

Santa Barbara County Employees' Retirement System

**Actuarial Experience Study for
July 1, 2016 through June 30,
2019 (Revised)**

Produced by Cheiron

January 2020

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January 10, 2020

Board of Retirement
Santa Barbara County Employees' Retirement System
3916 State Street, Suite 210
Santa Barbara, CA 93105

Dear Members of the Board:

The purpose of this report is to provide the results of an Actuarial Experience Study of the Santa Barbara County Employees' Retirement System (SBCERS) covering actuarial experience from July 1, 2016 through June 30, 2019. This report is for the use of the SBCERS Retirement Board in selecting assumptions to be used in actuarial valuations beginning June 30, 2019.

In preparing our report, we relied on information (some oral and some written) supplied by SBCERS. 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.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. 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 SBCERS Retirement Board for the purposes described herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any such party.

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

Sincerely,
Cheiron



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



Anne D. Harper, FSA, EA, MAAA
Principal Consulting Actuary

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
EXPERIENCE STUDY AS OF JUNE 30, 2019**

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 SBCERS, 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 SBCERS'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 Retirement Board elected to maintain the economic assumptions used in the last actuarial valuation, which include a 7.00% long-term rate of return on plan assets, an annual increase in prices measured by the Consumer Price Index (CPI) of 2.75%, a real return on assets of 4.25%, an annual wage increase equal to 25 basis points greater than price increases (3.00% in total), and a post-retirement COLA average growth rate of 2.60% and 1.90% for the 3.0% and 2.0% COLA groups, respectively.

It should be noted that RVK, the Plan's investment consultant, predicts a lower investment return, at least over the short term, as do other investment consultants. RVK's most recent capital market expectations indicate a 6.15% expected nominal return for the current portfolio, which reflects a 3.65% expected real return with 2.50% inflation. However, we reviewed the capital market assumptions from two other investment consultants and the Horizon Survey and they all project slightly higher returns than RVK for the next 10 years. Including the other consultants' capital market assumptions, we computed expected returns for SBCERS's target portfolio, indicating an average expected nominal 10-year geometric return of 6.82% (reflecting a 4.61% expected real return with 2.21% inflation). If the current target asset allocation is maintained and these projections are realized, the Plan would experience a pattern of small 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 (3.00% and 2.60%, respectively) over the same time period.

Other data presented in this report supports the finding that the discount rate and other economic assumptions adopted by the Retirement Board are reasonable.

SECTION I – EXECUTIVE SUMMARY

SUMMARY OF DEMOGRAPHIC ASSUMPTION ANALYSIS

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

- **Retirement rates (Active members)** – Developed separate assumptions for more service groupings for both General/APCD and Safety groups. Overall, increases made to the General/APCD member rates and decreases made to the Safety member rates, except for increases to the rates for Safety members with 30 or more years of service.
- **Retirement rates (Inactive members)** – Slightly higher retirement age assumption for members employed with a reciprocal system. Reduced assumed retirement age from 65 to 60 for Plan 2 members.
- **Termination rates** – Minor increases made at various service levels for General members only. Increased percentage of Safety members assumed to take a reciprocal benefit.
- **Refund rates** – Decrease for Safety members with 5 to 9 years and 15 to 19 years of service.
- **Disability rates** – Adopt CalPERS Public Agency Miscellaneous tables for General members and CalPERS State Safety tables for Safety members (increases for both General and Safety rates).
- **Mortality rates** – Pub2010 base tables – PubG (Above-Median) for General members, PubS for Safety members, with generational improvement for all members based on MP-2019.
- **Merit salary increases** – Increases to rates for General members with 3 to 13 years of service, and those with 22 or more years of service, and increases to rates for Safety members with 19 or more years of service.
- **Other assumptions** – Minor changes to other assumptions, including family composition, and sick leave load.

The body of this report provides additional detail and support for our conclusions and recommendations. In addition, we have included a discussion of issues related to the projection of pay and benefits for members who work less than 2,080 hours, including the development of potential load factors. We will be following up this report with a detailed study of this issue before making a final recommendation.

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
EXPERIENCE STUDY AS OF JUNE 30, 2019**

SECTION I – EXECUTIVE SUMMARY

COST OF ECONOMIC AND DEMOGRAPHIC ASSUMPTION CHANGES

Among the demographic assumptions included below, the recommended changes to the disability and merit salary increase assumptions have the largest impact on the total System contribution rate. This table summarizes the estimated cost impact – for the General, Safety, APCD, and combined membership – of the recommended changes to the demographic assumptions contained in this report, other than the partial hours member load, which will be subject to further analysis.

Impact of Assumption Changes on Employer Contribution Rates				
	General Contribution Rate	Safety Contribution Rate	APCD Contribution Rate	Total Contribution Rate
Demographic Assumption Changes:				
Mortality Rates	0.07%	(0.56%)	0.27%	(0.09%)
Retirement Rates	0.23%	(0.56%)	0.26%	0.00%
Termination and Refund Rates	(0.18%)	0.20%	(0.22%)	(0.06%)
Disability Rates	0.26%	1.27%	0.23%	0.53%
Merit Scale	0.23%	0.25%	0.29%	0.23%
Reciprocal Transfers	0.00%	0.10%	0.00%	0.03%
Spouse Elections	0.08%	0.04%	0.05%	0.08%
Interest Crediting Rate	0.00%	0.00%	0.00%	0.00%
Sick Leave Load	<u>0.00%</u>	<u>0.07%</u>	<u>0.00%</u>	<u>0.02%</u>
All Demographic Changes	0.69%	0.81%	0.88%	0.74%
Expense Assumption Change	(0.10%)	(0.18%)	(0.13%)	(0.11%)
Employee Contribution Rate Increases	<u>(0.37%)</u>	<u>(0.76%)</u>	<u>(0.60%)</u>	<u>(0.49%)</u>
Impact of all Changes for 2019 Valuation	0.22%	(0.13%)	0.15%	0.14%
Ultimate Impact after 5-year phase-in	0.81%	(1.98%)	1.56%	0.06%

SECTION II – 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.

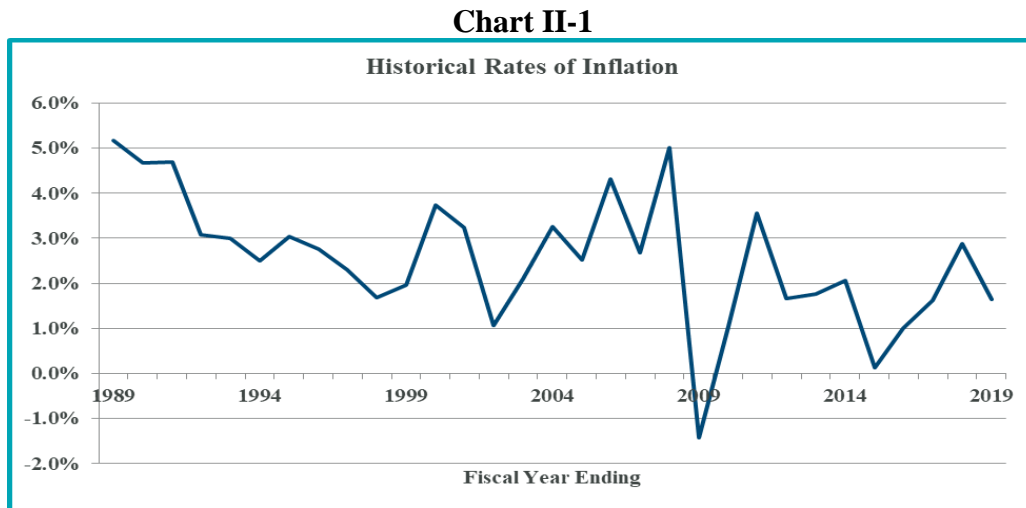
In order to develop recommendations for each of these assumptions, we considered historical data, both nationally and for the Plan, and expectations for the future, as expressed by the Plan's and other external investment consultants and the Board.

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 II-1 below shows inflation (CPI-U) for the U.S. by individual year for the last 30 years.



**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
EXPERIENCE STUDY AS OF JUNE 30, 2019**

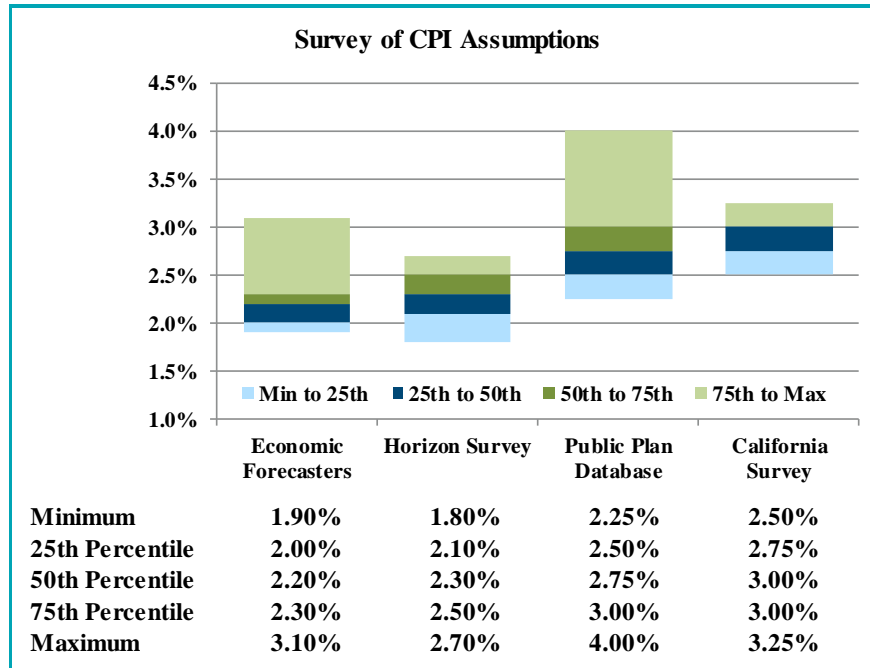
**SECTION II – ECONOMIC ASSUMPTIONS
PRICE INFLATION**

Over the 30 years ending June, 2019, the geometric average inflation rate for the U.S. has been about 2.5%.

Future Expectations

The Federal Reserve publishes a quarterly survey of professional economic forecasters. Chart II-2 shows the distribution of the professionals' forecasts for average inflation over the next 10 years compared to the distribution of 20-year inflation assumptions used by investment consultants in Horizon's 2019 survey, assumptions used by plans in the 2018 Public Plans Database, and assumptions used by California public pension plans from Cheiron's 2018 survey.

Chart II-2



RVK, the Board's investment advisor, assumes inflation will be 2.50%, similar to that of many other investment consultants. Finally, the 20-year breakeven inflation rate (the difference between yields on 20-year nominal Treasury securities and Treasury inflation protection securities) is 1.8%.

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 2.00% and 3.00%. Therefore, we agree with the Board's recent action to maintain the assumption at 2.75%.

**SECTION II – ECONOMIC ASSUMPTIONS
WAGE INFLATION AND COLA GROWTH**

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.

From 2002 through 2018, national wage inflation averaged approximately 2.7% compared to annual price inflation of 2.0%, making wage increases more than 0.7% higher than inflation. However, over the same time period the median wage inflation was only about 2.3%, as much of the growth in wages was clustered at the top end of the wage scale, resulting in an increase in the real wage of only 0.3% per year. Wage inflation dropped significantly in 2008 and 2009, and there were smaller declines in national average wage growth in 2013 and 2016.

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 to be the case in parts of California. Also, the Social Security Administration projects real wage growth of 0.6% – 1.8% 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.

Cheiron agrees with the Board's recent action to maintain a small non-inflationary base payroll growth assumption 0.25% annually. As a result, the annual expected increase in base payroll will remain at 3.00%. This rate is 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 SBCERS are eligible to receive automatic Cost-of-Living Adjustments (COLAs), based on the growth in the Los Angeles-Long Beach-Anaheim, CA Consumer Price Index (CPI-U) and a 3% or 2% cap, depending on the plan, 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.

**SECTION II – ECONOMIC ASSUMPTIONS
WAGE INFLATION AND COLA GROWTH**

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. Simulations of inflation show 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.

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.

Based on a blending of the results under the two sets of inputs, and using the 2.75% inflation assumption, we recommend maintaining the COLA growth assumption of 2.60% for the group capped at 3.0% and 1.9% for the group capped at 2.0%.

**SECTION II – ECONOMIC ASSUMPTIONS
DISCOUNT RATE**

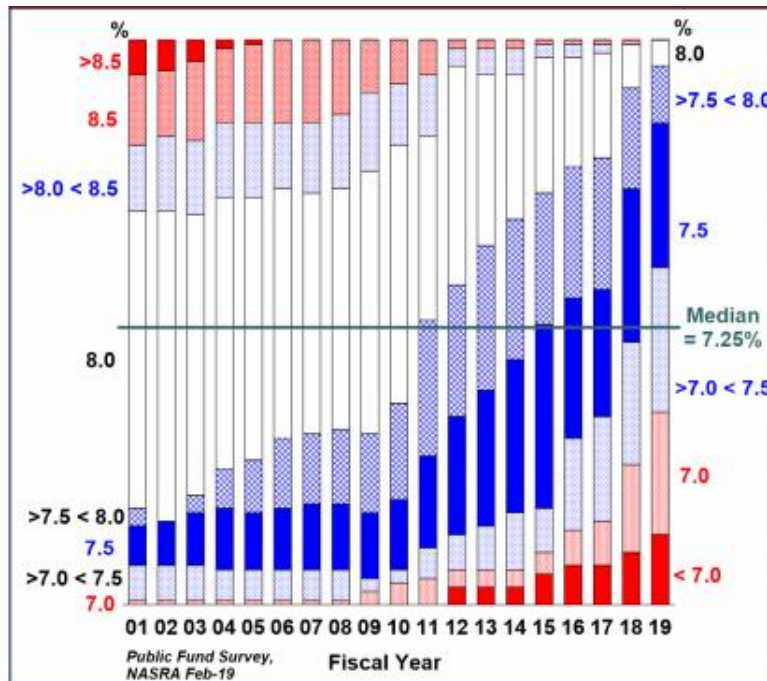
DISCOUNT RATE

The discount rate (investment rate of return) 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 II-3 below shows the change in the distribution of assumptions since 2001. The median assumption is now 7.25%, and the number of plans using a discount rate of 7.0% or lower has increased significantly. SBCERS' current discount rate is 7.0%.

**Chart II-3
Change in Distribution of Public Pension Investment Return Assumptions
FY 01 to FY 19**

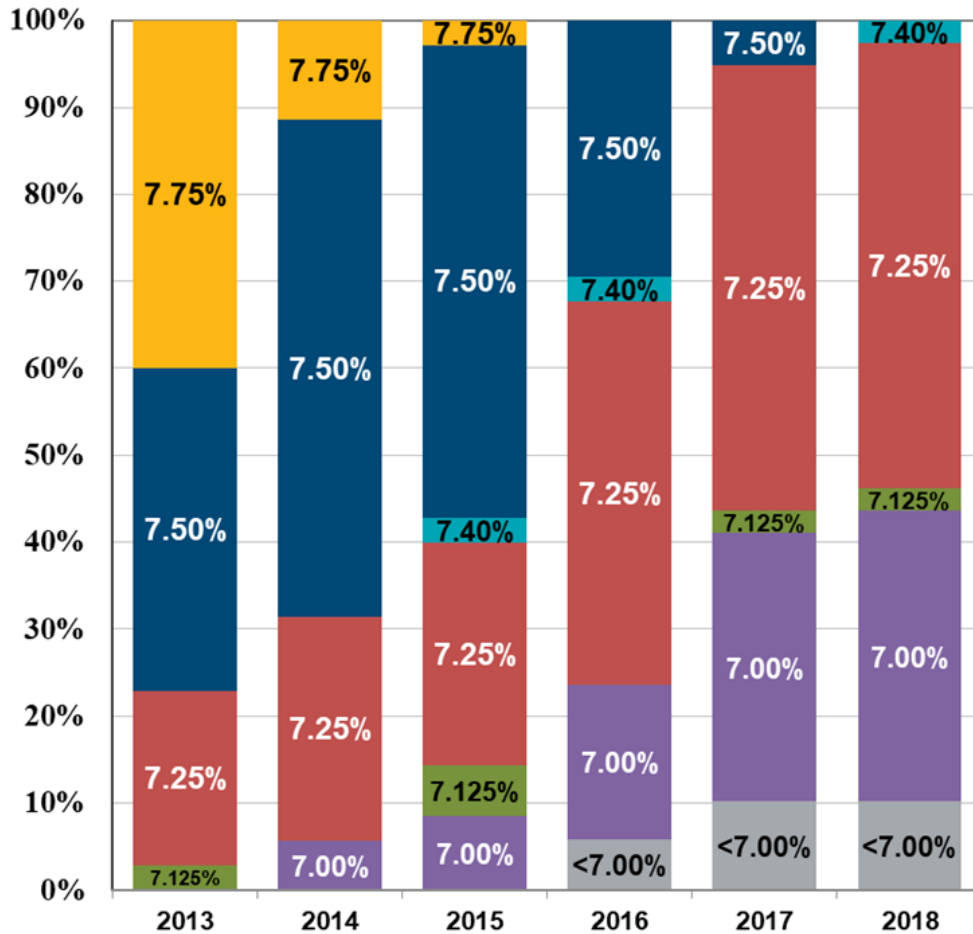


**SECTION II – ECONOMIC ASSUMPTIONS
DISCOUNT RATE**

Our survey of California retirement systems has an average assumption of 7.11% and a median assumption of 7.25% with 20 of the 39 systems using the median rate and only one system above the median rate. Chart II-4 below shows the change in discount rate assumptions for California systems from 2013 to 2018.

Chart II-4

**Distribution of Discount Rates
Cheiron Survey of California Systems**



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.

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
EXPERIENCE STUDY AS OF JUNE 30, 2019**

**SECTION II – ECONOMIC ASSUMPTIONS
DISCOUNT RATE**

Table II-1 below shows the expected nominal geometric return based on the Board’s current target asset allocation and the Plan’s investment consultant (RVK), two other investment consultants active in the California public plan market whose published expectations included similar asset classes to those included in the SBCERS portfolio (Verus and Meketa), and a survey of multiple investment consultants published by Horizon Actuarial Services (based on both a 10 and 20 year time horizon). The table also shows the underlying inflation assumption used by each investment consultant in the development of their capital market assumptions and computes the expected real rate of return (nominal investment return in excess of inflation).

Table II-1

SBCERS Target Portfolio Return Expectations			
Source	Nominal	Inflation	Real
RVK	6.15%	2.50%	3.65%
Verus	7.09%	2.00%	5.09%
Meketa	7.47%	2.10%	5.37%
Horizon Survey	<u>6.56%</u>	<u>2.22%</u>	<u>4.34%</u>
Average Short-Term (10-year)	6.82%	2.21%	4.61%
Verus (30-year)	7.14%	1.80%	5.34%
Horizon Survey (20-year)	<u>7.46%</u>	<u>2.29%</u>	<u>5.17%</u>
Average Long-Term	7.30%	2.05%	5.26%
Average	7.06%	2.13%	4.93%

RVK’s expected nominal and real return are 6.15% and 3.65%, respectively, which are considerably lower than other investment consultants’ expectations. The overall averages of short-term and long-term nominal and real return are 7.06% and 4.93%, respectively. The assumed rate of return has traditionally been a long-term focus due to the nature of public sector pension plans. However, recently more attention has been given to the short-term outlook as plans must deal with the cost impact of lower returns expected in the next five to ten years.

The marked difference between RVK and the other investment consultants’ nominal and real returns are due to adjustments RVK made to their 2019 capital market assumptions to account for the outlier economic market conditions in December 2018. Most investment consultants developed their 2019 capital market assumptions based on market conditions in December 2018 and as a result are significantly higher than the assumptions provided the prior year. We understand that this increase reflects, among other factors, the higher interest rates and lower valuations as of December, 2018. We note that these conditions have reversed since December. For example, the yield on the 10-year Treasury was 2.4% in December 2017, 2.8% in December 2018, but is only 2.1% in June 2019. As a result, expected returns as of the valuation date, June 30, 2019, are likely to be lower than those forecast based on December 2018 market conditions.

**SECTION II – ECONOMIC ASSUMPTIONS
DISCOUNT RATE**

It is our understanding that RVK incorporated this type of information to adjust their expectations.

SBCERS current real rate of return assumption of 4.25% is slightly less than the short-term average of 4.61%, though notably higher than RVK's assumption of 3.65%. After combining the average real return of 4.61% with SBCERS's inflation assumption of 2.75%, the current discount rate of 7.00% is slightly lower than short-term average of 7.36%. However, we find the 7.00% assumption to be reasonable, given the market conditions in December 2018 were conducive to higher expectations for 2019 which have since reversed. However, there are a few considerations to discuss relevant to the expected rate of return in the short term.

- 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 RVK and much of the investment community are correct in their projections, we can expect returns below the 7.00% 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 (2.75% and 3.00%, respectively).
- 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 ten years; longer measurement periods are often considered less relevant because of the potential for changes in the economy and in the investment markets.

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 changes are appropriate.

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
EXPERIENCE STUDY AS OF JUNE 30, 2019**

**SECTION III – 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 SBCERS, with some adjustments where future experience is expected to differ from historical experience and with deference to standard tables where SBCERS 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 SBCERS'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.

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

We used a longitudinal study to analyze the merit increases, wherein we reviewed the average increase in pay for each level of service. To analyze the merit component, we subtracted the Plan's real wage from the total pay increases experienced by each member during the experience study period. We have computed the real wage growth by calculating the increase in the average salary across all active members (calculated separately for General and Safety) each year, and adjusting for changes in the average service level.

Charts III-1 and III-2 on the following pages analyze the pay patterns for General and Safety members, respectively, for the six-year period from 2013 through 2019. Our charts will generally show the current assumption (dark blue line) compared to the actual experience (teal line) and the proposed assumption (green line).

Tables III-1 and III-2 summarize the current and proposed salary increase assumptions at key years of service. See Appendices A and B for a full listing of the proposed and prior rates.

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
EXPERIENCE STUDY AS OF JUNE 30, 2019**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
MERIT SALARY INCREASES**

We have proposed new assumptions with higher increases for General members with 3 to 13 years of service, and more than 22 years of service. The ultimate increase rate changed from 0.25% to 0.375%.

Chart III-1: General

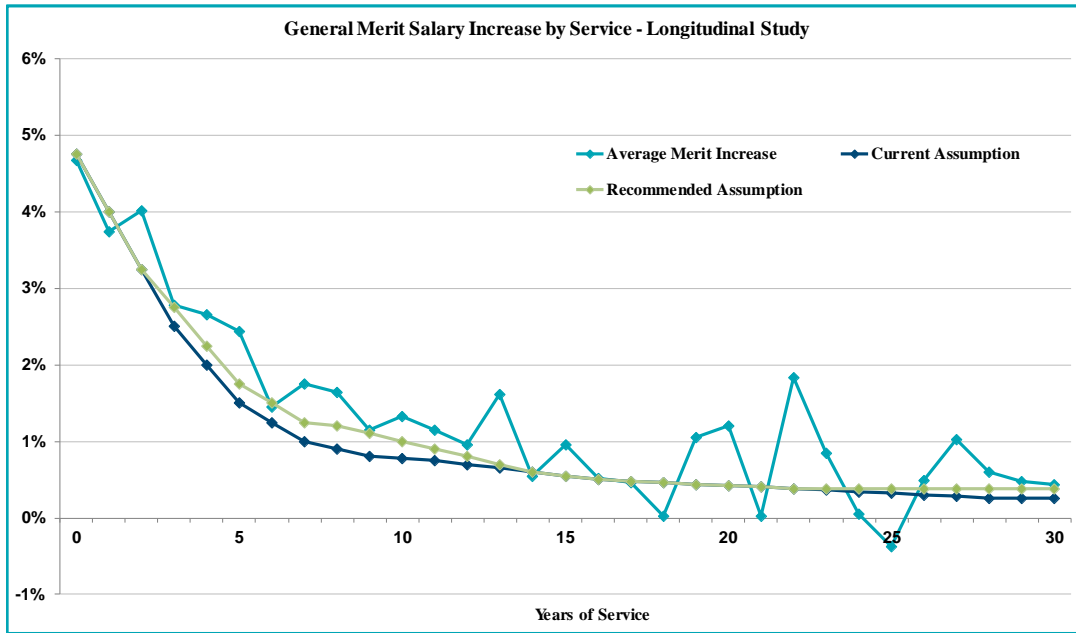


Table III-1: General

General - Merit Salary Increases		
Service	Current	Proposed
0	4.75%	4.75%
1	4.00%	4.00%
2	3.25%	3.25%
3	2.50%	2.75%
4	2.00%	2.25%
5	1.50%	1.75%
6	1.25%	1.50%
7	1.00%	1.25%
10	0.78%	1.00%
15	0.55%	0.55%
20	0.42%	0.42%
22	0.38%	0.375%
29	0.25%	0.375%
30+	0.25%	0.375%

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
EXPERIENCE STUDY AS OF JUNE 30, 2019**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
MERIT SALARY INCREASES**

We have proposed new assumptions with a slightly higher increase for Safety members with 11 years of service, and a higher ultimate rate of 0.75% starting at 19 years of service compared to 0.50% at 29 years of service.

Chart III-2: Safety

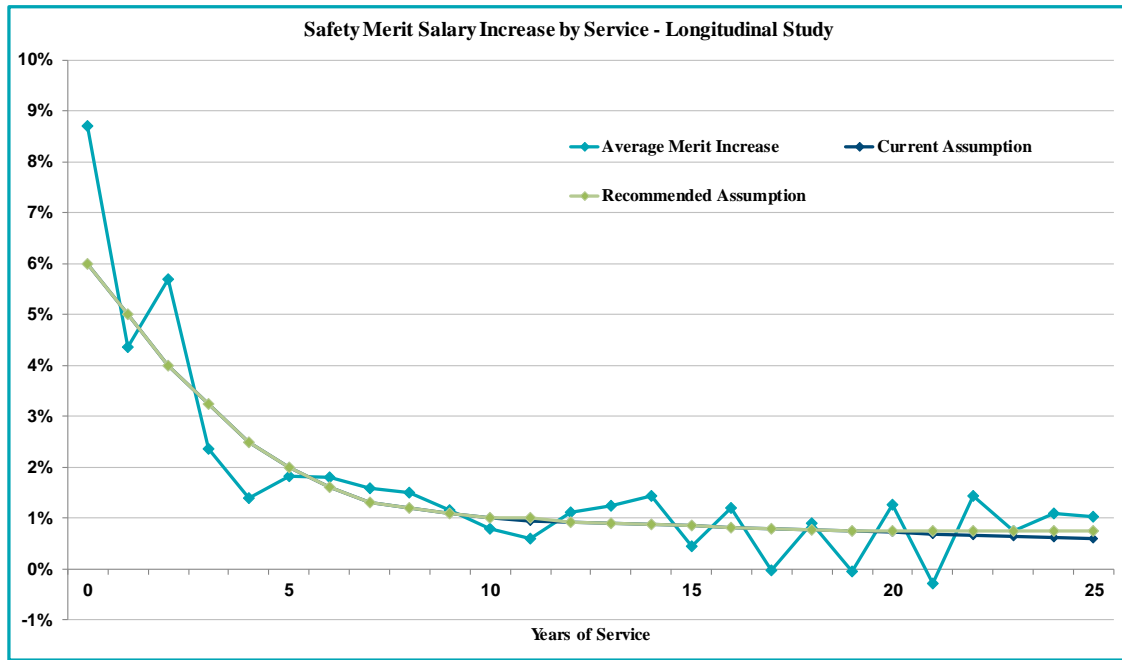


Table III-2: Safety

Safety - Merit Salary Increases		
Service	Current	Proposed
0	6.00%	6.00%
1	5.00%	5.00%
2	4.00%	4.00%
3	3.25%	3.25%
4	2.50%	2.50%
5	2.00%	2.00%
10	1.00%	1.00%
15	0.85%	0.85%
20	0.72%	0.75%
25	0.59%	0.75%
29	0.50%	0.75%
30+	0.50%	0.75%

**SECTION III – 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 1.00 although this is never the case. Any recommended assumption change should increase the r-squared compared to the current assumption making it closer to 1.00 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 mortality rates, we compare SBCERS's experience to that of a standard table and, if warranted, adjust the tables to bring the proposed assumption closer to an A/E ratio of 100%.

Finally, since the amount of data that is available over a three year period to analyze the decrements is somewhat limited, we have added data from the two previous studies to add more credibility to these calculations, for a combined nine years of experience (2010-2019), except where noted.

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

RETIREMENT RATES

The current retirement rates vary by age and service and are applied to all members who are eligible to retire. Generally members with more service are more likely to retire than members with fewer years of service since the retirement benefit is greater, at any given age.

The current retirement assumptions are based on age with separate assumptions for legacy general members with less than 30 years and those with 30 or more years of service; and for legacy Safety members with less than 20 years of service and those with 20 or more years of

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
EXPERIENCE STUDY AS OF JUNE 30, 2019**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES**

service. During our analysis, we determined that a further split for both General and Safety members was justified. We recommend separate assumptions by age for each of the following three service groups for both General and Safety legacy members:

- Members with less than 20 years of service,
- Members with 20 or more years of service and less than 30 years of service, and
- Members with 30 or more years of service.

We continue to recommend using the same assumptions for the Safety PEPRA members and Safety Plan 4 retirement rates since we do not yet have any plan experience to support a different set of assumptions.

The current retirement rates for General PEPRA members are based on age and gender rather than age and service. As mentioned before, retirement behavior is significantly impacted by the number of years of service a member has earned. Also for SBCERS, retirement patterns for males and females are very similar and do not warrant separate assumptions based on gender. Therefore, we are recommending General PEPRA rates that are age and service based with separate rates for members with less than 25 years of service and those with 25 or more years of service. The proposed General PEPRA retirement rates are lower for each age than the legacy General rates since the benefit multipliers are lower at each age for PEPRA members. Since we do not yet have any plan experience to support these assumptions, we compared our proposed rates to the CalPERS PEPRA rates for State Miscellaneous members and found them to be reasonable.

The retirement experience analysis for the General members also includes the APCD members.

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
EXPERIENCE STUDY AS OF JUNE 30, 2019**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES**

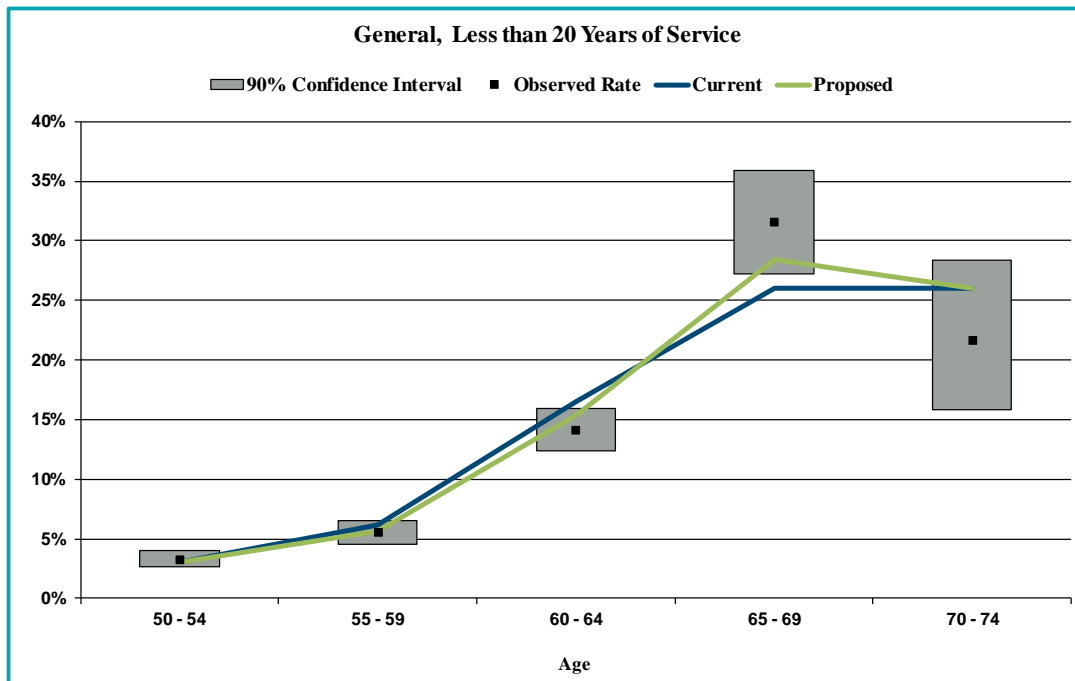
Table III-R1 shows the calculation of actual-to-expected ratios and the r-squared statistic for General members with less than 20 years of service. Chart III-R1 shows the information graphically along with the 90% confidence interval.

The data shows lower actual retirements than expected under the current assumption. The proposed assumption decreases the aggregate number of assumed retirements, but increases the retirement rate for ages 65-66 to be more in line with the experience. The new assumptions increase the aggregate A/E ratio from 97% to 99%. The r-squared also increases from 82% to 93%.

Table III-R1 – General

General, Less than 20 Years of Service						
Age	Exposures	Retirements			Actual to Expected Ratios	
		Actual	Current	Proposed	Current	Proposed
50 - 54	1,819	60	55	54	110%	111%
55 - 59	1,548	86	95	88	91%	98%
60 - 64	1,033	146	170	159	86%	92%
65 - 69	323	102	84	92	121%	111%
70 - 74	120	26	31	31	83%	83%
Total	4,843	420	435	424	97%	99%
R-squared			82%	93%		

Chart III-R1 – General



**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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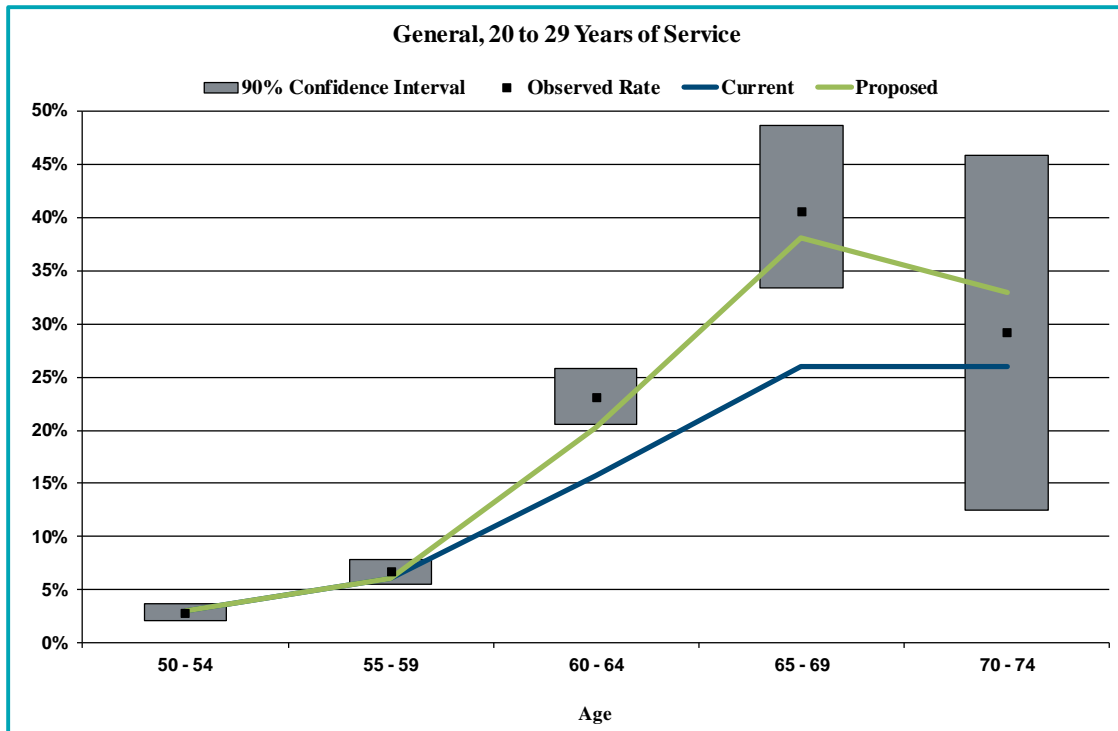
Table III-R2 shows the calculation of actual-to-expected ratios and the r-squared statistic for General members with 20 or more years of service and less than 30 years of service and Chart III-R2 shows the information graphically along with the 90% confidence interval.

The data shows higher actual retirements than expected under the current assumption. The proposed assumption increases the overall number of expected retirements and decreases the aggregate A/E ratio from 128% to 109%. The r-squared increases from 93% to 98%.

Table III-R2 – General

General, 20 to 29 Years of Service						
Age	Exposures	Retirements			Actual to Expected Ratios	
		Actual	Current	Proposed	Current	Proposed
50 - 54	1,316	38	39	40	96%	95%
55 - 59	1,329	89	82	82	109%	109%
60 - 64	709	164	111	143	147%	115%
65 - 69	111	45	29	42	156%	107%
70 - 74	24	7	6	8	112%	88%
Total	3,489	343	268	315	128%	109%
R-squared			93%	98%		

Chart III-R2 – General



**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
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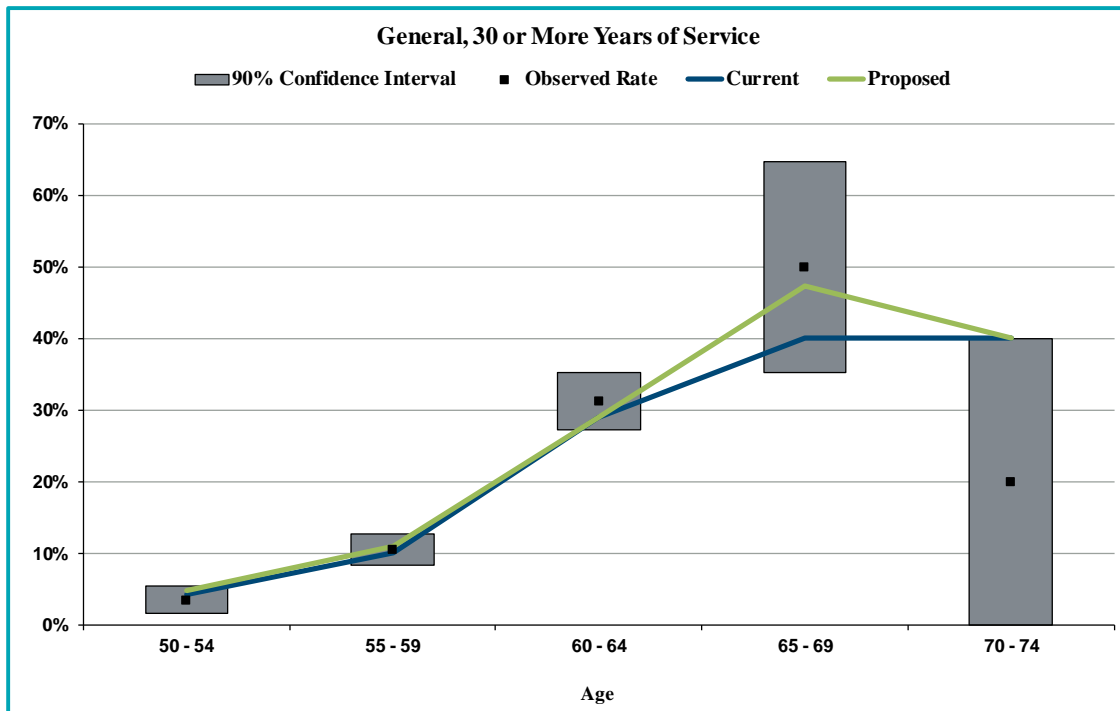
Table III-R3 shows the calculation of actual-to-expected ratios and the r-squared statistic for General members with 30 or more years of service and Chart III-R3 shows the information graphically along with the 90% confidence interval.

The data shows higher actual retirements than expected under the current assumption. The proposed assumption increases the overall number of expected retirements to be more in line with actual experience and decreases the aggregate A/E ratio from 106% to 100%. The r-squared increases from 96% to 98%.

Table III-R3 – General

General, 30 or More Years of Service						
Age	Exposures	Retirements			Actual to Expected Ratios	
		Actual	Current	Proposed	Current	Proposed
50 - 54	235	8	10	11	79%	70%
55 - 59	551	58	55	61	105%	95%
60 - 64	352	110	102	102	108%	108%
65 - 69	34	17	14	16	125%	106%
70 - 74	10	2	4	4	50%	50%
Total	1,182	195	185	194	106%	100%
R-squared			96%	98%		

Chart III-R3 – General



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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
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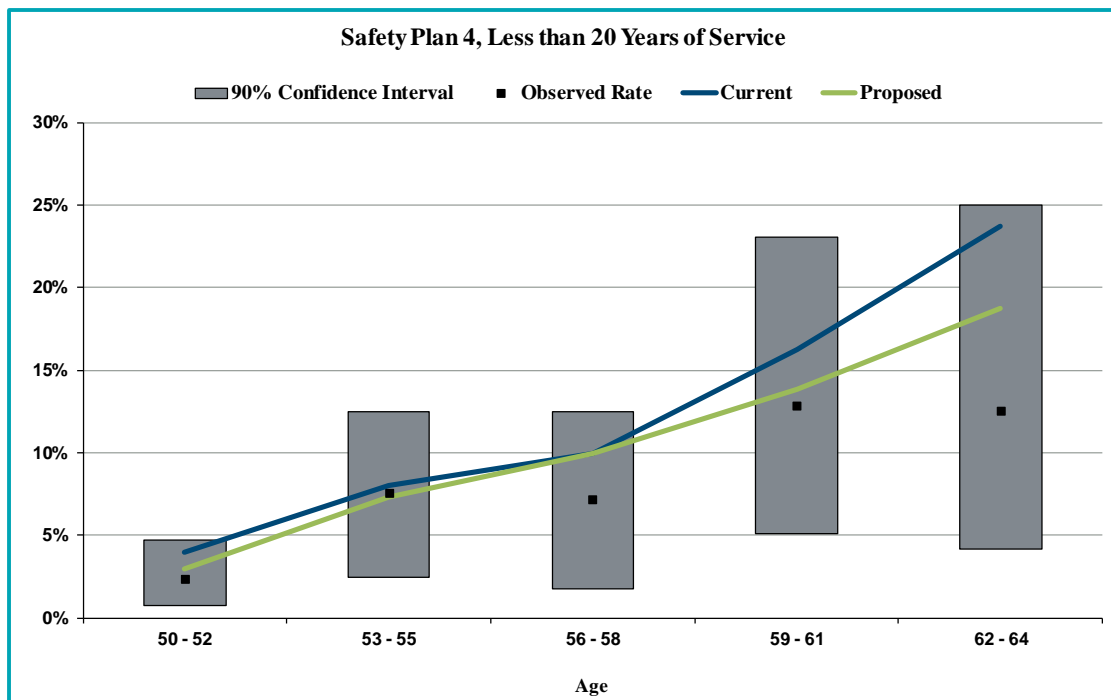
Table III-R4 shows the calculation of actual-to-expected ratios and the r-squared statistic for Safety Plan 4 members with less than 20 years of service. Chart III-R4 shows the information graphically along with the 90% confidence interval.

The data shows lower actual retirements than expected under the current assumption. The proposed assumption decreases the aggregate expected retirements to be more in line with actual experience and increases the aggregate A/E ratio from 72% to 83%. The r-squared also increases from 11% to 54%.

Table III-R4 – Safety

Safety Plan 4, Less than 20 Years of Service						
Age	Exposures	Retirements			Actual to Expected Ratios	
		Actual	Current	Proposed	Current	Proposed
50 - 52	128	3	5	4	59%	78%
53 - 55	80	6	6	6	93%	103%
56 - 58	56	4	6	6	71%	71%
59 - 61	39	5	6	5	79%	93%
62 - 64	24	3	6	5	53%	67%
Total	264	21	29	25	72%	83%
R-squared			11%	54%		

Chart III-R4 – Safety



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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
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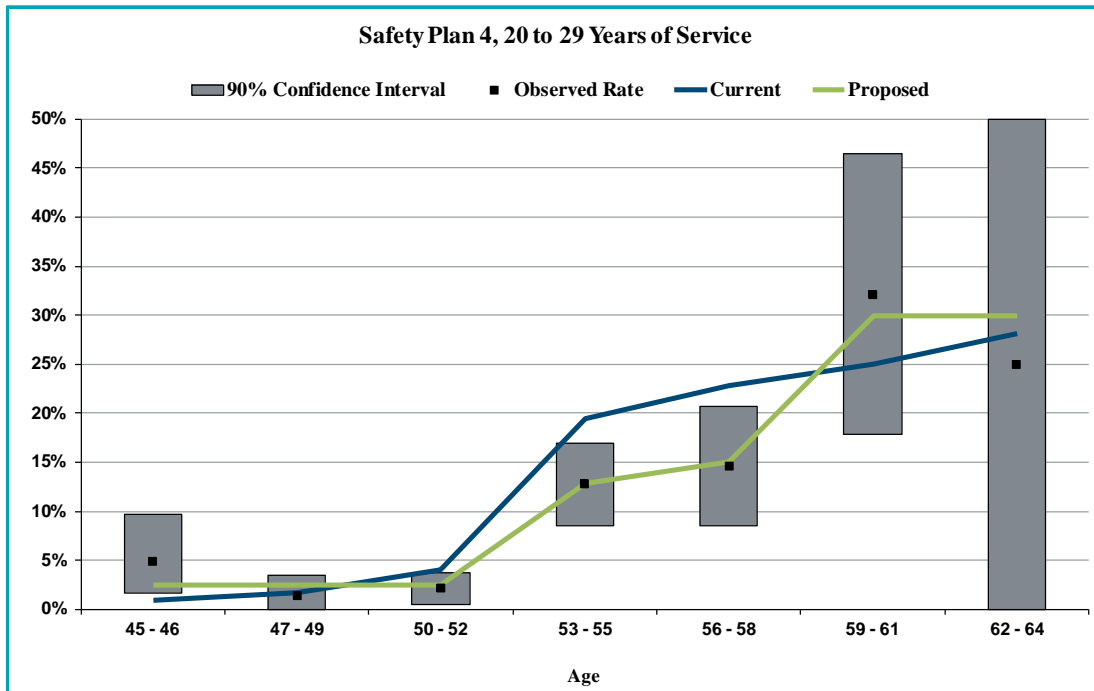
Table III-R5 shows the calculation of actual-to-expected ratios and the r-squared statistic for Safety Plan 4 members with 20 to 29 more years of service. Chart III-R5 shows the information graphically along with the 90% confidence interval.

The data shows lower actual retirements than expected under the current assumption. The proposed assumption decreases the aggregate expected retirements to be more in line with actual experience and increases the aggregate A/E ratio from 75% to 98%. The r-squared also increases from 86% to 93%.

Table III-R5 – Safety

Safety Plan 4, 20 to 29 Years of Service						
Age	Exposures	Retirements			Actual to Expected Ratios	
		Actual	Current	Proposed	Current	Proposed
45 - 46	62	3	1	2	484%	194%
47 - 49	143	2	2	4	80%	56%
50 - 52	188	4	8	5	53%	85%
53 - 55	165	21	32	21	65%	99%
56 - 58	82	12	19	12	64%	98%
59 - 61	28	9	7	8	129%	107%
62 - 64	8	2	2	2	89%	83%
Total	676	53	71	54	75%	98%
R-squared			86%	93%		

Chart III-R5 – Safety



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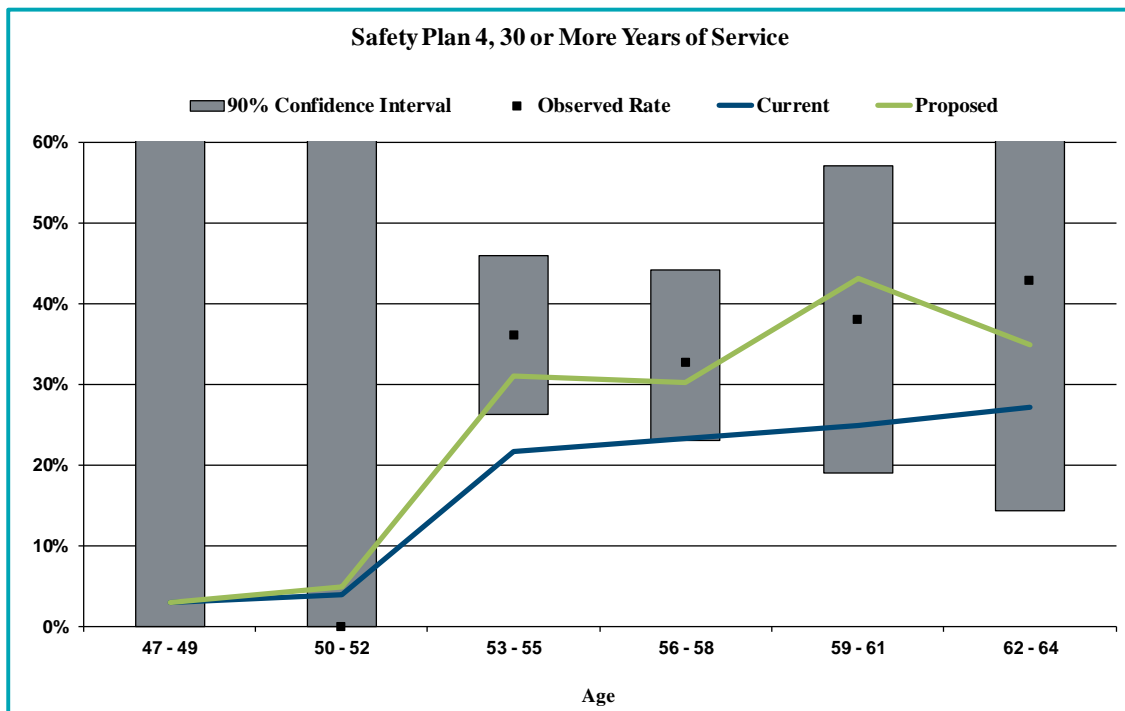
Table III-R6 shows the calculation of actual-to-expected ratios and the r-squared statistic for Safety Plan 4 members with 30 or more years of service. Chart III-R6 shows the information graphically along with the 90% confidence interval.

The data shows higher actual retirements than expected under the current assumption. The proposed assumption increases the aggregate expected retirements to be more in line with actual experience and decreases the aggregate A/E ratio from 155% to 109%. The r-squared also increases from 89% to 94%.

Table III-R6 – Safety

Safety Plan 4, 30 or More Years of Service						
Age	Exposures	Retirements			Actual to Expected Ratios	
		Actual	Current	Proposed	Current	Proposed
47 - 49	1	1	0	0	3333%	3333%
50 - 52	9	0	0	0	0%	0%
53 - 55	61	22	13	19	166%	116%
56 - 58	52	17	12	16	140%	108%
59 - 61	21	8	5	9	152%	88%
62 - 64	7	3	2	2	158%	122%
Total	151	51	33	47	155%	109%
R-squared			89%	94%		

Chart III-R6 – Safety



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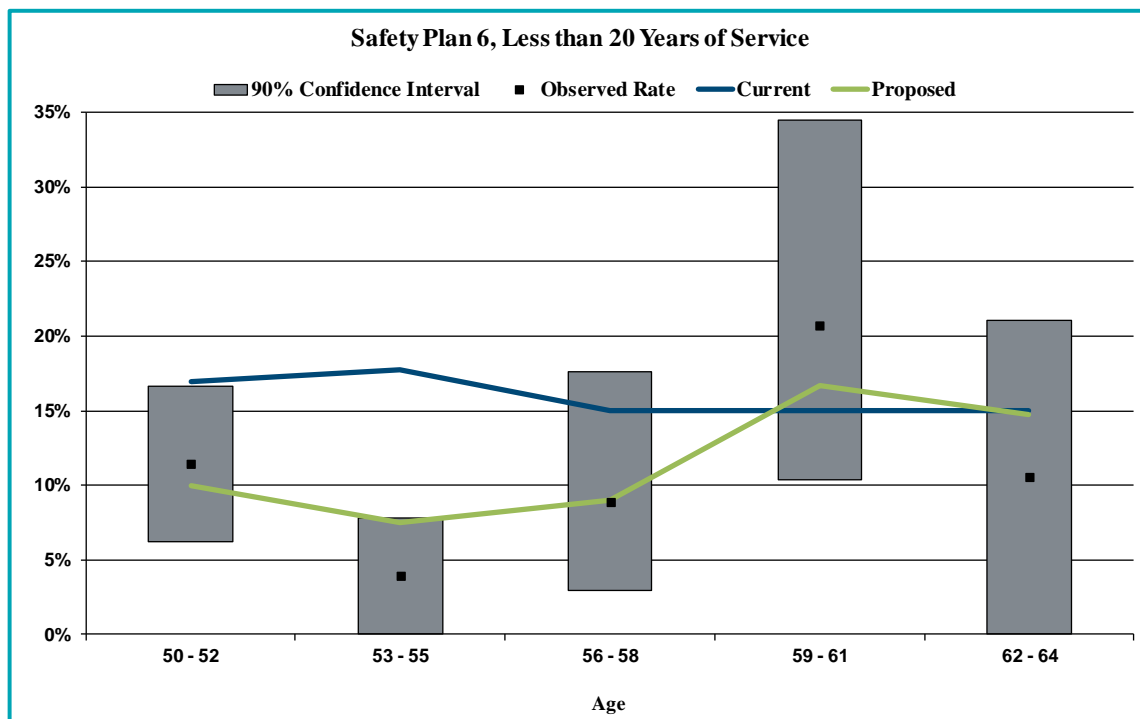
Table III-R7 shows the calculation of actual-to-expected ratios and the r-squared statistic for Safety Plan 6 members with less than 20 years of service. Chart III-R7 shows the information graphically along with the 90% confidence interval.

The data shows lower actual retirements than expected under the current assumption, except for ages 59-61. The proposed assumption decreases the aggregate retirements to be more in line with actual experience and increases the aggregate A/E ratio from 64% to 99%. The r-squared also increases from 41% to 74%.

Table III-R7 – Safety

Safety Plan 6, Less than 20 Years of Service						
Age	Exposures	Retirements			Actual to Expected Ratios	
		Actual	Current	Proposed	Current	Proposed
50 - 52	96	11	16	10	68%	115%
53 - 55	51	2	9	4	22%	52%
56 - 58	34	3	5	3	59%	98%
59 - 61	29	6	4	5	138%	124%
62 - 64	19	2	3	3	70%	71%
Total	229	24	38	24	64%	99%
R-squared			41%	74%		

Chart III-R7 – Safety



**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES**

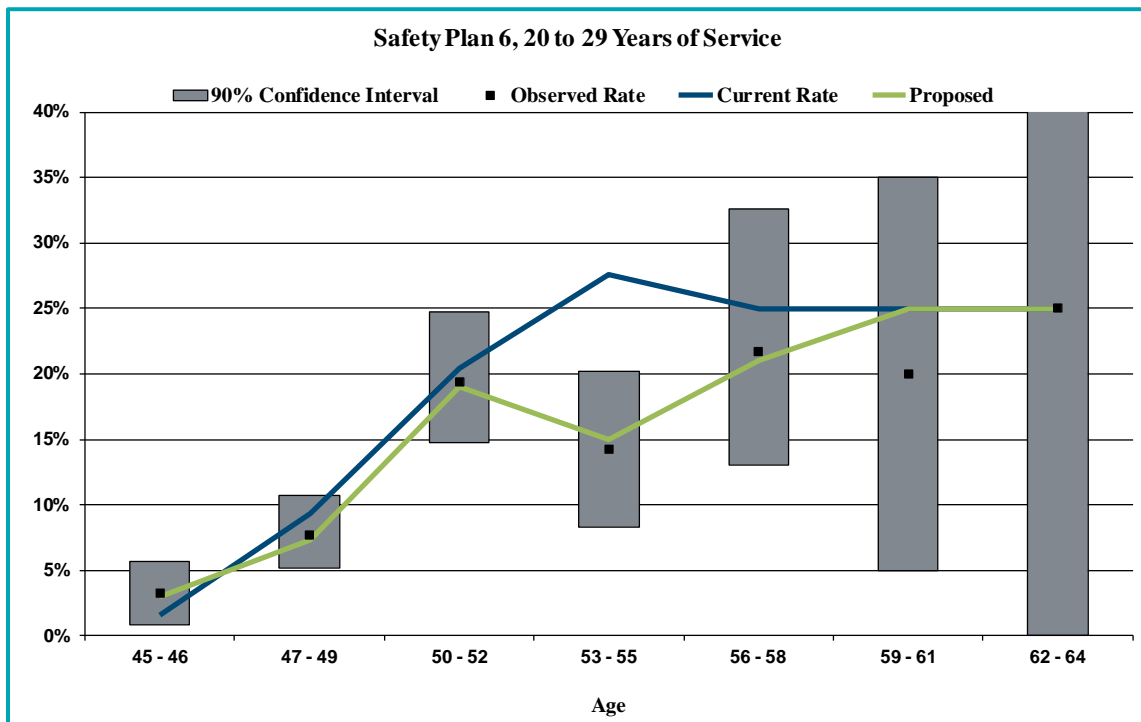
Table III-R8 shows the calculation of actual-to-expected ratios and the r-squared statistic for Safety Plan 6 members with 20 to 29 years of service. Chart III-R8 shows the information graphically along with the 90% confidence interval.

The data shows lower actual retirements than expected under the current assumption, except for ages 45-46. The proposed assumption decreases the aggregate expected retirements to be more in line with experience and decreases the aggregate A/E ratio from 83% to 100%. The r-squared increases from 83% to 89%.

Table III-R8 – Safety

Safety Plan 6, 20 to 29 Years of Service						
Age	Exposures	Retirements			Actual to Expected Ratios	
		Actual	Current	Proposed	Current	Proposed
45 - 46	124	4	2	4	209%	108%
47 - 49	234	18	22	17	82%	105%
50 - 52	170	33	35	32	95%	102%
53 - 55	84	12	23	13	52%	95%
56 - 58	46	10	12	10	87%	103%
59 - 61	20	4	5	5	80%	80%
62 - 64	8	2	2	2	100%	100%
Total	686	83	100	83	83%	100%
R-squared			83%	89%		

Chart III-R8 – Safety



**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES**

Table III-R9 shows the calculation of actual-to-expected ratios and the r-squared statistic for Safety Plan 6 members with 30 or more years of service. Chart III-R7 shows the information graphically along with the 90% confidence interval.

The data shows higher actual retirements than expected under the current assumption, except at age 62-64. However, we are not proposing to decrease retirement rates at these ages since doing so would make them lower than for those members with less than 30 years of service. The proposed assumption increases the aggregate expected retirements to be more in line with actual experience and decreases the aggregate A/E ratio from 113% to 102%. The r-squared increases from 59% to 75%.

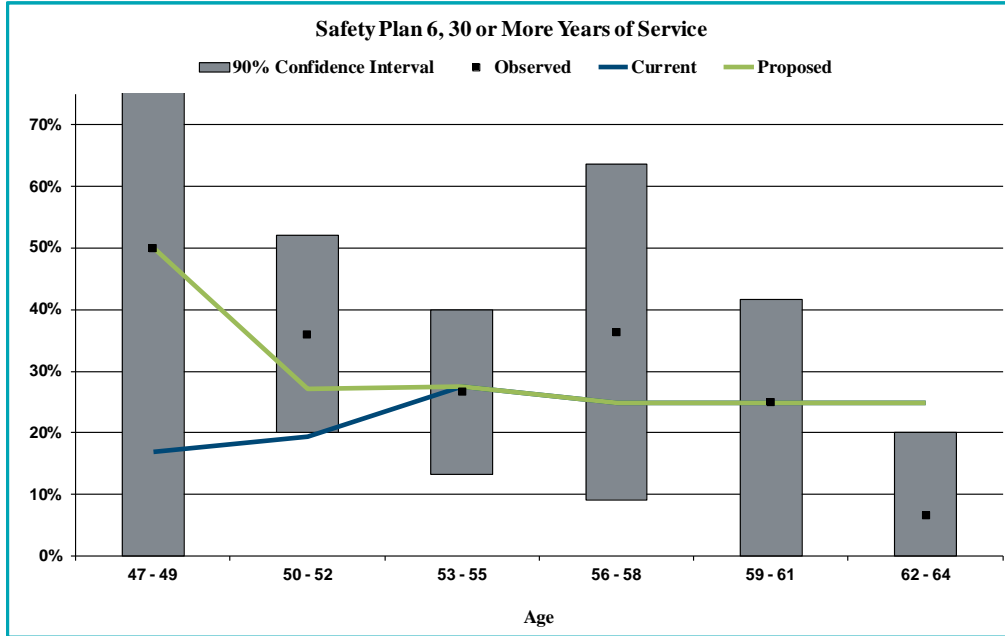
Table III-R9 – Safety

Safety Plan 6, 30 or More Years of Service						
Age	Exposures	Retirements			Actual to Expected Ratios	
		Actual	Current	Proposed	Current	Proposed
45 - 46	0	0	0	0	0%	0%
47 - 49	2	1	0	1	294%	100%
50 - 52	25	9	5	7	186%	132%
53 - 55	30	8	8	8	97%	97%
56 - 58	11	4	3	3	145%	145%
59 - 61	12	3	3	3	100%	100%
62 - 64	15	1	4	4	27%	27%
Total	95	26	23	26	113%	102%
R-squared			59%	75%		

SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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SECTION III – DEMOGRAPHIC ASSUMPTIONS
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Chart III-R9 – Safety



**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**

Termination rates reflect the frequency at which active members leave employment for reasons other than retirement, death, or disability. Currently, the termination rates are based on service for both Safety and General members. We have found that the rate of termination is more related to years of service rather than age. This methodology also avoids under-weighting the liabilities that can occur if using age-based rates only. The termination rates do not apply once members are eligible for a service retirement benefit. Again, we have combined the experience of the past three years with that of the prior six-year period in order to have a more robust dataset to review.

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

The data shows actual termination rates close to expected under the current assumption. We are recommending modest increases in the General termination rates for members with 5 to 9 years of service, a slight decreases in rates for those members with 12 years of service and modest increases in rates for those members with 15 to 19 years of service. The proposed assumption increases the aggregate assumed rate of termination and decreases the aggregate A/E ratio from 106% to 102%. The r-squared increases slightly. We note that because the number of terminations and exposures is quite high, a higher degree of credibility can be assigned to the termination experience, and therefore we are comfortable recommending assumptions that align closely with the data.

Table III-T1

General Termination Rates						
Service	Exposures	Terminations			A/E Ratios	
		Actual	Current	Proposed	Current	Proposed
0 - 4	7,307	877	849	849	103%	103%
5 - 9	5,892	359	313	355	115%	101%
10 - 14	3,552	121	124	122	97%	99%
15 - 19	2,091	60	41	55	145%	110%
25 - 29	265	4	4	4	101%	101%
Total	20,026	1,431	1,345	1,398	106%	102%
R-squared			99%	99%		

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**

Chart III-T1

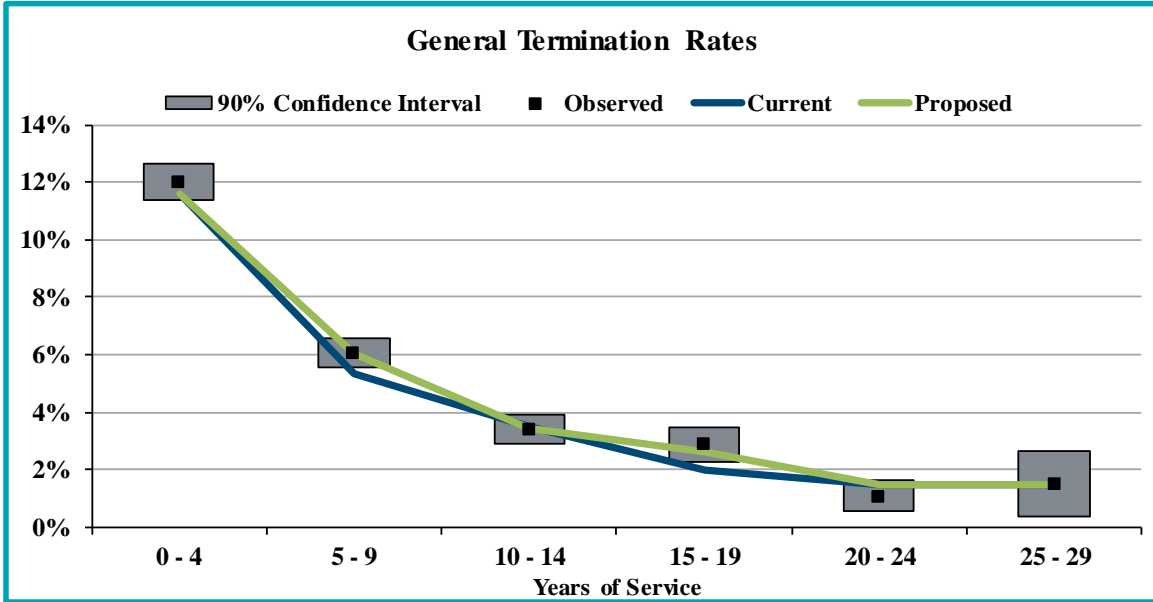


Table III-T2 shows the calculation of actual-to-expected ratios and the r-squared statistic for Safety members, and Chart III-T2 shows the information graphically along with the 90% confidence interval.

The data shows actual termination rates are close to expected under the current assumption. We are not recommending any changes in Safety termination rates. The Aggregate A/E ratio remains at 98%.

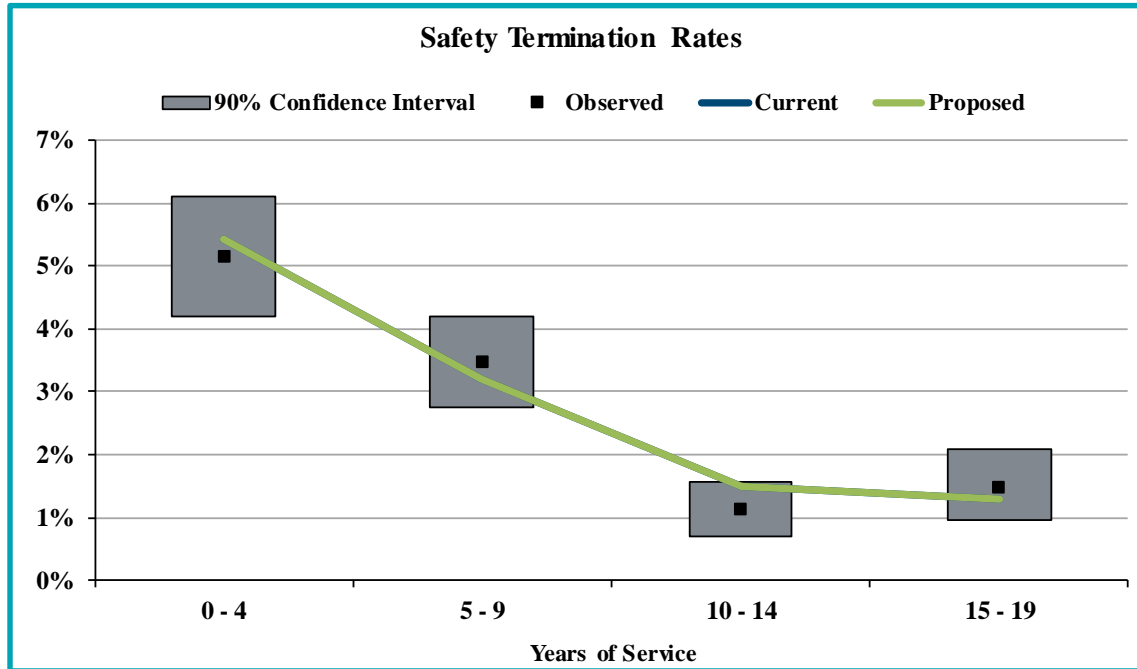
Table III-T2

Safety Termination Rates						
Service	Exposures	Terminations			A/E Ratios	
		Actual	Current	Proposed	Current	Proposed
0 - 4	1,475	76	80	80	95%	95%
5 - 9	1,638	57	52	52	109%	109%
10 - 14	1,596	18	24	24	76%	76%
15 - 19	1,153	17	15	15	113%	113%
Total	5,862	168	171	171	98%	98%
R-squared			88%	88%		

SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Chart III-T2



**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**

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 a member terminates employment and works for a reciprocal employer, the member's retirement benefit is ultimately based on the member's service with SBCERS and the highest Final Compensation based on employment with any reciprocal employer.

Tables III-T3 and III-T4 show the results of our analysis of refunds for General and Safety members for the period July 1, 2010 through June 30, 2019. We are recommending decreasing the refund assumption and continuing the trend from the last experience study for Safety members at the five to nine years and fifteen to nineteen years of service. We are not recommending changes to the assumptions for General members.

Table III-T3

Refund Assumptions					
Service	Total Terminations	Refunds	% of Total	Current Assumption	Proposed Assumption
General					
0 - 4	941	941	100%	100%	100%
5 - 9	316	54	17%	20%	20%
10 - 14	126	16	13%	15%	15%
15 - 19	70	6	9%	10%	10%
20 - 24	28	0	0%	5%	5%
25 - 29	<u>7</u>	<u>1</u>	14%	0%	0%
Total	1488	1018			
Safety					
0 - 4	90	86	96%	100%	100%
5 - 9	49	7	14%	20%	15%
10 - 14	17	1	6%	10%	10%
15 - 19	<u>15</u>	<u>1</u>	7%	10%	5%
Total	171	95			

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**

Table III-T4 below shows the experience for the percentage of terminated vested members who retire from a reciprocal system. We have performed the analysis from two different perspectives. The first method looks at the number of members who notify SBCERS that they have been employed at a reciprocal retirement system when they leave SBCERS employment. The second method looks at the number of members who retire from a terminated status at SBCERS but were employed at a reciprocal system.

The first analysis results in lower rates of reciprocity, most likely due to members not reporting to SBCERS that they were hired at a reciprocal system and the information only becoming available once the member retires from the reciprocal system.

Based on the analysis, we are recommending increasing the percentage of reciprocal transfers from 30% to 35% for Safety. We have also seen with other California retirement systems that Safety members tend to have higher rates of reciprocal transfers than General members, based on the specificity of the job qualifications and requirements. Thus, we recommend maintaining the current assumption of 30% for General members, but will continue to monitor this assumption in the next experience study.

Table III-T4

Percentage of Members With Reciprocity at Retirement	
General	
Termination Analysis	
Members who terminated and left contributions on deposit	470
Members who terminated and went to a reciprocal system	93
Percentage of terminated members with reciprocity	20%
Retirement Analysis	
Members who retired from terminated or reciprocal status	264
Members who retired from reciprocal status	93
Percentage of retirements with reciprocity	35%
Safety	
Termination Analysis	
Members who terminated and left contributions on deposit	76
Members who terminated and went to a reciprocal system	13
Percentage of terminated members with reciprocity	17%
Retirement Analysis	
Members who retired from terminated or reciprocal status	60
Members who retired from reciprocal status	23
Percentage of retirements with reciprocity	38%

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
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Tables III-T5 and III-T6 show the results of our analysis of the age at which vested terminated and reciprocal transfer members decide to retire. Currently, vested terminated and reciprocal transfer members are assumed to have the same retirement age. However, terminated vested members not working at a reciprocal system tend to retire earlier than reciprocal members since the same financial incentive to postpone retirement does not exist. Reciprocal members' retirement benefits are calculated based on the final average salary from the reciprocal system, but terminated vested members benefits are based on the final average salary at the time they left SBCERS.

In general, we are proposing increases to assumed retirement ages for reciprocal transfers and some vested terminated members, except for Plan 2, where we have recommended a significant reduction in the assumed retirement age. The current and proposed retirement age assumptions can be found in the tables below.

Table III-T5

Average Retirement Age for General and APCD Retirees from Terminated Status						
FYE	General Plans 5 & 7, APCD				Plan 2	
	Deferred Vested		Reciprocal		Retirement	
	New Retirees	Retirement Age	New Retirees	Retirement Age	New Retirees	Age
2014	23	54.8	20	60.0	1	66.0
2015	19	59.6	17	60.2	1	62.0
2016	26	59.6	14	60.0	0	0.0
2017	32	58.6	13	63.3	4	59.3
2018	26	59.2	16	61.9	0	0.0
2019	42	60.1	10	63.0	0	0.0
Total	168	58.8	90	61.2	6	60.8
Current Assumption		58		58		65
Proposed Assumption		58		60		60

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**

Table III-T6

Average Retirement Age for Safety Retirees from Terminated Status								
FYE	Safety Plan 4				Safety Plan 6			
	Deferred Vested		Reciprocal		Deferred Vested		Reciprocal	
	New Retirees	Retirement Age	New Retirees	Retirement Age	New Retirees	Retirement Age	New Retirees	Retirement Age
2014	0	n/a	1	58.0	3	53.0	3	55.0
2015	2	52.5	2	54.5	5	50.4	2	54.5
2016	2	55.5	0	n/a	5	53.8	1	53.0
2017	2	57.0	1	54.0	3	50.0	3	56.7
2018	1	57.0	1	50.0	8	54.8	6	54.8
2019	<u>1</u>	<u>51.0</u>	<u>2</u>	<u>57.5</u>	<u>5</u>	<u>50.2</u>	<u>1</u>	<u>55.0</u>
Total	8	54.8	7	55.1	29	52.4	16	55.1
Current Assumption		54		54		52		52
Proposed Assumption		55		55		52		55

As stated on the previous page, if a member terminates employment and works for a reciprocal employer, the member's retirement benefit is ultimately computed using the highest Final Compensation based on employment any reciprocal employer. Currently for SBCERS, the assumption used to project pay during employment with the reciprocal employer is based on the wage growth assumption, increased by the ultimate merit pay increase assumption described earlier in this report. Therefore, the recommended total pay growth assumptions for members in reciprocal status are 3.375% for General members and 3.75% for Safety members.

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES**

This section analyzes the incidence of disability by the age of the employee. Unlike many of the other demographic assumptions that rely exclusively on the experience of the plan, disability rates are a blend between a table based on a much larger data set and adjustments to that table to better match the Plan's actual experience to the extent it is credible.

We are proposing the disability rates developed in the most recent CalPERS experience study for both General and Safety members. We are proposing the Non-Industrial Disability Miscellaneous Public Agency rates for General members. For Safety members we are proposing using disability rates by age based on adding the Industrial and Non-Industrial Disability State Safety rates.

It was previously assumed that 40% of General and 90% of the Safety disabilities are service-related. All disabilities for members with less than five years of service are assumed to be service-related.

We reviewed the experience and found that for Safety members, this assumption matched closely with the actual frequency of service versus non-service related disabilities during this period: approximately 91% of all Safety disabilities during the past six years were service-related. Therefore we are not recommending any changes to the Safety assumption.

For the General members, 62% of all disabilities which occurred during the past six years were service-related, and 56% of all current disabled members retired under a service-related disability. Based on the observed experience, we are recommending that the assumption for service-related disabilities by General members be increased to 55% of total disabilities.

The amount of disability experience is fairly limited. To improve the credibility of the data, we have aggregated the experience of the past three years with that of the prior experience studies (2010-2016).

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES**

Table III-D1 shows the calculation of actual-to-expected ratios and the r-squared statistic for all disabilities for Male General members, and Chart III-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 higher than the current assumption. In aggregate, the proposed assumptions increase the assumed rates of disability. The proposal decreases the aggregate A/E ratio from 156% to 86%, while the r-squared increases from 11% to 16%. We did not recommend any adjustment to the CalPERS rates to move the aggregate A/E ratio closer to 100% due to the lack of data.

Table III-D1

General Disability Incidence Rates - Male						
Age Band	Exposures	Disabilities			Actual to Expected Ratios	
		Actual	Current	Proposed	Current	Proposed
20 - 29	752	0	0	0	0%	0%
30 - 39	1,860	0	0	1	0%	0%
40 - 49	2,524	2	1	4	168%	56%
50 - 59	3,290	6	3	5	214%	115%
60 - 69	1,381	2	2	2	97%	103%
Total	9,807	10	6	12	156%	86%
R-squared			11%	16%		

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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES**

Chart III-D1

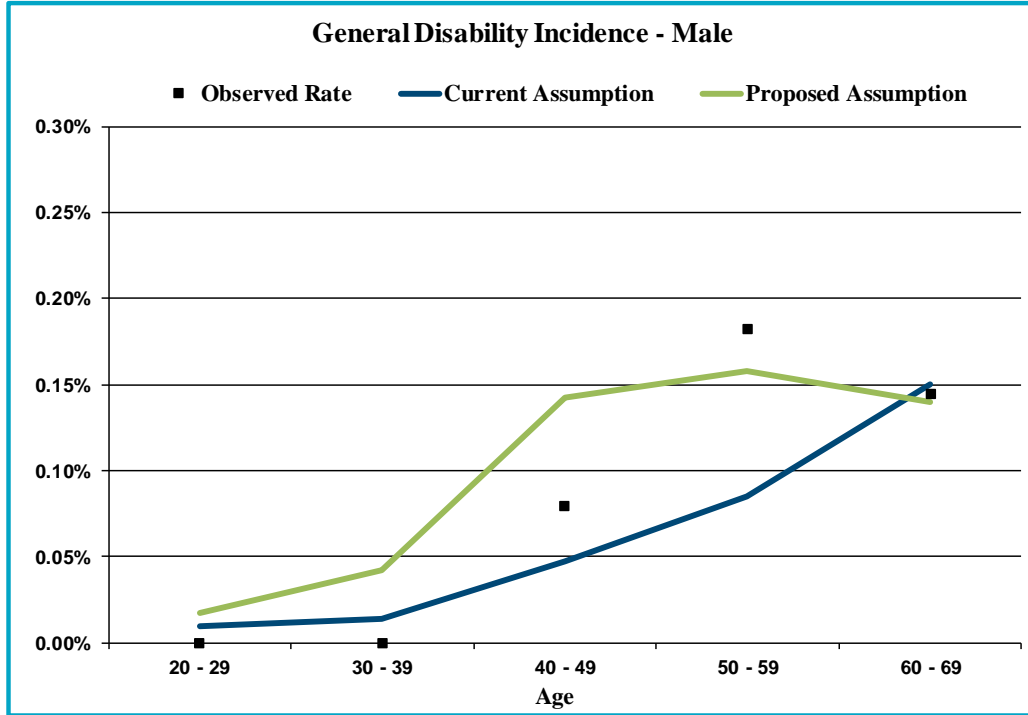


Table III-D2 on the next page shows the calculation of actual-to-expected ratios and the r-squared statistic for all disabilities for Female General members, and Chart III-D2 shows the information graphically. The 90% confidence interval is not shown because of a lack of credible data.

The data shows disability rates that are higher than the current assumption. In aggregate, the proposed assumptions increase the assumed rates of disability. The proposal decreases the aggregate A/E ratio from 162% to 75%. The r-squared also decreases from 28% to 20%. We did not recommend any adjustment to the CalPERS rates to move the aggregate A/E ratio closer to 100% due to the lack of data.

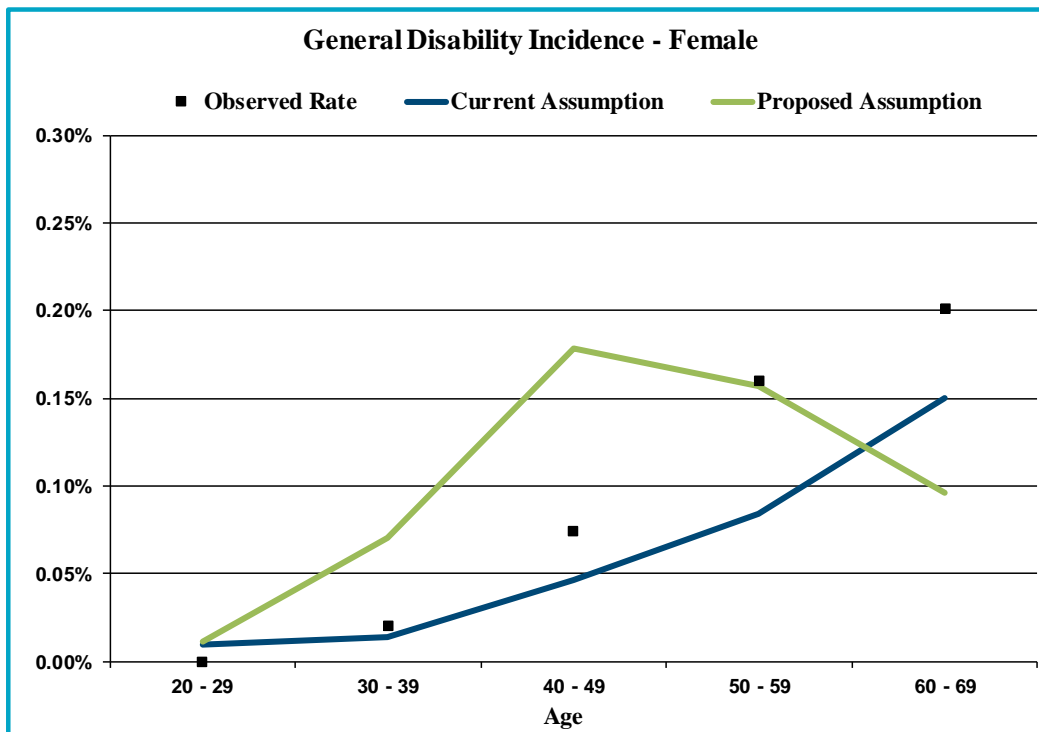
**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES**

Table III-D2

General Disability Incidence Rates - Female						
Age Band	Exposures	Disabilities			Actual to Expected Ratios	
		Actual	Current	Proposed	Current	Proposed
20 - 29	1,621	0	0	0	0%	0%
30 - 39	4,960	1	1	3	143%	29%
40 - 49	5,394	4	3	10	159%	42%
50 - 59	5,622	9	5	9	190%	102%
60 - 69	1,990	4	3	2	134%	209%
Total	19,587	18	11	24	162%	75%
R-squared			28%	20%		

Chart III-D2



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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES**

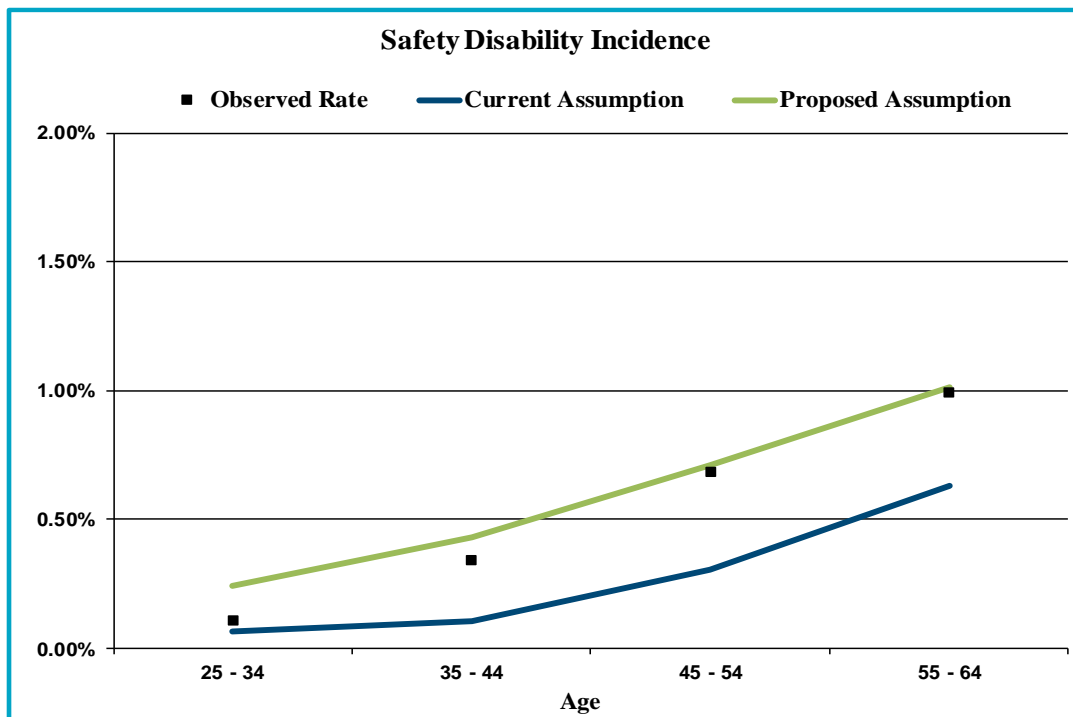
Table III-D3 below shows the calculation of actual-to-expected ratios and the r-squared statistic for Safety members, and Chart III-D3 shows the information graphically. The 90% confidence interval is not shown because of a lack of credible data.

The data shows that the number of disabilities is slightly lower than the number expected under the current assumption. In aggregate, the proposed assumptions decrease the assumed rates of disability. The proposal decreases the aggregate A/E ratio from 212% to 94%. The r-squared remains at 22%.

Table III-D3

Safety Disability Incidence Rates						
Age Band	Exposures	Disabilities			Actual to Expected Ratios	
		Actual	Current	Proposed	Current	Proposed
25 - 34	1,853	2	1	4	172%	45%
35 - 44	2,951	10	3	13	325%	79%
45 - 54	2,484	17	8	18	227%	96%
55 - 64	808	8	5	8	157%	98%
Total	8,096	37	17	43	220%	86%
R-squared			22%	22%		

Chart III-D3



**SECTION III – 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 Retirement Plans Experience Committee (RPEC) of the SOA recently completed an extensive mortality study and published a new set of mortality tables for U.S. public pension plans, the Pub-2010 Mortality Tables, with separate tables for teachers, safety members, and other public employees. The experience covered 35 public systems with 78 plans. Since benefits for retirees and salaries for active members are a significant predictor of mortality differences, separate tables were also developed for Above-Median and Below-Median. RPEC also published the most recent mortality improvement projection scale, MP-2019. 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, based on experience, most closely matches the anticipated experience of SBCERS.
2. Compare actual SBCERS experience to what would have been predicted by the selected standard table for the period of the experience study.
3. Adjust the standard table depending on the level of credibility for SBCERS 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 six-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, beginning with the 2010-2013 Experience Study, we recommended 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 approach also includes an expectation that the assumed mortality rates will automatically decrease over time.

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

In the prior study, SBCERS elected to use the following base tables:

Active members

- CalPERS Preretirement Non-Industrial Mortality, with no adjustment (General and Safety)
- CalPERS Preretirement Industrial Mortality, with no adjustment (Safety only).

Healthy retirees and beneficiaries

- CalPERS Healthy Annuitant Mortality, adjusted by 95% for males and 90% for females.

Disabled members

- CalPERS Industrially Disabled Annuitant Mortality, with no adjustment (Safety only)
- CalPERS Non-Industrially Disabled Annuitant Mortality, with no adjustment (General only).

Mortality was projected generationally using the MP-2016 projection scale.

Since the prior study, the Society of Actuaries' Retirement Plans Experience Committee (RPEC) has released a new mortality improvement scale, Scale MP-2019, which reflects more up-to-date data than was used in the development of Scale MP-2016.

MP-2019 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-2019 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.

RPEC has also recently released a new set of base mortality rate tables – the Pub-2010 Mortality Tables, which are based on a recent study of US defined benefit public plan mortality experience. The experience covered 35 public systems with 78 plans from calendar years 2008–2013, which included approximately 46 million exposures and 580 thousand deaths.

SBCERS's experience over the past six years matches well with the new Pub2010 rates for both General and Safety active members, after applying the improvement projections from the base year of the tables (2010) using the new MP-2019 mortality improvement projections through the mid-point of the nine-year period (2015).

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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

Based on SBCERS's experience, we are recommending the following base mortality tables:

Active members

- Public General 2010 Above-Median Income - PUBG-2010(A) – Employee Mortality Table, with no adjustment (General only)
- Public Safety 2010 - PUBS-2010 – Employee Mortality Table, with no adjustment (Safety non-duty deaths only)
- CalPERS Preretirement Industrial Mortality, with no adjustment (Safety duty deaths only)

Healthy retirees and beneficiaries

- Public General 2010 Above-Median Income - PUBG-2010(A) – Retiree Mortality Table, with no adjustment (General only)
- Public Safety 2010 - PUBS-2010 – Retiree Mortality Table, with no adjustment (Safety only)

Disabled members (No Change)

- CalPERS Non-Industrially Disabled Annuitant Mortality, with no adjustment (General only)
- CalPERS Industrially Disabled Annuitant Mortality, with no adjustment (Safety only)

We also recommend projecting these base tables generationally using the MP-2019 mortality improvement scale described above for all types of mortality.

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.

As shown in Tables III-M1 and III-M2 on the following pages, our proposed mortality rates for General healthy annuitants are close to recent experience with A/E ratios of 100% and 97% for Males and Female annuitants, respectively. To perform our comparisons, the applicable Pub2010 base rates were projected from their base year (2010) to the midpoint of the combined n-year study period (2015).

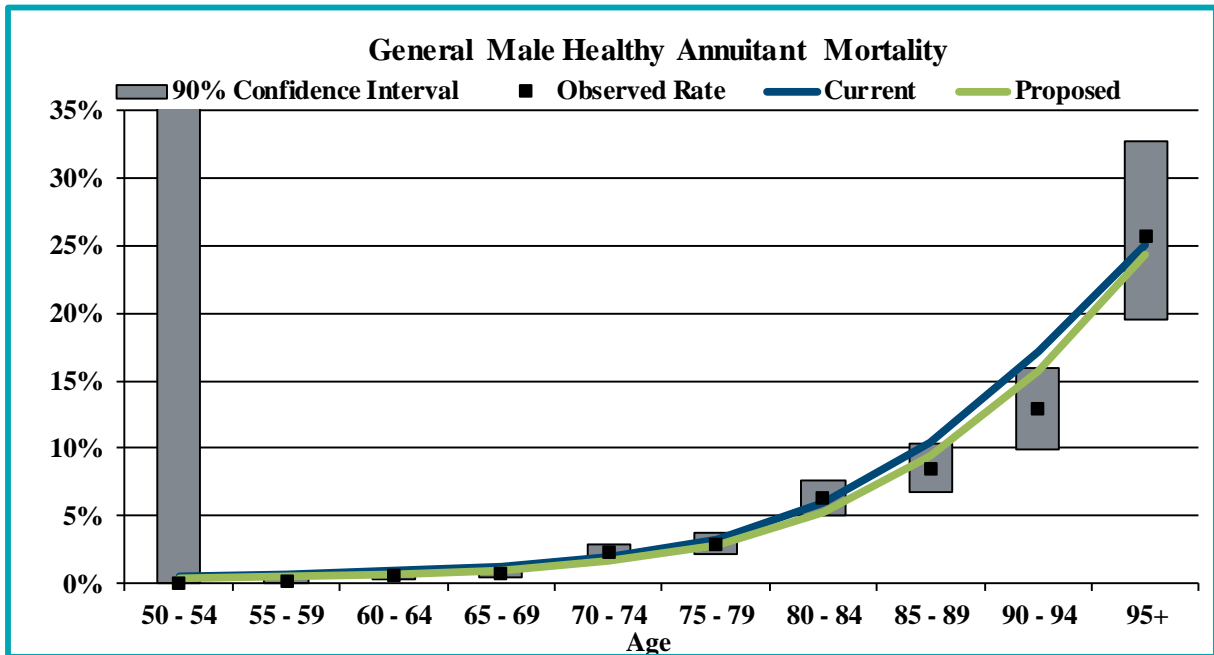
**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

Table III-M1 - General

General Healthy Annuitant Mortality - Base Table for Males								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Proposed	Current	Proposed
50 - 54	176	0	224,152	0	1,196	719	0%	0%
55 - 59	585	2	1,094,134	2,134	7,351	5,180	29%	41%
60 - 64	1,540	13	5,054,992	27,039	44,048	33,921	61%	80%
65 - 69	2,076	20	8,061,107	54,639	94,478	78,016	58%	70%
70 - 74	1,594	34	5,586,427	126,965	105,974	88,912	120%	143%
75 - 79	1,108	29	3,049,401	89,589	97,556	86,344	92%	104%
80 - 84	860	58	2,137,344	134,657	127,262	112,634	106%	120%
85 - 89	639	59	1,466,761	124,202	153,384	138,972	81%	89%
90 - 94	332	53	737,895	94,826	126,793	115,748	75%	82%
95 +	113	29	219,680	56,521	55,052	53,368	103%	106%
Total	9,023	297	27,631,893	710,572	813,094	713,815	87%	100%

Chart III-M1 - General



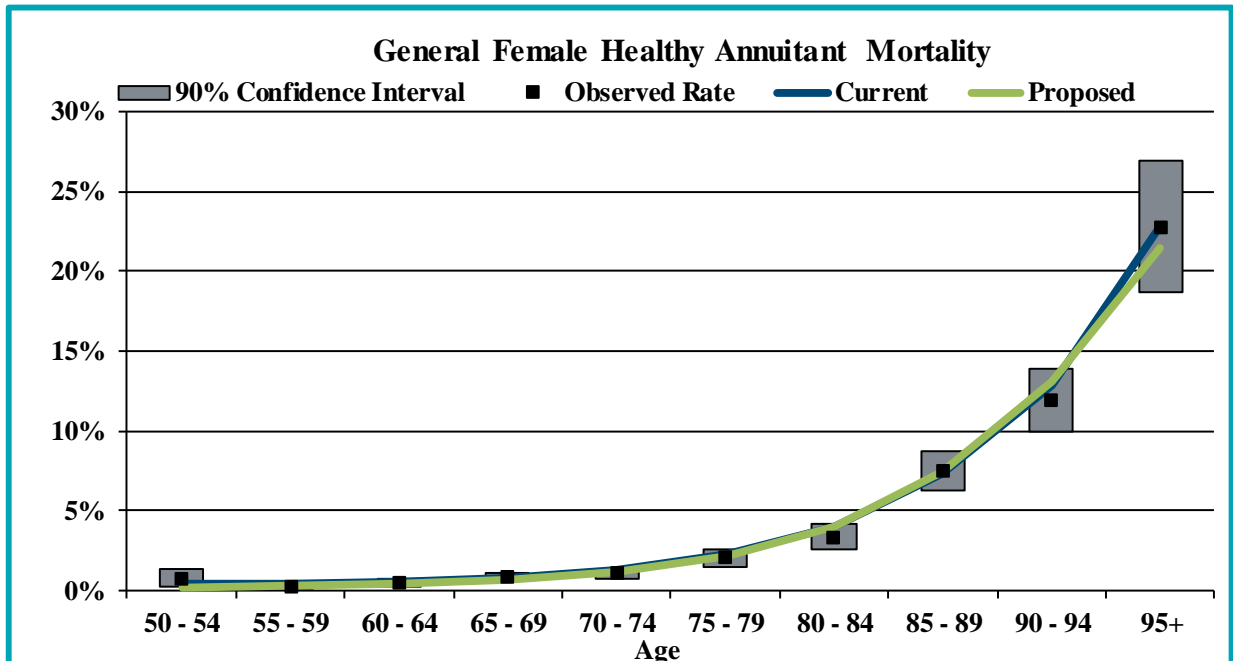
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

Table III-M2 - General

General Healthy Annuitant Mortality - Base Table for Females								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Proposed	Current	Proposed
50 - 54	527	5	715,505	4,974	3,163	1,759	157%	283%
55 - 59	1,501	5	2,411,498	5,775	10,443	7,795	55%	74%
60 - 64	2,694	14	6,205,996	31,329	33,096	27,753	95%	113%
65 - 69	3,299	25	8,387,452	68,260	65,001	58,529	105%	117%
70 - 74	2,638	34	5,997,819	63,524	77,175	72,055	82%	88%
75 - 79	1,821	39	3,568,766	74,669	81,564	78,274	92%	95%
80 - 84	1,512	63	2,721,531	91,447	108,901	109,131	84%	84%
85 - 89	1,271	92	2,089,547	157,280	152,838	155,222	103%	101%
90 - 94	705	104	1,165,876	139,016	150,334	152,540	92%	91%
95 +	278	70	462,599	105,150	105,465	99,553	100%	106%
Total	16,246	451	33,726,588	741,423	787,980	762,612	94%	97%

Chart III-M2 - General



Tables III-M3 and III-M4 summarize our analysis and development of the base mortality table for healthy Safety male and female retirees. As shown in Tables III-M3 our proposed mortality rates for male Safety healthy annuitants are close to recent experience with an A/E ratio of

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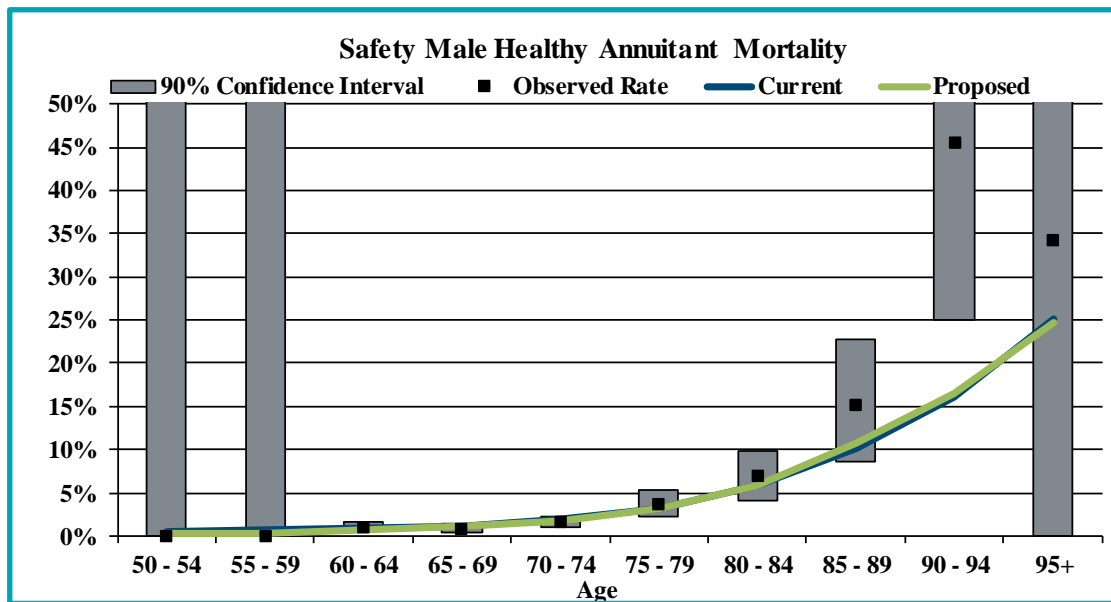
**SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

104%. This year, for Safety members we analyzed the experience for beneficiaries separately with the General retiree experience, rather than as a Safety retiree. As a result, there are only sixteen deaths among female Safety retirees. Given the lack of data, we propose using the same Safety PUB-2010 Table for females as is used for males.

Table III-M3 - Safety

Safety Healthy Annuitant Mortality - Base Table for Males								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Proposed	Current	Proposed
50 - 54	352	0	1,576,101	0	8,281	3,737	0%	0%
55 - 59	839	0	5,237,244	0	34,416	20,328	0%	0%
60 - 64	967	8	6,511,274	62,906	55,500	41,632	113%	151%
65 - 69	1,064	10	6,566,465	58,877	77,627	70,712	76%	83%
70 - 74	959	19	5,716,268	92,183	108,594	104,648	85%	88%
75 - 79	456	17	2,344,638	86,447	72,454	75,075	119%	115%
80 - 84	193	14	794,012	54,753	45,785	47,228	120%	116%
85 - 89	70	10	291,570	44,202	29,755	31,116	149%	142%
90 - 94	12	4	35,901	16,335	5,754	5,946	284%	275%
95 +	3	1	7,992	2,729	2,005	1,968	136%	139%
Total	4,915	83	29,081,464	418,432	440,170	402,391	95%	104%

Chart III-M3 - Safety



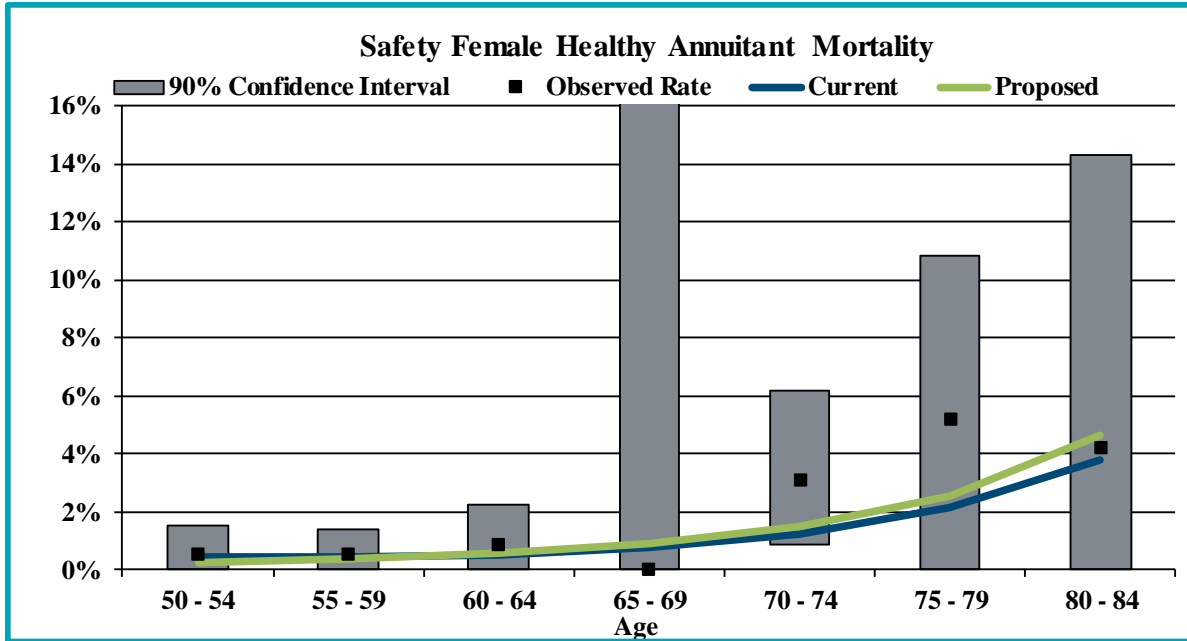
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

Table III-M4 - Safety

Safety Healthy Annuitant Mortality - Base Table for Females								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Proposed	Current	Proposed
50 - 54	134	2	529,062	2,916	2,346	1,060	124%	275%
55 - 59	222	2	1,042,536	5,793	4,490	3,500	129%	166%
60 - 64	179	2	723,760	6,379	3,796	3,948	168%	162%
65 - 69	158	0	721,478	0	5,560	6,455	0%	0%
70 - 74	113	6	446,674	13,751	5,517	6,610	249%	208%
75 - 79	37	3	126,617	6,527	2,680	3,189	244%	205%
80 - 84	14	1	45,041	1,903	1,706	2,070	112%	92%
Total	857	16	3,635,167	37,269	26,095	26,832	143%	139%

Chart III-M4 - Safety



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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

We have not shown the data for the disabled and active member mortality experience, as the number of deaths is very low – 66 total disabled deaths and 18 total active deaths – over the nine year period, which is not enough data to produce sufficiently credible assumptions. We have used our professional judgment to recommend appropriate base tables based on the Pub2010 and CalPERS rates for active and disabled members, respectively, and applied the same generational improvement scales as recommended for the service-retired members.

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 SOA PUB2010 tables) projected using Scale MP-2019 from 2010 to 2044. 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, and the period during which the associated employee contribution rates will be in use. The employee contribution rates are also blended using a male/female weighting of 35%/65% for General Members and 80%/20% 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, 2020 through June 30, 2023. 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, 2019 through June 30, 2022.

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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
OTHER DEMOGRAPHIC ASSUMPTIONS**

SICK LEAVE SERVICE CREDIT

Upon retirement, members are entitled to convert their sick leave balances into service credit for retirement benefits, limited to one year of service credit. The current assumption is that General members' converted sick leave balances are equivalent to 1.25% of their service at retirement, and Safety members' converted sick leave balances are equivalent to 2.00% of their service at retirement. We propose increasing the sick leave load to 2.25% for Safety members and maintaining the current assumption of 1.25% for General members. The load is applied to all service retirement benefits, but not applied to death, disability or early termination benefits.

Table III-O2 shows the results of the analysis during the experience study period for members who retired or became disabled.

Table III-O2

	Count	Avg Years of Service	Avg Sick Leave Hours	Avg Add'l Service	Percent Increase
General	1,133	19.8	503	0.2	1.22%
Safety	282	21.7	1,002	0.5	2.22%

FAMILY COMPOSITION

The current assumption is that 75% of active male and 55% of active female SBCERS participants will have beneficiaries eligible for an unreduced (i.e., subsidized) 60% Joint and Survivor allowance (100% allowance for Duty Disability). This assumption will also be applied to determine the number of active members eligible for a pre-retirement surviving spouse death benefit.

We recommend changing the current assumptions for females to 60% to more closely match recent experience. We do not recommend changing the current assumption for males.

The current assumption is that male members are three years older than their spouses and female members are assumed to be two years younger than their spouses.

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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
OTHER DEMOGRAPHIC ASSUMPTIONS**

Table III-O3 compiles the average age difference for retired or disabled members between spouses and domestic partners.

Table III-O3

Percent of Retired and Disabled Members with Spouses or Domestic Partners						
Valuation Year	FEMALES			MALES		
	Disabled and Retirees	Eligible Spouses	Percent Eligible	Disabled and Retirees	Eligible Spouses	Percent Eligible
2017	104	67	64%	117	81	69%
2018	102	51	50%	97	79	81%
2019	120	80	67%	78	62	79%
Total	326	198	61%	292	222	76%

This information is used to predict spouse information for future retirees. We recommend changing the assumption for female members to be one year younger than their spouses to more closely match recent experience. We do not recommend changing the current assumption for males.

Table III-O4

Age Difference Between Retired or Disabled Members and Spouses or Domestic Partners									
Valuation Year	FEMALES				MALES				
	Eligible Spouses	Member Age	Spouse Age	Difference	Eligible Spouses	Member Age	Spouse Age	Difference	
2017	67	61.8	62.7	(0.9)	81	61.6	58.3	3.3	
2018	51	61.0	60.5	0.5	79	59.9	57.5	2.4	
2019	80	60.2	61.4	(1.2)	62	59.7	57.2	2.5	
Total	118	60.9	61.6	(0.7)	222	60.5	57.7	2.8	

PLAN EXPENSES

An allowance of \$5,300,000 for Plan administrative expenses was included in the annual cost calculation in the June 30, 2018 actuarial valuation. The actual Plan administrative expenses for FYE 2019 were \$6,784,000 which included technology improvements of about \$1.8 million. Using the average expenses over the last six years, adjusting for the non-recurring technology improvements in years 2016–2019, and assumed expense growth equal to wage inflation, we recommend assumed Plan administrative expenses of \$5,300,000 for FYE 2020. These expenses are split between employees and employers based on their share of the overall contributions. Expenses are expected to grow with wage inflation (by 3.00% per year) in future years.

SECTION III – DEMOGRAPHIC ASSUMPTIONS
OTHER DEMOGRAPHIC ASSUMPTIONS

PARTIAL HOURS MEMBER LOAD

Upon retirement, the benefit for all members is calculated based on their accrued service, which is prorated based on the actual hours worked for years in which a member works less than 2,080 hours, if applicable, and an annualized or full-time equivalent salary. To accurately reflect how the plan is administered, one option is to apply a load to member's benefits for those who work less than 2,080 hours in the current Plan Year, instead of annualizing their pensionable pay, so that SBCERS' payroll is not overstated. The load would account for both the annualization of pay and partial years of service accruing from the valuation date to assumed retirement. We have calculated potential loads based on the number of hours worked in the current plan year and whether a member was hired prior to or after January 2013. The loads we calculated are shown in the table below.

Table III-O1

Partial Hours Member Load		
Hours	Legacy	PEPRA
< 1,040	2.500	1.150
1,040 to 1,799	1.200	1.030
1,800 to 2,079	1.025	1.000

To determine the loads, we first valued the liabilities for each of the groups above with annualized salaries and projected prorated service to the expected retirement date based on the hours worked in the current plan year. Next, we took the ratio of 1) the liabilities determined above to 2) the liabilities calculated without annualizing salaries but assuming a full year of service would be earned each year. The calculation of the liabilities in (2) is the current methodology used in the actuarial valuation. New active members hired during the plan year were not part of this analysis.

The active members who work fewer hours will have a larger load to account for the greater impact of annualizing pensionable pay at retirement. The PEPRA members have smaller loads since the methodology used in the valuation process provides a closer estimate to the actual retirement benefit when a member has less service. As stated above the current method projects a full year of service but a partial year's pay until retirement which is very similar to projecting a partial year of service with an annualized salary, if the member is further from retirement. When a member is closer to retirement, annualizing pay has a larger impact than the additional years of partial service earned from the valuation date to retirement.

After discussions with Staff and the Retirement Board, it was decided that a more comprehensive study will be performed before recommending an assumption due to the complexity of this issue and other potential options to explore.

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX A – SUMMARY OF PROPOSED ASSUMPTIONS

The recommended assumptions are listed below. The assumptions are based on an experience study covering the period from July 1, 2016 through June 30, 2019.

1. Rate of Return

Assets are assumed to earn 7.00% net of investment expenses.

2. Administrative Expenses

Administrative expenses are assumed to be \$5.3 million for the next year, to be split between employees and employers based on their share of the overall contributions. Administrative expenses are assumed to increase by the assumed wage inflation of 3.00% each year.

3. Cost-of-Living

The cost-of-living as measured by the Consumer Price Index (CPI) will increase at the rate of 2.75% per year. This assumption is also used for increasing the compensation limit that applies to PEPRA members.

4. Post Retirement COLA

Benefits are assumed to increase after retirement at the rate of 2.6% per year for General Plans 5, Safety Plans 4, 6, and 8 (PEPRA), and APCD Plans 1 and 2; 1.90% per year for General Plans 7 and APCD Plan 8 (PEPRA), and 0% per year for General Plan 2.

For General Plan 8 (PEPRA), benefits are assumed to increase at the rate of 1.90% per year if their employer had implemented General Plan 7 prior to January 1, 2013. Otherwise, benefits are assumed to increase at the rate of 2.6% per year.

5. 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.

6. 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.

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APPENDIX A – SUMMARY OF PROPOSED ASSUMPTIONS

7. Social Security Wage Base

General Plan 2 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 2.75% per year. This assumption is also used for increasing the compensation limit that applies to PEPRA members.

8. Interest on Member Contributions

The annual credited interest rate on member contributions is assumed to be 3.25%. As of June 30, 2008, the credited interest rate each six-month period is the semi-annual yield of the five-year Treasury note as of the last business day of the interest-crediting period.

9. Sick Leave Service Credit Upon Retirement

Upon retirement, members are entitled to turn their sick leave balances into service credit for retirement benefits. Members are limited to one year of service credit. For safety plan members, a 2.25% load was applied to the expected years of service at retirement for sick leave service credit. For general plan members, the load was 1.25%.

10. Family Composition

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

Percentage Married	
Gender	Percentage
Males	75%
Females	60%

11. Vacation Cashout

Any cash outs of vacation during the final average salary period affecting the calculation of a retirement benefit are recognized at the time of retirement. There is no pre-recognition of potential costs included in the valuation.

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX A – SUMMARY OF PROPOSED ASSUMPTIONS

12. Increases in Pay

Wage inflation component: 3.00%

Additional longevity and promotion component:

Longevity and Promotion Increases		
Service	General	Safety
0	4.75%	6.00%
1	4.00%	5.00%
2	3.25%	4.00%
3	2.75%	3.25%
4	2.25%	2.50%
5	1.75%	2.00%
6	1.50%	1.60%
7	1.25%	1.30%
8	1.20%	1.20%
9	1.10%	1.10%
10	1.00%	1.00%
11	0.90%	1.00%
12	0.80%	0.92%
13	0.70%	0.89%
14	0.60%	0.87%
15	0.55%	0.85%
16	0.50%	0.82%
17	0.48%	0.80%
18	0.46%	0.77%
19	0.44%	0.75%
20	0.42%	0.75%
21	0.40%	0.75%
22	0.38%	0.75%
23	0.38%	0.75%
24	0.38%	0.75%
25	0.38%	0.75%
26	0.38%	0.75%
27	0.38%	0.75%
28	0.38%	0.75%
29	0.38%	0.75%
30+	0.38%	0.75%

Increases are compound rather than additive.

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX A – SUMMARY OF PROPOSED ASSUMPTIONS

13. Rates of Termination

Sample rates of termination are shown in the following table below. The 1.30% rate of termination continues for Safety PEPRAs members with 20 or more years of service who are not eligible to retire.

Rates of Termination		
Service	General	Safety
0	20.00%	9.00%
1	14.00%	9.00%
2	10.00%	3.50%
3	8.00%	3.00%
4	7.00%	3.00%
5	7.00%	5.00%
6	6.00%	2.75%
7	6.00%	2.75%
8	6.00%	2.75%
9	5.00%	2.75%
10	4.50%	2.00%
11	3.50%	1.50%
12	3.00%	1.30%
13	3.00%	1.30%
14	2.75%	1.30%
15	2.75%	1.30%
16	2.75%	1.30%
17	2.50%	1.30%
18	2.50%	1.30%
19	2.50%	1.30%
20	1.50%	0.00%
21	1.50%	
22	1.50%	
23	1.50%	
24	1.50%	
25	1.50%	
26	1.50%	
27	1.50%	
28	1.50%	
29	1.50%	
30	0.00%	

**Termination rates do not apply once member is eligible for retirement*

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX A – SUMMARY OF PROPOSED ASSUMPTIONS

14. Withdrawal

Rates of withdrawal apply to active members who terminate their employment and withdraw their member contributions, forfeiting entitlement to future Plan benefits.

Rates of Withdrawal		
Service	General	Safety
0	100.00%	100.00%
1	100.00%	100.00%
2	100.00%	100.00%
3	100.00%	100.00%
4	100.00%	100.00%
5	20.00%	15.00%
6	20.00%	15.00%
7	20.00%	15.00%
8	20.00%	15.00%
9	20.00%	15.00%
10	15.00%	10.00%
11	15.00%	10.00%
12	15.00%	10.00%
13	15.00%	10.00%
14	15.00%	10.00%
15	10.00%	5.00%
16	10.00%	5.00%
17	10.00%	5.00%
18	10.00%	5.00%
19	10.00%	5.00%
20	5.00%	0.00%
21	5.00%	0.00%
22	5.00%	0.00%
23	5.00%	0.00%
24	5.00%	0.00%
25	0.00%	0.00%
26	0.00%	0.00%
27	0.00%	0.00%
28	0.00%	0.00%
29	0.00%	0.00%
30	0.00%	0.00%

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
EXPERIENCE STUDY REPORT AS OF JUNE 30, 2019**

APPENDIX A – SUMMARY OF PROPOSED ASSUMPTIONS

Former members with contributions on deposit who commence benefits from deferred vested status are assumed to receive a retirement benefit commencing at the following ages:

General Plans 5, 7, and 8 (PEPRA) Members:	Age 58
General Plan 2 Members:	Age 60
Safety Plans 4 and 8 (PEPRA) Members:	Age 55
Safety Plan 6 Members:	Age 52
APCD Members:	Age 58

15. Reciprocal Transfers

30% of vested terminated General (except Plan 2), and 35% of vested terminated Safety Members that leave their member contributions on deposit with the Plan are assumed to be reciprocal.

Reciprocal members are assumed to remain with the reciprocal agency until retirement, and receive annual salary increases of:

General & APCD Members:	3.375%
Safety Members:	3.750%

Reciprocal members are assumed to commence retirement benefits at the following ages:

General Plans 5, 7, and 8 (PEPRA) Members:	Age 60
General Plan 2 Members:	Age 60
Safety Plans 4 and 8 (PEPRA) Members:	Age 55
Safety Plan 6 Members:	Age 55
APCD Members:	Age 60

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX A – SUMMARY OF PROPOSED ASSUMPTIONS

16. Rates of Disability

General member rates are based on the sex distinct CalPERS Non-Industrial Disability Miscellaneous Public Agency rates.

Safety members are based the sum of the Industrial and Non-Industrial Disability State Safety rates.

Representative disability rates of active participants are shown below.

Rates of Disability						
Age	General Years of Service				Safety Years of Service	
	Males		Females		Less than 5	5 or More
	Less than 5	5 or More	Less than 5	5 or More		
20	0.009%	0.017%	0.009%	0.016%	0.034%	0.038%
25	0.009%	0.017%	0.009%	0.016%	0.117%	0.130%
30	0.010%	0.019%	0.013%	0.024%	0.210%	0.233%
35	0.021%	0.039%	0.039%	0.071%	0.302%	0.336%
40	0.056%	0.102%	0.074%	0.135%	0.389%	0.432%
45	0.083%	0.151%	0.103%	0.188%	0.509%	0.565%
50	0.087%	0.158%	0.109%	0.199%	0.682%	0.758%
55	0.087%	0.158%	0.082%	0.149%	0.808%	0.898%
60	0.084%	0.153%	0.058%	0.105%	0.974%	1.082%
65	0.070%	0.128%	0.048%	0.088%	0.000%	0.000%
70	0.056%	0.102%	0.046%	0.084%		
75	0.000%	0.000%	0.000%	0.000%		

55% of General disabilities and 90% of Safety disabilities where the member has five or more years of service are assumed to be service-related. All disabilities for those with less than five years or service are assumed to be service-related.

17. Rates of Mortality for Health Lives

Mortality rates for General active members are based on the sex distinct Public General 2010 Above-Median Income Employee Mortality Table, with generational mortality improvements projected from 2010 using Projection Scale MP-2019, without adjustment.

Non-duty related mortality rates for Safety active members are based on the sex distinct Public Safety 2010 Employee Mortality Table, with generational mortality improvements projected from 2010 using Projection Scale MP-2019, without adjustment.

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX A – SUMMARY OF PROPOSED ASSUMPTIONS

Safety active members are also subject to the CalPERS Preretirement Industrial Mortality Table for duty-related deaths, with generational mortality improvements projected from 2009 using Projection Scale MP-2019.

Mortality rates for healthy General annuitants are based on the sex distinct Public General 2010 Above-Median Income Retiree Mortality Table, with generational mortality improvements projected from 2010 using Projection Scale MP-2019.

Mortality rates for Safety annuitants are based the sex distinct Public Safety 2010 Retiree Mortality Table, with generational improvements projected from 2010 using Projection Scale MP-2019.

18. Rates of Mortality for Retired Disabled Lives

Mortality rates for disabled retirees are based on 2014 CalPERS Industrial Disabled Annuitant Mortality, with no adjustment (Safety only), 2014 CalPERS Non-Industrial Disabled Annuitant Mortality, with no adjustment (General only), with Generational improvement using Projection Scale MP-2019 from a base year of 2009.

19. Benefit Payment Timing

End of the month.

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
EXPERIENCE STUDY REPORT AS OF JUNE 30, 2019**

APPENDIX A – SUMMARY OF PROPOSED ASSUMPTIONS

20. Rates of Retirement

Rates of retirement are based on age and service according to the following table. The rates for Safety PEPRA members are the same as the Safety Plan 4 rates.

Rates of Retirement												
Age	General			General - PEPRA		Safety						
	Svc < 20	20-29	Svc >= 30	Svc < 25	Svc >= 25	Svc < 20	Plan 4 20-29	Svc >= 30	Svc < 20	Plan 6 20-29	Svc >= 30	
< 38	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
38	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.50%	3.00%	0.00%	3.00%	3.00%	3.00%
39	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.50%	3.00%	0.00%	3.00%	3.00%	3.00%
40	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.50%	3.00%	0.00%	3.00%	3.00%	3.00%
41	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.50%	3.00%	0.00%	3.00%	3.00%	3.00%
42	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.50%	3.00%	0.00%	3.00%	3.00%	3.00%
43	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.50%	3.00%	0.00%	3.00%	3.00%	3.00%
44	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.50%	3.00%	0.00%	3.00%	3.00%	3.00%
45	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.50%	3.00%	0.00%	3.00%	3.00%	3.00%
46	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.50%	3.00%	0.00%	3.00%	3.00%	3.00%
47	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.50%	3.00%	0.00%	3.00%	3.00%	3.00%
48	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.50%	3.00%	0.00%	3.00%	3.00%	3.00%
49	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.50%	3.00%	0.00%	15.00%	50.00%	50.00%
50	2.00%	2.00%	10.00%	0.00%	0.00%	3.00%	2.50%	5.00%	10.00%	25.00%	50.00%	50.00%
51	2.50%	2.50%	4.00%	0.00%	0.00%	3.00%	2.50%	5.00%	10.00%	15.00%	20.00%	20.00%
52	2.50%	2.50%	4.00%	2.00%	3.00%	3.00%	2.50%	5.00%	10.00%	15.00%	20.00%	20.00%
53	4.00%	4.00%	4.00%	2.00%	2.00%	3.00%	5.00%	5.00%	7.50%	15.00%	20.00%	20.00%
54	4.00%	4.00%	5.00%	3.00%	3.50%	10.00%	10.00%	30.00%	7.50%	15.00%	30.00%	30.00%
55	4.00%	5.00%	10.00%	3.00%	7.00%	10.00%	25.00%	50.00%	7.50%	15.00%	35.00%	35.00%
56	4.00%	5.00%	10.00%	3.00%	7.00%	10.00%	15.00%	25.00%	7.50%	15.00%	25.00%	25.00%
57	7.00%	7.00%	10.00%	4.50%	6.00%	10.00%	15.00%	25.00%	10.00%	25.00%	25.00%	25.00%
58	7.00%	7.00%	10.00%	4.50%	6.00%	10.00%	15.00%	40.00%	10.00%	25.00%	25.00%	25.00%
59	7.00%	7.00%	15.00%	5.00%	10.00%	10.00%	30.00%	40.00%	15.00%	25.00%	25.00%	25.00%
60	7.00%	10.00%	15.00%	5.00%	10.00%	10.00%	30.00%	50.00%	15.00%	25.00%	25.00%	25.00%
61	15.00%	20.00%	30.00%	12.50%	15.00%	25.00%	30.00%	35.00%	20.00%	25.00%	25.00%	25.00%
62	20.00%	30.00%	40.00%	15.00%	25.00%	25.00%	30.00%	35.00%	20.00%	25.00%	25.00%	25.00%
63	15.00%	25.00%	40.00%	10.00%	25.00%	15.00%	30.00%	35.00%	10.00%	25.00%	25.00%	25.00%
64	25.00%	25.00%	40.00%	15.00%	20.00%	15.00%	30.00%	35.00%	10.00%	25.00%	25.00%	25.00%
65	30.00%	40.00%	50.00%	20.00%	30.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
66	30.00%	40.00%	50.00%	20.00%	30.00%							
67	26.00%	33.00%	40.00%	35.00%	40.00%							
68	26.00%	33.00%	40.00%	20.00%	30.00%							
69	26.00%	33.00%	40.00%	20.00%	30.00%							
70	26.00%	33.00%	40.00%	20.00%	30.00%							
71	26.00%	33.00%	40.00%	20.00%	30.00%							
72	26.00%	33.00%	40.00%	20.00%	30.00%							
73	26.00%	33.00%	40.00%	20.00%	30.00%							
74	26.00%	33.00%	40.00%	20.00%	30.00%							
75	100.00%	100.00%	100.00%	100.00%	100.00%							

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX B – SUMMARY OF PRIOR ASSUMPTIONS

The recommended assumptions were adopted by the Board at their October 26, 2016 meeting. The assumptions are based on an experience study covering the period from July 1, 2013 through June 30, 2016.

1. Rate of Return

Assets are assumed to earn 7.00% net of investment expenses.

2. Administrative Expenses

Administrative expenses are assumed to be \$5.1 million for the next year, to be split between employees and employers based on their share of the overall contributions. Administrative expenses are assumed to increase by the assumed wage inflation of 3.00% each year.

3. Cost-of-Living

The cost-of-living as measured by the Consumer Price Index (CPI) will increase at the rate of 2.75% per year.

4. Post Retirement COLA

Benefits are assumed to increase after retirement at the rate of 2.6% per year for General Plans 5, Safety Plans 4, 6, and 8 (PEPRA), and APCD Plans 1 and 2; 1.90% per year for General Plans 7 and APCD Plan 8 (PEPRA), and 0% per year for General Plan 2.

For General Plan 8 (PEPRA), benefits are assumed to increase at the rate of 1.90% per year if their employer had implemented General Plan 7 prior to January 1, 2013. Otherwise, benefits are assumed to increase at the rate of 2.6% per year.

5. 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.

6. 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.

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX B – SUMMARY OF PRIOR ASSUMPTIONS

7. Social Security Wage Base

General Plan 2 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 2.75% per year. This assumption is also used for increasing the compensation limit that applies to PEPRAs members.

8. Interest on Member Contributions

The annual credited interest rate on member contributions is assumed to be 3.75%. As of June 30, 2008, the credited interest rate each six-month period is the semi-annual yield of the five-year Treasury note as of the last business day of the interest-crediting period.

9. Sick Leave Service Credit Upon Retirement

Upon retirement, members are entitled to turn their sick leave balances into service credit for retirement benefits. Members are limited to one year of service credit. For safety plan members, a 2.00% load was applied to the expected years of service at retirement for sick leave service credit. For general plan members, the load was 1.25%.

10. Family Composition

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

Percentage Married	
Gender	Percentage
Males	75%
Females	55%

11. Vacation Cashout

Any cashouts of vacation during the final average salary period affecting the calculation of a retirement benefit are recognized at the time of retirement. There is no prerecognition of potential costs included in the valuation.

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX B – SUMMARY OF PRIOR ASSUMPTIONS

12. Increases in Pay

Wage inflation component: 3.00%

Additional longevity and promotion component:

Longevity and Promotion Increases		
Service	General	Safety
0	4.75%	6.00%
1	4.00%	5.00%
2	3.25%	4.00%
3	2.50%	3.25%
4	2.00%	2.50%
5	1.50%	2.00%
6	1.25%	1.60%
7	1.00%	1.30%
8	0.90%	1.20%
9	0.80%	1.10%
10	0.78%	1.00%
11	0.75%	0.95%
12	0.70%	0.92%
13	0.65%	0.89%
14	0.60%	0.87%
15	0.55%	0.85%
16	0.50%	0.82%
17	0.48%	0.80%
18	0.46%	0.77%
19	0.44%	0.74%
20	0.42%	0.72%
21	0.40%	0.69%
22	0.38%	0.67%
23	0.36%	0.64%
24	0.34%	0.62%
25	0.32%	0.59%
26	0.30%	0.57%
27	0.28%	0.54%
28	0.26%	0.52%
29	0.25%	0.50%
30+	0.25%	0.50%

**Increases are compound rather than additive.*

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX B – SUMMARY OF PRIOR ASSUMPTIONS

13. Rates of Termination

Sample rates of termination are shown in the following table below. The 1.30% rate of termination continues for Safety PEPRA members with 20 or more years of service who are not eligible to retire.

Rates of Termination		
Service	General	Safety
0	20.00%	9.00%
1	14.00%	9.00%
2	10.00%	3.50%
3	8.00%	3.00%
4	7.00%	3.00%
5	6.00%	5.00%
6	6.00%	2.75%
7	5.00%	2.75%
8	5.00%	2.75%
9	4.50%	2.75%
10	4.50%	2.00%
11	3.50%	1.50%
12	3.50%	1.30%
13	3.00%	1.30%
14	2.50%	1.30%
15	2.50%	1.30%
16	2.50%	1.30%
17	1.50%	1.30%
18	1.50%	1.30%
19	1.50%	1.30%
20	1.50%	0.00%
21	1.50%	
22	1.50%	
23	1.50%	
24	1.50%	
25	1.50%	
26	1.50%	
27	1.50%	
28	1.50%	
29	1.50%	
30	0.00%	

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

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX B – SUMMARY OF PRIOR ASSUMPTIONS

14. Withdrawal

Rates of withdrawal apply to active members who terminate their employment and withdraw their member contributions, forfeiting entitlement to future Plan benefits.

Rates of Withdrawal		
Service	General	Safety
0	100.00%	100.00%
1	100.00%	100.00%
2	100.00%	100.00%
3	100.00%	100.00%
4	100.00%	100.00%
5	20.00%	20.00%
6	20.00%	20.00%
7	20.00%	20.00%
8	20.00%	20.00%
9	20.00%	20.00%
10	15.00%	10.00%
11	15.00%	10.00%
12	15.00%	10.00%
13	15.00%	10.00%
14	15.00%	10.00%
15	10.00%	10.00%
16	10.00%	10.00%
17	10.00%	10.00%
18	10.00%	10.00%
19	10.00%	10.00%
20	5.00%	0.00%
21	5.00%	0.00%
22	5.00%	0.00%
23	5.00%	0.00%
24	5.00%	0.00%
25	0.00%	0.00%
26	0.00%	0.00%
27	0.00%	0.00%
28	0.00%	0.00%
29	0.00%	0.00%
30	0.00%	0.00%

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX B – SUMMARY OF PRIOR ASSUMPTIONS

Former members with contributions on deposit are assumed to receive a retirement benefit commencing at the following ages:

General Plans 5, 7, and 8 (PEPRA) Members:	Age 58
General Plan 2 Members:	Age 65
Safety Plans 4 and 8 (PEPRA) Members:	Age 54
Safety Plan 6 Members:	Age 52
APCD Members:	Age 58

15. Reciprocal Transfers

30% of vested terminated General (except Plan 2) and Safety Members that leave their member contributions on deposit with the Plan are assumed to be reciprocal.

Reciprocal members are assumed to remain with the reciprocal agency until retirement, and receive annual salary increases of:

General & APCD Members:	3.25%
Safety Members:	3.50%

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX B – SUMMARY OF PRIOR ASSUMPTIONS

16. Rates of Disability

Disability rates of active participants are shown below.

Age	Rates of Disability			
	General		Safety	
	Less than 5	5 or More	Less than 5	5 or More
29 or less	0.004%	0.010%	0.045%	0.050%
30	0.004%	0.010%	0.054%	0.060%
31	0.004%	0.010%	0.054%	0.060%
32	0.004%	0.010%	0.054%	0.060%
33	0.004%	0.010%	0.054%	0.060%
34	0.004%	0.010%	0.054%	0.060%
35	0.004%	0.010%	0.090%	0.100%
36	0.008%	0.020%	0.090%	0.100%
37	0.008%	0.020%	0.090%	0.100%
38	0.008%	0.020%	0.090%	0.100%
39	0.008%	0.020%	0.090%	0.100%
40	0.008%	0.020%	0.117%	0.130%
41	0.008%	0.020%	0.117%	0.130%
42	0.012%	0.030%	0.117%	0.130%
43	0.016%	0.040%	0.117%	0.130%
44	0.020%	0.050%	0.117%	0.130%
45	0.024%	0.060%	0.135%	0.150%
46	0.024%	0.060%	0.162%	0.180%
47	0.024%	0.060%	0.180%	0.200%
48	0.024%	0.060%	0.225%	0.250%
49	0.024%	0.060%	0.225%	0.250%
50	0.028%	0.070%	0.252%	0.280%
51	0.028%	0.070%	0.270%	0.300%
52	0.028%	0.070%	0.450%	0.500%
53	0.028%	0.070%	0.450%	0.500%
54	0.028%	0.070%	0.450%	0.500%
55	0.040%	0.100%	0.450%	0.500%
56	0.040%	0.100%	0.450%	0.500%
57	0.040%	0.100%	0.450%	0.500%
58	0.040%	0.100%	0.450%	0.500%
59	0.040%	0.100%	0.450%	0.500%
60	0.060%	0.150%	0.720%	0.800%
61	0.060%	0.150%	0.720%	0.800%
62	0.060%	0.150%	0.720%	0.800%
63	0.060%	0.150%	0.720%	0.800%
64	0.060%	0.150%	0.720%	0.800%
65	0.060%	0.150%	0.000%	0.000%
66	0.060%	0.150%		
67	0.060%	0.150%		
68	0.060%	0.150%		
69	0.060%	0.150%		
70	0.060%	0.150%		
71	0.060%	0.150%		
72	0.060%	0.150%		
73	0.060%	0.150%		
74	0.060%	0.150%		
75	0.000%	0.000%		

40% of General disabilities and 90% of Safety disabilities where the member has five or more years of service are assumed to be service-related. All disabilities for those with less than five years or service are assumed to be service-related.

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2019**

APPENDIX B – SUMMARY OF PRIOR ASSUMPTIONS

17. Rates of Mortality for Healthy Lives

Non-duty related mortality rates for active members are based on the sex distinct CalPERS Preretirement Non-Industrial Mortality Table, with no adjustment, with Generational improvement using Projection Scale MP-2016 from a base year of 2009. Safety members are also subject to the CalPERS Preretirement Industrial Mortality Table for duty-related deaths, with the same Generational improvements applied.

Mortality rates for retirees, beneficiaries, terminated vested members, and reciprocals are based on the sex distinct CalPERS Healthy Annuitant Tables adjusted by 0.95 for males and 0.90 for females, with Generational improvement using Projection Scale MP-2016 from a base year of 2009.

18. Rates of Mortality for Retired Disabled Lives

Mortality rates for disabled retirees are based on CalPERS Industrial Disabled Annuitant Mortality, with no adjustment (Safety only), CalPERS Non-Industrially Disabled Annuitant Mortality, with no adjustment (General only), with Generational improvement using Projection Scale MP-2016 from a base year of 2009.

19. Benefit Payment Timing

End of the month.

**SANTA BARBARA COUNTY EMPLOYEES' RETIREMENT SYSTEM
ACTUARIAL VALUATION REPORT AS OF JUNE 30, 2019**

APPENDIX B – SUMMARY OF PRIOR ASSUMPTIONS

20. Rates of Retirement

Rates of retirement are based on age according to the following table. The rates for Safety PEPRA members are the same as the Safety Plan 4 rates.

Rates of Retirement								
Age	General		General - PEPRA		Safety			
	Svc < 30	Svc >= 30	Male	Female	Plan 4		Plan 6	
					Svc < 20	Svc >= 20	Svc < 20	Svc >= 20
< 34	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
35	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	1.00%
36	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	1.00%
37	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	1.00%
38	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	1.00%
39	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	1.00%
40	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	1.00%
41	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	1.00%
42	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	1.00%
43	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	1.00%
44	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	1.00%
45	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	1.00%
46	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	2.00%
47	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	5.00%
48	0.00%	4.00%	0.00%	0.00%	0.00%	1.00%	0.00%	5.00%
49	0.00%	4.00%	0.00%	0.00%	0.00%	3.00%	0.00%	17.00%
50	3.00%	4.00%	0.00%	0.00%	4.00%	4.00%	20.00%	25.00%
51	3.00%	4.00%	0.00%	0.00%	4.00%	4.00%	15.00%	15.00%
52	3.00%	4.00%	2.40%	1.80%	4.00%	4.00%	15.00%	20.00%
53	3.00%	4.00%	2.40%	1.80%	5.00%	5.00%	15.00%	20.00%
54	3.00%	5.00%	2.40%	5.40%	10.00%	20.00%	15.00%	30.00%
55	5.00%	10.00%	2.40%	5.40%	10.00%	35.00%	25.00%	35.00%
56	5.00%	10.00%	3.60%	5.40%	10.00%	20.00%	15.00%	25.00%
57	7.00%	10.00%	3.60%	5.40%	10.00%	25.00%	15.00%	25.00%
58	7.00%	10.00%	3.60%	5.40%	10.00%	25.00%	15.00%	25.00%
59	7.00%	10.00%	7.20%	7.20%	10.00%	25.00%	15.00%	25.00%
60	7.00%	15.00%	9.00%	9.00%	25.00%	25.00%	15.00%	25.00%
61	15.00%	30.00%	15.00%	10.80%	15.00%	25.00%	15.00%	25.00%
62	25.00%	40.00%	20.00%	20.00%	30.00%	25.00%	15.00%	25.00%
63	15.00%	40.00%	20.00%	20.00%	20.00%	30.00%	15.00%	25.00%
64	26.00%	40.00%	20.00%	20.00%	20.00%	30.00%	15.00%	25.00%
65	26.00%	40.00%	25.00%	25.00%	100.00%	100.00%	100.00%	100.00%
66	26.00%	40.00%	25.00%	25.00%				
67	26.00%	40.00%	40.00%	40.00%				
68	26.00%	40.00%	25.00%	25.00%				
69	26.00%	40.00%	25.00%	25.00%				
70	26.00%	40.00%	25.00%	25.00%				
71	26.00%	40.00%	25.00%	25.00%				
72	26.00%	40.00%	25.00%	25.00%				
73	26.00%	40.00%	25.00%	25.00%				
74	26.00%	40.00%	25.00%	25.00%				
75	100.00%	100.00%	100.00%	100.00%				



Classic Values, Innovative Advice