

Stanislaus County Employees' Retirement Association

**Actuarial Experience Study for
July 1, 2012 through June 30,
2015**

Produced by Cheiron

April 2016

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
Transmittal Letter	i
Section I Executive Summary	1
Section II Certification	3
Section III Economic Assumptions	4
A. Price Inflation.....	4
B. Wage Inflation	7
C. Discount Rate.....	9
Section IV Demographic Assumptions.....	15
A. Merit Salary Increases.....	16
B. Retirement Rates	17
C. Termination Rates	26
D. Disability Rates	33
E. Mortality Rates.....	43
F. Other Demographic Assumptions.....	48
 <u>Appendices</u>	
Appendix A Summary of Proposed Assumptions.....	49
Appendix B Summary of Prior Assumptions.....	58

April 12, 2016

Board of Retirement
Stanislaus County Employees' Retirement Association
832 12th Street, Suite 600
Modesto, CA 95353

Dear Members of the Board:

The purpose of this report is to present an Actuarial Experience Study of the Stanislaus County Employees' Retirement Association (StanCERA, the Fund, the Plan) covering actuarial experience from July 1, 2012 through June 30, 2015. The report includes analyses and recommendations of economic and demographic assumptions to be used beginning with the July 1, 2015 actuarial valuation.

If you have any questions about the report or would like additional information, please let us know.

Sincerely,
Cheiron



Graham A. Schmidt, ASA, FCA, EA, MAAA
Consulting Actuary



Timothy S. Doyle, ASA, MAAA
Associate Actuary



Jonathan Chipko, FSA, FCA, EA, MAAA
Associate Actuary

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

SECTION I — EXECUTIVE SUMMARY

Actuarial assumptions (economic and demographic) are intended to be long-term in nature, and should be both individually reasonable and consistent in the aggregate. The purpose of this experience study is to evaluate whether or not the current assumptions adequately reflect the long-term expectations for StanCERA, and if not, to recommend adjustments. It is important to note that frequent and significant changes in the actuarial assumptions are not typically recommended, unless there are known fundamental changes in expectations of the economy, or with respect to StanCERA's membership or assets that would warrant such frequent or significant changes.

SUMMARY OF ECONOMIC ASSUMPTION ANALYSIS

The specific economic assumptions analyzed in this report are price inflation, wage inflation, COLA growth, and the discount rate. These assumptions have a significant impact on the contribution rates in the short-term and the risk of negative outcomes in the long-term.

The economic assumptions recently adopted by the Retirement Board include a 7.25% long-term rate of return on Plan assets, an annual increase in prices measured by the Consumer Price Index (CPI) of 3%, annual wage increase equal to 25 basis points greater than price increases (3.25% in total), and a post-retirement COLA average growth rate of 2.70%.

The discount rate assumption is consistent with the long-term (20-year) capital market assumptions from a survey of investment consultants. Other data presented in this report indicate that the discount rate and other economic assumptions adopted by the Retirement Board are reasonable.

However, the Plan's investment consultant (Verus) projects lower returns for the next 10 years, averaging 6.1%, for StanCERA's current target portfolio. If the current target asset allocation is maintained and Verus's projections are realized, the Board can expect a pattern of actuarial losses from the assets in the near term, though they may be partially offset by liability gains if wage and COLA inflation rates are below the assumed rates (3.25% and 2.70%, respectively) over the same time period.

SUMMARY OF DEMOGRAPHIC ASSUMPTION ANALYSIS

This experience study specifically analyzes and makes the following recommendations for the demographic assumptions.

- **Merit salary increases** – Reduction to rates at lower service levels for all members.
- **Retirement rates** – Higher rates for longer service members and lower rates for some shorter service members.
- **Termination rates** – Unisex rates for General members and changes in rates for members with less than 10 years of service.
- **Disability rates** – Adopt CalPERS non-service connected rates.
- **Mortality rates** – Adjusted CalPERS base tables, with generational improvement for all members.

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

SECTION I — EXECUTIVE SUMMARY

Among the demographic assumptions, the recommendation to change mortality assumptions has the largest impact on contribution rates. The recommended change to retirement rates also would increase contribution rates while the changes to termination rates and merit salary increases would reduce contribution rates. Further information about these changes to contribution rates can be found in Cheiron's presentation to the Board on November 24, 2015.

The recently completed mortality study by the Society of Actuaries found that mortality rates had improved faster than previously anticipated and recommended future projections of mortality improvement commensurate with recent experience in the short-term tapering to a long-term expected rate of improvement by 2027. The recommended change to mortality rates for StanCERA reflects both the improvement in mortality since the last experience study and the application of the recommended higher rates of improvement projected in the future.

The body of this report provides additional detail and support for our conclusions and recommendations.

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

SECTION II — CERTIFICATION

The purpose of this report is to provide the results of an Actuarial Experience Study of the Stanislaus County Employees' Retirement Association (StanCERA) covering actuarial experience from July 1, 2012 through June 30, 2015. This report is for the use of the StanCERA Retirement Board in selecting assumptions to be used in actuarial valuations beginning June 30, 2015.

In preparing our report, we relied on information (some oral and some written) supplied by StanCERA. This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

To the best of our knowledge, this report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices that are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

This report was prepared for the StanCERA Retirement Board for the purposes described herein. This report is not intended to benefit any other party, and Cheiron assumes no duty or liability to any such party.



Graham A. Schmidt, ASA, FCA, EA, MAAA
Consulting Actuary



Timothy S. Doyle, ASA, MAAA
Associate Actuary



Jonathan Chipko, FSA, FCA, EA, MAAA
Associate Actuary

SECTION III — ECONOMIC ASSUMPTIONS
PRICE INFLATION

The economic assumptions used in actuarial valuations are intended to be long-term in nature, and should be both individually reasonable and consistent with each other. The specific assumptions analyzed in this report are:

- **Price inflation** – used indirectly as an underlying component of other economic assumptions.
- **Wage inflation** – across the board wage growth used to project benefits and to amortize the unfunded liability as a level percentage of expected payroll.
- **COLA growth** – rate at which inflation-linked post-retirement COLAs are expected to change.
- **Discount rate** – used both to project long-term asset growth and to discount future cash flows in calculating the liabilities and costs of the Plan.

In order to develop recommendations for each of these assumptions, we considered historical data, both nationally and for the Plan, and expectations for the future, as expressed by the Plan's and other external investment consultants and the Board.

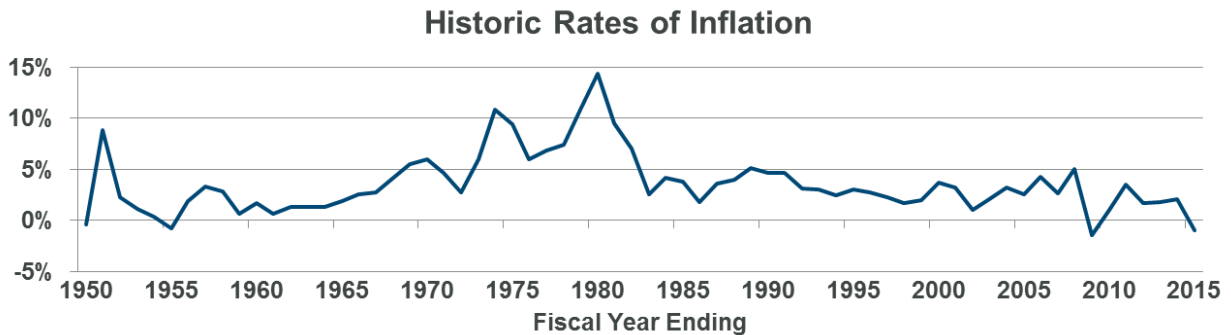
PRICE INFLATION

Long-term price inflation rates are the foundation of other economic assumptions. In a growing economy, wages and investments are expected to grow at the underlying inflation rate plus some additional real growth rate, whether it reflects productivity in terms of wages or risk premiums in terms of investments.

Historical Data

Chart III-1 below shows inflation for the U.S. by individual year since 1950.

Chart III-1



STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

SECTION III — ECONOMIC ASSUMPTIONS
PRICE INFLATION

Over the 50 years ending June 2015, the geometric average inflation rate for the U.S. has been about 4.1%, but this average is heavily influenced by the high inflation rates in the 1970s and early 1980s. Over the last 30 years, the geometric average inflation rate has been 2.7%.

Future Expectations

A measure of the market consensus of expected future inflation rates is the difference in yields between conventional treasury bonds and Treasury Inflation-Protected Securities (TIPS) at the same maturity. Table III-1 shows the yields on both types of bonds and the break-even inflation rate as of December 2015. Break-even inflation is the level of inflation needed for an investment in TIPS to “break even” with an investment in conventional treasury bonds of the same maturity.

Table III-1

Break-Even Inflation Based on Treasury Bond Yields			
Time to Maturity	Conventional Yield	TIPS Yield	Break Even Inflation
5 Years	1.70%	0.46%	1.24%
10 Years	2.24%	0.73%	1.51%
20 Years	2.61%	1.06%	1.55%

Data Source Federal Reserve, Constant Maturity Yields, Monthly Series

The Federal Reserve Bank of Philadelphia publishes a quarterly survey of professional economic forecasters that includes their forecasts of inflation over the next 10 years. The survey for the third quarter of 2015 shows a median inflation forecast of 2.15%; a minimum forecast of about 1.8% and a maximum forecast of 3.0%.

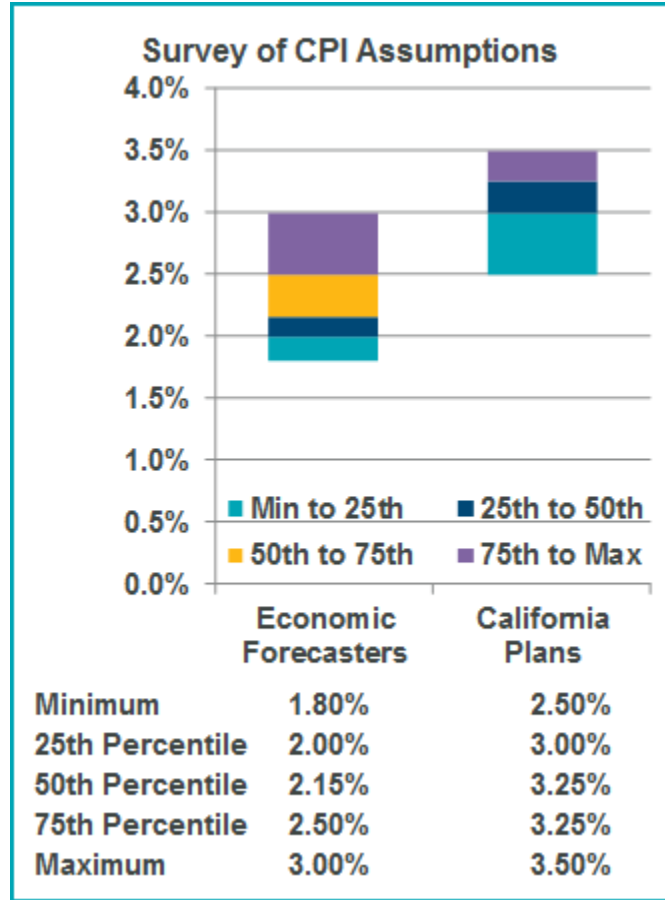
Boston College’s Center for Retirement Research maintains a database on over 150 large public plans. For 2013, the inflation assumptions used by the plans in the database ranged from 2.50% to 5.00%. These assumptions tend to be based on time horizons that are longer than 10 years.

The Federal Reserve publishes a quarterly survey of professional economic forecasters. Chart III-2 on the next page shows the distribution of the professionals forecasts for average inflation over the next 10 years compared to assumptions used by California public pension plans.

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION III — ECONOMIC ASSUMPTIONS
PRICE INFLATION**

Chart III-2



Finally, Verus, the Board’s investment consultant, uses an inflation assumption of 2.1% for the next 10 years. A broader survey of 10 investment consultants, as published by Horizon Actuarial Services in 2015, reflects a 2.29% average assumption over the next 20 years.

Based on all of these considerations, we believe a reasonable range for long-term price inflation for use in the Plan’s actuarial valuations is between 2.0% and 3.5%. Therefore, we agree with the Board’s recent action to reduce the assumption from 3.25% to 3.00%. If, at the time of the next review of economic assumptions, the markets and forecasters continue to indicate lower expectations of future inflation, further reductions in the assumption could be considered.

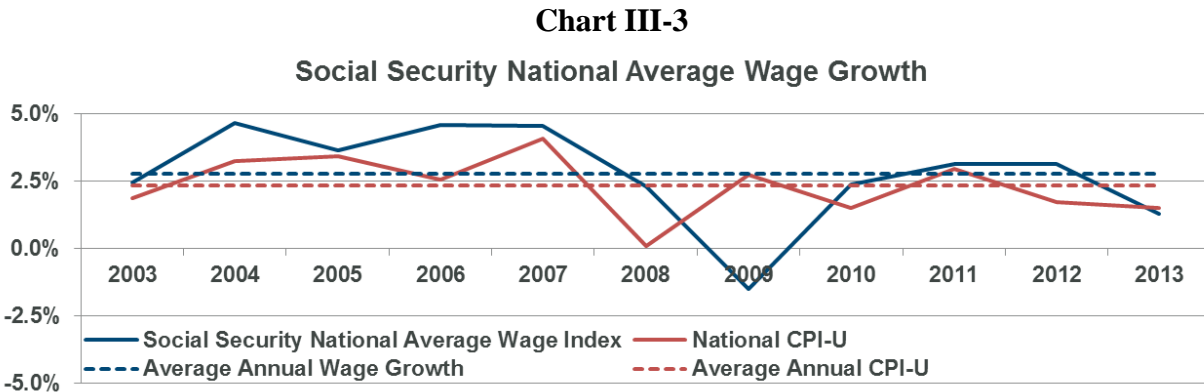
SECTION III — ECONOMIC ASSUMPTIONS
WAGE INFLATION

WAGE INFLATION

Wage inflation can be thought of as the annual across-the-board increase in wages. Individuals often receive salary increases in excess of the wage inflation rate, and we study these increases as a part of the merit salary scale assumption. Wage inflation generally exceeds price inflation by some margin reflecting the history of increased purchasing power.

Wage inflation is used in the actuarial valuation as the minimum expected salary increase for an individual and, for purposes of amortizing the unfunded actuarial liability, the rate at which payroll is expected to grow over the long term, assuming a stable active member population.

Chart III-3 shows the increase in national average wages (as reported by the Social Security Administration) compared to inflation from 2003 through 2013.



Over this period, national wage inflation averaged approximately 2.77% compared to annual price inflation of 2.33%, making wage increases less than 0.5% above inflation. Note the significant drop in 2008 and 2009 as well as the recent decline in national average wage growth in 2013, the latest year for which data is available.

Usually we recommend that long range gains due to productivity, the collective bargaining process or other pressures should be assumed to be zero or minimal. While productivity tends to increase in many sectors of the economy, any long-term assumption of salary growth beyond inflation carries with it an assumed improvement in relative standard of living.

It is acceptable to assume some additional level of base payroll increase beyond general inflation. Potential reasons contributing to the increase may include the presence of strong union representation in the collective bargaining process, competition in hiring among other similar employers, and regional factors – such as the local inflation index exceeding the national average, as has sometimes proven the case in parts of California. Also, historically the US as a whole witnessed 0.9% annual real growth in wages from 1970-2010, and the Social Security

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION III — ECONOMIC ASSUMPTIONS
WAGE INFLATION AND COLA GROWTH**

Administration projects real wage growth of 0.5% - 1.1% going forward in their Social Security solvency projections.

However, governmental entities remain under financial stress, and other areas of employee compensation – most notably health care costs and pension contributions – have continued to increase faster than the CPI. The Social Security Administration noted in their most recent report that the real wage differential has actually been negative (-0.2%) over the most recent economic cycle (2007-2013).

Cheiron recommends agrees with the Board's recent action to maintain a small non-inflationary base payroll growth assumption of 0.25% annually. As a result, the annual expected increase in base payroll would be 3.25%, reduced from 3.50% in the June 30, 2014 valuation. This increase will be applied to all continuing active members, and to starting pay for new entrants when projections of future populations are required. This increase will also be used in the calculation of the unfunded liability amortization payment as a level percentage of payroll.

COLA GROWTH

Members of StanCERA – other than those in Tier 3 - are eligible to receive automatic Cost of Living Adjustments (COLAs), based on the growth in the Bay Area Consumer Price Index (CPI-U) and a 3% cap on the annual COLA increase. Any increase in the CPI above the maximum increase can be banked for future years in which the change in the CPI is below the maximum increase.

We have produced statistical simulations of inflation and then modeled how the COLA maximum and the banking process interact with the changes in CPI. For a given long-term estimate of inflation, we used two sets of inputs and then blended the results: a 50% autocorrelation factor with 1.5% annual inflation volatility, and a 25% autocorrelation factor with 1.0% annual inflation volatility. A starting inflation level of 2.25% was used in all simulations, to reflect the low level of current inflation.

It is necessary to determine an assumed rate of COLA growth, reflecting both inflation (i.e. the growth in the CPI), and the interaction of the CPI with the COLA cap and banking mechanism. Our simulations tell us that the average growth in the COLA is expected to be below the cap, even if the expected increase in the CPI is equal to or higher than the cap itself. This is because if there is not a significant bank already in existence (such as in the early years of retirement) and there are years in which inflation is below the cap, this shortfall will not be made up in future years.

Based on a blending of the results under the two sets of inputs, and using the 3.00% inflation assumption adopted by the Board and found to be reasonable by Cheiron, we recommend maintaining the 2.7% COLA growth assumption used in the prior actuarial valuation.

**SECTION III — ECONOMIC ASSUMPTIONS
DISCOUNT RATE**

DISCOUNT RATE

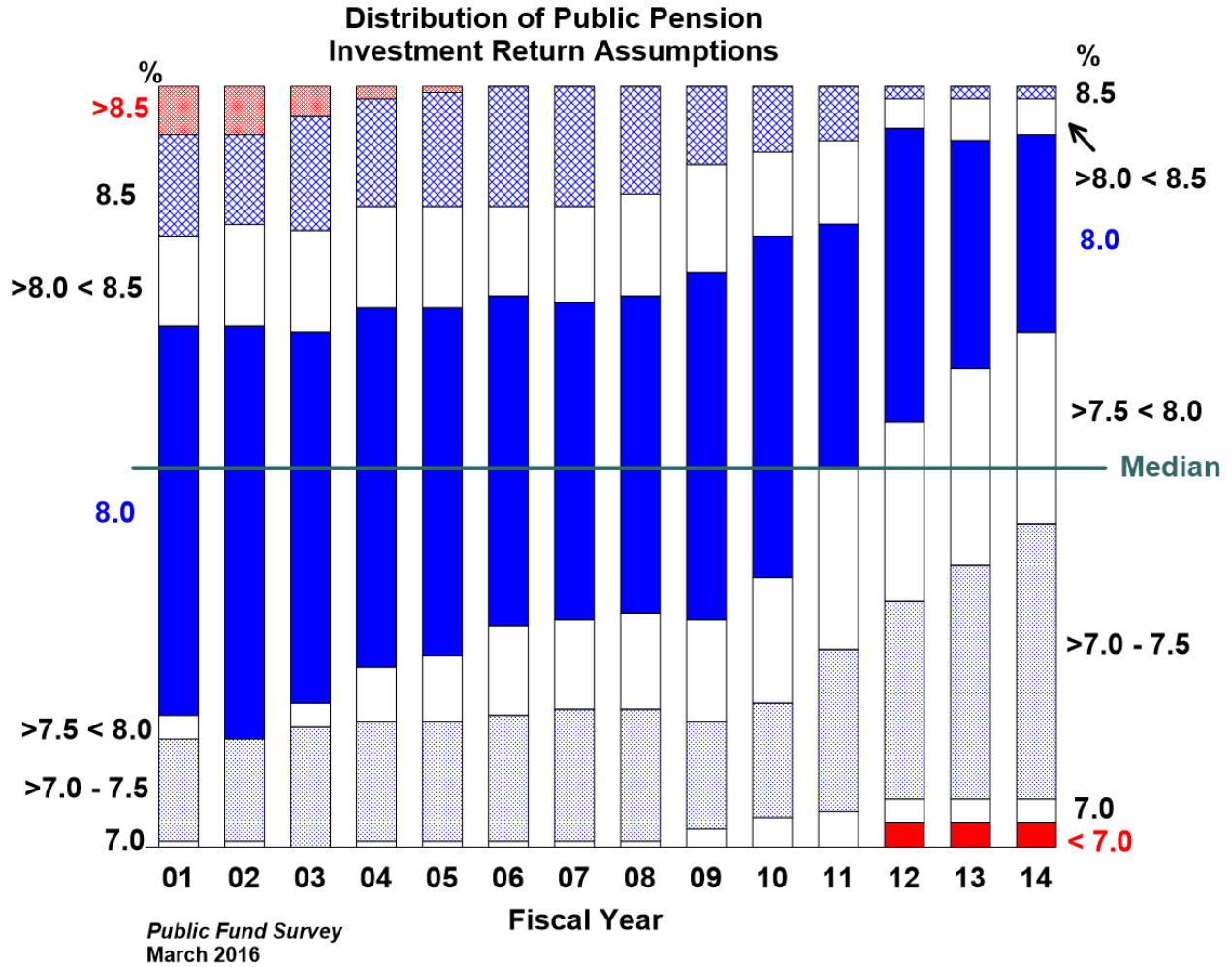
The discount rate assumption is generally the most significant of all the assumptions employed in actuarial valuations. The discount rate is based on the long-term expected return on plan investments. In the short-term, a higher discount rate results in lower expected contributions. However, over the long term, actual contributions will depend on actual investment returns and not the discount rate (or expected investment returns). If actual investment returns are lower than expected, contribution rates will increase in the future. It is important to set a realistic discount rate so that projections of future contributions for budgeting purposes will not be biased, particularly to be too low.

Other Large Public Retirement Plans

Based on the Public Fund Survey, developed by the National Association of State Retirement Administrators (NASRA) covering most of the largest public retirement systems in the country, there has been a general movement over at least the last decade to reduce the discount rate used in actuarial valuations. Chart III-4 on the next page shows the change in the distribution of assumptions since 2001. The median assumption is now 7.75% and the number of plans using a discount rate of 7.5% or lower has increased significantly.

SECTION III — ECONOMIC ASSUMPTIONS
DISCOUNT RATE

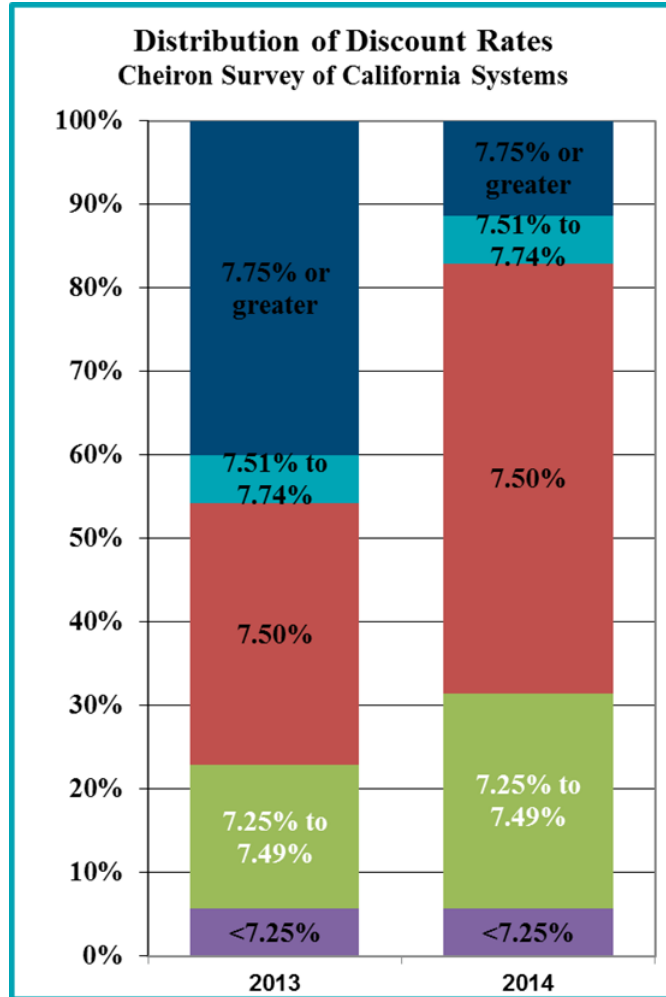
Chart III-4



In our survey of California retirement systems, the median assumption is even lower at 7.50% with 18 of the 35 systems using the median rate. Only four systems use a rate as high as 7.75%. Chart III-5 below shows the change in discount rate assumptions for California systems from 2013 to 2014.

SECTION III — ECONOMIC ASSUMPTIONS
DISCOUNT RATE

Chart III-5



Target Asset Allocation and Future Expectations

The discount rate assumption depends on the anticipated average level of inflation and the anticipated average *real rate of return*. The real rate of return is the investment return in excess of underlying inflation. The expected average real rate of return is heavily dependent on asset mix: The portion of assets in stocks, bonds, and other asset classes.

Tables III-2 and III-3 on the next page show the target allocation based on the Board's current policy along with the capital market assumptions provided by the Plan's investment consultant (Verus), and those from a survey of 10 investment consultants published by Horizon Actuarial Services. The Verus assumptions are intended to project returns over a 10-year period, while the Horizon survey results cover a 20-year time horizon.

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION III — ECONOMIC ASSUMPTIONS
DISCOUNT RATE**

Based on these assumptions, we calculated an expected geometric return of 7.32% under the Horizon survey assumptions, but only a 6.13% return under the Verus assumptions.

Table III-2

Verus (10-year) Assumptions				
Asset Category	Target Allocation	Arithmetic Return	Geometric Return	Standard Deviation
US Large	30.5%	6.7%	5.7%	14.7%
US Small	7.7%	6.5%	4.7%	19.8%
International Developed	14.4%	11.0%	9.5%	18.2%
Emerging Markets	3.6%	13.9%	11.5%	23.7%
Core Fixed Income	29.8%	3.2%	3.2%	3.2%
Private Credit	7.5%	8.4%	7.9%	10.5%
Core Real Estate	6.5%	5.9%	5.1%	13.2%
Total	100.0%	6.60%	6.13%	10.03%

Table III-3

Horizon Survey (20-year) Assumptions				
Asset Category	Target Allocation	Arithmetic Return	Geometric Return	Standard Deviation
US Large	30.5%	9.2%	7.9%	17.1%
US Small	7.7%	10.2%	8.2%	21.0%
International Developed	14.4%	9.8%	8.1%	19.6%
Emerging Markets	3.6%	12.3%	9.2%	26.6%
Core Fixed Income	29.8%	4.6%	4.4%	5.6%
Private Credit*	7.5%	8.4%	7.9%	10.5%
Core Real Estate	6.5%	7.4%	6.6%	13.6%
Total	100.0%	7.91%	7.32%	11.34%

* The Horizon survey did not include a Private Credit asset class, therefore the Verus assumptions were used for this class.

Based on these capital market assumptions, we also calculated the potential distribution of returns over 10 and 20-year periods as shown in Table III-4. The 50th percentile return under the Horizon survey assumptions was 7.32%, which is very close to the 7.25% nominal return recently adopted by the Board. Using the survey's average inflation assumption (2.29%), this results in a 5.03% real return assumption.

SECTION III — ECONOMIC ASSUMPTIONS
DISCOUNT RATE

Table III-4

Expected Distribution of Average Annual Passive Investment Returns				
Percentile	Verus (10 years)		Horizon Survey (20 years)	
	Nominal	Real	Nominal	Real
95th	11.44%	9.34%	11.54%	9.25%
75th	8.27%	6.17%	9.03%	6.74%
50th	6.13%	4.03%	7.32%	5.03%
25th	4.02%	1.92%	5.64%	3.35%
5th	1.07%	-1.03%	3.26%	0.97%

As stated earlier in this report, the Verus geometric assumption for the current target portfolio is considerably lower over the next 10 years (6.13%). However, the median real return under the Verus assumptions (4.03%) is relatively close to that recently adopted by the Board: 4.25%, based on a 7.25% nominal return and 3.00% price inflation.

As of the 2013 valuation, the expected rate of return is expressed net of investment, but not administrative, expenses. The returns above were modeled based on the expected returns of the portfolio benchmark indices, which are expected to have minimal expenses. The actuarial standards on selecting a return assumption (ASOP 27) state that in general superior or inferior returns (net of fees) should not be assumed for active versus passive management, therefore we do not recommend a significant adjustment to the modeled returns for the fees of the asset managers. However, a slight margin is appropriate to reflect the investment-related expenses other than those of the investment managers, which would include the investment advisor and custodian.

The recently adopted discount rate of 7.25% is consistent with the Horizon survey of long-term capital market assumptions, including a small adjustment for investment-related expenses as described above. We therefore find the current discount rate to be a reasonable assumption. However, there are a number of factors that suggest that the near-term expected rate of return should be discussed.

- Many investment consultants expect poor rates of return in the immediate and near-term future. They reason that there is little in the way of yields on fixed income, and that the equity markets are fully valued.
- If Verus and much of the investment community are correct in their projections, we can expect returns below the 7.25% assumed rate for a number of years. This will result in actuarial losses and increases in employer contribution rates. However, these losses may be partially offset by gains on the liabilities from price and wage inflation below the assumed level (3.00% and 3.25%, respectively)

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION III — ECONOMIC ASSUMPTIONS
DISCOUNT RATE**

- We believe that near- and mid-term return projections should be considered along with long-term projections. Fund performance is usually measured over five to 10 years; longer measurement periods are often considered less relevant because of the potential for changes in the economy and in the investment markets.

As a result, the prospect of several years of actuarial losses, in line with the Verus assumptions, and the resulting increases in County and other employer contribution rates should be communicated to their staff for use in planning. In addition, we recommend that the Board and staff continue to conduct at least a brief discussion of this assumption annually, in consultation with the Plan's actuary and investment consultant, to determine if further changes are appropriate.

SECTION IV — DEMOGRAPHIC ASSUMPTIONS
MERIT SALARY INCREASES

Demographic assumptions are used to predict membership behavior, including rates of retirement, termination, disability, and mortality. These assumptions are based primarily on the historical experience of StanCERA, with some adjustments where future experience is expected to differ from historical experience and with deference to standard tables where StanCERA experience is not fully credible and a standard table is available. For purposes of this study, merit salary increases are also considered a demographic assumption because the assumption is based primarily on StanCERA's historical experience.

MERIT SALARY INCREASES

Salary increases consist of three components: Increases due to cost of living maintenance (inflation), increases related to non-inflationary pressures on base pay (such as productivity increases), and increases in individual pay due to merit, promotion, and longevity. Increases due to cost of living and non-inflationary base pay factors were addressed in an earlier section of this report. To analyze the merit component, we subtracted the Plan's real wage growth as measured by the increase in the Plan's aggregate average wages for members with 20 or more years of service during the experience study period. This calculation was performed separately for Safety and General members.

The merit salary increase assumption is analyzed by employee group and by service. Generally, newer employees are more likely to earn a longevity increase or receive a promotion, so their salary increases tend to be greater than those for longer service employees.

Charts IV-1 and IV-2 on the next page analyze the pay patterns for Safety and General members, respectively. The charts show the current assumption (red line) compared to the actual experience (blue line) and the proposed assumption (green line).

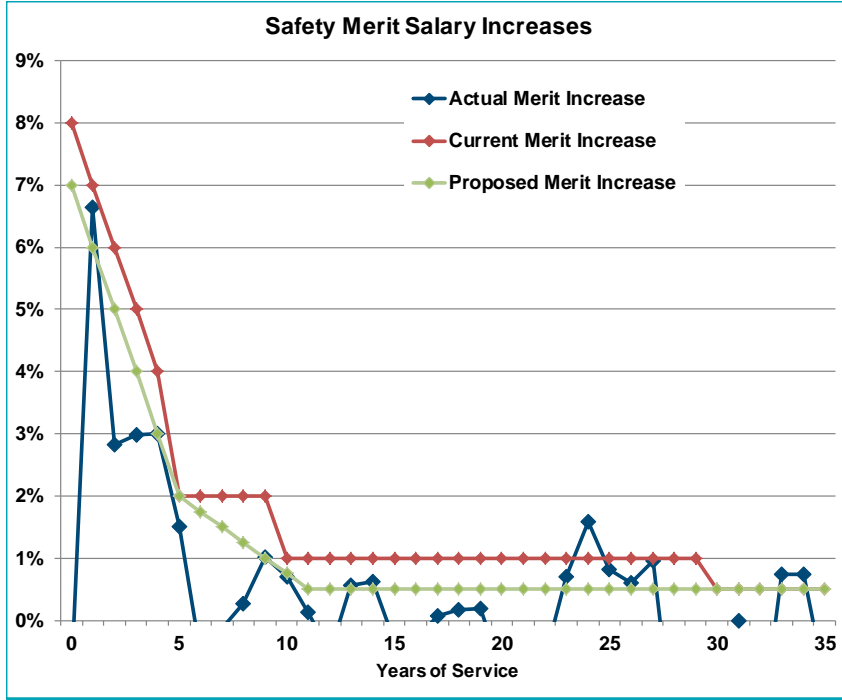
For Safety members, we have recommended slightly lower rates for the first 30 years of service than previously assumed. The ultimate rate of 0.50% remains unchanged but begins at 11 years of service rather than 30 years of service.

For General members, we have proposed new assumptions with slightly higher increases in the first two years of service, and slightly lower rates thereafter, when compared to the previous assumption. Again, the proposal maintains an ultimate rate of 0.50% but at an earlier stage of a member's career than previously assumed, in this case, at eight years of service instead of at 20 years of service.

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

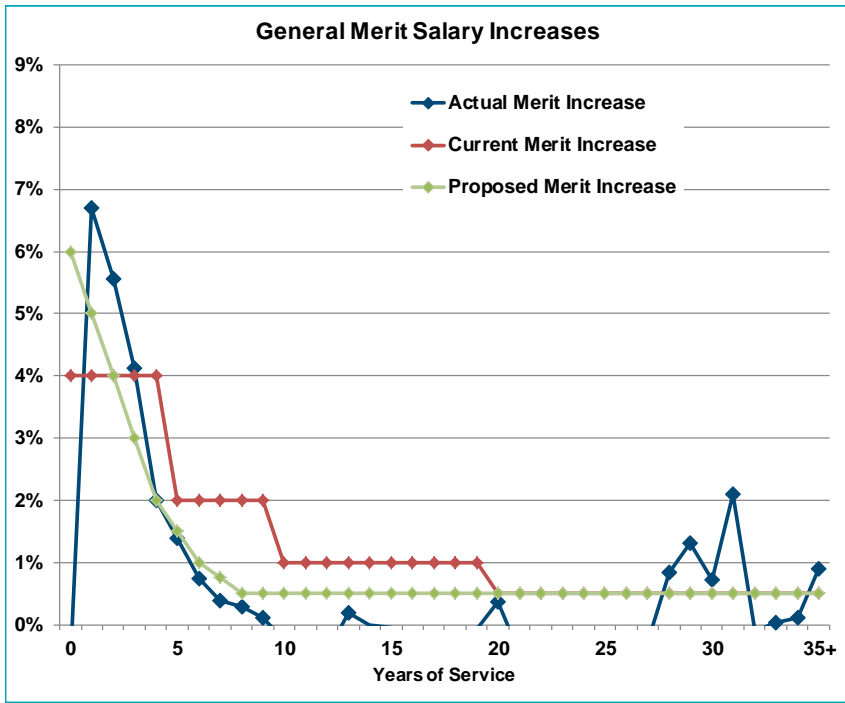
**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
MERIT SALARY INCREASES**

Chart IV-1



Merit Salary Increases Safety		
Service	Current	Recommended
0	8.00%	7.00%
1	7.00%	6.00%
2	6.00%	5.00%
3	5.00%	4.00%
4	4.00%	3.00%
5	2.00%	2.00%
6	2.00%	1.75%
7	2.00%	1.50%
8	2.00%	1.25%
9	2.00%	1.00%
10	1.00%	0.75%
11	1.00%	0.50%
12	1.00%	0.50%
13	1.00%	0.50%
14	1.00%	0.50%
15	1.00%	0.50%
16	1.00%	0.50%
17	1.00%	0.50%
18	1.00%	0.50%
19	1.00%	0.50%
20	1.00%	0.50%
21	1.00%	0.50%
22	1.00%	0.50%
23	1.00%	0.50%
24	1.00%	0.50%
25	1.00%	0.50%
26	1.00%	0.50%
27	1.00%	0.50%
28	1.00%	0.50%
29	1.00%	0.50%
30+	0.50%	0.50%

Chart IV-2



Merit Salary Increases General		
Service	Current	Recommended
0	4.00%	6.00%
1	4.00%	5.00%
2	4.00%	4.00%
3	4.00%	3.00%
4	4.00%	2.00%
5	2.00%	1.50%
6	2.00%	1.00%
7	2.00%	0.75%
8	2.00%	0.50%
9	2.00%	0.50%
10	1.00%	0.50%
11	1.00%	0.50%
12	1.00%	0.50%
13	1.00%	0.50%
14	1.00%	0.50%
15	1.00%	0.50%
16	1.00%	0.50%
17	1.00%	0.50%
18	1.00%	0.50%
19	1.00%	0.50%
20	0.50%	0.50%
21	0.50%	0.50%
22	0.50%	0.50%
23	0.50%	0.50%
24	0.50%	0.50%
25+	0.50%	0.50%

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES**

ANALYSIS OF OTHER DEMOGRAPHIC ASSUMPTIONS

For all of the remaining demographic assumptions, we determined the ratio of the actual number of decrements for each membership group compared to the expected number of decrements (A/E ratio or actual-to-expected ratio). If the assumption is perfect, this ratio will be 100%. Otherwise, any recommended assumption change should move from the current A/E ratio towards 100% unless future experience is expected to be different than the experience during the period of study.

We also calculate an r-squared statistic for each assumption. R-squared measures how well the assumption fits the actual data and can be thought of as the percentage of the variation in actual data explained by the assumption. Ideally, r-squared would equal 100% although this is never the case. Any recommended assumption change should increase the r-squared compared to the current assumption making it closer to 100% unless the pattern of future decrements is expected to be different from the pattern experienced during the period of study.

In addition, we calculated the 90% confidence interval, which represents the range within which the true decrement rate during the experience study period fell with 90% confidence. (If there is insufficient data to calculate a confidence interval, the confidence interval is shown as the entire range of the graph.) We generally propose assumption changes when the current assumption is outside the 90% confidence interval of the observed experience. However, adjustments are made to account for differences between future expectations and historical experience, to account for the past experience represented by the current assumption, and to maintain a neutral to slight conservative bias in the selection of the assumption. For disability and mortality rates, we compare StanCERA's experience to that of a standard table, and only adjust the standard table to the extent StanCERA's experience is large enough to be credible in the case of disabilities. For mortality, we adjust the standard table to bring the proposed assumption closer to an A/E ratio of 100.

RETIREMENT RATES

The current retirement rates vary by age and are applied to all members who are eligible to retire. As a result, a member who is age 60 with 10 years of service, for example, is assumed just as likely to retire as a member who is age 60 with 30 years of service. In reviewing the data for StanCERA, we found that at any given age, members with more service are generally more likely to retire than members with fewer years of service. StanCERA is not large enough to justify assumptions for each age and service combination, so we recommend separate assumptions by age for each of the following two service groups for Safety members:

- Members with less than 20 years of service,
- Members with 20 or more years of service.

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES**

We recommend separate assumptions by age for each of the following two service groups for General members:

- Members with less than 30 years of service,
- Members with 30 or more years of service.

Table IV-R1 shows the calculation of actual-to-expected ratios and the r-squared statistic for Safety members with less than 20 years of service. Charts IV-R1 shows the information graphically along with the 90% confidence interval.

The data shows much lower actual retirement rates than expected under the current assumption. The proposed assumption decreases the aggregate assumed rate of retirement and increases the aggregate A/E ratio from 43% to 87%. The r-squared also increases from 0.12 to 0.20.

See Appendices A and B for a full listing of the proposed and prior rates. Notably, the ultimate retirement age increases from 60 to 65.

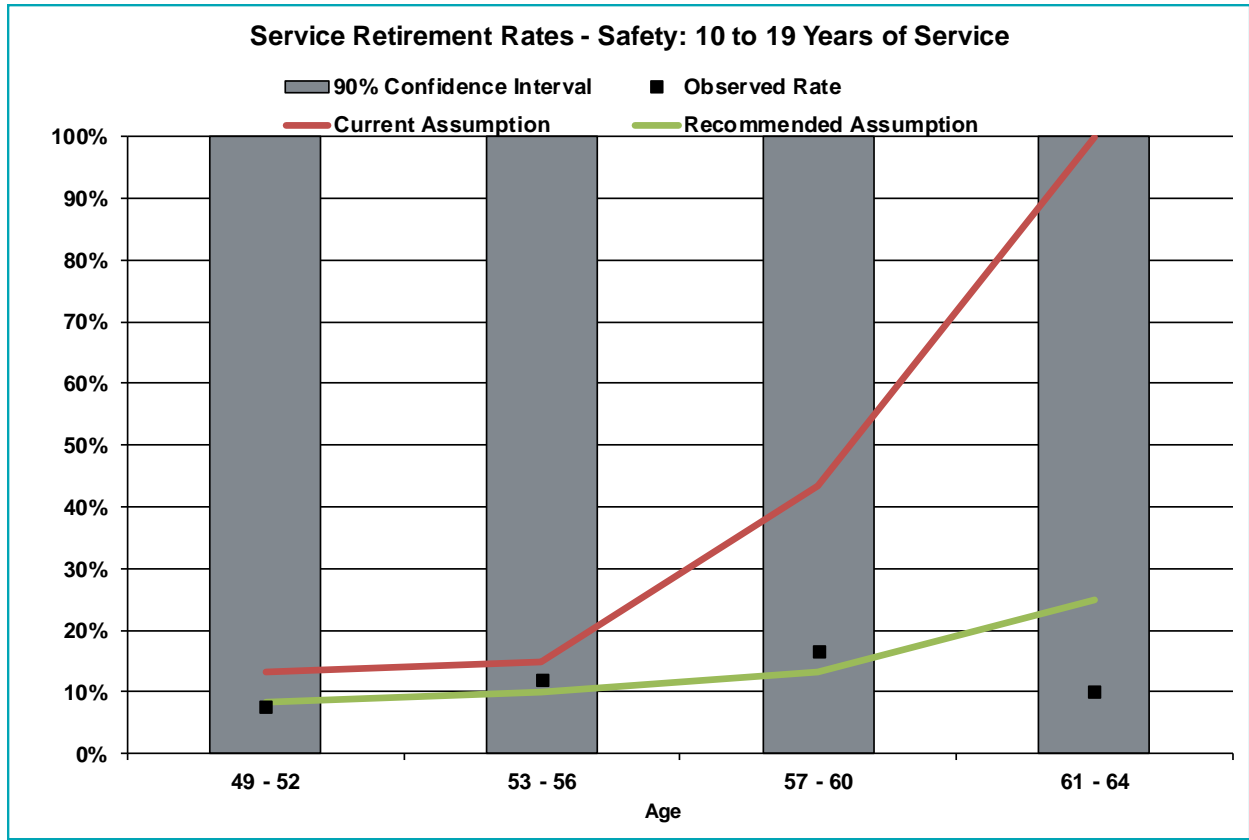
Table IV-R1

Service Retirement Rates - Safety: 10 to 19 Years of Service						
Age	Exposures	Retirements			Actual to Expected Ratios	
		Actual	Current	Recommended	Current	Recommended
49 - 52	52	4	7.0	4.4	58%	92%
53 - 56	33	4	5.0	3.3	81%	121%
57 - 60	24	4	10.4	3.2	38%	127%
61 - 64	10	1	10.0	2.5	10%	40%
Subtotal	119	13	32.3	13.3	40%	98%
65+	5	3	5.0	5.0	60%	60%
Total	124	16	37.3	18.3	43%	87%
R-squared			0.1231	0.1970		

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

SECTION IV — DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart IV-R1



Average Retirement Age			
Actual:	56.8	Current Expected:	58.6
		Recommended Expected:	58.4

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES**

Table IV-R2 shows the calculation of actual-to-expected ratios and the r-squared statistic for Safety members with 20 or more years of service, and Chart IV-R2 shows the information graphically along with the 90% confidence interval.

The data shows higher actual retirement rates than expected under the current assumption. The proposed assumption increases the overall assumed rate of retirement and decreases the aggregate A/E ratio from 148% to 102%. The r-squared also increases from 0.46 to 0.83.

See Appendices A and B for a full listing of the proposed and prior rates. The ultimate retirement age remains at 60.

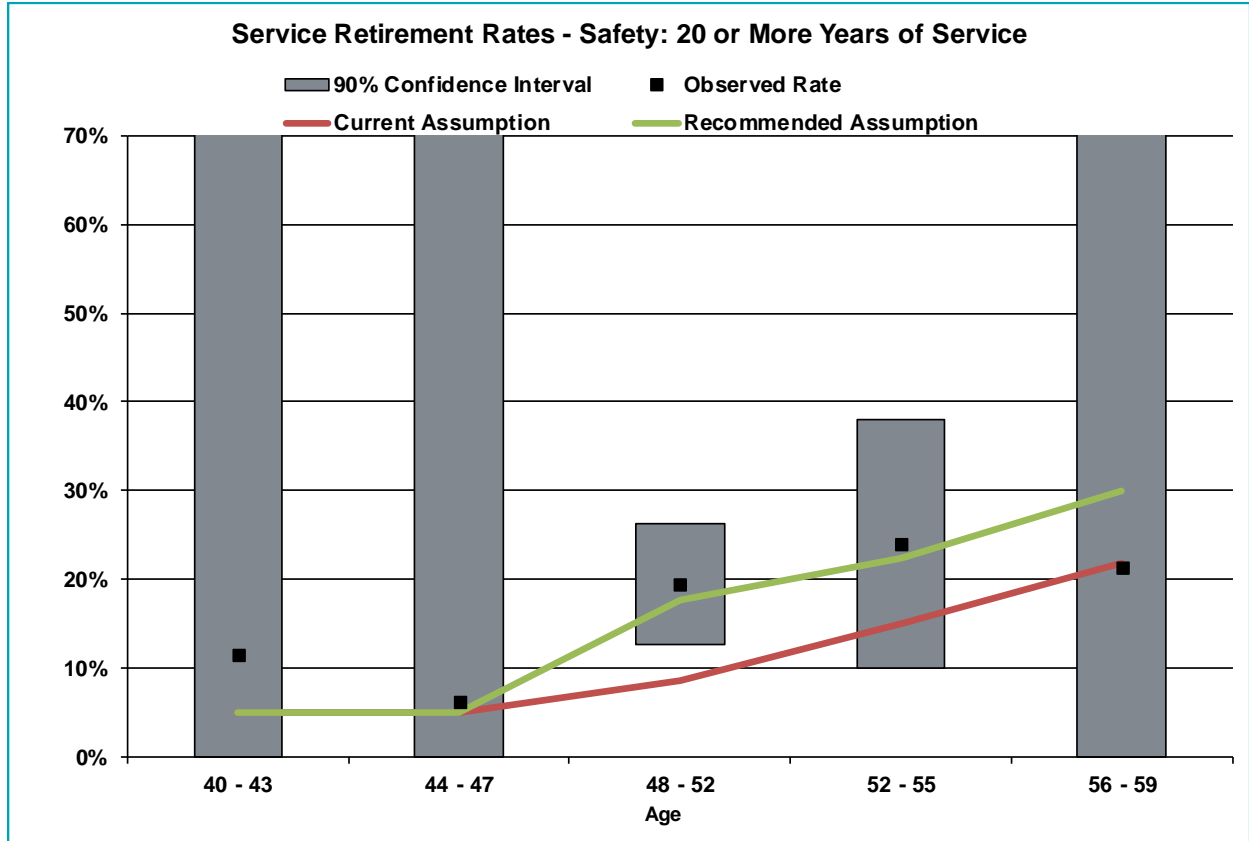
Table IV-R2

Service Retirement Rates - Safety: 20 or More Years of Service						
Age	Exposures	Retirements			Actual to Expected Ratios	
		Actual	Current	Recommended	Current	Recommended
40 - 43	17	2	0.9	0.9	232%	232%
44 - 47	79	5	4.0	4.0	126%	126%
48 - 52	92	18	7.9	16.2	229%	111%
52 - 55	25	6	3.8	5.6	160%	107%
56 - 59	24	5	5.2	7.1	97%	71%
Subtotal	237	36	21.6	33.7	167%	107%
60+	6	4	5.5	5.5	73%	73%
Total	243	40	27.1	39.2	148%	102%
R-squared			0.4600	0.8319		

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES**

Chart IV-R2



Average Retirement Age			
Actual:	52.0	Current Expected:	54.1
		Recommended Expected:	53.3

Table IV-R3 shows the calculation of actual-to-expected ratios and the r-squared statistic for General members with less than 30 years of service. Charts IV-R3 shows the information graphically along with the 90% confidence interval.

The data shows lower actual retirement rates than expected under the current assumption. The proposed assumption decreases the aggregate assumed rate of retirement and increases the aggregate A/E ratio from 86% to 90%. The r-squared also increases from 0.84 to 0.93.

See Appendices A and B for a full listing of the proposed and prior rates. Notably, the ultimate retirement age increases from 70 to 75.

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES**

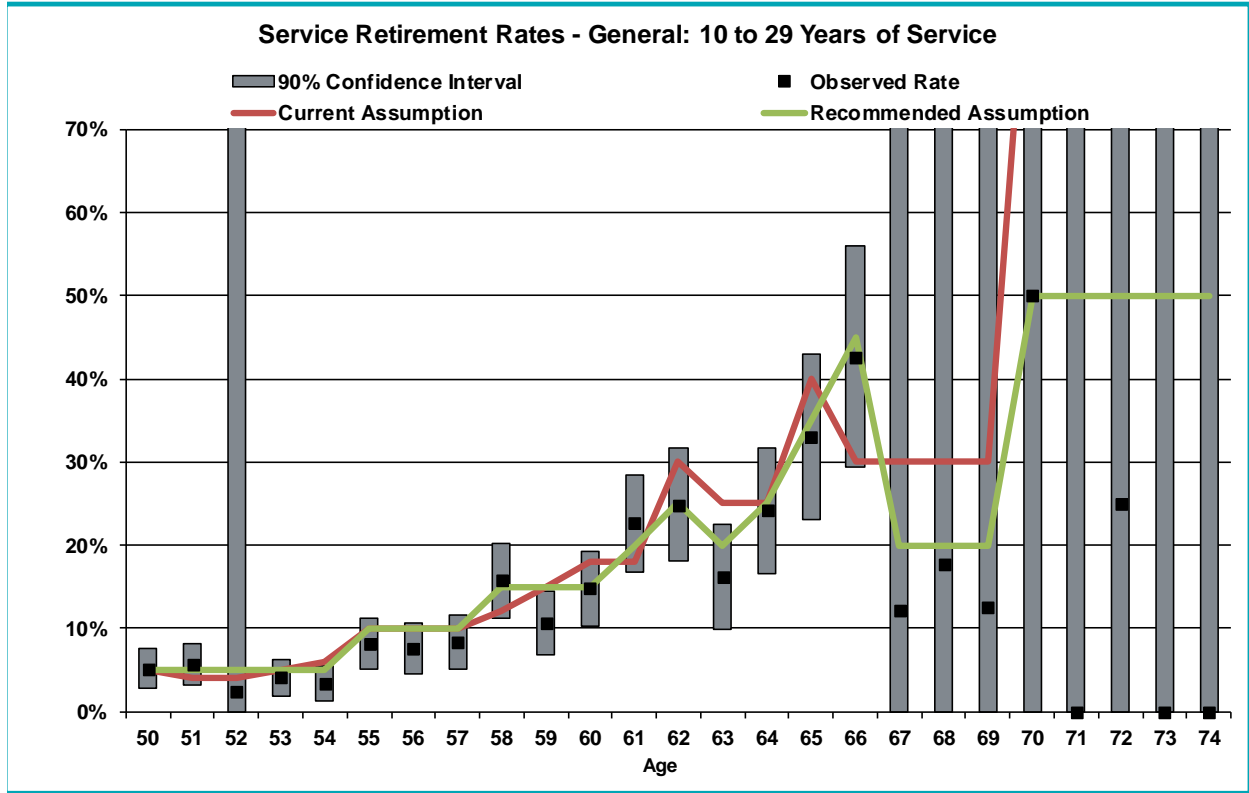
Table IV-R3

Service Retirement Rates - General: 10 to 29 Years of Service						
Age	Exposures	Retirements			Actual to Expected Ratios	
		Actual	Current	Recommended	Current	Recommended
49	106	3	0.0	-	0%	0%
50	232	12	11.6	11.6	103%	103%
51	233	13	9.3	11.6	140%	112%
52	216	5	8.6	10.8	58%	46%
53	220	9	11.0	11.0	82%	82%
54	207	7	12.4	10.4	56%	68%
55	210	17	21.0	21.0	81%	81%
56	200	15	20.0	20.0	75%	75%
57	192	16	19.2	19.2	83%	83%
58	178	28	21.3	26.6	131%	105%
59	170	18	25.4	25.4	71%	71%
60	169	25	30.3	25.3	82%	99%
61	137	31	24.7	27.4	126%	113%
62	113	28	33.8	28.1	83%	100%
63	93	15	23.1	18.5	65%	81%
64	87	21	21.8	21.8	97%	97%
65	61	20	24.2	21.2	83%	94%
66	38	16	11.3	16.9	142%	95%
67	17	2	5.0	3.3	40%	61%
68	17	3	5.1	3.4	59%	88%
69	8	1	2.4	1.6	42%	63%
70	10	5	10.0	5.0	50%	100%
71	5	0	5.0	2.5	0%	0%
72	4	1	4.0	2.0	25%	50%
73	1	0	1.0	0.5	0%	0%
74	1	0	1.0	0.5	0%	0%
Subtotal	2,919	311	362.3	345.5	86%	90%
75+	1	1	1.0	1.0	100%	100%
Total	2,920	312	363.3	346.5	86%	90%
R-squared			0.8385	0.9338		

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

SECTION IV — DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart IV-R3



Average Retirement Age			
Actual:	59.5	Current Expected:	60.1
		Recommended Expected:	59.6

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES**

Table IV-R4 shows the calculation of actual-to-expected ratios and the r-squared statistic for General members with 30 or more years of service, and Chart IV-R4 shows the information graphically along with the 90% confidence interval.

The data shows higher actual retirement rates than expected under the current assumption. The proposed assumption increases the overall assumed rate of retirement and decreases the aggregate A/E ratio from 149% to 96%. The r-squared also increases from 0.73 to 0.85.

See Appendices A and B for a full listing of the proposed and prior rates. The ultimate retirement age remains at 70.

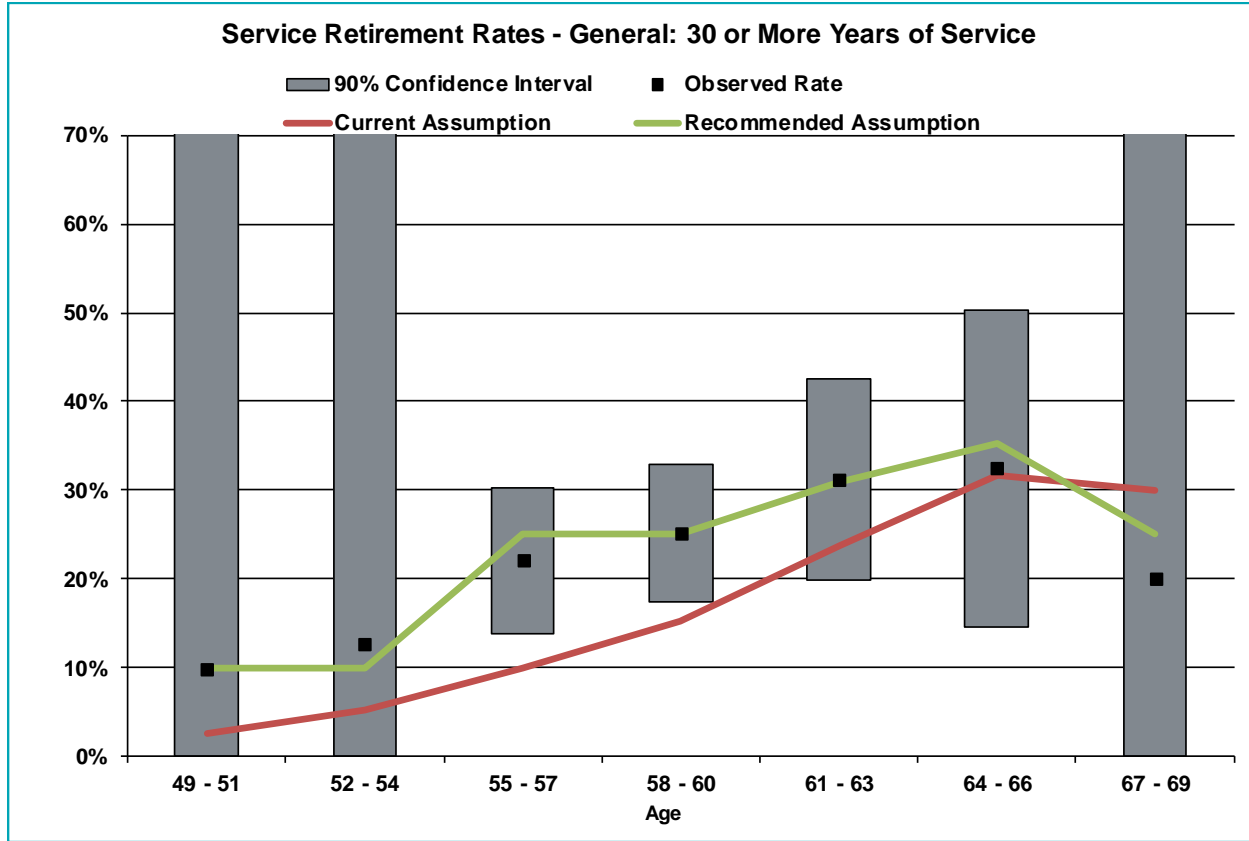
Table IV-R4

Service Retirement Rates - General: 30 or More Years of Service						
Age Band	Exposures	Retirements			Actual to Expected Ratios	
		Actual	Current	Recommended	Current	Recommended
49 - 51	10	1	0.3	1.0	385%	98%
52 - 54	40	5	2.0	4.0	248%	127%
55 - 57	68	15	6.8	17.0	221%	88%
58 - 60	84	21	12.7	20.9	166%	101%
61 - 63	45	14	10.7	14.0	131%	100%
64 - 66	19	6	5.9	6.5	103%	92%
67 - 69	5	1	1.5	1.3	67%	80%
Subtotal	270	63	39.8	64.6	158%	98%
70+	5	3	4.5	4.5	67%	67%
Total	274	66	44.3	69.1	149%	96%
R-squared			0.7257	0.8489		

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

SECTION IV — DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES

Chart IV-R4



Average Retirement Band			
Actual:	59.7	Current Expected:	61.3
		Recommended Expected:	59.9

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**

Termination rates reflect the frequency at which active members leave employment for reasons other than retirement, death, or disability. Currently, there is one set of service-based termination rates for Safety members, a set for male General members, and another set for female General members.

Table IV-T1 shows the calculation of actual-to-expected ratios and the r-squared statistic for Safety members, and Chart IV-T1 shows the information graphically along with the 90% confidence interval.

The data shows higher actual termination rates than expected under the current assumption. The proposed assumption increases the assumed rates of termination and decreases the aggregate A/E ratio from 118% to 102%. The r-squared also increases from 0.74 to 0.90.

See Appendices A and B for a full listing of the proposed and prior rates.

Table IV-T1

Termination Rates - Safety: All Years of Service							
Service	Exposures	Retirements			Actual to Expected Ratios		
		Actual	Current	Recommended	Current	Recommended	
0	115	23	17.3	20.7	133%	111%	
1	125	12	18.8	15.0	64%	80%	
2	67	5	7.0	6.0	71%	83%	
3	29	3	2.9	2.0	103%	148%	
4	51	2	3.1	3.1	65%	65%	
5	95	6	3.6	4.8	169%	126%	
6	137	5	5.1	6.9	98%	73%	
7	139	11	5.2	7.0	212%	158%	
8	127	7	4.7	6.4	149%	110%	
9	82	4	3.0	4.1	133%	98%	
10	87	3	3.0	4.4	100%	69%	
11	99	6	3.4	4.9	178%	122%	
12	91	2	3.1	3.1	65%	65%	
13	82	3	1.6	2.8	193%	108%	
14	79	1	1.5	2.7	67%	37%	
15	70	3	1.4	2.4	222%	126%	
16	62	3	1.2	2.1	258%	143%	
17	56	2	1.0	1.9	195%	106%	
18	53	3	0.9	1.8	319%	168%	
19	19	0	0.3	0.6	0%	0%	
Total	1,662	104	87.9	102.4	118%	102%	
R-squared			0.7368	0.9034			

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

SECTION IV — DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Chart IV-T1

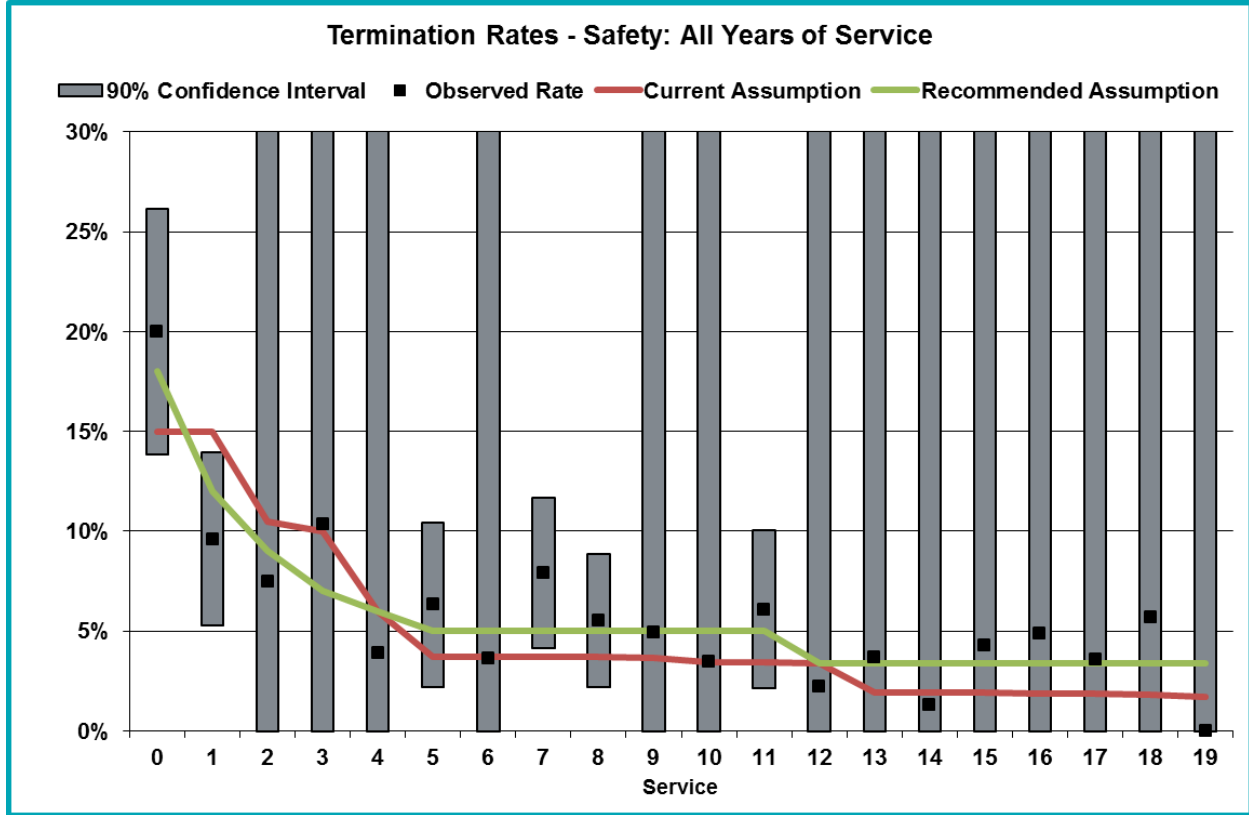


Table IV-T2 shows the calculation of actual-to-expected ratios and the r-squared statistic for male General members, and Chart IV-T2 shows the information graphically along with the 90% confidence interval.

The data shows slightly lower actual termination rates than expected under the current assumption. The proposed assumptions decrease the assumed rates of termination only at 0 years of service and increase the aggregate A/E ratio from 94% to 100%. The r-squared also increases from 0.71 to 0.82.

See Appendices A and B for a full listing of the proposed and prior rates.

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**

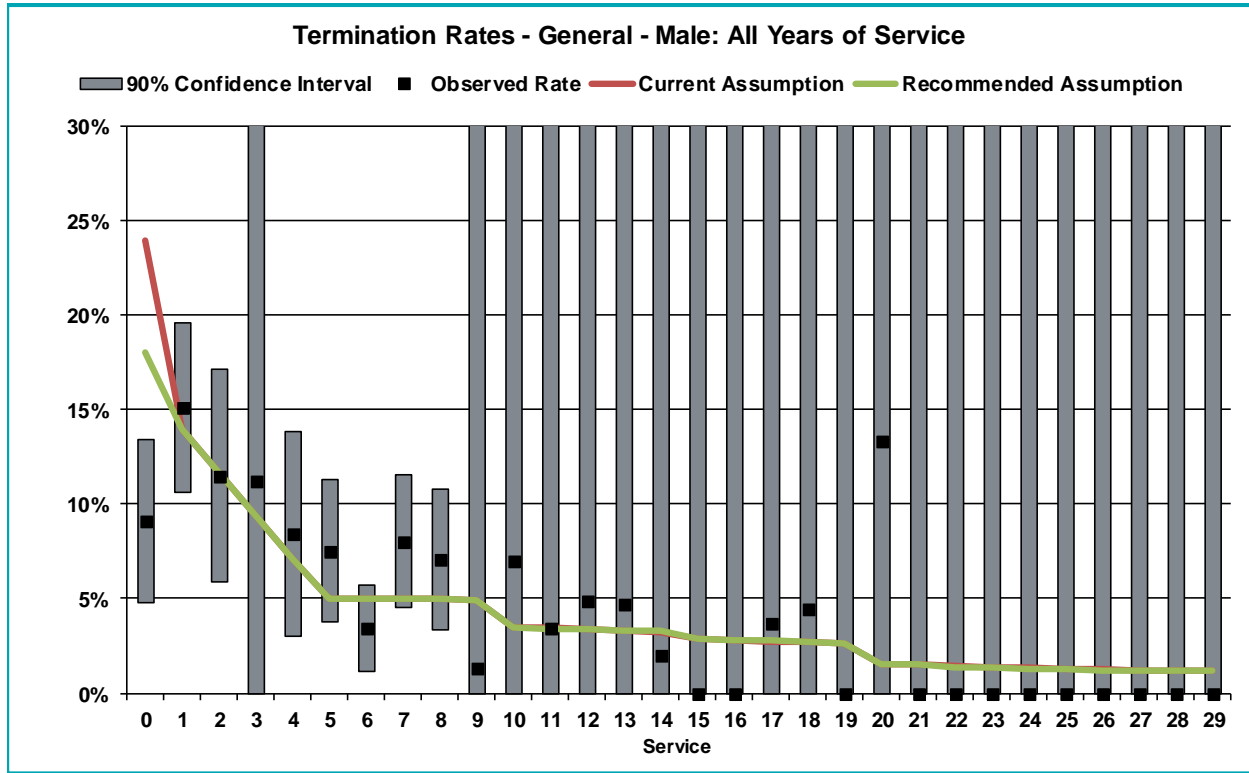
Table IV-T2

Termination Rates - General - Male: All Years of Service						
Service	Exposures	Retirements			Actual to Expected Ratios	
		Actual	Current	Recommended	Current	Recommended
0	121	11	29.0	21.8	38%	51%
1	172	26	24.1	24.1	108%	108%
2	87	10	10.2	10.2	98%	98%
3	45	5	4.2	4.2	120%	120%
4	71	6	5.1	5.0	119%	119%
5	133	10	6.7	6.7	150%	150%
6	173	6	8.7	8.7	69%	69%
7	162	13	8.1	8.1	160%	160%
8	128	9	6.3	6.4	142%	141%
9	77	1	3.8	3.7	26%	27%
10	58	4	2.0	2.0	200%	199%
11	58	2	2.0	2.0	100%	101%
12	62	3	2.1	2.1	142%	142%
13	64	3	2.1	2.1	141%	142%
14	51	1	1.6	1.7	61%	60%
15	41	0	1.2	1.2	0%	0%
16	35	0	1.0	1.0	0%	0%
17	27	1	0.7	0.8	135%	132%
18	23	1	0.6	0.6	166%	165%
19	20	0	0.5	0.5	0%	0%
20	8	1	0.1	0.1	868%	889%
21	10	0	0.1	0.1	0%	0%
22	2	0	0.0	0.0	0%	0%
23	5	0	0.1	0.1	0%	0%
24	4	0	0.1	0.1	0%	0%
25	4	0	0.0	0.0	0%	0%
26	4	0	0.0	0.0	0%	0%
27	3	0	0.0	0.0	0%	0%
28	2	0	0.0	0.0	0%	0%
29	0	0	0	0	0%	0%
Total	1,644	113	120.6	113.2	94%	100%
R-squared			0.7073	0.8219		

Chart IV-T2

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**



Average Termination Service			
Actual:	4.9	Current Expected:	4.2
		Recommended Expected:	4.4

Table IV-T3 shows the calculation of actual-to-expected ratios and the r-squared statistic for female General members, and Chart IV-T3 shows the information graphically along with the 90% confidence interval.

The data shows that actual termination rates are higher in aggregate than the current assumption. The proposed assumptions increase the assumed rates of termination and are the same as the proposed termination assumptions for male General members. The proposal decreases the aggregate A/E ratio from 118% to 102%. The r-squared increases from 0.95 to 0.97.

See Appendices A and B for a full listing of the proposed and prior rates.

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**

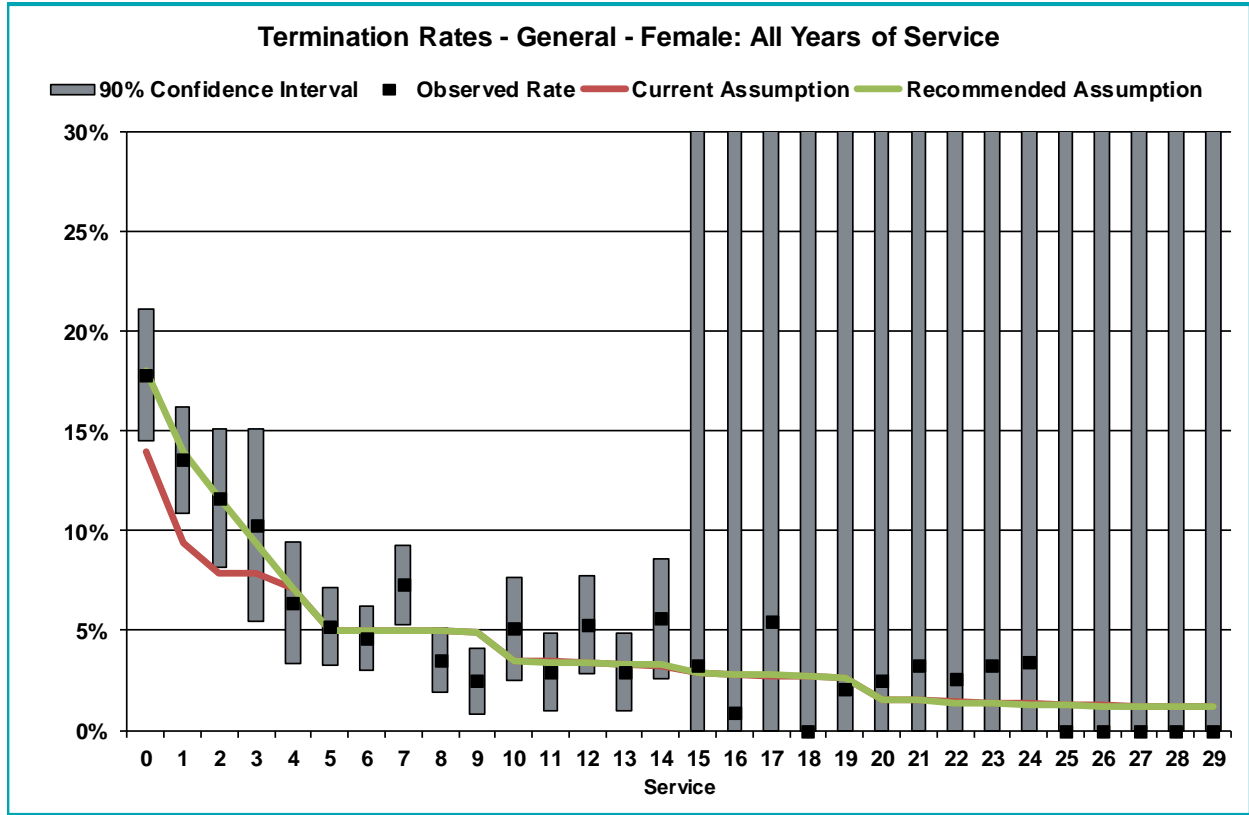
Table IV-T3

Termination Rates - General - Female: All Years of Service						
Service	Exposures	Retirements			Actual to Expected Ratios	
		Actual	Current	Recommended	Current	Recommended
0	364	65	51.0	65.5	128%	99%
1	449	61	42.2	62.9	145%	97%
2	232	27	18.3	27.1	147%	99%
3	107	11	8.5	10.1	130%	109%
4	172	11	12.3	12.2	90%	90%
5	345	18	17.3	17.3	104%	104%
6	475	22	23.8	23.7	92%	93%
7	452	33	22.7	22.6	145%	146%
8	368	13	18.3	18.4	71%	71%
9	242	6	11.9	11.9	50%	51%
10	196	10	6.8	6.9	147%	146%
11	204	6	7.0	6.9	86%	87%
12	226	12	7.7	7.7	157%	157%
13	204	6	6.8	6.7	89%	89%
14	161	9	5.2	5.3	172%	170%
15	124	4	3.5	3.6	114%	112%
16	114	1	3.2	3.2	31%	31%
17	91	5	2.5	2.5	200%	196%
18	76	0	2.0	2.0	0%	0%
19	49	1	1.3	1.3	79%	79%
20	40	1	0.6	0.6	165%	169%
21	31	1	0.5	0.5	217%	215%
22	39	1	0.6	0.5	180%	186%
23	31	1	0.4	0.4	232%	230%
24	29	1	0.4	0.4	257%	265%
25	16	0	0.2	0.2	0%	0%
26	6	0	0.1	0.1	0%	0%
27	4	0	0.0	0.0	0%	0%
28	2	0	0.0	0.0	0%	0%
29	2	0	0.0	0.0	0%	0%
Total	4,845	326	275.1	320.5	118%	102%
R-squared			0.9483	0.9699		

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**

Chart IV-T3



Average Termination Service			
Actual:	4.9	Current Expected:	5.3
		Recommended Expected:	4.7

Refund rates and Reciprocity

When a vested member terminates employment, they have the option of receiving a refund of contributions with interest or a deferred annuity. If an employee terminates employment and works for a reciprocal employer, the employee’s retirement benefit is ultimately based on the employee’s service with StanCERA and Final Compensation based on employment with any reciprocal employer.

Table IV-T4 shows the results of our analysis of withdrawals for General and Safety, for the period from July 1, 2012 through June 30, 2015. We are not recommending any changes to the withdrawal or transfer assumptions at this time.

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**

Table IV-T4

	Withdrawals as % of Terminations		Transfers as a % of Non-Withdrawals	
	< 10 Years of Service	10+ Years of Service	< 10 Years of Service	10+ Years of Service
Observed				
General	49.86%	18.67%	25.97%	39.34%
Safety	37.18%	7.69%	36.73%	33.33%
Current/Proposed Assumption				
General	50.00%	20.00%	25.00%	25.00%
Safety	35.00%	10.00%	50.00%	50.00%

Table IV-T5 shows the results of our analysis of the age at which vested terminated and transferred members decide to retire. We are not recommending any changes to the assumptions at this time, as the only relatively large group, General vested terminated members, have experience close to the assumed deferral age.

Table IV-T5

	Retirements from Vested Status			Retirements from Transferred Status		
	Number of Retirees	Average Age	Current Assumption	Number of Retirees	Average Age	Current Assumption
General	105	58.68	58	25	60.71	58
Safety	12	54.26	53	3	56.28	53

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES**

This section analyzes the incidence of disability by the age of the employee. There are separate sets of assumptions for nonservice-connected disabilities and service-connected disabilities. Both sets of assumptions for Safety members are unisex, while General rates vary by gender. The disability decrement is only applied after members are eligible for disability benefits.

The amount of disability experience is fairly limited; only seventeen disabilities have occurred during the last three years for Safety and General members combined. To improve the credibility of the data, we have aggregated the experience of the past three years with that of the prior experience study (2009-2012).

Table IV-D1 shows the calculation of actual-to-expected ratios and the r-squared statistic for service-connected disabilities for Safety members, and Chart IV-D1 shows the information graphically. The 90% confidence interval is not shown because of a lack of credible data.

The data shows disability rates that are close to the current assumption until age 45. We are not proposing any change to the disability assumption for Safety members. The current assumption has an A/E ratio of 49%. The r-squared is 0.17.

See Appendix A or B for a full listing of the rates.

Table IV-D1

Service Disability Rates - Safety - All						
Age Band	Exposures	Disabilities			Actual to Expected Ratios	
		Actual	Current	Recommended	Current	Recommended
20 - 24	103	0	0.2	0.2	0%	0%
25 - 29	575	0	1.5	1.5	0%	0%
30 - 34	814	2	3.4	3.4	59%	59%
35 - 39	845	4	5.1	5.1	79%	79%
40 - 44	708	5	6.3	6.3	79%	79%
45 - 49	536	3	6.7	6.7	45%	45%
50 - 54	289	0	4.7	4.7	0%	0%
55 - 59	157	1	3.0	3.0	34%	34%
Total	4,027	15	30.8	30.8	49%	49%
R-squared			0.1713	0.1713		

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

SECTION IV — DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

Chart IV-D1

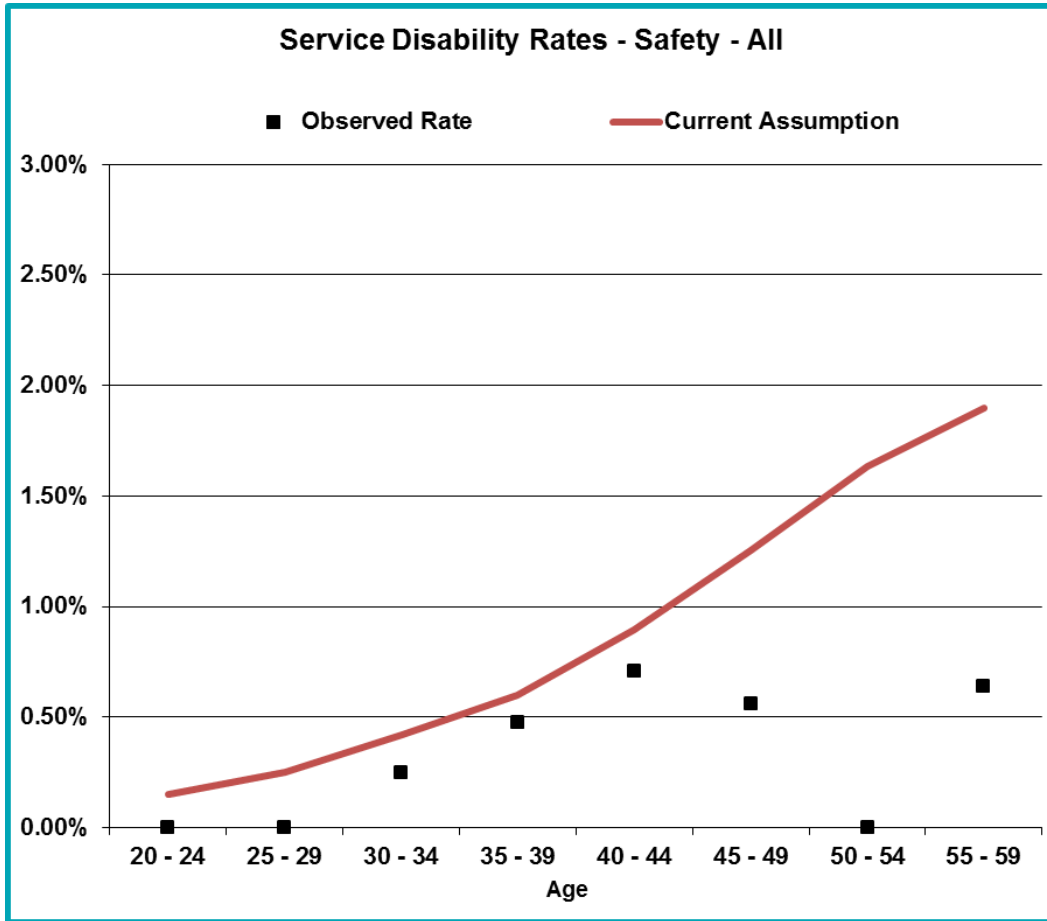


Table IV-D2 on the next page shows the calculation of actual-to-expected ratios and the r-squared statistic for male General members, and Chart IV-D2 shows the information graphically. The 90% confidence interval is not shown because of a lack of credible data.

The data shows that the number of disabilities has been lower than expected under the current assumption. In this context, however, the 25% A/E ratio does not mean much; there were only two service-connected disabilities among all male General members in the last six years, while we predicted eight disabilities. We are not proposing any change to the service-connected disability assumption for male General members.

See Appendix A or B for a full listing of the rates.

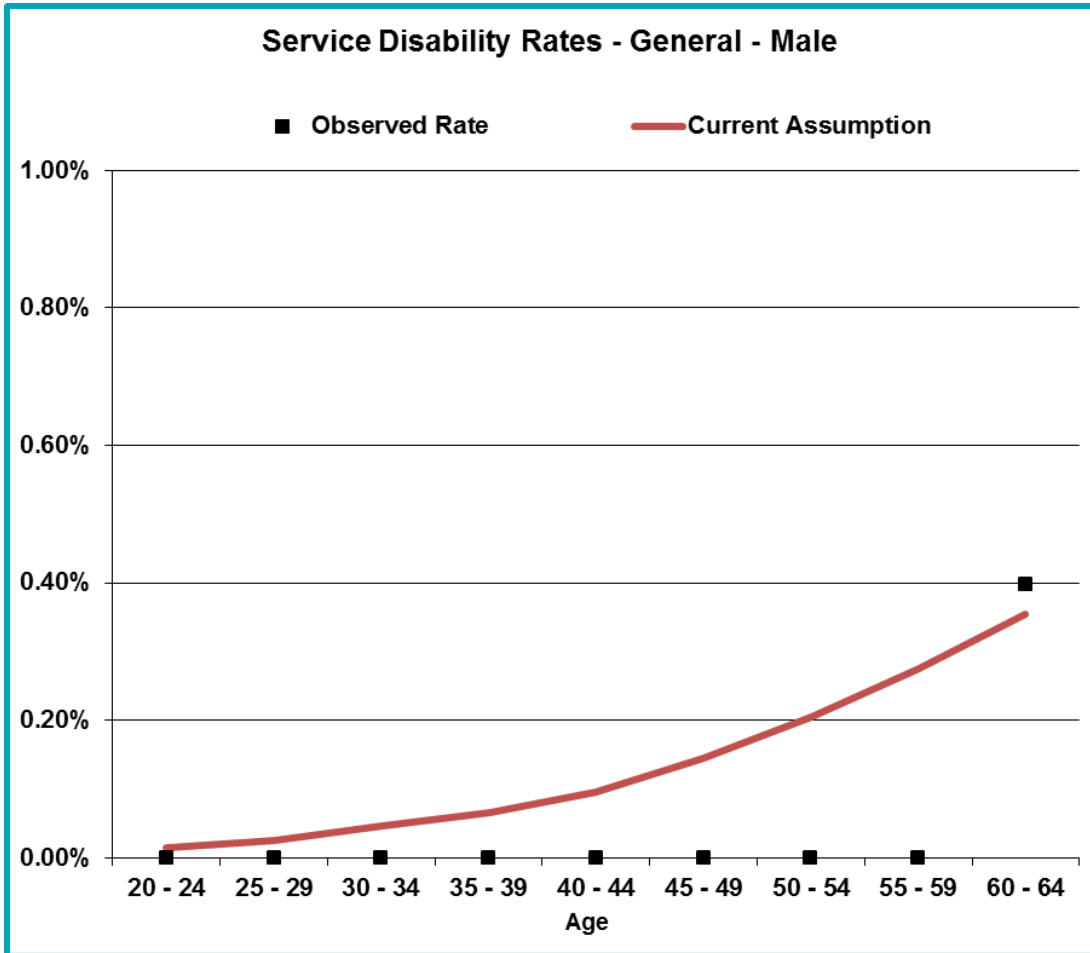
**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES**

Table IV-D2

Service Disability Rates - General - Male						
Age Band	Exposures	Disabilities			Actual to Expected Ratios	
		Actual	Current	Recommended	Current	Recommended
20 - 24	37	0	0.0	0.0	0%	0%
25 - 29	289	0	0.1	0.1	0%	0%
30 - 34	566	0	0.3	0.3	0%	0%
35 - 39	590	0	0.4	0.4	0%	0%
40 - 44	677	0	0.7	0.7	0%	0%
45 - 49	771	0	1.1	1.1	0%	0%
50 - 54	855	0	1.8	1.8	0%	0%
55 - 59	730	0	2.0	2.0	0%	0%
60 - 64	502	2	1.8	1.8	112%	112%
Total	5,017	2	8.1	8.1	25%	25%
R-squared			0.0676	0.0676		

Chart IV-D2



**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES**

Table IV-D3 shows the calculation of actual-to-expected ratios and the r-squared statistic for service-connected disabilities for female General members, and Chart IV-D3 shows the information graphically. The 90% confidence interval is not shown because of a lack of credible data.

The data shows that the number of disabilities has been lower than expected under the current assumption. However, there were only three service-connected disabilities among all female General members in the last six years, while we predicted four disabilities. We are not proposing any change to the service-connected disability assumption for female General members.

See Appendix A or B for a full listing of the rates.

Table IV-D3

Service Disability Rates - General - Female						
Age Band	Exposures	Disabilities			Actual to Expected Ratios	
		Actual	Current	Recommended	Current	Recommended
20 - 25	111	0	0.0	0.0	0%	0%
25 - 29	866	0	0.0	0.0	0%	0%
30 - 34	1,587	0	0.0	0.0	0%	0%
35 - 39	1,919	0	0.1	0.1	0%	0%
40 - 44	2,081	0	0.3	0.3	0%	0%
45 - 49	2,206	1	0.5	0.5	182%	182%
50 - 54	2,387	1	0.9	0.9	108%	108%
55 - 59	2,230	0	1.3	1.3	0%	0%
60 - 64	1,195	1	0.9	0.9	111%	111%
Total	14,582	3	4.1	4.1	73%	73%
R-squared			0.0425	0.0425		

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

SECTION IV — DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

Chart IV-D3

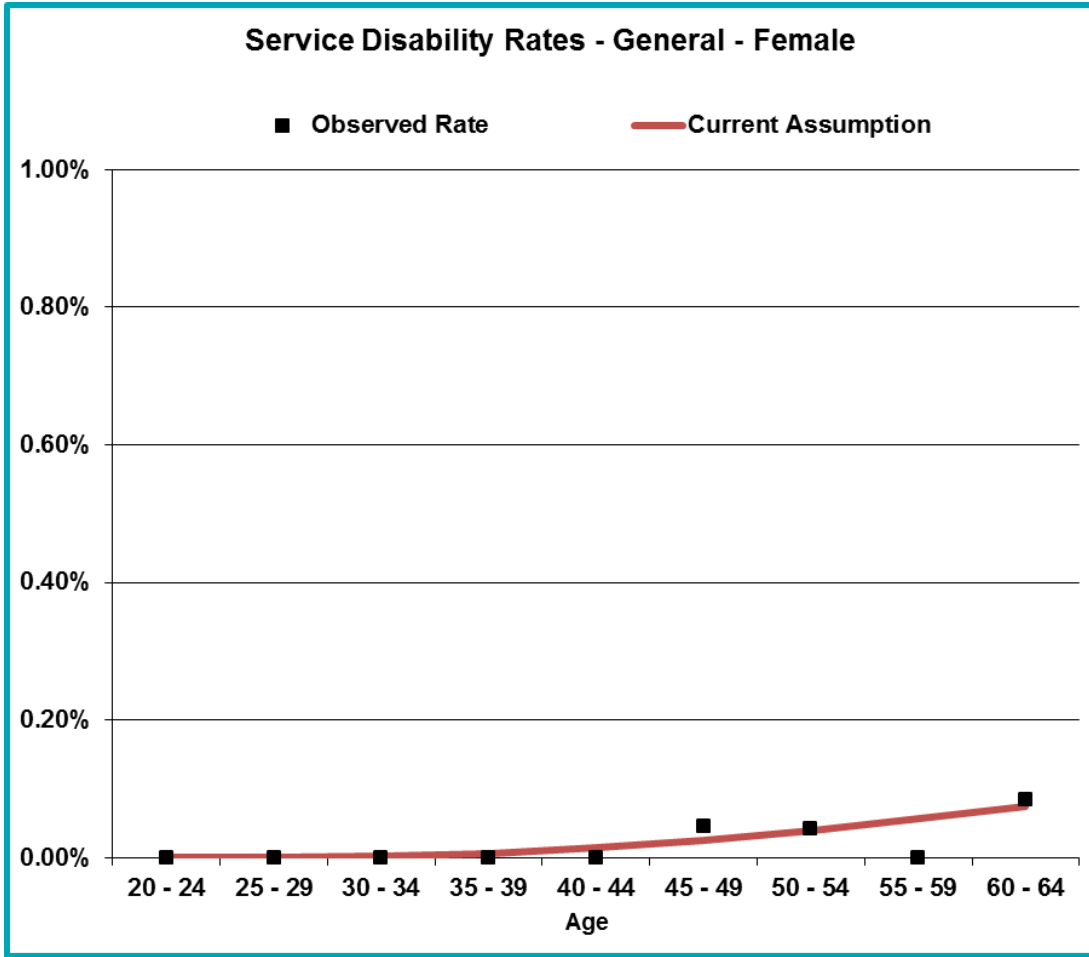


Table IV-D4 on the next page shows the calculation of actual-to-expected ratios and the r-squared statistic for nonservice-connected disabilities for Safety members, and Chart IV-D4 shows the information graphically. The 90% confidence interval is not shown due to a lack of data.

The data shows that the number of disabilities has been lower than expected under the current assumption. In this context, however, the 30% A/E ratio does not mean much; there was only one nonservice-connected disability among all safety members in the last six years, while we predicted three disabilities. We are proposing a change to tables from a study with a similar workforce and which was developed using a much larger set of exposures: the CalPERS Public Agency Police Non-Industrial Disability table. Changing to this table brings the A/E ratio to 61%, and increases the r-squared statistic slightly.

See Appendices A and B for a full listing of the proposed and prior rates.

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES**

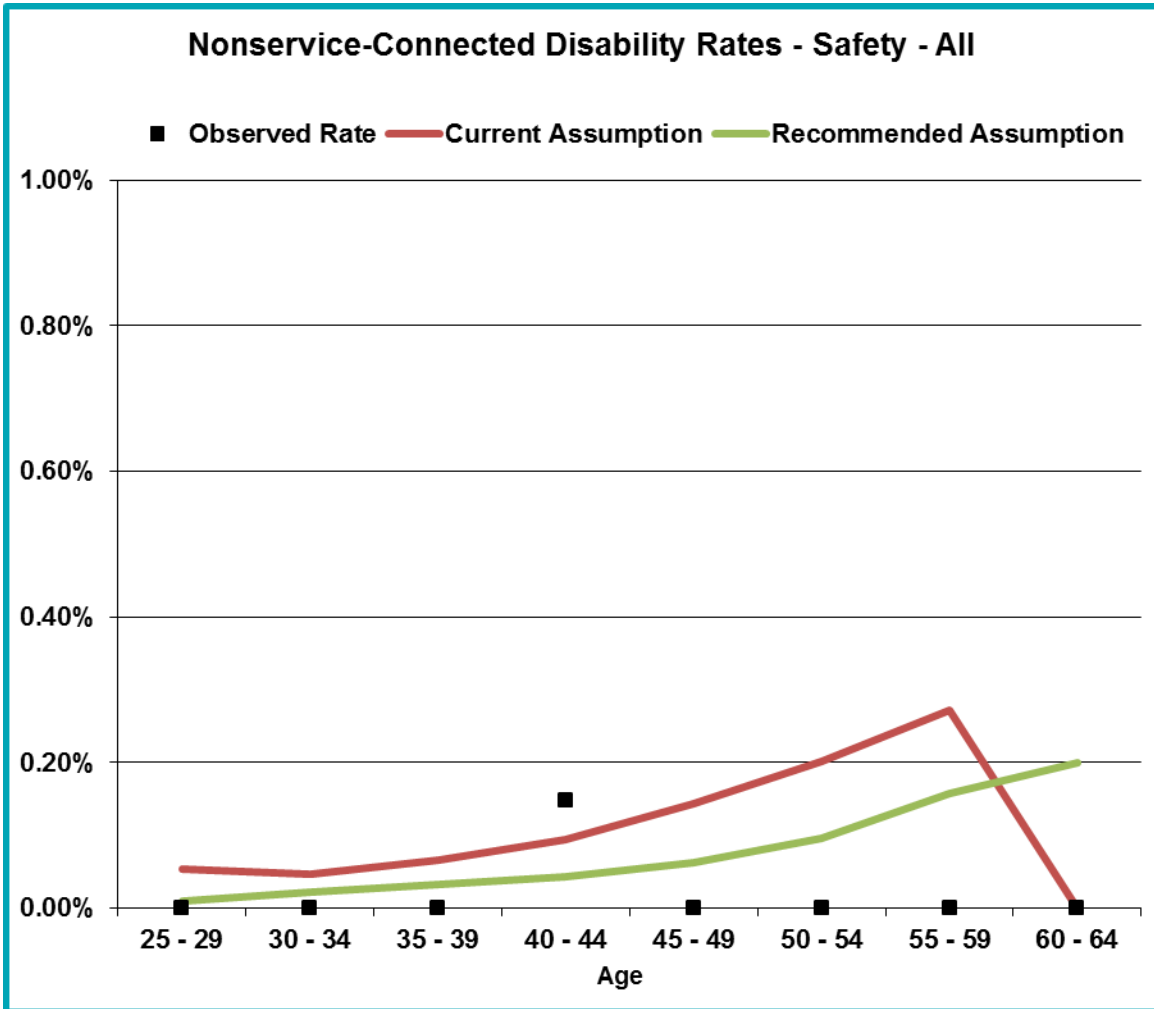
Table IV-D4

Nonservice-Connected Disability Rates - Safety - All						
Age Band	Exposures	Disabilities			Actual to Expected Ratios	
		Actual	Current	Recommended	Current	Recommended
25 - 29	238	0	0.1	0.0	0%	0%
30 - 34	654	0	0.3	0.1	0%	0%
35 - 39	761	0	0.5	0.2	0%	0%
40 - 44	675	1	0.6	0.3	157%	341%
45 - 49	529	0	0.8	0.3	0%	0%
50 - 54	268	0	0.5	0.3	0%	0%
55 - 59	152	0	0.4	0.2	0%	0%
60 - 64	50	0	-	0.1	0%	0%
Total	3,324	1	3.3	1.6	30%	61%
R-squared			0.0201	0.0247		

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

SECTION IV — DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

Chart IV-D4



The Table IV-D5 shows the calculation of actual-to-expected ratios and the r-squared statistic for nonservice-connected disabilities for male General members, and Chart IV-D5 shows the information graphically. The 90% confidence interval is not shown because of a lack of credible data.

We are again proposing a change to tables from a study, which was developed using a much larger set of exposures: the CalPERS Public Agency Miscellaneous Non-Industrial Disability table for Males. Changing to this table increases the A/E ratio from 19% to 29%, and increases the r-squared statistic slightly.

See Appendices A and B for a full listing of the proposed and prior rates.

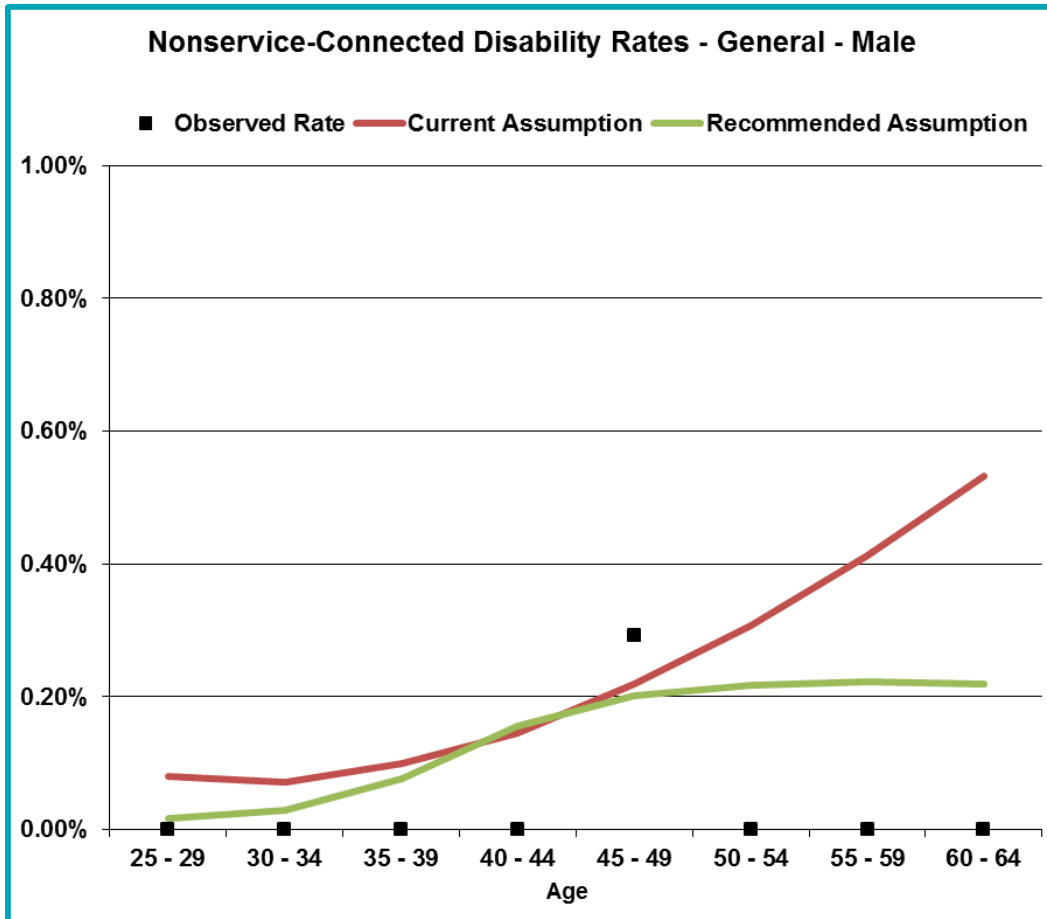
**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES**

Table IV-D5

Nonservice-Connected Disability Rates - General - Male						
Age Band	Exposures	Disabilities			Actual to Expected Ratios	
		Actual	Current	Recommended	Current	Recommended
25 - 29	72	0	0.1	0.0	0%	0%
30 - 34	330	0	0.2	0.1	0%	0%
35 - 39	428	0	0.4	0.3	0%	0%
40 - 44	538	0	0.8	0.8	0%	0%
45 - 49	685	2	1.5	1.4	133%	144%
50 - 54	777	0	2.4	1.7	0%	0%
55 - 59	668	0	2.8	1.5	0%	0%
60 - 64	472	0	2.5	1.0	0%	0%
Total	3,970	2	10.7	6.9	19%	29%
R-squared			0.0037	0.0417		

Chart IV-D5



**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES**

Table IV-D6 shows the calculation of actual-to-expected ratios and the r-squared statistic for nonservice-connected disabilities for female General members, and Chart IV-D6 shows the information graphically. The 90% confidence interval is not shown because of a lack of credible data.

We are again proposing a change to tables from a study, which was developed using a much larger set of exposures: the CalPERS Public Agency Miscellaneous Non-Industrial Disability table for Females. Changing to this table increases the A/E ratio from 36% to 57%, and increases the r-squared statistic from 0.04 to 0.16.

See Appendices A and B for a full listing of the proposed and prior rates.

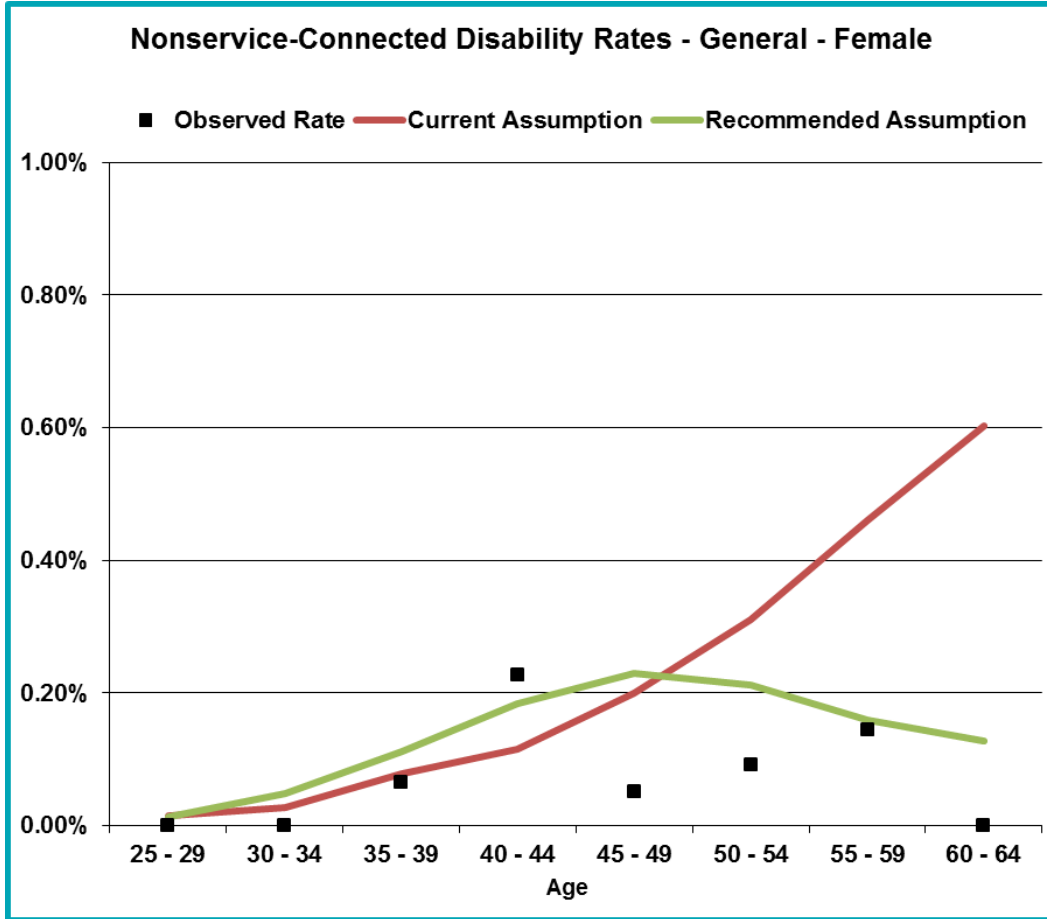
Table IV-D6

Nonservice-Connected Disability Rates - General - Female						
Age Band	Exposures	Disabilities			Actual to Expected Ratios	
		Actual	Current	Recommended	Current	Recommended
25 - 29	282	0	0.0	0.0	0%	0%
30 - 34	993	0	0.3	0.5	0%	0%
35 - 39	1,522	1	1.2	1.7	84%	59%
40 - 44	1,760	4	2.0	3.2	197%	124%
45 - 49	1,971	1	3.9	4.5	25%	22%
50 - 54	2,170	2	6.7	4.6	30%	44%
55 - 59	2,085	3	9.6	3.3	31%	90%
60 - 64	1,125	0	6.8	1.4	0%	0%
Total	11,905	11	30.6	19.3	36%	57%
R-squared			0.0394	0.1642		

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

SECTION IV — DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES

Chart IV-D6



**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

Post-retirement mortality assumptions are typically developed separately by gender for both healthy annuitants and disabled annuitants. Pre-retirement mortality assumptions are developed separately for males and females. Unlike most of the other demographic assumptions that rely exclusively on the experience of the plan, for mortality, standard mortality tables and projection scales serve as the primary basis for the assumption.

The Society of Actuaries recently completed an extensive mortality study and issued a set of mortality tables named the RP-2014 mortality tables and a mortality improvement projection scale named the MP-2015 scale. We used these tables as the basis for our analysis.

The steps in our analysis are as follows:

1. Select a standard mortality table that is, based on experience, most closely matching the anticipated experience of StanCERA.
2. Compare actual StanCERA experience to what would have been predicted by the selected standard table for the period of the experience study.
3. Adjust the standard table either fully or partially depending on the level of credibility for StanCERA experience. This adjusted table is called the base table.
4. Select an appropriate standard mortality improvement projection scale and apply it to the base table.

As we have done in prior experience studies, we have combined the experience of the past three years with that of the prior three-year period in order to have a more robust dataset to review.

Historically we have proposed assumption changes when the Actual-to-Expected (A/E) ratio for the current assumption is less than 100%. However, for this Study we are recommending a change in this approach going forward, where the proposed assumptions are intended to track closely to actual experience (i.e. an A/E ratio close to 100%, but with a ratio slightly less than 100% still being reasonable). However, as described below, this new approach also includes an expectation that the assumed mortality rates will automatically become more conservative each year, since the actual mortality rates are also expected to decrease over time.

We also historically recommended the same or a related table for active employees and healthy annuitants, which has been the current practice for StanCERA. However, recent mortality studies by the Society of Actuaries and others have shown significantly lower rates of mortality for active employees versus those of the same age who are no longer working, therefore this year we have suggested using separate tables for active versus retired members.

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

In the prior study, StanCERA elected to continue using the following assumptions:

Healthy active members, retirees, and beneficiaries

- The Combined Healthy Retired Pensioners (RP) 2000 tables published by the Society of Actuaries, projected from 2000 to 2020 using Scale AA.

Disabled members

- The Combined Healthy Retired Pensioners (RP) 2000 tables published by the Society of Actuaries, projected from 2000 to 2020 using Scale AA, set forward seven years.

Since the prior study, the Society of Actuaries' Retirement Plans Experience Committee (RPEC) has released a new mortality improvement scale, Scale MP-2015. The mortality improvements included in the most commonly used current projection scale - Scale AA - were found to produce some unsatisfactory results in projecting mortality. Scale MP-2015 reflects more up-to-date data, approximately 20 years more current than that used in the development of Scale AA, and it was reviewed against a significant amount of data drawn from California public plan experience.

MP-2015 represents the Society of Actuaries' most advanced actuarial methodology in incorporating mortality improvement trends with actual recent mortality rates, by using rates that vary not only by age but also by calendar year – known as a two-dimensional approach to projecting mortality improvements. Scale MP-2015 was designed with the intent of being applied to mortality on a generational basis. The effect of this is to build in an automatic expectation of future improvements in mortality.

This is a different approach from building in a margin for conservatism in the current rates to account for the expectation that the same rates will be applied in future years, when mortality experience has improved. Recent reports issued by RPEC suggest that using generational mortality is a preferable approach, as it allows for an explicit declaration of the amount of future mortality improvement included in the assumptions.

RPEC has also recently released a new set of base mortality rate tables – the RP-2014 tables, which are intended to replace the RP-2000 tables and are based on a recent study of US defined benefit plan mortality experience. However, RPEC excluded all public pension plan data in the construction of these tables - including a large amount of California public sector data - because there were significant differences between the private and public sector retirement experience, and the new tables are expected to be used by private sector plans to meet accounting and federal funding requirements specific to private plans.

Fortunately, there are alternative sets of assumptions that have been developed that may serve as a logical basis for developing mortality assumptions for StanCERA. As part of an Experience Study completed in 2014, CalPERS adopted a new set of mortality tables for active, retired, and disabled members. StanCERA's experience over the past six years matches well with the new CalPERS rates, after removing the improvement projections included by CalPERS and replacing

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

them with the new MP-2015 mortality improvement projections through the mid-point of the six-year period (2009-2015).

Even with the use of six years of data, the StanCERA is only partially credible, based on standard statistical theory. We therefore recommend partially adjusting the CalPERS base tables to fit StanCERA's experience to develop a new base table. The rates for each age in the standard table are adjusted by a factor, where the factor is determined by multiplying the actual-to-expected ratio for the group (such as male retirees) by a credibility factor for the group. The credibility factor is equal to the square root of the number of deaths divided by 1,082, which is the number of deaths needed for full credibility (defined by a 90% probability that the observed rate is within 5% of the true rate).

Based on these adjustments, we are recommending the following base mortality table assumptions:

Active members

- CalPERS Preretirement Non-Industrial Mortality, adjusted by 100.3% for males and 98.8% for females.
- CalPERS Preretirement Industrial Mortality (Line-of-Duty Mortality for Safety only).

Healthy retirees and beneficiaries

- CalPERS Healthy Annuitant Mortality, adjusted by 93.4% for males and 107.9% for females.

Service-Connected Disabled members

- CalPERS Industrially Disabled Annuitant Mortality, adjusted by 100.2% for males and 100.1% for females.

Nonservice-Connected Disabled members

- CalPERS Non-Industrially Disabled Annuitant Mortality, adjusted by 96.4% for males and 110.4% for females.

We also recommend projecting these base tables generationally using the MP-2015 mortality improvement scale described above for all types of mortality except Line-of-Duty Mortality for Safety members. We recommend no mortality projection for Line-of-Duty Mortality for Safety members.

As shown in Table IV-M1 below, our proposed mortality rates for healthy annuitants are close to recent experience. To perform our comparisons, the CalPERS base rates (without projection) were projected from their base year (2009) to the midpoint of the combined six-year study period (2012).

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

Table IV-M1

Mortality Experience (2009-2015)									
	Exposures	Actual Deaths	Weighted Exposures	Actual Weighted Deaths	Actual Weighted Rates	Current Expected Weighted Deaths	Proposed Expected Weighted Deaths	Current Weighted A/E Ratio	Recommended Weighted A/E Ratio
<u>Active Members</u>									
Male	8,421	13	555,778,391	880,828	0.16%	1,125,009	859,078	78%	103%
Female	15,658	18	824,775,609	785,675	0.10%	1,431,983	857,323	55%	92%
Total Actives	24,079	31	1,380,554,000	1,666,502	0.12%	2,556,992	1,716,402	65%	97%
<u>Retired and Surviving Spouse</u>									
Male	6,078	156	211,475,039	3,863,662	1.83%	4,618,185	4,366,032	84%	88%
Female	10,031	277	226,864,246	4,768,367	2.10%	4,463,674	4,445,606	107%	107%
Total Ret/Surv	16,109	433	438,339,285	8,632,029	1.97%	9,081,859	8,811,638	95%	98%
<u>Disabled</u>									
Nonservice-Connected Male	149	2	2,112,491	10,588	0.50%	61,609	65,643	17%	16%
Nonservice-Connected Female	349	17	5,051,127	196,170	3.88%	107,877	118,349	182%	166%
Service-Connected Male	866	15	26,475,001	390,604	1.48%	625,221	384,062	62%	102%
Service-Connected Female	462	6	10,546,991	111,847	1.06%	187,191	110,888	60%	101%
Total Disabled	1,826	40	44,185,610	709,209	1.61%	981,898	678,942	72%	104%
TOTAL (Excluding Actives)	17,935	473	482,524,895	9,341,238	1.94%	10,063,756	9,490,580	93%	98%

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

Rather than weighting the experience based on the number of members living and dying, we have weighted the experience based on benefit size (salary for current active members). This approach has been recommended by RPEC, since members with larger benefits are expected to live longer, and a benefit-weighted approach helps avoid underestimating the liabilities.

The match between the actual and expected experience across all statuses (active, retired, and disabled) is close under the proposed assumptions: 98%. We are comfortable that the ratio of actual to expected deaths is less than 100% within some subgroups, since as described above, the use of generational mortality assumptions will automatically result in assumed mortality rates that decrease over time. In particular, the number of deaths among the disabled members are lower than expected, but this group has the smallest amount of overall experience.

Mortality Assumptions for Employee Contribution Rates

For purposes of determining employee contribution rates, the use of generational mortality improvements is impractical from an administrative perspective. Therefore, we recommend using the base mortality tables described above (various CalPERS tables with StanCERA-specific adjustments) projected using Scale MP-2015 from 2009 to 2037 for General Members and to 2038 for Safety Members. These static projections are intended to approximate generational mortality improvements.

The projection periods are based upon the duration of active liabilities for the respective impacted groups (General Tiers 1, 2, 4, 5, and Safety Tiers 2, 4, and 5) as of June 30, 2015 and the period during which the associated employee contribution rates will be in use. The rates also are blended using a male/female weighting of 25% male/75% female for General Members and 80% male/20% female for Safety members.

We anticipate that these mortality assumptions will be used to determine the employee contribution rates in effect for the period of July 1, 2016 through June 30, 2019. We also anticipate that the mortality assumptions for this purpose will be updated again after the next experience study covering the period from July 1, 2015 through June 30, 2018.

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

**SECTION IV — DEMOGRAPHIC ASSUMPTIONS
OTHER DEMOGRAPHIC ASSUMPTIONS**

TERMINAL PAY

The current assumptions increase the liability for retirement benefits for Safety active participants by 2.5% and 3.5% for General active participants to account for the impact of unused vacation time.

	Retirees	Average Final Compensation	Average Vacation Pay	Load
General	319	66,431	2,472	3.72%
Safety	49	83,196	2,515	3.02%

The data provided by StanCERA includes the vacation pay cashed out at retirement for each member who retired from active status after December 31, 2012. We compared the total vacation pay for retirees to their final average pay. We recommend maintaining the 3.5% assumption for General members, and increasing the Safety assumption to 3.0%.

FAMILY COMPOSITION

The current assumption is that 90% of active male and 50% of active female StanCERA participants have beneficiaries eligible for pre-retirement death benefits and that male spouses are three years older than their wives.

	Retirees	Number Married	Percent Married	Member Age	Spouse Age	Difference
Male	191	149	78%	59.37	56.00	3.37
Female	366	187	51%	58.42	60.27	-1.85

Average ages shown are for married retirees.

Analysis of the retiree data leads us to propose a decrease in the male marriage assumption from 90% to 80%, as well as a change to married female retirees being two years younger than their spouses.

PLAN EXPENSES

An allowance of \$2,100,000 for Plan administrative expenses was included in the annual cost calculation in the prior valuation. The Plan's administrative expenses in during the last two years have averaged approximately \$2,314,000. We recommend changing the Plan's assumed administrative expenses for 2015 to \$2,400,000, increasing each year at the assumed rate of inflation.

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

APPENDIX A — SUMMARY OF PROPOSED ASSUMPTIONS

The recommended assumptions were adopted by the Board at their March 16, 2016 meeting. The demographic assumptions are based on an experience study covering the period from July 1, 2012 through June 30, 2015.

1. Rate of Return

The annual rate of return on all Plan assets is assumed to be 7.25%, net of investment expenses.

2. Cost of Living

The cost of living as measured by the Consumer Price Index (CPI) will increase at the rate of 3.00% per year.

3. Administrative Expenses

An allowance of \$2,400,000 for Plan administrative expenses has been included in the annual cost calculated.

4. Interest Credited to Employee Accounts

The employee accounts are credited with 0.25% interest annually.

5. Increases in Pay

Base salary increase: 3.25%

Assumed pay increases for active Members consist of increases due to base salary adjustments (as noted above), plus service-based increases due to longevity and promotion, as shown below.

Longevity & Promotion Increases		
Service	General	Safety
0	6.00%	7.00%
1	5.00%	6.00%
2	4.00%	5.00%
3	3.00%	4.00%
4	2.00%	3.00%
5	1.50%	2.00%
6	1.00%	1.75%
7	0.75%	1.50%
8	0.50%	1.25%
9	0.50%	1.00%
10	0.50%	0.75%
11+	0.50%	0.50%

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

APPENDIX A — SUMMARY OF PROPOSED ASSUMPTIONS

6. PEPRA Compensation Limit

The assumption used for increasing the compensation limit that applies to PEPRA members is 3.0%

7. Post Retirement COLA

100% of CPI up to 3% annually with banking, 2.7% annual increases assumed. Increases are assumed to occur on April 1.

8. Social Security Wage Base

General Plan 3 members have their benefits offset by an assumed Social Security Benefit. For projecting the Social Security Benefit, the annual Social Security Wage Base increase is assumed to be 3.25% per year.

9. Internal Revenue Code Section 415 Limit

The Internal Revenue Code Section 415 maximum benefit limitations are not reflected in the valuation for funding purposes. Any limitation is reflected in a member's benefit after retirement.

10. Internal Revenue Code Section 401(a)(17)

The Internal Revenue Code Section 401(a)(17) maximum compensation limitation is not reflected in the valuation for funding purposes. Any limitation is reflected in a member's benefit after retirement.

11. Family Composition

Percentage married for all active members who retire, become disabled, or die during active service is shown in the following table. Male retirees are assumed to be three years older than their spouses, while female retirees are assumed to be two years younger than their spouses.

Percentage Married	
Gender	Percentage
Males	80%
Females	50%

12. Accumulated Vacation Time Load

Active members' service retirement and related benefits are loaded by 3.0% for Safety Members and 3.5% for General Members for conversion of vacation time.

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

APPENDIX A — SUMMARY OF PROPOSED ASSUMPTIONS

13. Rates of Separation

Rates of termination apply to all active Members who terminate their employment.

Separate rates of termination are assumed among Safety and General Members.

Termination Rates		
Years of Service	General All	Safety All
0	18.0%	18.0%
1	14.0%	12.0%
2	11.7%	9.0%
3	9.4%	7.0%
4	7.1%	6.0%
5	5.0%	5.0%
10	3.5%	5.0%
15	2.9%	3.4%
20	1.5%	0.0%
25	1.3%	0.0%
30+	0.0%	0.0%

Termination rates do not apply once a member is eligible for retirement.

14. Withdrawal

Rates of withdrawal apply to active Members who terminate their employment and withdraw their member contributions, forfeiting entitlement to future Plan benefits. Separate rates of withdrawal are assumed among Safety and General Members, and are based on service. The rates do not overlap with the service retirement rates.

50% of all General Member terminations with less than 10 years of service are assumed to take a refund of contributions, as well as 20% of those with 10 or more years of service.

35% of all Safety Member terminations with less than 10 years of service are assumed to take a refund of contributions, and 10% of those with 10 or more years are assumed to take a refund.

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

APPENDIX A — SUMMARY OF PROPOSED ASSUMPTIONS

15. Vested Termination and Reciprocal Transfers

Rates of vested termination apply to active Members who terminate their employment after five years of service and leave their member contributions on deposit with the Plan. Alternatively, those who terminate their employment with less than five years of service can leave their member contributions with the Plan and transfer to a reciprocal employer, therefore retaining entitlement to future Plan benefits.

Vested terminated Tier 3 General Members are assumed to begin receiving benefits at age 65 while all other General Members are assumed to begin at age 58; terminated Safety Members are assumed to begin receiving benefits at age 53. 25% of vested terminated General Members are assumed to be reciprocal; 50% of vested terminated Safety Members are assumed to be reciprocal.

Reciprocal members are assumed to receive 4% annual pay increases from the date of transfer to the assumed retirement date.

16. Rates of Service-Connected Disability

Separate rates of duty disability are assumed among Safety and General Members; rates for both sexes for Safety Members are combined. Below are sample rates:

Rates of Service-Connected Disability			
	General		Safety
Age	Male	Female	All
20	0.0043%	0.0002%	0.0759%
25	0.0102%	0.0004%	0.1932%
30	0.0211%	0.0008%	0.3457%
35	0.0284%	0.0024%	0.5309%
40	0.0401%	0.0056%	0.7426%
45	0.0613%	0.0101%	1.1297%
50	0.0897%	0.0162%	1.5092%
55	0.1227%	0.0249%	1.7230%
60	0.1637%	0.0349%	0.0000%
65	0.0000%	0.0000%	0.0000%

17. Rates of Nonservice-Connected Disability

Separate rates of ordinary disability are assumed among Safety and General Members. Rates of ordinary disability for Safety Members are assumed to follow the CalPERS Public Agency Police Non-Industrial Disability table; rates of ordinary disability for General Members are assumed to follow the CalPERS Public Agency Miscellaneous

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

APPENDIX A — SUMMARY OF PROPOSED ASSUMPTIONS

Non-Industrial Disability table. The rates shown are applied after five Years of Service. Below are sample rates:

Rates of Non Service-Connected Disability			
Age	General		Safety
	Male	Female	All
20	0.0170%	0.0100%	0.0100%
25	0.0170%	0.0100%	0.0100%
30	0.0190%	0.0240%	0.0200%
35	0.0490%	0.0810%	0.0300%
40	0.1220%	0.1550%	0.0400%
45	0.1910%	0.2180%	0.0500%
50	0.2130%	0.2290%	0.0800%
55	0.2210%	0.1790%	0.1300%
60	0.2220%	0.1350%	0.2000%
65	0.2100%	0.1180%	0.2000%
70	0.1800%	0.1140%	0.2000%
75	0.1420%	0.1180%	0.2000%
80	0.1420%	0.1180%	0.2000%
81+	0.0000%	0.0000%	0.0000%

18. Rates of Mortality for Non-annuitants

Rates of ordinary death for active Members are specified by the CalPERS Pre-Retirement Non-Industrial Mortality table, adjusted by 100.3% for males and 98.8% for females, with generational mortality improvements projected from 2009 using Scale MP-2015. Duty related mortality rates are only applicable for Safety Active Members, and are based on the CalPERS Pre-Retirement Individual Death table without adjustment or projection.

The following table provides a sample of the base mortality rates including adjustments but prior to any projections for mortality improvements.

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

APPENDIX A — SUMMARY OF PROPOSED ASSUMPTIONS

Mortality Rates			
Age	Ordinary Death - General and Safety		Duty Death
	Male	Female	Safety All
20	0.0330%	0.0209%	0.0030%
25	0.0426%	0.0241%	0.0070%
30	0.0522%	0.0262%	0.0100%
35	0.0607%	0.0368%	0.0120%
40	0.0798%	0.0525%	0.0130%
45	0.1129%	0.0745%	0.0140%
50	0.1651%	0.1049%	0.0150%
55	0.2428%	0.1508%	0.0160%
60	0.3556%	0.2198%	0.0170%
65	0.5107%	0.3233%	0.0180%
70	0.7110%	0.4616%	0.0190%

19. Rates of Mortality for Nonservice-Connected Disabled Retirees

Rates of mortality for nonservice-connected disabled Members are specified by the CalPERS Non-Industrially Disabled Annuitant Mortality table, adjusted by 96.4% for males and 110.4% for females, with generational mortality improvements projected from 2009 using Scale MP-2015.

The following table provides a sample of the base mortality rates including adjustments but prior to any projections for mortality improvements.

Nonservice-Connected Disabled Mortality Rates		
Age	Male	Female
45	1.250%	0.943%
50	1.720%	1.358%
55	2.020%	1.402%
60	2.539%	1.667%
65	3.008%	2.259%
70	3.750%	3.107%
75	5.204%	4.269%
80	7.934%	6.642%
85	12.692%	10.910%
90	17.804%	17.755%

APPENDIX A — SUMMARY OF PROPOSED ASSUMPTIONS

20. Rates of Mortality for Service-Connected Disabled Retirees

Rates of mortality for service-connected disabled Members are specified by the CalPERS Industrially Disabled Annuitant Mortality table, adjusted by 100.2% for males and 100.1% for females, with generational mortality improvements projected from 2009 using Scale MP-2015.

The following table provides a sample of the base mortality rates including adjustments but prior to any projections for mortality improvements.

Service-Connected Disabled Mortality Rates		
Age	Male	Female
45	0.339%	0.298%
50	0.533%	0.496%
55	0.637%	0.460%
60	0.869%	0.634%
65	1.431%	1.068%
70	2.216%	1.777%
75	3.842%	2.955%
80	6.642%	4.983%
85	10.410%	7.967%
90	16.218%	12.347%

21. Rates of Mortality for Healthy Annuitants

Rates of mortality for retired Members and their beneficiaries are specified by the CalPERS Healthy Annuitant Mortality table, adjusted by 93.4% for males and 107.9% for females, with generational mortality improvements projected from 2009 using Scale MP-2015.

The following table provides a sample of the base mortality rates including adjustments but prior to any projections for mortality improvements.

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

APPENDIX A — SUMMARY OF PROPOSED ASSUMPTIONS

Healthy Annuitant Mortality Rates		
Age	Male	Female
45	0.225%	0.229%
50	0.497%	0.534%
55	0.594%	0.496%
60	0.763%	0.576%
65	0.986%	0.807%
70	1.649%	1.365%
75	2.786%	2.366%
80	4.928%	3.987%
85	8.807%	7.202%
90	15.118%	13.310%

22. Mortality Improvement

As mentioned above, the mortality assumptions employ fully generational mortality improvement projection from a base year of 2009 using Scale MP-2015.

23. Rates of Mortality for Purposes of Determining Employee Contribution Rates

The rates are based on the same base tables described above (CalPERS mortality tables with StanCERA-specific adjustments) and are projected using Scale MP-2015 from 2009 to 2037 for General members and to 2039 for Safety members. The rates are blended using a male/female weighting of 25% male/75% female for General members and 80% male/20% female for Safety members. These assumptions are used only for determining the employee contribution rates for General members in Tiers 1, 2, 4 and 5 and Safety members in Tiers 2, 4 and 5.

24. Rates of Retirement

Retirement is assumed to occur among eligible members in accordance with the tables below:

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

APPENDIX A — SUMMARY OF PROPOSED ASSUMPTIONS

Rates of Retirement General				Rates of Retirement Safety			
	Years of Service				Years of Service		
Age	0-9	10-29	30+	Age	0-9	10-19	20+
40-44	0.00%	0.00%	0.00%	40-44	0.00%	0.00%	5.00%
45-49	0.00%	0.00%	10.00%	45-48	0.00%	0.00%	10.00%
50-54	0.00%	5.00%	10.00%	49	0.00%	0.00%	20.00%
55	0.00%	10.00%	25.00%	50	0.00%	10.00%	30.00%
56	0.00%	10.00%	25.00%	51	0.00%	10.00%	20.00%
57	0.00%	10.00%	25.00%	52	0.00%	10.00%	20.00%
58	0.00%	15.00%	25.00%	53	0.00%	10.00%	20.00%
59	0.00%	15.00%	25.00%	54	0.00%	10.00%	20.00%
60	0.00%	15.00%	25.00%	55	0.00%	10.00%	30.00%
61	0.00%	20.00%	25.00%	56	0.00%	10.00%	30.00%
62	0.00%	25.00%	40.00%	57	0.00%	10.00%	30.00%
63	0.00%	20.00%	25.00%	58	0.00%	10.00%	30.00%
64	0.00%	25.00%	25.00%	59	0.00%	10.00%	30.00%
65	0.00%	35.00%	35.00%	60	0.00%	25.00%	100.00%
66	0.00%	45.00%	45.00%	61	0.00%	25.00%	100.00%
67	0.00%	20.00%	25.00%	62	0.00%	25.00%	100.00%
68	0.00%	20.00%	25.00%	63	0.00%	25.00%	100.00%
69	0.00%	20.00%	25.00%	64	0.00%	25.00%	100.00%
70	50.00%	50.00%	100.00%	65	0.00%	100.00%	100.00%
71	50.00%	50.00%	100.00%	66	0.00%	100.00%	100.00%
72	50.00%	50.00%	100.00%	67	0.00%	100.00%	100.00%
73	50.00%	50.00%	100.00%	68	0.00%	100.00%	100.00%
74	50.00%	50.00%	100.00%	69	0.00%	100.00%	100.00%
75+	100.00%	100.00%	100.00%	70+	100.00%	100.00%	100.00%

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

APPENDIX B — SUMMARY OF PRIOR ASSUMPTIONS

The following are the assumptions used in the actuarial valuation as of June 30, 2014. The economic and demographic assumptions and methods for that valuation were determined in the Actuarial Experience Study performed by EFI/Cheiron as of June 30, 2012 and adopted by the Board on January 22, 2013.

1. Rate of Return

The annual rate of return on all Plan assets is assumed to be 7.75%, net of investment expenses.

2. Cost of Living

The cost of living as measured by the Consumer Price Index (CPI) will increase at the rate of 3.25% per year.

3. Administrative Expenses

An allowance of \$2,100,000 for Plan administrative expenses has been included in the annual cost calculated for the current Plan year.

4. Interest Credited to Employee Accounts

The employee accounts are credited with 0.25% interest annually.

5. Increases in Pay

Base salary increase: 3.50%

Assumed pay increases for active Members consist of increases due to base salary adjustments (as noted above), plus service-based increases due to longevity and promotion, as shown below.

Longevity & Promotion Increases		
Service	General	Safety
0	4.00%	8.00%
1	4.00%	7.00%
2	4.00%	6.00%
3	4.00%	5.00%
4	4.00%	4.00%
5-9	2.00%	2.00%
10-19	1.00%	1.00%
20-29	0.50%	1.00%
30+	0.50%	0.50%

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

APPENDIX B — SUMMARY OF PRIOR ASSUMPTIONS

6. PEPRA Compensation Limit

The assumption used for increasing the compensation limit that applies to PEPRA members is 3.25%.

7. Post Retirement COLA

100% of CPI up to 3% annually with banking, 2.7% annual increases assumed.

8. Social Security Wage Base

General Plan 3 members have their benefits offset by an assumed Social Security Benefit. For projecting the Social Security Benefit, the annual Social Security Wage Base increase is assumed to be 3.5% per year.

9. Internal Revenue Code Section 415 Limit

The Internal Revenue Code Section 415 maximum benefit limitations are not reflected in the valuation for funding purposes. Any limitation is reflected in a member's benefit after retirement.

10. Internal Revenue Code Section 401(a)(17)

The Internal Revenue Code Section 401(a)(17) maximum compensation limitation is not reflected in the valuation for funding purposes. Any limitation is reflected in a member's benefit after retirement.

11. Family Composition

Percentage married for all active members who retire, become disabled, or die during active service is shown in the following table. Women are assumed to be three years younger than men.

Percentage Married	
Gender	Percentage
Males	90%
Females	50%

12. Accumulated Vacation Time Load

Active members' service retirement and related benefits are loaded by 2.5% for Safety Members and 3.5% for General Members for conversion of vacation time.

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

APPENDIX B — SUMMARY OF PRIOR ASSUMPTIONS

13. Rates of Separation

Rates of termination apply to all active Members who terminate their employment.

Separate rates of termination are assumed among Safety and General Members.

Years of Service	Termination Rates		Safety All
	General Male	General Female	
0	24.0%	14.0%	15.0%
1	14.0%	9.4%	15.0%
2	11.7%	7.9%	10.5%
3	9.4%	7.9%	10.0%
4	7.1%	7.1%	6.0%
5	5.0%	5.0%	3.7%
10	3.5%	3.5%	3.4%
15	2.9%	2.9%	1.9%
20	1.5%	1.5%	0.0%
25	1.3%	1.3%	0.0%
30+	0.0%	0.0%	0.0%

Termination rates do not apply once a member is eligible for retirement.

14. Withdrawal

Rates of withdrawal apply to active Members who terminate their employment and withdraw their member contributions, forfeiting entitlement to future Plan benefits. Separate rates of withdrawal are assumed among Safety and General Members, and are based on service. The rates do not overlap with the service retirement rates.

50% of all General Member terminations with less than 10 years of service are assumed to take a refund of contributions, as well as 20% of those with 10 or more years of service.

35% of all Safety Member terminations with less than 10 years of service are assumed to take a refund of contributions, and 10% of those with 10 or more years are assumed to take a refund.

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

APPENDIX B — SUMMARY OF PRIOR ASSUMPTIONS

15. Vested Termination and Reciprocal Transfers

Rates of vested termination apply to active Members who terminate their employment after five years of service and leave their member contributions on deposit with the Plan. Alternatively, those who terminate their employment with less than five years of service can leave their member contributions with the Plan and transfer to a reciprocal employer, therefore retaining entitlement to future Plan benefits.

Vested terminated Tier 3 General Members are assumed to begin receiving benefits at age 65 while all other General Members are assumed to begin at age 58; terminated Safety Members are assumed to begin receiving benefits at age 53. 25% of vested terminated General Members are assumed to be reciprocal; 50% of vested terminated Safety Members are assumed to be reciprocal.

Reciprocal members are assumed to receive 4% annual pay increases from the date of transfer to the assumed retirement date.

16. Rates of Service-Connected Disability

Separate rates of duty disability are assumed among Safety and General Members; rates for both sexes for Safety Members are combined. Below are sample rates:

Rates of Service-Connected Disability			
	General		Safety
Age	Male	Female	All
20	0.0043%	0.0002%	0.0759%
25	0.0102%	0.0004%	0.1932%
30	0.0211%	0.0008%	0.3457%
35	0.0284%	0.0024%	0.5309%
40	0.0401%	0.0056%	0.7426%
45	0.0613%	0.0101%	1.1297%
50	0.0897%	0.0162%	1.5092%
55	0.1227%	0.0249%	1.7230%
60	0.1637%	0.0349%	0.0000%
65	0.0000%	0.0000%	0.0000%

17. Rates of Nonservice-Connected Disability

Separate rates of ordinary disability are assumed among Safety and General Members; rates for both sexes for Safety Members are combined. The rates shown are applied after five Years of Service. On the next page are sample rates:

**STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015**

APPENDIX B — SUMMARY OF PRIOR ASSUMPTIONS

Rates of Non Service-Connected Disability			
Age	General		Safety
	Male	Female	All
20	0.0130%	0.0025%	0.0173%
25	0.0307%	0.0050%	0.0409%
30	0.0316%	0.0100%	0.0421%
35	0.0426%	0.0281%	0.0568%
40	0.0602%	0.0446%	0.0802%
45	0.0920%	0.0808%	0.1227%
50	0.1345%	0.1295%	0.1793%
55	0.1840%	0.1990%	0.2453%
60	0.2456%	0.2764%	0.0000%
65	0.0000%	0.0000%	0.0000%

18. Rates of Mortality for Healthy Lives

Rates of mortality for active Members are specified by the Retired Pensioners (RP) 2000 tables published by the Society of Actuaries (projected from 2000 to 2020 using Scale AA). Duty related mortality rates are only applicable for Safety Active Members. Sample rates are as follows:

Mortality Rates			
Age	Ordinary Death - General and Safety		Duty Death
	Male	Female	Safety All
20	0.0235%	0.0138%	0.0150%
25	0.0308%	0.0156%	0.0189%
30	0.0402%	0.0216%	0.0254%
35	0.0699%	0.0381%	0.0357%
40	0.0919%	0.0522%	0.0564%
45	0.1161%	0.0814%	0.0885%
50	0.1487%	0.1189%	0.0703%
55	0.2469%	0.2314%	0.1055%
60	0.4887%	0.4573%	0.0000%
65	0.9607%	0.8780%	0.0000%
70	1.6413%	1.5145%	0.0000%

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

APPENDIX B — SUMMARY OF PRIOR ASSUMPTIONS

19. Rates of Mortality for Disabled Retirees

Rates of mortality for disabled Members and specified by the Retired Pensioners (RP) 2000 tables published by the Society of Actuaries (projected from 2000 to 2020 using Scale AA) set forward seven years. Sample rates are shown below.

Disabled Mortality Rates		
Age	Male	Female
45	0.178%	0.152%
50	0.333%	0.315%
55	0.647%	0.602%
60	1.237%	1.100%
65	2.016%	1.832%
70	3.611%	2.963%
75	6.854%	4.892%
80	12.062%	8.892%
85	20.397%	14.843%
90	28.808%	21.098%

20. Retired Member and Beneficiary Mortality

Rates of mortality for retired Members and their beneficiaries are specified by the Retired Pensioners (RP) 2000 tables published by the Society of Actuaries (projected from 2000 to 2020 using Scale AA). Sample rates are shown below.

Retired Mortality Rates		
Age	Male	Female
45	0.116%	0.081%
50	0.149%	0.119%
55	0.247%	0.231%
60	0.489%	0.457%
65	0.961%	0.868%
70	1.641%	1.514%
75	2.854%	2.393%
80	5.265%	3.987%
85	9.624%	6.866%
90	16.928%	12.400%

21. Mortality Improvement

The mortality tables have been projected to the year 2020 using Scale AA to account for expected future improvements in mortality. The experience study report for the period covering July 1, 2009 to June 30, 2012 contains a full description of these adjustments.

STANISLAUS COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2015

APPENDIX B — SUMMARY OF PRIOR ASSUMPTIONS

22. Rates of Retirement

Retirement is assumed to occur among eligible members in accordance with the tables below:

Rates of Retirement		
Age	General	Safety
40-44	0.00%	5.00%
45-49	0.00%	5.00%
50	5.00%	15.00%
51	4.00%	15.00%
52	4.00%	15.00%
53	5.00%	15.00%
54	6.00%	15.00%
55	10.00%	15.00%
56	10.00%	15.00%
57	10.00%	20.00%
58	12.00%	30.00%
59	15.00%	30.00%
60	18.00%	100.00%
61	18.00%	100.00%
62	30.00%	100.00%
63	25.00%	100.00%
64	25.00%	100.00%
65	40.00%	100.00%
66	30.00%	100.00%
67	30.00%	100.00%
68	30.00%	100.00%
69	30.00%	100.00%
70	100.00%	100.00%



Classic Values, Innovative Advice