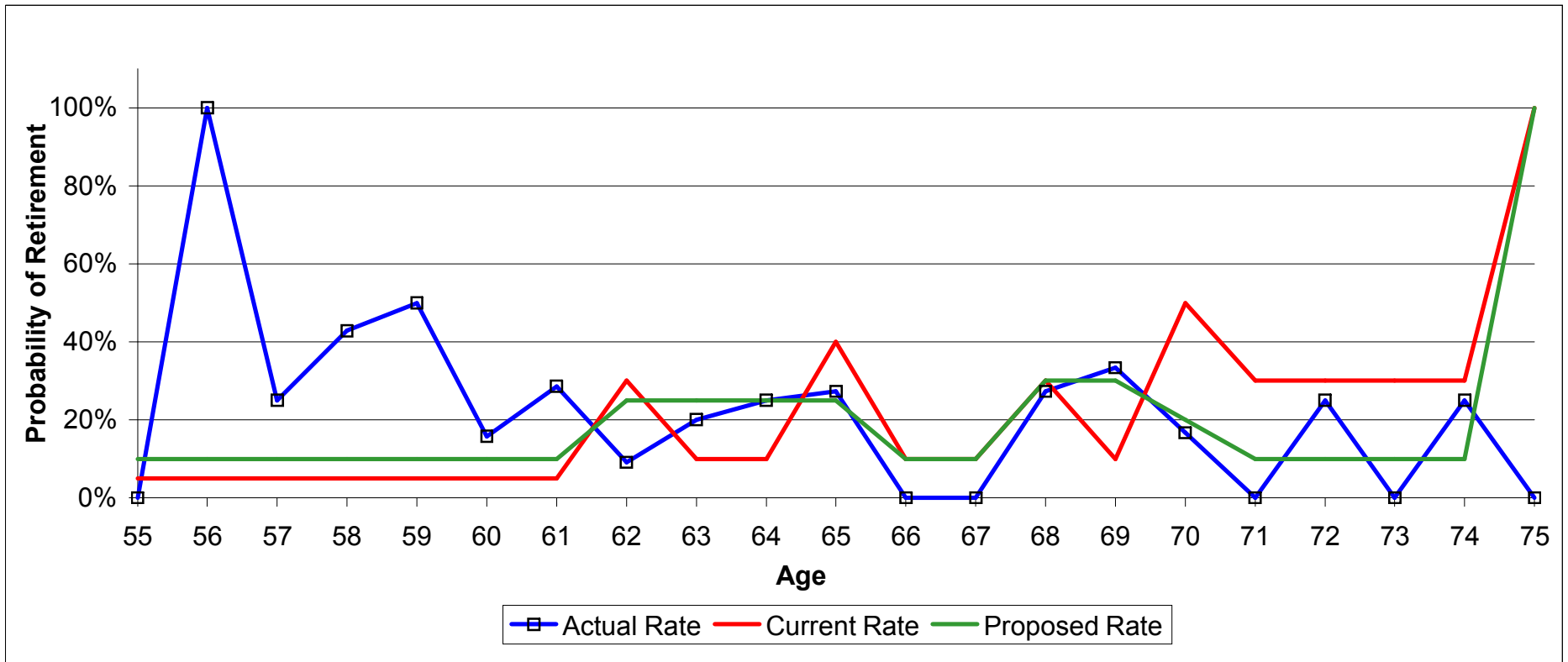
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	21	25	25
Actual/Expected		84%	84%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

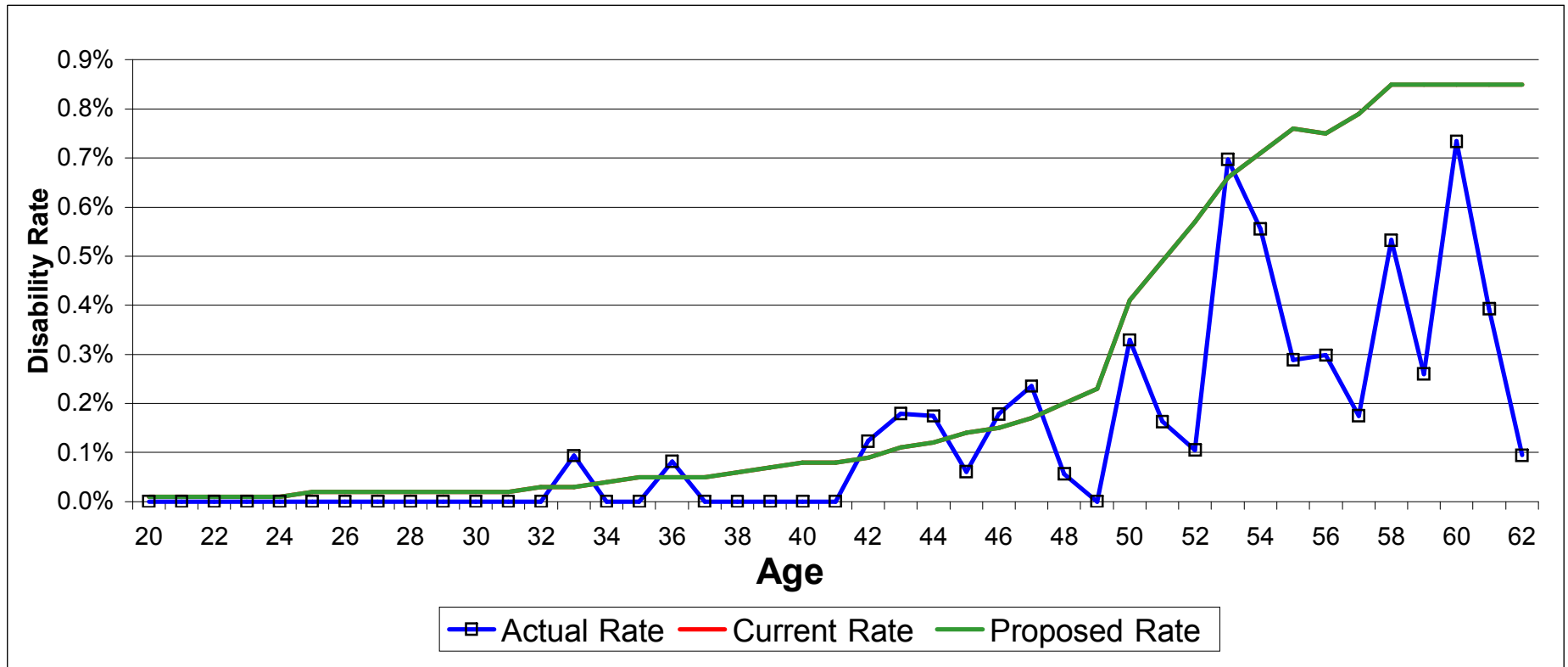
**Exhibit 15  
Retirement Rates  
URSJJ**



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	36	31	31
Actual/Expected		116%	116%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 16  
Rate of Disability - Active Lives  
OPERS (Regular) -Males**



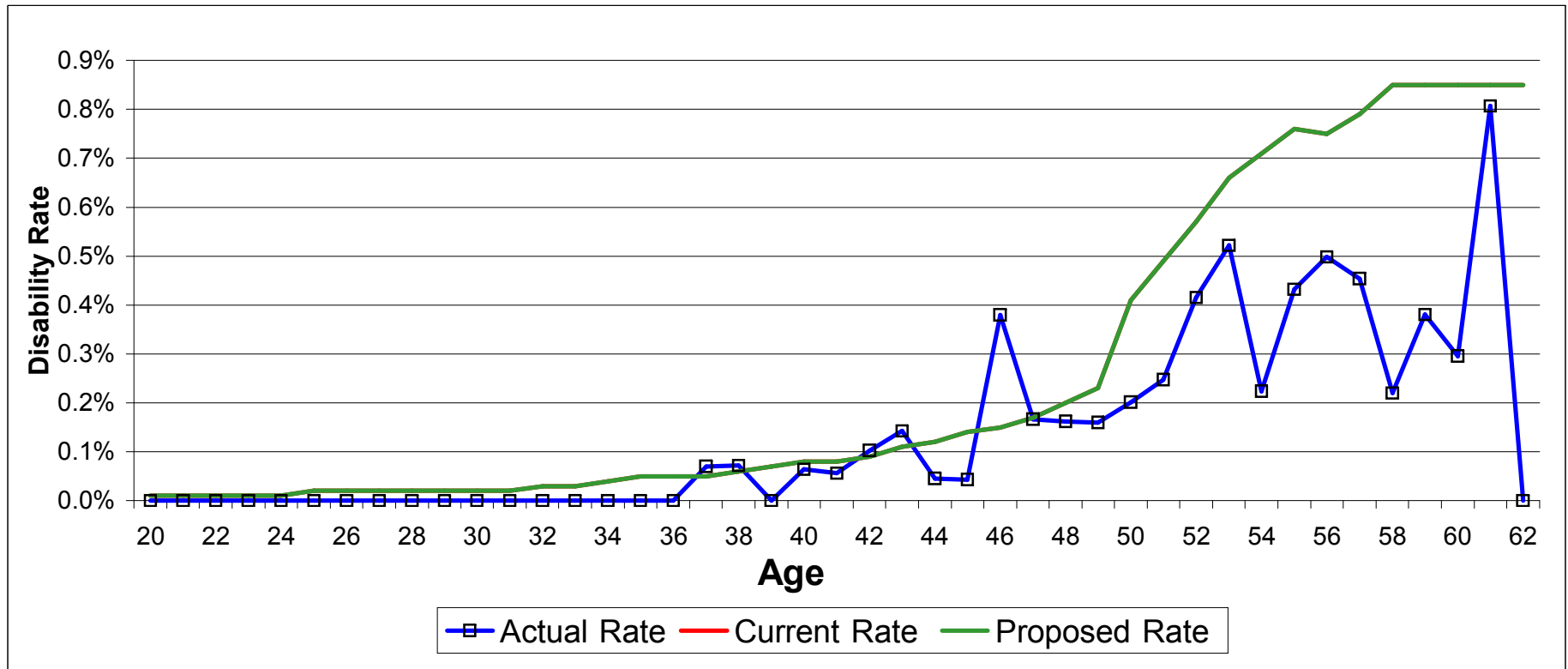
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	95	179	179
Actual/Expected		53%	53%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 17  
Rate of Disability - Active Lives  
OPERS (Regular) -Females**



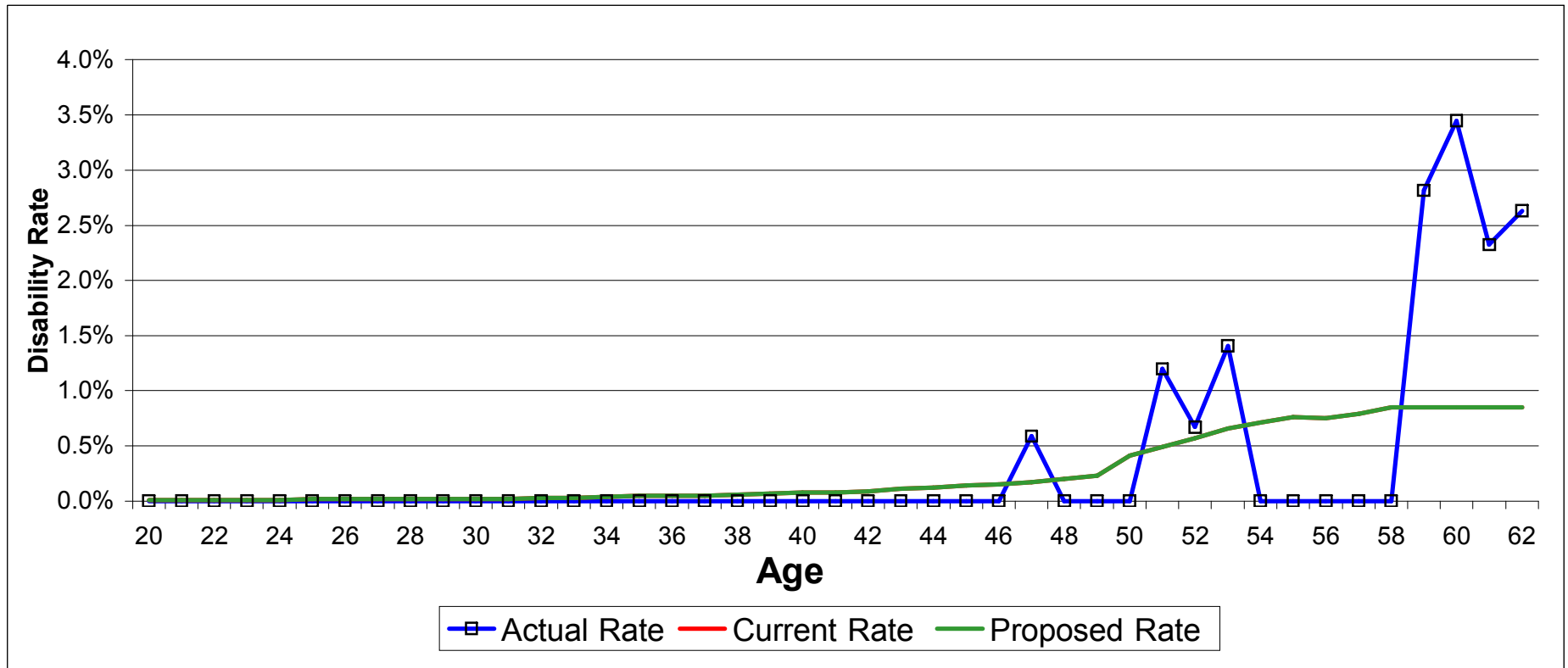
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	122	211	211
Actual/Expected		58%	58%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 18  
Rate of Disability - Active Lives  
Hazardous Duty**



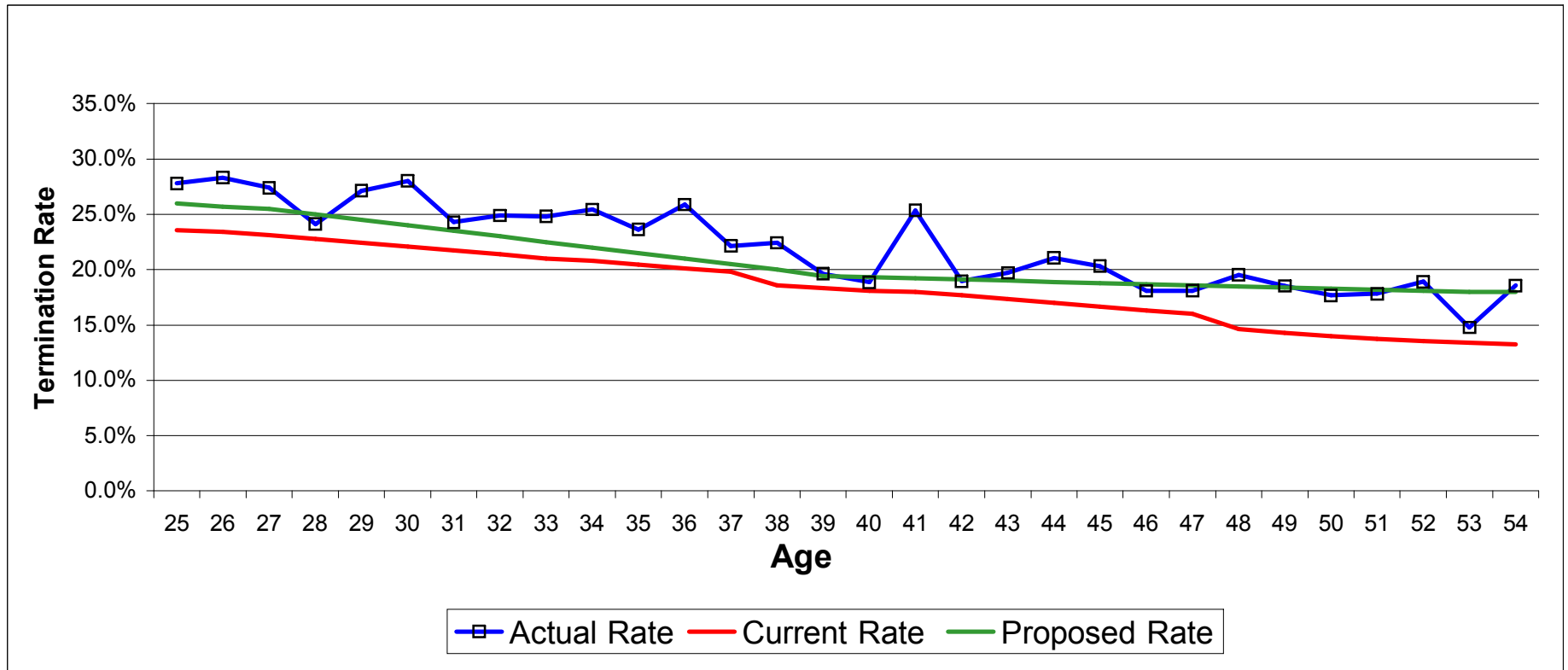
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	12	13	13
Actual/Expected		92%	92%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 19  
Rate of Termination of Employment  
<2 Years of Service**



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	4,214	3,537	3,942
Actual/Expected		119%	107%

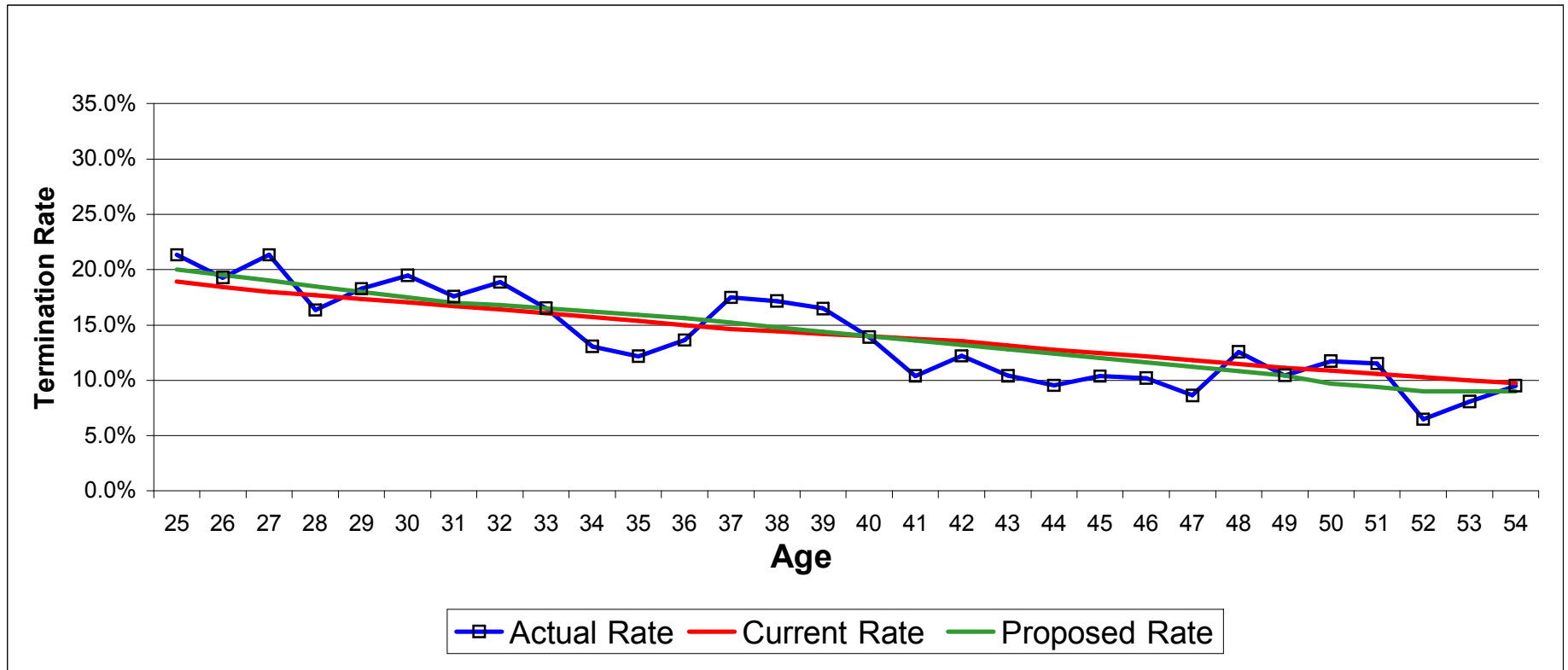


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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 20  
Rate of Termination of Employment  
2 Years of Service**



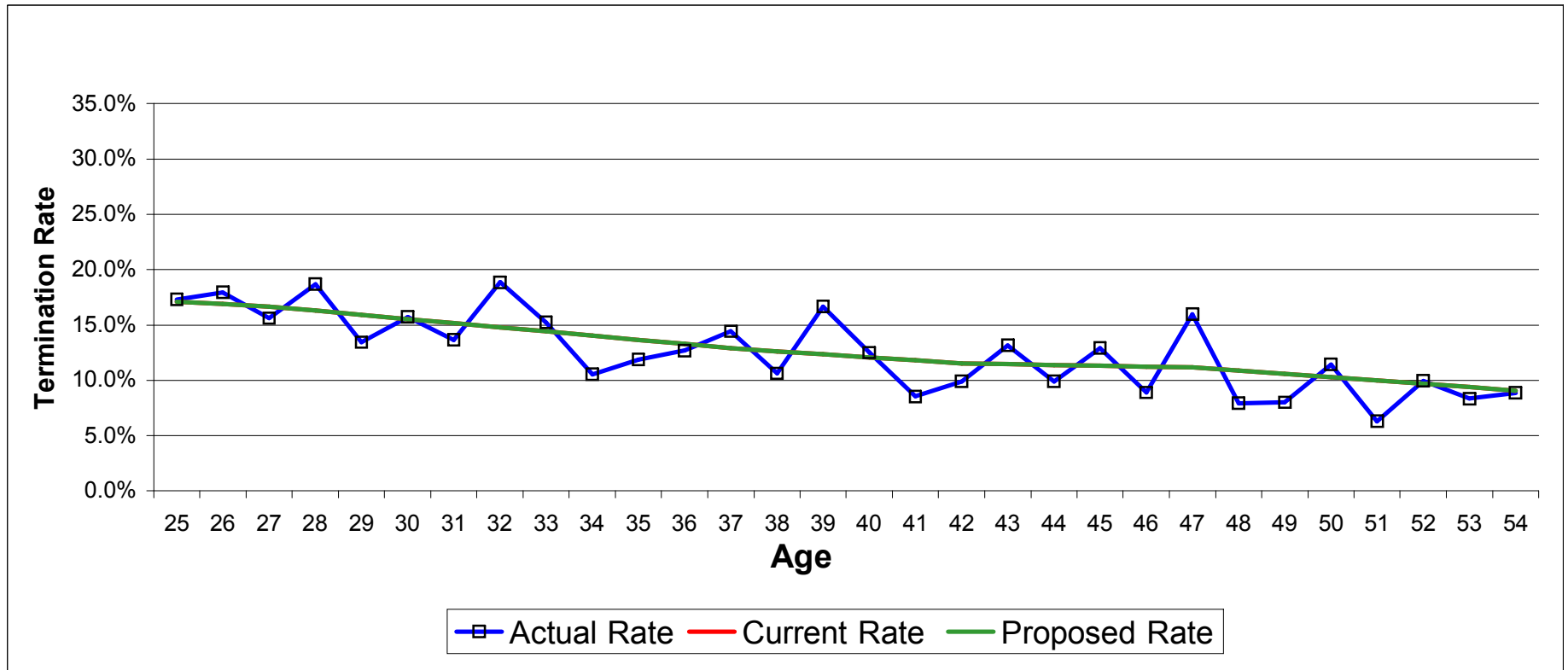
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	889	903	907
Actual/Expected		98%	98%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 21  
Rate of Termination of Employment  
3 Years of Service**



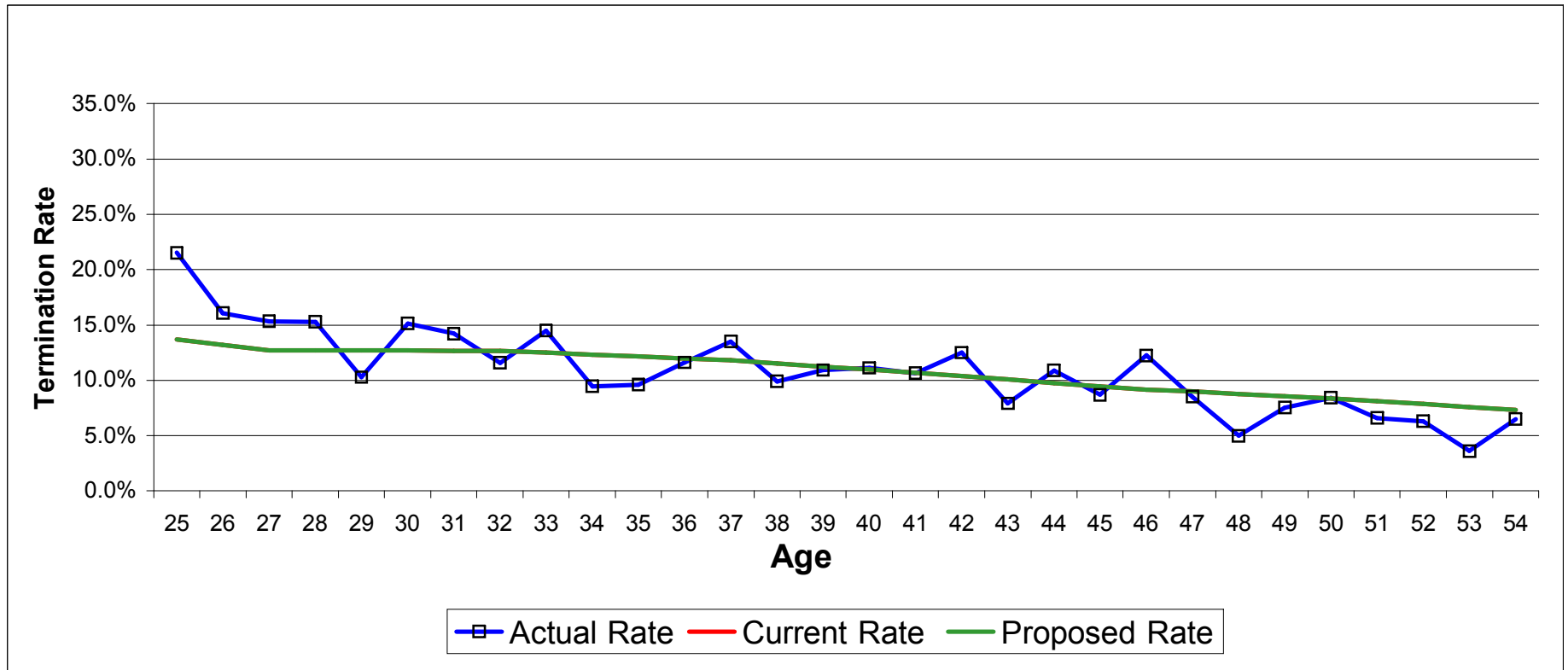
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	734	750	750
Actual/Expected		98%	98%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 22  
Rate of Termination of Employment  
4 Years of Service**



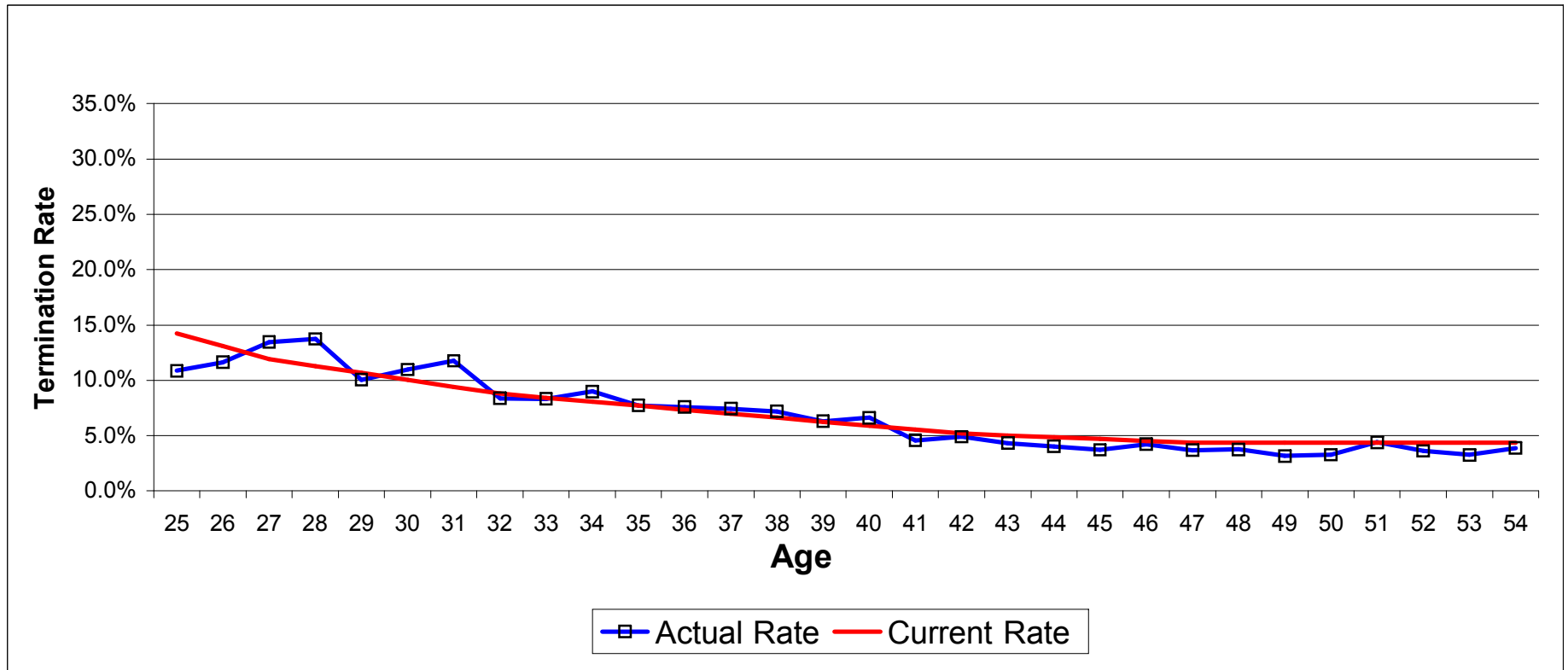
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	595	596	596
Actual/Expected		100%	100%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 23  
Rate of Termination of Employment  
5+ Years of Service**



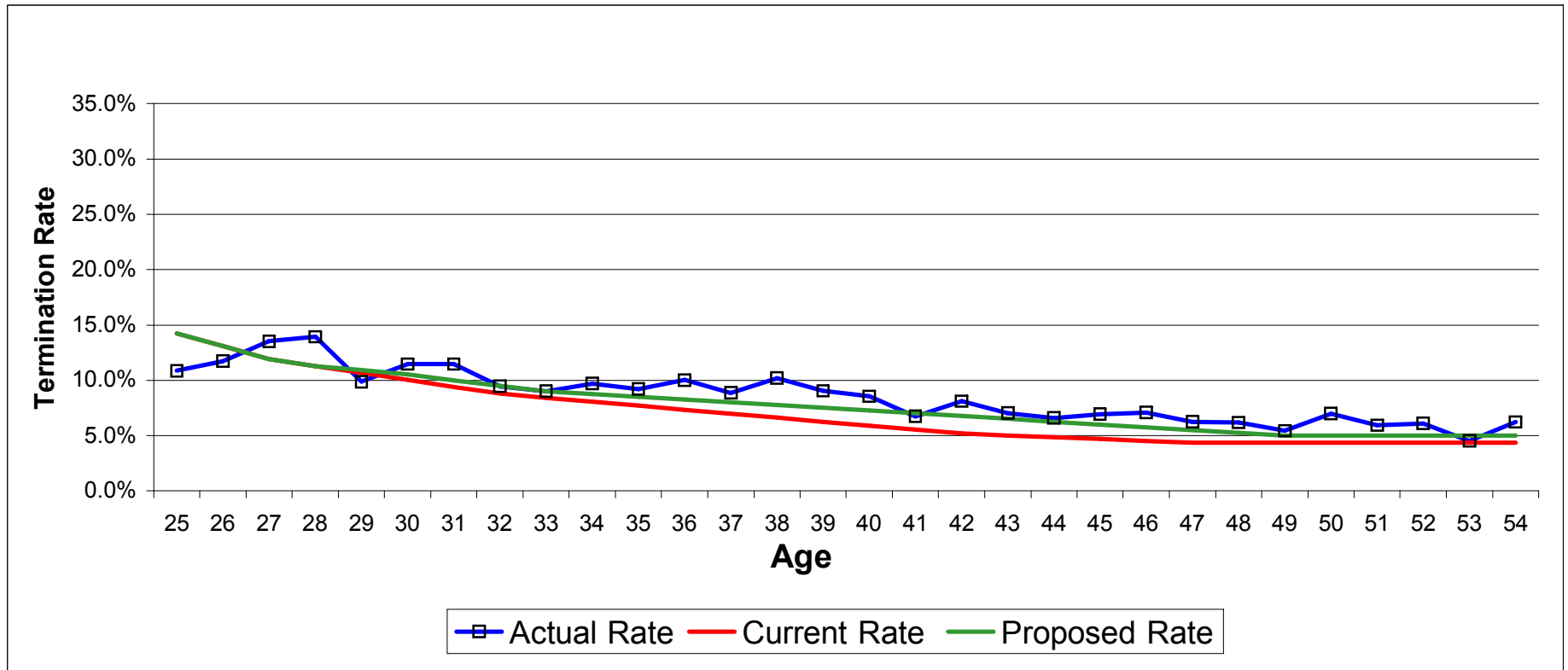
	Actual	Expected - Current Assumptions
Total Count	2,743	2,956
Actual/Expected		93%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 24  
Rate of Termination of Employment  
5-8 Years of Service**



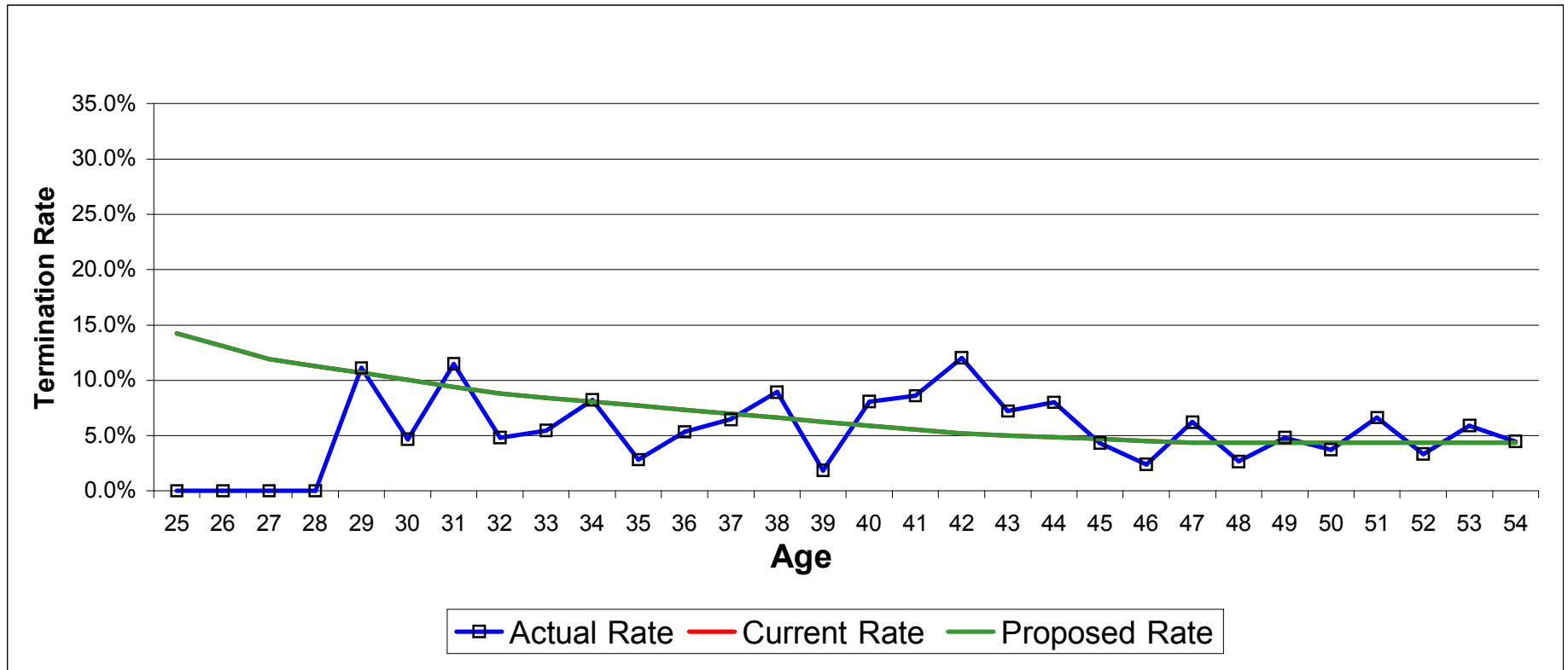
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	1,447	1,138	1,295
Actual/Expected		127%	112%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 25  
Rate of Termination of Employment  
9 Years of Service**



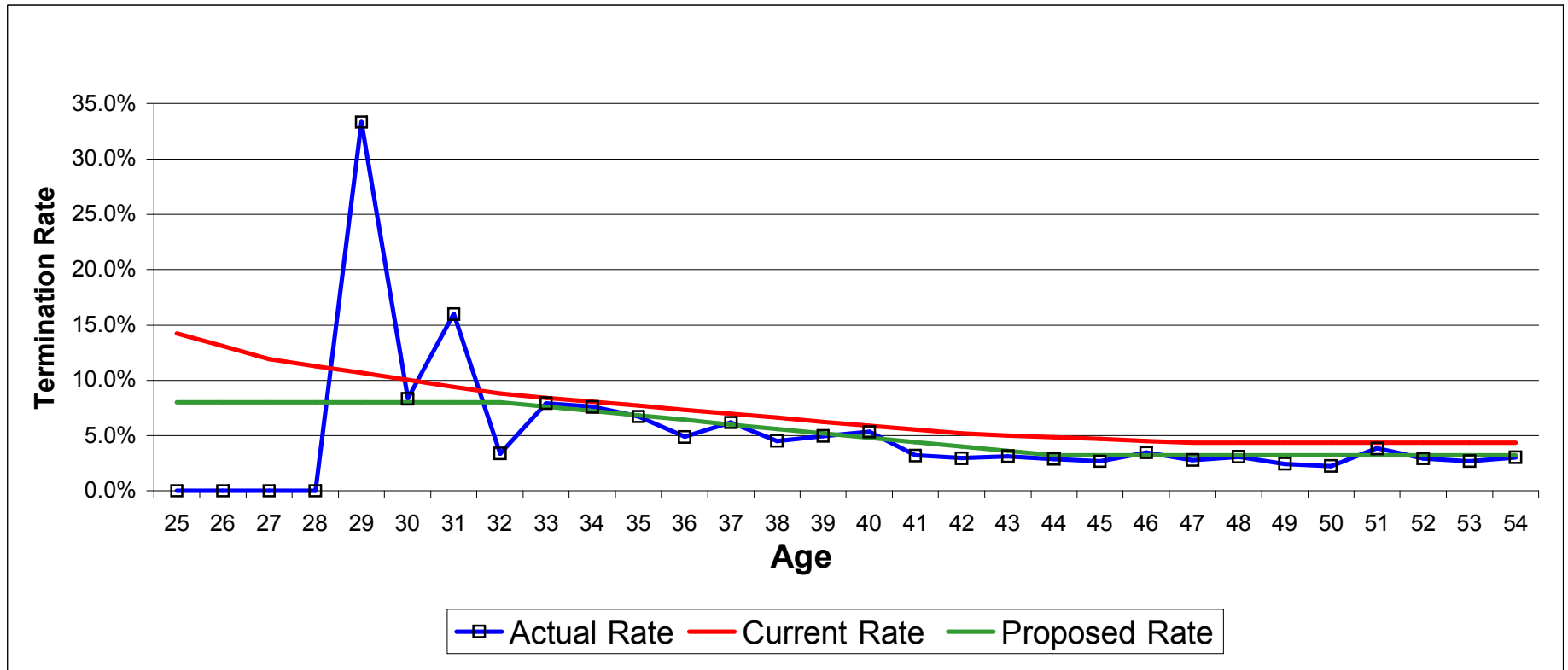
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	176	175	175
Actual/Expected		101%	101%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 26  
Rate of Termination of Employment  
10+ Years of Service**



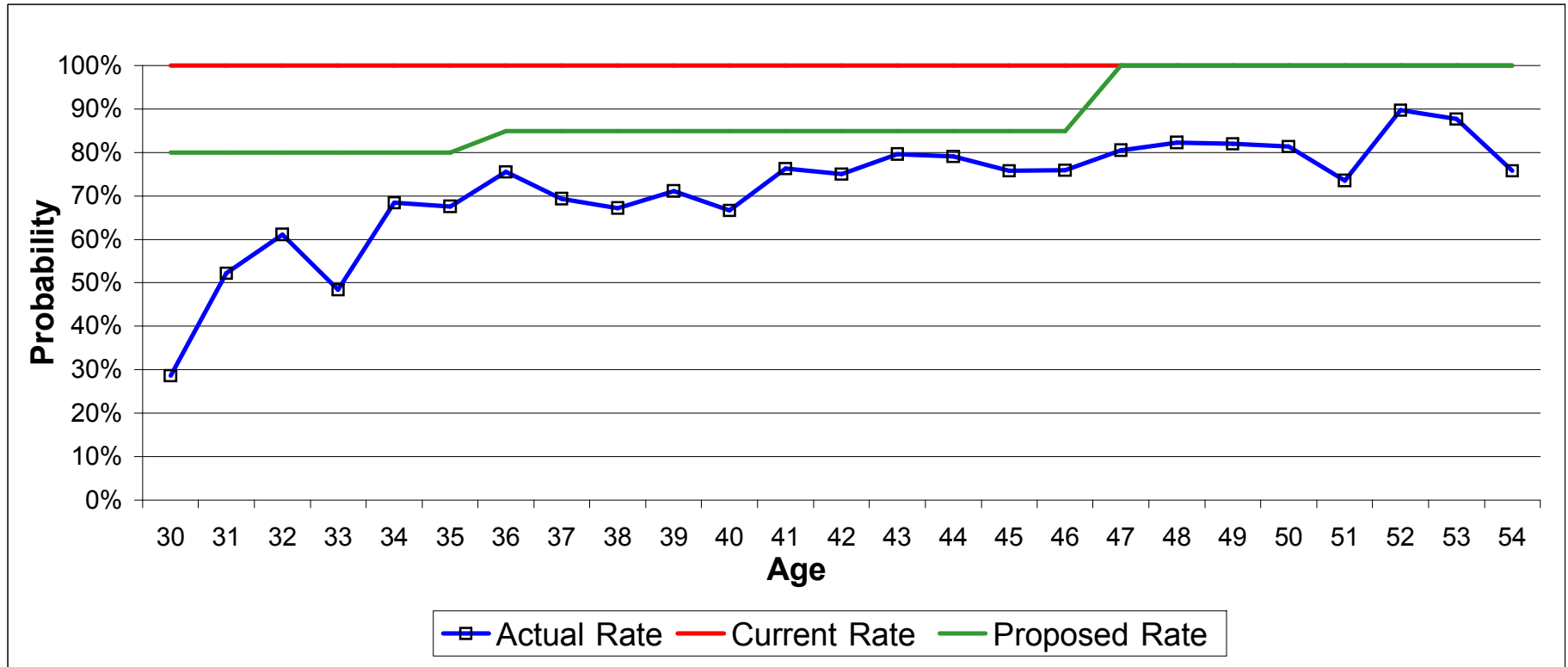
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	1,120	1,644	1,240
Actual/Expected		68%	90%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 27  
Probability of Contributions Remaining with the System  
OPERS - Regular**

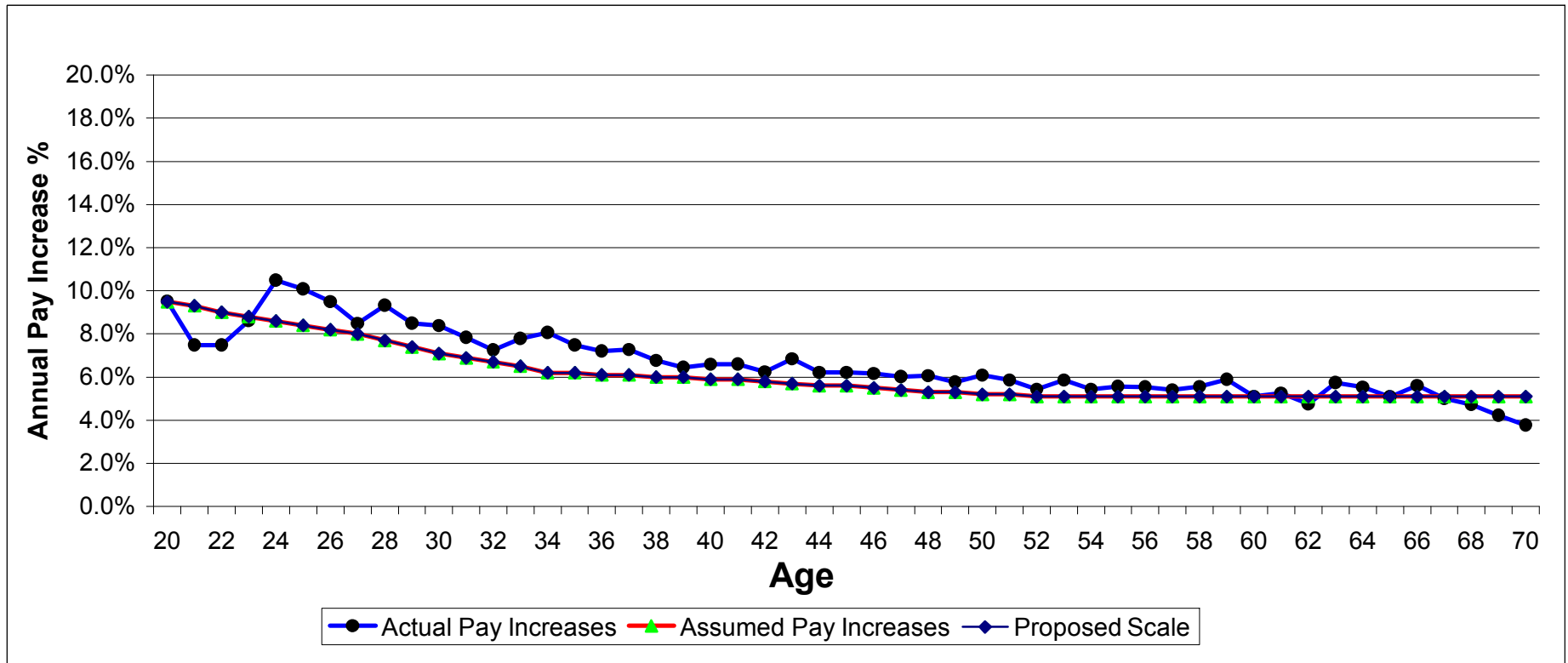


	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	1,046	1,390	1,257
Actual/Expected		75%	83%



**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 28  
Total Salary Scale  
OPERS**



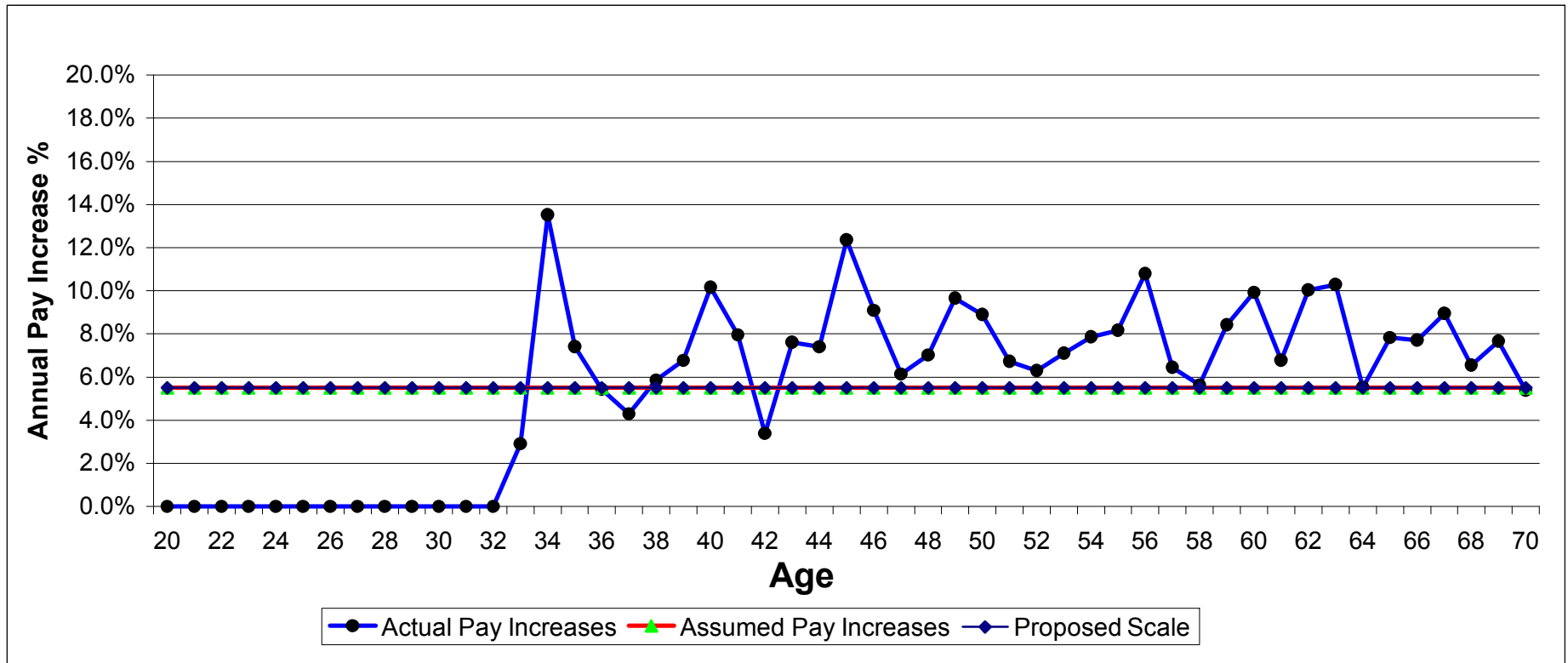
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Average Increase	6.25%	5.60%	5.60%
Actual/Expected		112%	112%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

**Exhibit 29  
Total Salary Scale  
URSJJ**



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Average Increase	7.87%	5.50%	5.50%
Actual/Expected		143%	143%



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**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

Data Summary 1  
Probability of Death - Healthy Retirees  
OPERS - Males

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	261	4	1.5%	1.3	0.0	1.3	0.5%
56	387	7	1.8%	2.0	0.0	2.0	0.5%
57	481	4	0.8%	2.6	0.0	2.6	0.5%
58	552	7	1.3%	3.2	0.0	3.2	0.6%
59	592	1	0.2%	3.8	0.0	3.8	0.6%
60	598	10	1.7%	4.2	0.0	4.2	0.7%
61	675	10	1.5%	5.2	0.0	5.2	0.8%
62	908	10	1.1%	7.7	0.0	7.7	0.9%
63	1,172	17	1.5%	11.1	0.0	11.1	1.0%
64	1,167	19	1.6%	12.3	0.0	12.3	1.1%
65	1,165	14	1.2%	13.6	0.0	13.6	1.2%
66	1,221	14	1.1%	15.9	0.0	15.9	1.3%
67	1,225	30	2.4%	17.7	0.0	17.7	1.4%
68	1,258	30	2.4%	19.9	0.0	19.9	1.6%
69	1,252	37	3.0%	21.9	0.0	21.9	1.7%
70	1,289	39	3.0%	24.6	0.0	24.6	1.9%
71	1,195	38	3.2%	25.2	0.0	25.2	2.1%
72	1,172	45	3.8%	27.5	0.0	27.5	2.3%
73	1,054	31	2.9%	27.5	0.0	27.5	2.6%
74	1,058	43	4.1%	30.8	0.0	30.8	2.9%
75	979	40	4.1%	32.2	0.0	32.2	3.3%
76	931	56	6.0%	34.1	0.0	34.1	3.7%
77	856	52	6.1%	35.2	0.0	35.2	4.1%
78	795	46	5.8%	36.7	0.0	36.7	4.6%
79	720	52	7.2%	37.3	0.1	37.3	5.2%
80	655	53	8.1%	38.1	0.1	38.1	5.8%
81	611	47	7.7%	40.2	0.1	40.2	6.6%
82	568	55	9.7%	42.2	0.1	42.2	7.4%
83	524	57	10.9%	43.4	0.1	43.4	8.3%
84	439	34	7.7%	40.8	0.1	40.8	9.3%
85	367	45	12.3%	37.9	0.1	37.9	10.3%
86	299	37	12.4%	34.2	0.1	34.2	11.4%
87	251	34	13.5%	32.2	0.1	32.2	12.8%
88	229	29	12.7%	32.8	0.1	32.8	14.3%
89	179	37	20.7%	28.3	0.2	28.3	15.8%
90	130	30	23.1%	22.9	0.2	22.9	17.6%
	27,215	1,114	4.1%	846.7	0.0	846.7	3.1%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

Data Summary 2  
Probability of Death - Healthy Retirees  
OPERS - Females

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	340	1	0.3%	1.1	0.0	1.1	0.3%
56	506	1	0.2%	1.9	0.0	1.9	0.4%
57	588	4	0.7%	2.5	0.0	2.5	0.4%
58	631	3	0.5%	3.0	0.0	3.0	0.5%
59	648	5	0.8%	3.4	0.0	3.4	0.5%
60	718	8	1.1%	4.2	0.0	4.2	0.6%
61	846	6	0.7%	5.6	0.0	5.6	0.7%
62	1,060	9	0.8%	7.8	0.0	7.8	0.7%
63	1,297	12	0.9%	10.5	0.0	10.5	0.8%
64	1,277	11	0.9%	11.4	0.0	11.4	0.9%
65	1,295	14	1.1%	12.8	0.0	12.8	1.0%
66	1,376	17	1.2%	14.9	0.0	14.9	1.1%
67	1,319	25	1.9%	15.7	0.0	15.7	1.2%
68	1,262	10	0.8%	16.5	0.0	16.5	1.3%
69	1,295	21	1.6%	18.7	0.0	18.7	1.4%
70	1,275	22	1.7%	20.3	0.0	20.3	1.6%
71	1,264	30	2.4%	22.1	0.0	22.1	1.7%
72	1,182	19	1.6%	23.0	0.0	23.0	1.9%
73	1,162	28	2.4%	24.9	0.0	24.9	2.1%
74	1,127	31	2.8%	26.7	0.0	26.7	2.4%
75	1,059	39	3.7%	27.5	0.0	27.5	2.6%
76	991	38	3.8%	28.3	0.0	28.3	2.9%
77	932	38	4.1%	29.6	0.0	29.6	3.2%
78	911	32	3.5%	31.9	0.0	31.9	3.5%
79	886	45	5.1%	34.3	0.0	34.3	3.9%
80	840	54	6.4%	35.9	0.0	35.9	4.3%
81	770	48	6.2%	36.4	0.0	36.4	4.7%
82	680	46	6.8%	35.7	0.1	35.7	5.2%
83	671	40	6.0%	39.1	0.1	39.1	5.8%
84	586	32	5.5%	38.0	0.1	38.0	6.5%
85	535	58	10.8%	39.0	0.1	39.0	7.3%
86	428	45	10.5%	35.2	0.1	35.2	8.2%
87	367	45	12.3%	34.0	0.1	34.0	9.3%
88	312	33	10.6%	32.2	0.1	32.2	10.3%
89	245	34	13.9%	28.3	0.1	28.3	11.6%
90	211	32	15.2%	27.0	0.1	27.0	12.8%
	30,892	936	3.0%	779.3	0.0	779.3	2.5%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 3  
Probability of Death - Healthy Retirees  
URSJJ - Males

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	-	-	0.0%	-	0.0	-	0.5%
56	1	-	0.0%	0.0	0.0	0.0	0.5%
57	2	-	0.0%	0.0	0.0	0.0	0.5%
58	2	-	0.0%	0.0	0.0	0.0	0.5%
59	4	-	0.0%	0.0	0.0	0.0	0.6%
60	9	-	0.0%	0.1	0.0	0.1	0.6%
61	9	-	0.0%	0.1	0.0	0.1	0.7%
62	11	-	0.0%	0.1	0.0	0.1	0.8%
63	12	-	0.0%	0.1	0.0	0.1	0.9%
64	13	-	0.0%	0.1	0.0	0.1	1.0%
65	11	-	0.0%	0.1	0.0	0.1	1.1%
66	14	-	0.0%	0.2	0.0	0.2	1.2%
67	13	1	7.7%	0.2	0.0	0.2	1.3%
68	13	-	0.0%	0.2	0.0	0.2	1.4%
69	9	-	0.0%	0.2	0.0	0.1	1.6%
70	9	-	0.0%	0.2	0.0	0.2	1.7%
71	5	-	0.0%	0.1	0.0	0.1	1.9%
72	8	-	0.0%	0.2	0.0	0.2	2.1%
73	16	1	6.3%	0.4	0.0	0.4	2.3%
74	20	-	0.0%	0.6	0.0	0.5	2.6%
75	18	1	5.6%	0.6	0.0	0.5	2.9%
76	16	-	0.0%	0.6	0.0	0.5	3.3%
77	12	1	8.3%	0.5	0.0	0.4	3.7%
78	18	-	0.0%	0.8	0.0	0.7	4.1%
79	17	1	5.9%	0.9	0.1	0.8	4.6%
80	16	-	0.0%	0.9	0.1	0.8	5.2%
81	10	1	10.0%	0.7	0.1	0.6	5.8%
82	13	1	7.7%	1.0	0.1	0.9	6.6%
83	11	2	18.2%	0.9	0.1	0.8	7.4%
84	7	-	0.0%	0.7	0.1	0.6	8.3%
85	3	-	0.0%	0.3	0.1	0.3	9.3%
86	5	1	20.0%	0.6	0.1	0.5	10.3%
87	4	-	0.0%	0.5	0.1	0.5	11.4%
88	4	-	0.0%	0.6	0.1	0.5	12.8%
89	3	1	33.3%	0.5	0.2	0.4	14.3%
90	3	1	33.3%	0.5	0.2	0.5	15.8%
	341	12	3.5%	13.3	0.0	11.9	3.5%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 4  
Retirement Rates  
State - Early

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	1,249	63	5.0%	50.0	4.0%	50.0	4.0%
56	1,179	67	5.7%	59.0	5.0%	59.0	5.0%
57	1,102	49	4.4%	55.1	5.0%	55.1	5.0%
58	996	62	6.2%	59.8	6.0%	59.8	6.0%
59	824	51	6.2%	57.7	7.0%	57.7	7.0%
60	684	51	7.5%	47.9	7.0%	47.9	7.0%
61	579	77	13.3%	115.8	20.0%	115.8	20.0%
	6,613	420	6.4%	445.1	6.7%	445.1	6.7%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 5  
Retirement Rates  
Local - Early

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	250	11	4.4%	10.0	4.0%	10.0	4.0%
56	232	5	2.2%	11.6	5.0%	11.6	5.0%
57	225	13	5.8%	11.3	5.0%	11.3	5.0%
58	239	4	1.7%	14.3	6.0%	14.3	6.0%
59	214	12	5.6%	15.0	7.0%	15.0	7.0%
60	189	9	4.8%	13.2	7.0%	13.2	7.0%
61	165	21	12.7%	33.0	20.0%	33.0	20.0%
	1,514	75	5.0%	108.4	7.2%	108.4	7.2%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 6  
Retirement Rates  
Regular - Early

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
50	-	-	0.0%	-	0.0%	-	0.0%
51	-	-	0.0%	-	0.0%	-	0.0%
52	-	-	0.0%	-	0.0%	-	0.0%
53	-	-	0.0%	-	0.0%	-	0.0%
54	-	-	0.0%	-	0.0%	-	0.0%
55	1,499	74	4.9%	60.0	4.0%	60.0	4.0%
56	1,411	72	5.1%	70.6	5.0%	70.6	5.0%
57	1,327	62	4.7%	66.4	5.0%	66.4	5.0%
58	1,235	66	5.3%	74.1	6.0%	74.1	6.0%
59	1,038	63	6.1%	72.7	7.0%	72.7	7.0%
60	873	60	6.9%	61.1	7.0%	61.1	7.0%
61	744	98	13.2%	148.8	20.0%	148.8	20.0%
62	-	-	0.0%	-	0.0%	-	0.0%
63	-	-	0.0%	-	0.0%	-	0.0%
64	-	-	0.0%	-	0.0%	-	0.0%
65	-	-	0.0%	-	0.0%	-	0.0%
66	-	-	0.0%	-	0.0%	-	0.0%
67	-	-	0.0%	-	0.0%	-	0.0%
68	-	-	0.0%	-	0.0%	-	0.0%
69	-	-	0.0%	-	0.0%	-	0.0%
70	-	-	0.0%	-	0.0%	-	0.0%
	8,127	495	6.1%	553.5	6.8%	553.5	6.8%



**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 7  
Retirement Rates  
State - Unreduced

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
50	109	27	24.8%	10.9	10.0%	21.8	20.0%
51	184	48	26.1%	18.4	10.0%	36.8	20.0%
52	368	81	22.0%	36.8	10.0%	73.6	20.0%
53	466	85	18.2%	46.6	10.0%	93.2	20.0%
54	581	107	18.4%	58.1	10.0%	116.2	20.0%
55	681	66	9.7%	68.1	10.0%	68.1	10.0%
56	709	67	9.4%	70.9	10.0%	70.9	10.0%
57	754	61	8.1%	82.9	11.0%	82.9	11.0%
58	709	85	12.0%	85.1	12.0%	85.1	12.0%
59	691	77	11.1%	89.8	13.0%	89.8	13.0%
60	630	87	13.8%	88.2	14.0%	88.2	14.0%
61	636	123	19.3%	222.6	35.0%	127.2	20.0%
62	1,201	325	27.1%	360.3	30.0%	360.3	30.0%
63	808	134	16.6%	121.2	15.0%	121.2	15.0%
64	668	108	16.2%	167.0	25.0%	100.2	15.0%
65	545	173	31.7%	163.5	30.0%	163.5	30.0%
66	358	78	21.8%	89.5	25.0%	71.6	20.0%
67	240	46	19.2%	55.2	23.0%	48.0	20.0%
68	189	38	20.1%	41.6	22.0%	37.8	20.0%
69	150	37	24.7%	31.5	21.0%	37.5	25.0%
70	123	28	22.8%	123.0	100.0%	123.0	100.0%
	10,800	1,881	17.4%	2,031.2	18.8%	2,017.0	18.7%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 8  
Retirement Rates  
Local - Unreduced

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
50	8	3	37.5%	0.8	10.0%	1.6	20.0%
51	8	1	12.5%	0.8	10.0%	1.6	20.0%
52	26	2	7.7%	2.6	10.0%	5.2	20.0%
53	28	3	10.7%	2.8	10.0%	5.6	20.0%
54	36	14	38.9%	3.6	10.0%	7.2	20.0%
55	48	3	6.3%	4.8	10.0%	4.8	10.0%
56	53	3	5.7%	5.3	10.0%	5.3	10.0%
57	73	7	9.6%	8.0	11.0%	8.0	11.0%
58	72	2	2.8%	8.6	12.0%	8.6	12.0%
59	89	10	11.2%	11.6	13.0%	11.6	13.0%
60	89	15	16.9%	12.5	14.0%	12.5	14.0%
61	111	28	25.2%	38.8	35.0%	22.2	20.0%
62	369	107	29.0%	110.7	30.0%	110.7	30.0%
63	272	37	13.6%	40.8	15.0%	40.8	15.0%
64	226	25	11.1%	56.5	25.0%	33.9	15.0%
65	184	50	27.2%	55.2	30.0%	55.2	30.0%
66	137	25	18.2%	34.3	25.0%	27.4	20.0%
67	116	25	21.6%	26.7	23.0%	23.2	20.0%
68	95	12	12.6%	20.9	22.0%	19.0	20.0%
69	82	19	23.2%	17.2	21.0%	20.5	25.0%
70	66	11	16.7%	66.0	100.0%	66.0	100.0%
	2,188	402	18.4%	528.5	24.2%	490.9	22.4%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM**  
**JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 9  
Retirement Rates  
Regular - Unreduced

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
50	117	30	25.6%	11.7	10.0%	23.4	20.0%
51	192	49	25.5%	19.2	10.0%	38.4	20.0%
52	394	83	21.1%	39.4	10.0%	78.8	20.0%
53	494	88	17.8%	49.4	10.0%	98.8	20.0%
54	617	121	19.6%	61.7	10.0%	123.4	20.0%
55	729	69	9.5%	72.9	10.0%	72.9	10.0%
56	762	70	9.2%	76.2	10.0%	76.2	10.0%
57	827	68	8.2%	91.0	11.0%	91.0	11.0%
58	781	87	11.1%	93.7	12.0%	93.7	12.0%
59	780	87	11.2%	101.4	13.0%	101.4	13.0%
60	719	102	14.2%	100.7	14.0%	100.7	14.0%
61	747	151	20.2%	261.4	35.0%	149.4	20.0%
62	1,570	432	27.5%	471.0	30.0%	471.0	30.0%
63	1,080	171	15.8%	162.0	15.0%	162.0	15.0%
64	894	133	14.9%	223.5	25.0%	134.1	15.0%
65	729	223	30.6%	218.7	30.0%	218.7	30.0%
66	495	103	20.8%	123.8	25.0%	99.0	20.0%
67	356	71	19.9%	81.9	23.0%	71.2	20.0%
68	284	50	17.6%	62.5	22.0%	56.8	20.0%
69	232	56	24.1%	48.7	21.0%	58.0	25.0%
70	189	39	20.6%	189.0	100.0%	189.0	100.0%
	12,988	2,283	17.6%	2,559.7	19.7%	2,507.9	19.3%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 10  
Retirement Rates  
Elected - Early

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	37	4	10.8%	1.5	4.0%	3.7	10.0%
56	29	2	6.9%	1.5	5.0%	2.9	10.0%
57	37	4	10.8%	1.9	5.0%	3.7	10.0%
58	42	7	16.7%	2.5	6.0%	4.2	10.0%
59	31	2	6.5%	2.2	7.0%	3.1	10.0%
	176	19	10.8%	9.5	5.4%	17.6	10.0%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM**  
**JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 11  
Retirement Rates  
Elected - Unreduced

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
50	5	1	20.0%	0.5	10.0%	1.5	30.0%
51	7	4	57.1%	0.7	10.0%	2.1	30.0%
52	7	3	42.9%	0.7	10.0%	2.1	30.0%
53	9	3	33.3%	0.9	10.0%	2.7	30.0%
54	18	7	38.9%	1.8	10.0%	5.4	30.0%
55	17	2	11.8%	1.7	10.0%	1.7	10.0%
56	11	1	9.1%	1.1	10.0%	1.1	10.0%
57	19	4	21.1%	2.1	11.0%	3.8	20.0%
58	24	6	25.0%	2.9	12.0%	4.8	20.0%
59	26	-	0.0%	3.4	13.0%	5.2	20.0%
60	65	11	16.9%	9.1	14.0%	13.0	20.0%
61	65	13	20.0%	22.7	35.0%	13.0	20.0%
62	65	12	18.5%	19.5	30.0%	13.0	20.0%
63	54	9	16.7%	8.1	15.0%	10.8	20.0%
64	45	7	15.6%	11.3	25.0%	9.0	20.0%
65	44	8	18.2%	13.2	30.0%	8.8	20.0%
66	34	7	20.6%	8.5	25.0%	6.8	20.0%
67	38	19	50.0%	8.7	23.0%	15.2	40.0%
68	25	10	40.0%	5.5	22.0%	10.0	40.0%
69	18	5	27.8%	3.8	21.0%	7.2	40.0%
70	15	6	40.0%	15.0	100.0%	15.0	100.0%
	611	138	22.6%	141.2	23.1%	152.2	24.9%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 12  
Retirement Rates  
Hazardous Duty - Early

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	46	3	6.5%	1.8	4.0%	1.8	4.0%
56	50	5	10.0%	2.5	5.0%	2.5	5.0%
57	45	4	8.9%	2.3	5.0%	2.3	5.0%
58	33	1	3.0%	2.0	6.0%	2.0	6.0%
59	26	4	15.4%	1.8	7.0%	1.8	7.0%
60	19	1	5.3%	1.3	7.0%	1.3	7.0%
61	18	2	11.1%	3.6	20.0%	3.6	20.0%
	237	20	8.4%	15.3	6.5%	15.3	6.5%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 13  
Retirement Rates  
Hazardous Duty - Unreduced

Dur	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
20	91	19	20.9%	22.8	25.0%	18.2	20.0%
21	72	9	12.5%	13.0	18.0%	10.8	15.0%
22	52	5	9.6%	9.4	18.0%	7.8	15.0%
23	45	4	8.9%	8.1	18.0%	6.8	15.0%
24	36	2	5.6%	6.5	18.0%	5.4	15.0%
25	37	6	16.2%	6.7	18.0%	7.4	20.0%
26	25	6	24.0%	4.5	18.0%	5.0	20.0%
27	16	4	25.0%	2.9	18.0%	3.2	20.0%
28	12	1	8.3%	2.2	18.0%	2.4	20.0%
29	15	3	20.0%	2.7	18.0%	3.0	20.0%
30	13	2	15.4%	13.0	100.0%	3.3	25.0%
31	8	2	25.0%	8.0	100.0%	2.0	25.0%
32	5	-	0.0%	5.0	100.0%	1.3	25.0%
33	4	1	25.0%	4.0	100.0%	1.0	25.0%
34	2	-	0.0%	2.0	100.0%	0.5	25.0%
35	1	-	0.0%	1.0	100.0%	1.0	100.0%
	434	64	14.7%	111.6	25.7%	79.0	18.2%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 14  
Retirement Rates  
Hazardous Duty - Unreduced (Age)

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
62	20	8	40.0%	8.0	40.0%	8.0	40.0%
63	15	4	26.7%	3.3	22.0%	3.3	22.0%
64	11	1	9.1%	2.8	25.0%	2.8	25.0%
65	13	4	30.8%	5.2	40.0%	5.2	40.0%
66	5	2	40.0%	1.3	25.0%	1.3	25.0%
67	4	2	50.0%	0.9	23.0%	0.9	23.0%
68	3	-	0.0%	0.7	22.0%	0.7	22.0%
69	3	-	0.0%	0.6	21.0%	0.6	21.0%
70	2	-	0.0%	2.0	100.0%	2.0	100.0%
	76	21	27.6%	24.7	32.5%	24.7	32.5%



**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 15  
Retirement Rates  
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Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	3	-	0.0%	0.2	5.0%	0.3	10.0%
56	3	3	100.0%	0.2	5.0%	0.3	10.0%
57	4	1	25.0%	0.2	5.0%	0.4	10.0%
58	7	3	42.9%	0.4	5.0%	0.7	10.0%
59	10	5	50.0%	0.5	5.0%	1.0	10.0%
60	19	3	15.8%	1.0	5.0%	1.9	10.0%
61	14	4	28.6%	0.7	5.0%	1.4	10.0%
62	11	1	9.1%	3.3	30.0%	2.8	25.0%
63	10	2	20.0%	1.0	10.0%	2.5	25.0%
64	8	2	25.0%	0.8	10.0%	2.0	25.0%
65	11	3	27.3%	4.4	40.0%	2.8	25.0%
66	12	-	0.0%	1.2	10.0%	1.2	10.0%
67	10	-	0.0%	1.0	10.0%	1.0	10.0%
68	11	3	27.3%	3.3	30.0%	3.3	30.0%
69	9	3	33.3%	0.9	10.0%	2.7	30.0%
70	6	1	16.7%	3.0	50.0%	1.2	20.0%
71	6	-	0.0%	1.8	30.0%	0.6	10.0%
72	4	1	25.0%	1.2	30.0%	0.4	10.0%
73	3	-	0.0%	0.9	30.0%	0.3	10.0%
74	4	1	25.0%	1.2	30.0%	0.4	10.0%
75	4	-	0.0%	4.0	100.0%	4.0	100.0%
	169	36	21.3%	31.0	18.3%	31.1	18.4%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

Data Summary 16  
Rate of Disability - Active Lives  
OPERS (Regular) -Males

Age	Exposure	Actual Disabilities	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
20	145	-	0.000%	0.0	0.010%	0.0	0.010%
21	207	-	0.000%	0.0	0.010%	0.0	0.010%
22	403	-	0.000%	0.0	0.010%	0.0	0.010%
23	494	-	0.000%	0.0	0.010%	0.0	0.010%
24	636	-	0.000%	0.1	0.010%	0.1	0.010%
25	754	-	0.000%	0.2	0.020%	0.2	0.020%
26	791	-	0.000%	0.2	0.020%	0.2	0.020%
27	791	-	0.000%	0.2	0.020%	0.2	0.020%
28	852	-	0.000%	0.2	0.020%	0.2	0.020%
29	890	-	0.000%	0.2	0.020%	0.2	0.020%
30	911	-	0.000%	0.2	0.020%	0.2	0.020%
31	962	-	0.000%	0.2	0.020%	0.2	0.020%
32	1,010	-	0.000%	0.3	0.030%	0.3	0.030%
33	1,067	1	0.094%	0.3	0.030%	0.3	0.030%
34	1,143	-	0.000%	0.5	0.040%	0.5	0.040%
35	1,167	-	0.000%	0.6	0.050%	0.6	0.050%
36	1,222	1	0.082%	0.6	0.050%	0.6	0.050%
37	1,184	-	0.000%	0.6	0.050%	0.6	0.050%
38	1,152	-	0.000%	0.7	0.060%	0.7	0.060%
39	1,203	-	0.000%	0.8	0.070%	0.8	0.070%
40	1,334	-	0.000%	1.1	0.080%	1.1	0.080%
41	1,498	-	0.000%	1.2	0.080%	1.2	0.080%
42	1,621	2	0.123%	1.5	0.090%	1.5	0.090%
43	1,672	3	0.179%	1.8	0.110%	1.8	0.110%
44	1,719	3	0.175%	2.1	0.120%	2.1	0.120%
45	1,634	1	0.061%	2.3	0.140%	2.3	0.140%
46	1,679	3	0.179%	2.5	0.150%	2.5	0.150%
47	1,699	4	0.235%	2.9	0.170%	2.9	0.170%
48	1,776	1	0.056%	3.6	0.200%	3.6	0.200%
49	1,782	-	0.000%	4.1	0.230%	4.1	0.230%
50	1,821	6	0.329%	7.5	0.410%	7.5	0.410%
51	1,838	3	0.163%	9.0	0.490%	9.0	0.490%
52	1,897	2	0.105%	10.8	0.570%	10.8	0.570%
53	1,865	13	0.697%	12.3	0.660%	12.3	0.660%
54	1,799	10	0.556%	12.8	0.710%	12.8	0.710%
55	1,729	5	0.289%	13.1	0.760%	13.1	0.760%
56	1,675	5	0.299%	12.6	0.750%	12.6	0.750%
57	1,715	3	0.175%	13.5	0.790%	13.5	0.790%
58	1,689	9	0.533%	14.4	0.850%	14.4	0.850%
59	1,538	4	0.260%	13.1	0.850%	13.1	0.850%
60	1,362	10	0.734%	11.6	0.850%	11.6	0.850%
61	1,273	5	0.393%	10.8	0.850%	10.8	0.850%
62	1,058	1	0.095%	9.0	0.850%	9.0	0.850%
	54,657	95	0.174%	179.2	0.328%	179.2	0.328%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

Data Summary 17  
Rate of Disability - Active Lives  
OPERS (Regular) -Females

Age	Exposure	Actual Disabilities	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
20	142	-	0.000%	0.0	0.010%	0.0	0.010%
21	194	-	0.000%	0.0	0.010%	0.0	0.010%
22	296	-	0.000%	0.0	0.010%	0.0	0.010%
23	555	-	0.000%	0.1	0.010%	0.1	0.010%
24	730	-	0.000%	0.1	0.010%	0.1	0.010%
25	832	-	0.000%	0.2	0.020%	0.2	0.020%
26	926	-	0.000%	0.2	0.020%	0.2	0.020%
27	980	-	0.000%	0.2	0.020%	0.2	0.020%
28	966	-	0.000%	0.2	0.020%	0.2	0.020%
29	1,089	-	0.000%	0.2	0.020%	0.2	0.020%
30	1,144	-	0.000%	0.2	0.020%	0.2	0.020%
31	1,219	-	0.000%	0.2	0.020%	0.2	0.020%
32	1,202	-	0.000%	0.4	0.030%	0.4	0.030%
33	1,254	-	0.000%	0.4	0.030%	0.4	0.030%
34	1,318	-	0.000%	0.5	0.040%	0.5	0.040%
35	1,440	-	0.000%	0.7	0.050%	0.7	0.050%
36	1,448	-	0.000%	0.7	0.050%	0.7	0.050%
37	1,422	1	0.070%	0.7	0.050%	0.7	0.050%
38	1,389	1	0.072%	0.8	0.060%	0.8	0.060%
39	1,440	-	0.000%	1.0	0.070%	1.0	0.070%
40	1,562	1	0.064%	1.2	0.080%	1.2	0.080%
41	1,779	1	0.056%	1.4	0.080%	1.4	0.080%
42	1,949	2	0.103%	1.8	0.090%	1.8	0.090%
43	2,109	3	0.142%	2.3	0.110%	2.3	0.110%
44	2,192	1	0.046%	2.6	0.120%	2.6	0.120%
45	2,310	1	0.043%	3.2	0.140%	3.2	0.140%
46	2,369	9	0.380%	3.6	0.150%	3.6	0.150%
47	2,401	4	0.167%	4.1	0.170%	4.1	0.170%
48	2,464	4	0.162%	4.9	0.200%	4.9	0.200%
49	2,499	4	0.160%	5.7	0.230%	5.7	0.230%
50	2,484	5	0.201%	10.2	0.410%	10.2	0.410%
51	2,427	6	0.247%	11.9	0.490%	11.9	0.490%
52	2,409	10	0.415%	13.7	0.570%	13.7	0.570%
53	2,299	12	0.522%	15.2	0.660%	15.2	0.660%
54	2,233	5	0.224%	15.9	0.710%	15.9	0.710%
55	2,083	9	0.432%	15.8	0.760%	15.8	0.760%
56	2,006	10	0.499%	15.0	0.750%	15.0	0.750%
57	1,983	9	0.454%	15.7	0.790%	15.7	0.790%
58	1,818	4	0.220%	15.5	0.850%	15.5	0.850%
59	1,578	6	0.380%	13.4	0.850%	13.4	0.850%
60	1,353	4	0.296%	11.5	0.850%	11.5	0.850%
61	1,239	10	0.807%	10.5	0.850%	10.5	0.850%
62	1,085	-	0.000%	9.2	0.850%	9.2	0.850%
	66,617	122	0.183%	211.3	0.317%	211.3	0.317%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

Data Summary 18  
Rate of Disability - Active Lives  
Hazardous Duty

Age	Exposure	Actual Disabilities	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
20	-	-	0.000%	-	0.010%	-	0.010%
21	8	-	0.000%	0.0	0.010%	0.0	0.010%
22	72	-	0.000%	0.0	0.010%	0.0	0.010%
23	108	-	0.000%	0.0	0.010%	0.0	0.010%
24	132	-	0.000%	0.0	0.010%	0.0	0.010%
25	141	-	0.000%	0.0	0.020%	0.0	0.020%
26	177	-	0.000%	0.0	0.020%	0.0	0.020%
27	181	-	0.000%	0.0	0.020%	0.0	0.020%
28	199	-	0.000%	0.0	0.020%	0.0	0.020%
29	215	-	0.000%	0.0	0.020%	0.0	0.020%
30	195	-	0.000%	0.0	0.020%	0.0	0.020%
31	202	-	0.000%	0.0	0.020%	0.0	0.020%
32	234	-	0.000%	0.1	0.030%	0.1	0.030%
33	246	-	0.000%	0.1	0.030%	0.1	0.030%
34	243	-	0.000%	0.1	0.040%	0.1	0.040%
35	234	-	0.000%	0.1	0.050%	0.1	0.050%
36	241	-	0.000%	0.1	0.050%	0.1	0.050%
37	222	-	0.000%	0.1	0.050%	0.1	0.050%
38	213	-	0.000%	0.1	0.060%	0.1	0.060%
39	211	-	0.000%	0.1	0.070%	0.1	0.070%
40	246	-	0.000%	0.2	0.080%	0.2	0.080%
41	258	-	0.000%	0.2	0.080%	0.2	0.080%
42	235	-	0.000%	0.2	0.090%	0.2	0.090%
43	210	-	0.000%	0.2	0.110%	0.2	0.110%
44	194	-	0.000%	0.2	0.120%	0.2	0.120%
45	179	-	0.000%	0.3	0.140%	0.3	0.140%
46	188	-	0.000%	0.3	0.150%	0.3	0.150%
47	170	1	0.588%	0.3	0.170%	0.3	0.170%
48	161	-	0.000%	0.3	0.200%	0.3	0.200%
49	162	-	0.000%	0.4	0.230%	0.4	0.230%
50	173	-	0.000%	0.7	0.410%	0.7	0.410%
51	167	2	1.198%	0.8	0.490%	0.8	0.490%
52	149	1	0.671%	0.8	0.570%	0.8	0.570%
53	142	2	1.408%	0.9	0.660%	0.9	0.660%
54	119	-	0.000%	0.8	0.710%	0.8	0.710%
55	120	-	0.000%	0.9	0.760%	0.9	0.760%
56	99	-	0.000%	0.7	0.750%	0.7	0.750%
57	93	-	0.000%	0.7	0.790%	0.7	0.790%
58	77	-	0.000%	0.7	0.850%	0.7	0.850%
59	71	2	2.817%	0.6	0.850%	0.6	0.850%
60	58	2	3.448%	0.5	0.850%	0.5	0.850%
61	43	1	2.326%	0.4	0.850%	0.4	0.850%
62	38	1	2.632%	0.3	0.850%	0.3	0.850%
	6,826	12	0.176%	12.7	0.187%	12.7	0.187%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 19  
Rate of Termination of Employment  
<2 Years of Service

Age	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	1,029	286	27.8%	242.3	23.5%	267.5	26.0%
26	922	261	28.3%	215.8	23.4%	237.0	25.7%
27	854	234	27.4%	197.4	23.1%	217.8	25.5%
28	763	184	24.1%	173.8	22.8%	190.8	25.0%
29	741	201	27.1%	166.3	22.4%	181.5	24.5%
30	728	204	28.0%	160.9	22.1%	174.7	24.0%
31	737	179	24.3%	160.3	21.8%	173.2	23.5%
32	707	176	24.9%	151.2	21.4%	162.6	23.0%
33	645	160	24.8%	135.5	21.0%	145.1	22.5%
34	637	162	25.4%	132.4	20.8%	140.1	22.0%
35	690	163	23.6%	141.0	20.4%	148.4	21.5%
36	653	169	25.9%	131.3	20.1%	137.1	21.0%
37	578	128	22.1%	114.6	19.8%	118.5	20.5%
38	535	120	22.4%	99.3	18.6%	107.0	20.0%
39	535	105	19.6%	98.0	18.3%	103.8	19.4%
40	562	106	18.9%	101.7	18.1%	108.5	19.3%
41	568	144	25.4%	102.2	18.0%	109.1	19.2%
42	575	109	19.0%	101.8	17.7%	109.8	19.1%
43	609	120	19.7%	105.8	17.4%	115.7	19.0%
44	598	126	21.1%	101.8	17.0%	113.0	18.9%
45	507	103	20.3%	84.5	16.7%	95.3	18.8%
46	520	94	18.1%	84.8	16.3%	97.2	18.7%
47	536	97	18.1%	85.7	16.0%	99.7	18.6%
48	563	110	19.5%	82.5	14.7%	104.2	18.5%
49	502	93	18.5%	71.8	14.3%	92.4	18.4%
50	464	82	17.7%	65.0	14.0%	84.9	18.3%
51	449	80	17.8%	61.6	13.7%	81.7	18.2%
52	455	86	18.9%	61.7	13.6%	82.4	18.1%
53	406	60	14.8%	54.4	13.4%	73.1	18.0%
54	388	72	18.6%	51.4	13.3%	69.8	18.0%
	18,456	4,214	22.8%	3,536.9	19.2%	3,941.9	21.4%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 20  
Rate of Termination of Employment  
2 Years of Service

Age	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	239	51	21.3%	45.2	18.9%	47.8	20.0%
26	311	60	19.3%	57.4	18.4%	60.6	19.5%
27	239	51	21.3%	43.0	18.0%	45.4	19.0%
28	263	43	16.3%	46.5	17.7%	48.7	18.5%
29	268	49	18.3%	46.5	17.4%	48.2	18.0%
30	236	46	19.5%	40.2	17.0%	41.3	17.5%
31	239	42	17.6%	40.0	16.7%	40.6	17.0%
32	212	40	18.9%	34.8	16.4%	35.6	16.8%
33	218	36	16.5%	35.0	16.1%	36.0	16.5%
34	222	29	13.1%	34.9	15.7%	36.0	16.2%
35	197	24	12.2%	30.2	15.4%	31.3	15.9%
36	220	30	13.6%	33.0	15.0%	34.3	15.6%
37	183	32	17.5%	26.8	14.7%	27.8	15.2%
38	169	29	17.2%	24.4	14.4%	25.0	14.8%
39	182	30	16.5%	25.8	14.2%	26.2	14.4%
40	187	26	13.9%	26.1	14.0%	26.2	14.0%
41	212	22	10.4%	29.2	13.8%	28.8	13.6%
42	213	26	12.2%	28.8	13.5%	28.1	13.2%
43	221	23	10.4%	29.1	13.2%	28.3	12.8%
44	231	22	9.5%	29.5	12.8%	28.6	12.4%
45	193	20	10.4%	24.1	12.5%	23.2	12.0%
46	167	17	10.2%	20.3	12.2%	19.4	11.6%
47	174	15	8.6%	20.6	11.8%	19.5	11.2%
48	207	26	12.6%	23.8	11.5%	22.4	10.8%
49	211	22	10.4%	23.5	11.1%	21.9	10.4%
50	179	21	11.7%	19.4	10.8%	17.4	9.7%
51	165	19	11.5%	17.4	10.6%	15.5	9.4%
52	170	11	6.5%	17.5	10.3%	15.3	9.0%
53	149	12	8.1%	14.9	10.0%	13.4	9.0%
54	158	15	9.5%	15.4	9.7%	14.2	9.0%
	6,235	889	14.3%	903.1	14.5%	907.1	14.5%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 21  
Rate of Termination of Employment  
3 Years of Service

Age	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	156	27	17.3%	26.7	17.1%	26.7	17.1%
26	195	35	17.9%	32.9	16.9%	32.9	16.9%
27	269	42	15.6%	44.9	16.7%	44.9	16.7%
28	214	40	18.7%	34.9	16.3%	34.9	16.3%
29	238	32	13.4%	37.9	15.9%	37.9	15.9%
30	216	34	15.7%	33.6	15.5%	33.6	15.5%
31	227	31	13.7%	34.4	15.2%	34.4	15.2%
32	228	43	18.9%	33.7	14.8%	33.7	14.8%
33	210	32	15.2%	30.3	14.4%	30.3	14.4%
34	209	22	10.5%	29.3	14.0%	29.3	14.0%
35	202	24	11.9%	27.6	13.7%	27.6	13.7%
36	197	25	12.7%	26.2	13.3%	26.2	13.3%
37	194	28	14.4%	25.0	12.9%	25.0	12.9%
38	160	17	10.6%	20.2	12.6%	20.2	12.6%
39	144	24	16.7%	17.8	12.3%	17.8	12.3%
40	168	21	12.5%	20.3	12.1%	20.3	12.1%
41	176	15	8.5%	20.8	11.8%	20.8	11.8%
42	192	19	9.9%	22.1	11.5%	22.1	11.5%
43	190	25	13.2%	21.8	11.5%	21.8	11.5%
44	202	20	9.9%	23.0	11.4%	23.0	11.4%
45	217	28	12.9%	24.6	11.3%	24.6	11.3%
46	180	16	8.9%	20.2	11.2%	20.2	11.2%
47	169	27	16.0%	18.9	11.2%	18.9	11.2%
48	202	16	7.9%	22.0	10.9%	22.0	10.9%
49	200	16	8.0%	21.2	10.6%	21.2	10.6%
50	201	23	11.4%	20.7	10.3%	20.7	10.3%
51	143	9	6.3%	14.3	10.0%	14.3	10.0%
52	161	16	9.9%	15.6	9.7%	15.6	9.7%
53	168	14	8.3%	15.7	9.4%	15.7	9.4%
54	147	13	8.8%	13.3	9.0%	13.3	9.0%
	5,775	734	12.7%	749.7	13.0%	749.7	13.0%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 22  
Rate of Termination of Employment  
4 Years of Service

Age	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	79	17	21.5%	10.8	13.7%	10.8	13.7%
26	143	23	16.1%	18.9	13.2%	18.9	13.2%
27	163	25	15.3%	20.7	12.7%	20.7	12.7%
28	242	37	15.3%	30.8	12.7%	30.8	12.7%
29	224	23	10.3%	28.5	12.7%	28.5	12.7%
30	218	33	15.1%	27.7	12.7%	27.7	12.7%
31	204	29	14.2%	25.9	12.7%	25.9	12.7%
32	216	25	11.6%	27.4	12.7%	27.4	12.7%
33	214	31	14.5%	26.7	12.5%	26.7	12.5%
34	201	19	9.5%	24.8	12.3%	24.8	12.3%
35	198	19	9.6%	24.1	12.1%	24.1	12.1%
36	198	23	11.6%	23.7	12.0%	23.7	12.0%
37	185	25	13.5%	21.9	11.8%	21.9	11.8%
38	172	17	9.9%	19.8	11.5%	19.8	11.5%
39	174	19	10.9%	19.5	11.2%	19.5	11.2%
40	144	16	11.1%	15.8	10.9%	15.8	10.9%
41	188	20	10.6%	20.1	10.7%	20.1	10.7%
42	184	23	12.5%	19.1	10.4%	19.1	10.4%
43	190	15	7.9%	19.1	10.1%	19.1	10.1%
44	193	21	10.9%	18.8	9.8%	18.8	9.8%
45	196	17	8.7%	18.5	9.4%	18.5	9.4%
46	196	24	12.2%	17.9	9.1%	17.9	9.1%
47	188	16	8.5%	16.9	9.0%	16.9	9.0%
48	161	8	5.0%	14.1	8.8%	14.1	8.8%
49	213	16	7.5%	18.2	8.6%	18.2	8.6%
50	202	17	8.4%	16.9	8.3%	16.9	8.3%
51	167	11	6.6%	13.6	8.1%	13.6	8.1%
52	159	10	6.3%	12.5	7.8%	12.5	7.8%
53	167	6	3.6%	12.7	7.6%	12.7	7.6%
54	154	10	6.5%	11.3	7.3%	11.3	7.3%
	5,533	595	10.8%	596.3	10.8%	596.3	10.8%



**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 23  
Rate of Termination of Employment  
5+ Years of Service

Age	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate
25	83	9	10.8%	11.8	14.3%
26	146	17	11.6%	19.1	13.1%
27	245	33	13.5%	29.2	11.9%
28	335	46	13.7%	37.8	11.3%
29	508	51	10.0%	54.2	10.7%
30	657	72	11.0%	66.0	10.0%
31	774	91	11.8%	72.8	9.4%
32	849	71	8.4%	74.6	8.8%
33	1,034	86	8.3%	87.1	8.4%
34	1,192	107	9.0%	96.1	8.1%
35	1,320	102	7.7%	101.5	7.7%
36	1,402	106	7.6%	102.8	7.3%
37	1,466	109	7.4%	102.0	7.0%
38	1,504	108	7.2%	99.3	6.6%
39	1,607	101	6.3%	100.3	6.2%
40	1,834	121	6.6%	108.0	5.9%
41	2,129	97	4.6%	117.7	5.5%
42	2,393	117	4.9%	123.7	5.2%
43	2,552	110	4.3%	127.9	5.0%
44	2,668	107	4.0%	129.4	4.9%
45	2,813	104	3.7%	131.6	4.7%
46	2,960	125	4.2%	133.8	4.5%
47	3,004	110	3.7%	131.0	4.4%
48	3,077	115	3.7%	134.2	4.4%
49	3,115	98	3.1%	135.8	4.4%
50	3,096	101	3.3%	135.0	4.4%
51	3,108	136	4.4%	135.5	4.4%
52	2,938	106	3.6%	128.1	4.4%
53	2,746	89	3.2%	119.7	4.4%
54	2,531	98	3.9%	110.4	4.4%
	54,086	2,743	5.1%	2,956.3	5.5%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 24  
Rate of Termination of Employment  
5-8 Years of Service

Age	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	83	9	10.8%	11.8	14.3%	11.8	14.3%
26	145	17	11.7%	19.0	13.1%	19.0	13.1%
27	244	33	13.5%	29.1	11.9%	29.1	11.9%
28	330	46	13.9%	37.3	11.3%	37.3	11.3%
29	487	48	9.9%	51.9	10.7%	53.1	10.9%
30	602	69	11.5%	60.4	10.0%	63.2	10.5%
31	663	76	11.5%	62.4	9.4%	66.3	10.0%
32	677	64	9.5%	59.5	8.8%	64.3	9.5%
33	710	64	9.0%	59.8	8.4%	63.9	9.0%
34	742	72	9.7%	59.8	8.1%	64.9	8.8%
35	761	70	9.2%	58.5	7.7%	64.7	8.5%
36	719	72	10.0%	52.7	7.3%	59.3	8.3%
37	678	60	8.8%	47.2	7.0%	54.2	8.0%
38	618	63	10.2%	40.8	6.6%	47.9	7.8%
39	609	55	9.0%	38.0	6.2%	45.7	7.5%
40	621	53	8.5%	36.6	5.9%	45.0	7.3%
41	623	42	6.7%	34.5	5.5%	43.6	7.0%
42	667	54	8.1%	34.5	5.2%	45.0	6.8%
43	654	46	7.0%	32.8	5.0%	42.5	6.5%
44	639	42	6.6%	31.0	4.9%	39.9	6.3%
45	635	44	6.9%	29.7	4.7%	38.1	6.0%
46	665	47	7.1%	30.1	4.5%	38.2	5.8%
47	640	40	6.3%	27.9	4.4%	35.2	5.5%
48	664	41	6.2%	29.0	4.4%	34.9	5.3%
49	663	36	5.4%	28.9	4.4%	33.2	5.0%
50	630	44	7.0%	27.5	4.4%	31.5	5.0%
51	625	37	5.9%	27.3	4.4%	31.3	5.0%
52	623	38	6.1%	27.2	4.4%	31.2	5.0%
53	597	27	4.5%	26.0	4.4%	29.9	5.0%
54	611	38	6.2%	26.6	4.4%	30.6	5.0%
	17,625	1,447	8.2%	1,137.5	6.5%	1,294.6	7.3%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM**  
**JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 25  
Rate of Termination of Employment  
9 Years of Service

Age	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	-	-	0.0%	-	14.3%	-	14.3%
26	-	-	0.0%	-	13.1%	-	13.1%
27	1	-	0.0%	0.1	11.9%	0.1	11.9%
28	5	-	0.0%	0.6	11.3%	0.6	11.3%
29	18	2	11.1%	1.9	10.7%	1.9	10.7%
30	43	2	4.7%	4.3	10.0%	4.3	10.0%
31	61	7	11.5%	5.7	9.4%	5.7	9.4%
32	83	4	4.8%	7.3	8.8%	7.3	8.8%
33	147	8	5.4%	12.4	8.4%	12.4	8.4%
34	134	11	8.2%	10.8	8.1%	10.8	8.1%
35	142	4	2.8%	10.9	7.7%	10.9	7.7%
36	150	8	5.3%	11.0	7.3%	11.0	7.3%
37	124	8	6.5%	8.6	7.0%	8.6	7.0%
38	112	10	8.9%	7.4	6.6%	7.4	6.6%
39	108	2	1.9%	6.7	6.2%	6.7	6.2%
40	124	10	8.1%	7.3	5.9%	7.3	5.9%
41	128	11	8.6%	7.1	5.5%	7.1	5.5%
42	133	16	12.0%	6.9	5.2%	6.9	5.2%
43	111	8	7.2%	5.6	5.0%	5.6	5.0%
44	125	10	8.0%	6.1	4.9%	6.1	4.9%
45	116	5	4.3%	5.4	4.7%	5.4	4.7%
46	125	3	2.4%	5.7	4.5%	5.7	4.5%
47	129	8	6.2%	5.6	4.4%	5.6	4.4%
48	113	3	2.7%	4.9	4.4%	4.9	4.4%
49	104	5	4.8%	4.5	4.4%	4.5	4.4%
50	134	5	3.7%	5.8	4.4%	5.8	4.4%
51	136	9	6.6%	5.9	4.4%	5.9	4.4%
52	120	4	3.3%	5.2	4.4%	5.2	4.4%
53	136	8	5.9%	5.9	4.4%	5.9	4.4%
54	112	5	4.5%	4.9	4.4%	4.9	4.4%
	2,974	176	5.9%	174.7	5.9%	174.7	5.9%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 26  
Rate of Termination of Employment  
10+ Years of Service

Age	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	-	-	0.0%	-	14.3%	-	8.0%
26	1	-	0.0%	0.1	13.1%	0.1	8.0%
27	-	-	0.0%	-	11.9%	-	8.0%
28	-	-	0.0%	-	11.3%	-	8.0%
29	3	1	33.3%	0.3	10.7%	0.2	8.0%
30	12	1	8.3%	1.2	10.0%	1.0	8.0%
31	50	8	16.0%	4.7	9.4%	4.0	8.0%
32	89	3	3.4%	7.8	8.8%	7.1	8.0%
33	177	14	7.9%	14.9	8.4%	13.5	7.6%
34	316	24	7.6%	25.5	8.1%	22.8	7.2%
35	417	28	6.7%	32.1	7.7%	28.4	6.8%
36	533	26	4.9%	39.1	7.3%	34.1	6.4%
37	664	41	6.2%	46.2	7.0%	39.8	6.0%
38	774	35	4.5%	51.1	6.6%	43.3	5.6%
39	890	44	4.9%	55.5	6.2%	46.3	5.2%
40	1,089	58	5.3%	64.1	5.9%	52.3	4.8%
41	1,378	44	3.2%	76.2	5.5%	60.6	4.4%
42	1,593	47	3.0%	82.4	5.2%	63.7	4.0%
43	1,787	56	3.1%	89.5	5.0%	64.3	3.6%
44	1,904	55	2.9%	92.3	4.9%	60.9	3.2%
45	2,062	55	2.7%	96.5	4.7%	66.0	3.2%
46	2,170	75	3.5%	98.1	4.5%	69.4	3.2%
47	2,235	62	2.8%	97.4	4.4%	71.5	3.2%
48	2,300	71	3.1%	100.3	4.4%	73.6	3.2%
49	2,348	57	2.4%	102.4	4.4%	75.1	3.2%
50	2,332	52	2.2%	101.7	4.4%	74.6	3.2%
51	2,347	90	3.8%	102.3	4.4%	75.1	3.2%
52	2,195	64	2.9%	95.7	4.4%	70.2	3.2%
53	2,013	54	2.7%	87.8	4.4%	64.4	3.2%
54	1,808	55	3.0%	78.8	4.4%	57.9	3.2%
	33,487	1,120	3.3%	1,644.1	4.9%	1,240.3	3.7%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

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Data Summary 27  
Probability of Contributions Remaining with the System  
OPERS - Regular

Age	Exposure	Actual Remaining	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
30	7	2	28.6%	7.0	100.0%	5.6	80.0%
31	23	12	52.2%	23.0	100.0%	18.4	80.0%
32	18	11	61.1%	18.0	100.0%	14.4	80.0%
33	31	15	48.4%	31.0	100.0%	24.8	80.0%
34	38	26	68.4%	38.0	100.0%	30.4	80.0%
35	37	25	67.6%	37.0	100.0%	29.6	80.0%
36	49	37	75.5%	49.0	100.0%	41.7	85.0%
37	49	34	69.4%	49.0	100.0%	41.7	85.0%
38	58	39	67.2%	58.0	100.0%	49.3	85.0%
39	52	37	71.2%	52.0	100.0%	44.2	85.0%
40	69	46	66.7%	69.0	100.0%	58.7	85.0%
41	59	45	76.3%	59.0	100.0%	50.2	85.0%
42	68	51	75.0%	68.0	100.0%	57.8	85.0%
43	59	47	79.7%	59.0	100.0%	50.2	85.0%
44	67	53	79.1%	67.0	100.0%	57.0	85.0%
45	66	50	75.8%	66.0	100.0%	56.1	85.0%
46	83	63	75.9%	83.0	100.0%	70.6	85.0%
47	72	58	80.6%	72.0	100.0%	72.0	100.0%
48	79	65	82.3%	79.0	100.0%	79.0	100.0%
49	61	50	82.0%	61.0	100.0%	61.0	100.0%
50	59	48	81.4%	59.0	100.0%	59.0	100.0%
51	87	64	73.6%	87.0	100.0%	87.0	100.0%
52	68	61	89.7%	68.0	100.0%	68.0	100.0%
53	65	57	87.7%	65.0	100.0%	65.0	100.0%
54	66	50	75.8%	66.0	100.0%	66.0	100.0%
	1,390	1,046	75.3%	1,390.0	100.0%	1,257.4	90.5%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

Data Summary 28  
Total Salary Scale  
OPERS

Age	Initial Salary (Millions)	Subsequent Salary (Millions)	Actual Rate	Current Expected (Millions)	Current Rate	Proposed Expected (Millions)	Proposed Rate
20	0.8	0.9	9.5%	0.9	9.5%	0.9	9.5%
21	2.4	2.5	7.5%	2.6	9.3%	2.6	9.3%
22	4.4	4.7	7.5%	4.8	9.0%	4.8	9.0%
23	8.1	8.8	8.6%	8.8	8.8%	8.8	8.8%
24	13.0	14.3	10.5%	14.1	8.6%	14.1	8.6%
25	18.3	20.1	10.1%	19.8	8.4%	19.8	8.4%
26	23.5	25.7	9.5%	25.4	8.2%	25.4	8.2%
27	27.2	29.5	8.5%	29.4	8.0%	29.4	8.0%
28	31.0	33.8	9.3%	33.3	7.7%	33.3	7.7%
29	37.0	40.2	8.5%	39.8	7.4%	39.8	7.4%
30	39.2	42.4	8.4%	41.9	7.1%	41.9	7.1%
31	43.6	47.0	7.8%	46.6	6.9%	46.6	6.9%
32	45.6	48.9	7.3%	48.6	6.7%	48.6	6.7%
33	50.3	54.3	7.8%	53.6	6.5%	53.6	6.5%
34	55.1	59.5	8.1%	58.5	6.2%	58.5	6.2%
35	60.2	64.7	7.5%	63.9	6.2%	63.9	6.2%
36	63.6	68.2	7.2%	67.5	6.1%	67.5	6.1%
37	64.9	69.6	7.3%	68.8	6.1%	68.8	6.1%
38	64.8	69.2	6.8%	68.7	6.0%	68.7	6.0%
39	67.7	72.1	6.4%	71.8	6.0%	71.8	6.0%
40	75.4	80.4	6.6%	79.9	5.9%	79.9	5.9%
41	89.2	95.1	6.6%	94.5	5.9%	94.5	5.9%
42	99.5	105.8	6.2%	105.3	5.8%	105.3	5.8%
43	108.1	115.5	6.8%	114.2	5.7%	114.2	5.7%
44	113.3	120.4	6.2%	119.7	5.6%	119.7	5.6%
45	118.0	125.3	6.2%	124.6	5.6%	124.6	5.6%
46	119.5	126.9	6.2%	126.1	5.5%	126.1	5.5%
47	123.7	131.1	6.0%	130.4	5.4%	130.4	5.4%
48	126.8	134.5	6.1%	133.6	5.3%	133.6	5.3%
49	131.2	138.7	5.8%	138.1	5.3%	138.1	5.3%
50	133.1	141.2	6.1%	140.0	5.2%	140.0	5.2%
51	132.1	139.8	5.9%	138.9	5.2%	138.9	5.2%
52	134.2	141.4	5.4%	141.0	5.1%	141.0	5.1%
53	128.9	136.5	5.9%	135.5	5.1%	135.5	5.1%
54	121.5	128.1	5.4%	127.7	5.1%	127.7	5.1%
55	114.9	121.3	5.6%	120.8	5.1%	120.8	5.1%
56	111.7	117.9	5.5%	117.4	5.1%	117.4	5.1%
57	115.6	121.9	5.4%	121.5	5.1%	121.5	5.1%
58	106.8	112.7	5.6%	112.2	5.1%	112.2	5.1%
59	94.2	99.7	5.9%	99.0	5.1%	99.0	5.1%
60	80.5	84.6	5.1%	84.6	5.1%	84.6	5.1%
61	69.7	73.4	5.2%	73.3	5.1%	73.3	5.1%
62	52.1	54.5	4.7%	54.7	5.1%	54.7	5.1%
63	41.6	44.0	5.7%	43.7	5.1%	43.7	5.1%
64	33.6	35.5	5.5%	35.3	5.1%	35.3	5.1%
65	23.1	24.2	5.1%	24.2	5.1%	24.2	5.1%
66	17.4	18.4	5.6%	18.3	5.1%	18.3	5.1%
67	12.5	13.1	5.0%	13.1	5.1%	13.1	5.1%
68	10.1	10.6	4.7%	10.6	5.1%	10.6	5.1%
69	7.8	8.1	4.2%	8.2	5.1%	8.2	5.1%
70	6.5	6.8	3.8%	6.9	5.1%	6.9	5.1%
	3,373.3	3,584.2	6.2%	3,562.4	5.6%	3,562.4	5.6%

**OKLAHOMA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
JULY 1, 2004 to JUNE 30, 2007 EXPERIENCE STUDY**

Data Summary 29  
Total Salary Scale  
URSJJ

Age	Initial Salary (Millions)	Subsequent Salary (Millions)	Actual Rate	Current Expected (Millions)	Current Rate	Proposed Expected (Millions)	Proposed Rate
20	-	-	0.0%	-	5.5%	-	5.5%
21	-	-	0.0%	-	5.5%	-	5.5%
22	-	-	0.0%	-	5.5%	-	5.5%
23	-	-	0.0%	-	5.5%	-	5.5%
24	-	-	0.0%	-	5.5%	-	5.5%
25	-	-	0.0%	-	5.5%	-	5.5%
26	-	-	0.0%	-	5.5%	-	5.5%
27	-	-	0.0%	-	5.5%	-	5.5%
28	-	-	0.0%	-	5.5%	-	5.5%
29	-	-	0.0%	-	5.5%	-	5.5%
30	-	-	0.0%	-	5.5%	-	5.5%
31	-	-	0.0%	-	5.5%	-	5.5%
32	-	-	0.0%	-	5.5%	-	5.5%
33	0.2	0.2	2.9%	0.2	5.5%	0.2	5.5%
34	0.3	0.3	13.5%	0.3	5.5%	0.3	5.5%
35	0.2	0.2	7.4%	0.2	5.5%	0.2	5.5%
36	0.2	0.2	5.4%	0.2	5.5%	0.2	5.5%
37	0.4	0.5	4.3%	0.5	5.5%	0.5	5.5%
38	0.5	0.5	5.9%	0.5	5.5%	0.5	5.5%
39	0.8	0.9	6.8%	0.9	5.5%	0.9	5.5%
40	0.7	0.8	10.2%	0.8	5.5%	0.8	5.5%
41	0.6	0.7	8.0%	0.7	5.5%	0.7	5.5%
42	0.5	0.5	3.4%	0.5	5.5%	0.5	5.5%
43	0.9	0.9	7.6%	0.9	5.5%	0.9	5.5%
44	1.4	1.5	7.4%	1.4	5.5%	1.4	5.5%
45	1.0	1.2	12.4%	1.1	5.5%	1.1	5.5%
46	1.3	1.4	9.1%	1.4	5.5%	1.4	5.5%
47	1.4	1.5	6.1%	1.5	5.5%	1.5	5.5%
48	1.9	2.0	7.0%	2.0	5.5%	2.0	5.5%
49	2.0	2.2	9.7%	2.1	5.5%	2.1	5.5%
50	2.2	2.4	8.9%	2.3	5.5%	2.3	5.5%
51	2.5	2.6	6.7%	2.6	5.5%	2.6	5.5%
52	3.3	3.5	6.3%	3.5	5.5%	3.5	5.5%
53	3.9	4.2	7.1%	4.1	5.5%	4.1	5.5%
54	4.6	5.0	7.9%	4.9	5.5%	4.9	5.5%
55	4.2	4.5	8.2%	4.4	5.5%	4.4	5.5%
56	3.0	3.4	10.8%	3.2	5.5%	3.2	5.5%
57	2.9	3.1	6.4%	3.0	5.5%	3.0	5.5%
58	3.1	3.2	5.6%	3.2	5.5%	3.2	5.5%
59	3.3	3.6	8.4%	3.5	5.5%	3.5	5.5%
60	2.6	2.9	9.9%	2.8	5.5%	2.8	5.5%
61	2.1	2.3	6.8%	2.2	5.5%	2.2	5.5%
62	1.8	2.0	10.0%	1.9	5.5%	1.9	5.5%
63	1.4	1.6	10.3%	1.5	5.5%	1.5	5.5%
64	1.0	1.1	5.5%	1.1	5.5%	1.1	5.5%
65	1.0	1.1	7.8%	1.1	5.5%	1.1	5.5%
66	1.5	1.6	7.7%	1.5	5.5%	1.5	5.5%
67	1.0	1.1	9.0%	1.1	5.5%	1.1	5.5%
68	0.8	0.9	6.6%	0.9	5.5%	0.9	5.5%
69	0.6	0.6	7.7%	0.6	5.5%	0.6	5.5%
70	0.5	0.5	5.4%	0.5	5.5%	0.5	5.5%
	61.5	66.4	7.9%	64.9	5.5%	64.9	5.5%