

Tulare County Employees' Retirement Association

**Actuarial Experience Study
for July 1, 2020 through
June 30, 2023**

Produced by Cheiron

October 2023

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October 20, 2023

Board of Retirement
Tulare County Employees' Retirement Association
136 N. Akers St.
Visalia, CA 93291

Dear Members of the Board:

The purpose of this report is to provide the results of an Actuarial Experience Study of the Tulare County Employees' Retirement Association (TCERA) covering actuarial experience from July 1, 2020 through June 30, 2023.

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

Cheiron utilizes ProVal, an actuarial valuation software program leased from Winklevoss Technologies (WinTech), to calculate liabilities and projected benefit payments. We have reviewed the underlying workings of this model to the degree feasible and consistent with Actuarial Standard of Practice No. 56 and believe them to be appropriate for the purposes of this experience study report.

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 Retirement Board of TCERA 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 other user.

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

Sincerely,
Cheiron

A handwritten signature in blue ink, reading "Graham A. Schmidt".

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

A handwritten signature in blue ink, reading "Steven M. Hastings".

Steven M. Hastings, FSA, EA, FCA, MAAA
Consulting Actuary

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

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 and should have no significant bias except when provisions for adverse deviation are included. The purpose of this experience study is to evaluate whether or not the current assumptions adequately reflect the long-term expectations for TCERA, 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 TCERA'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/payroll inflation, COLA growth, and the discount rate. These assumptions have a significant impact on the contribution rates in the short term and the risk of negative outcomes in the long term.

The economic assumptions previously adopted by the Retirement Board include a 7.00% long-term rate of return on Plan assets (net of investment and administrative expenses), an annual increase in prices measured by the Consumer Price Index (CPI) of 2.75%, annual base wage and payroll increases of 3.00%, and a post-retirement COLA average growth rate of 2.60% for Tier 1 members and 2.00% for all other members.

The nominal discount rate assumption of 7.00% is less than the geometric average return for the current target portfolio based on the capital market assumptions provided by Verus, the Plan's investment consultant, and under both a 10-year (7.6%) and 30-year (7.4%) time horizon. In addition, the current return assumption is consistent with the average of the 2022 and 2023 capital market assumptions from Verus and the Horizon Actuarial Services survey of investment consulting firms over varying time horizons. Other data presented in this report support the finding that the discount rate and other economic assumptions adopted by the Retirement Board are reasonable.

We recommend that the assumed COLA growth rate for the Tier 1 members currently in pay status be increased from 2.6% to 3.0%. However, we do not consider this to be an assumption change, but rather an explicit measurement of the existing COLA banks that have emerged during the past two years and thus should be considered an element of the existing actuarial liability losses.

SUMMARY OF DEMOGRAPHIC ASSUMPTION ANALYSIS

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

- **Retirement rates** – No changes to current assumptions for General or Safety members as recent experience has continued to be close to that which is assumed.
- **Termination rates** – Adjust rates to reflect recent experience. Update both General and Safety to use service-only based rates for expected terminations with minor adjustments to grade the rates downward as service increases to an ultimate rate at 15 years of service.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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SECTION I – EXECUTIVE SUMMARY

- **Disability rates** – No changes to duty or non-duty related disability rates for either General or Safety.
- **Mortality rates** – Reduce base rates slightly for male General members and increase base rates slightly for female General members. Also, slight increase in base mortality rates for male Safety members and an increase in base mortality rates for female Safety members. No change to base mortality rates for disabled members. Update the mortality improvement assumption to the MP-2021 scale for all members.
- **Merit salary increases** – No change to General salary assumption; small increase to Safety salary increases at higher service levels. Update reciprocal transfer salary increases to reflect wage inflation plus ultimate merit salary increases.
- **Leave conversion** – No change to the loads on benefit service for General or Safety members for expected conversions of unused leave upon a service retirement.
- **Marriage and Joint & Survivor payments** – Reduce the percentage of female General and Safety members, and male Safety members, who are assumed to be married. No change to percent married for male General members. Reduce the number of years that male employees are older than their spouses. Additionally, reduce the percentage of members assumed to elect a subsidized Joint & Survivor benefit option.
- **Other assumptions** – Reduce assumption for General terminated vested members who are expected to receive a deferred retirement benefit rather than take a refund of contributions and increase this assumption for Safety members. No changes to reciprocal rates or deferral ages for terminated vested members.

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

COST OF ECONOMIC AND DEMOGRAPHIC ASSUMPTION CHANGES

There were no economic assumptions adopted by the Board which resulted in a change in the contribution rate; as noted earlier, the modification to the post-retirement COLA growth rate for Tier 1 members in pay status is considered to be a change resulting from an actuarial liability loss, not an assumption change. The demographic assumptions resulted in a lower overall contribution requirement (reducing the average employer rate by 1.1% of pay), with the changes to family composition – in particular, the percentage of married members assumed to elect the unmodified subsidized form of benefit – having the largest absolute impact.

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SECTION I – EXECUTIVE SUMMARY

The table below summarizes the estimated cost impact – for the General, Safety, and combined membership – of the recommended changes to demographic assumptions contained in this report. The net impact on the 2023 valuation will be found in the June 30, 2023 valuation report.

Table I-1

Estimated Impact on Contribution Rates from Assumption Changes (based on June 30, 2023 valuation results)									
Description	Change in Contribution Rate (EE + ER)								
	Normal Cost Rate			UAL Rate			Total Contribution Rate		
	General	Safety	Total	General	Safety	Total	General	Safety	Total
<u>Recommended Demographic Assumptions</u>									
Mortality Rates	0.0%	-0.1%	0.0%	-0.2%	-0.3%	-0.2%	-0.3%	-0.4%	-0.3%
Termination Rates	-0.2%	-0.1%	-0.2%	0.1%	0.2%	0.1%	-0.1%	0.1%	-0.1%
Merit Salary Scale	0.0%	0.4%	0.1%	0.0%	0.4%	0.1%	0.0%	0.7%	0.2%
Family Composition	-0.4%	-0.4%	-0.4%	-0.7%	-0.5%	-0.6%	-1.1%	-0.9%	-1.1%
Changes to Terminated/Deferred Members	0.0%	-0.1%	0.0%	0.0%	-0.1%	0.0%	0.0%	-0.1%	0.0%
Total (Proposed Demographic Assumptions)	-0.7%	-0.3%	-0.6%	-0.8%	-0.3%	-0.7%	-1.5%	-0.5%	-1.3%
Final Impact of Assumption Changes (EE + ER)	-0.7%	-0.3%	-0.6%	-0.8%	-0.3%	-0.7%	-1.5%	-0.5%	-1.3%
Change to ER Rate due to Employee Contribution Rates Update	0.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%	0.0%	0.2%
Total Change to ER Rate	-0.5%	-0.2%	-0.4%	-0.8%	-0.3%	-0.7%	-1.2%	-0.5%	-1.1%

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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**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/payroll 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.

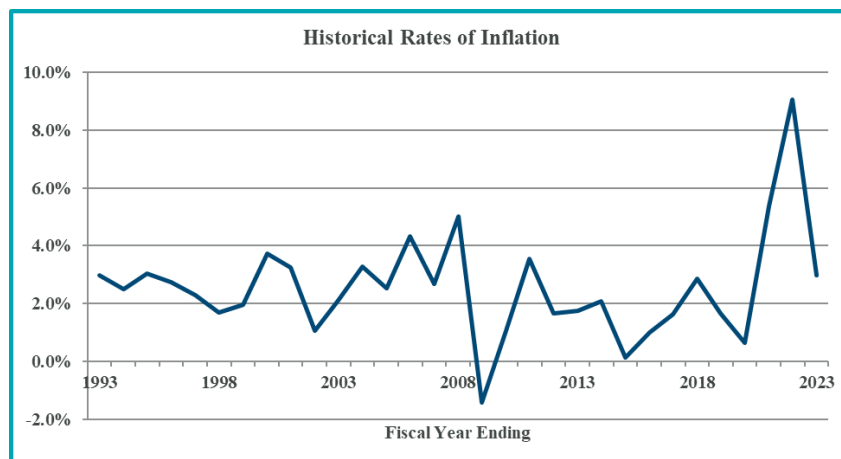
PRICE INFLATION

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 for the U.S. by Plan year (ending June 30) since 1993 as measured by the CPI-U.

Chart II-1



**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

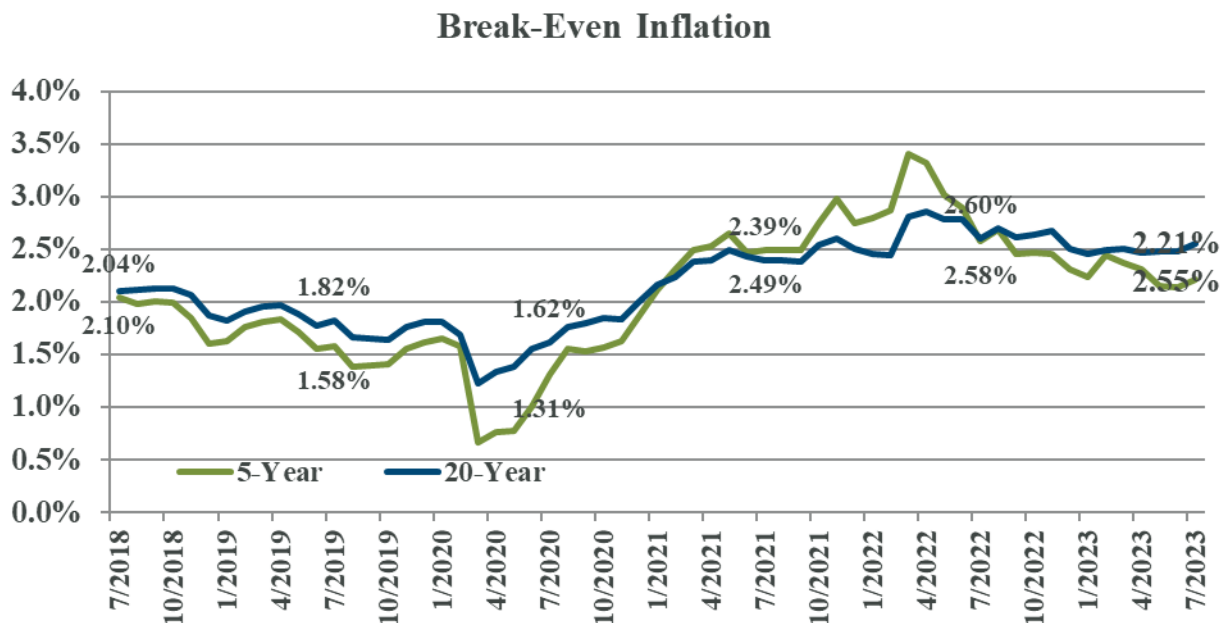
**SECTION II – ECONOMIC ASSUMPTIONS
PRICE INFLATION**

Over the 50 years ending June 2023, the geometric average inflation rate for the U.S. has been about 3.9%, but this average is heavily influenced by the high inflation rates in the 1970s and early 1980s. Over the last 30 years, the geometric average inflation rate has been 2.6%, and about 2.7% over the past 10 years (driven by the spike in 2022; prior to 2022 inflation had averaged less than 2.0% over the prior decade).

Future Expectations

A measure of the market consensus of expected future inflation rates is the difference in yields between conventional treasury bonds and Treasury Inflation-Protected Securities (TIPS) at the same maturity. Chart II-2 shows the yields on both types of bonds and the break-even inflation from July 2018 through July 2023 for 5-year and 20-year durations. Break-even inflation is the level of inflation needed for an investment in TIPS to “break even” with an investment in conventional treasury bonds of the same maturity.

Chart II-2



Data Source Federal Reserve, Constant Maturity Yields, Monthly Series

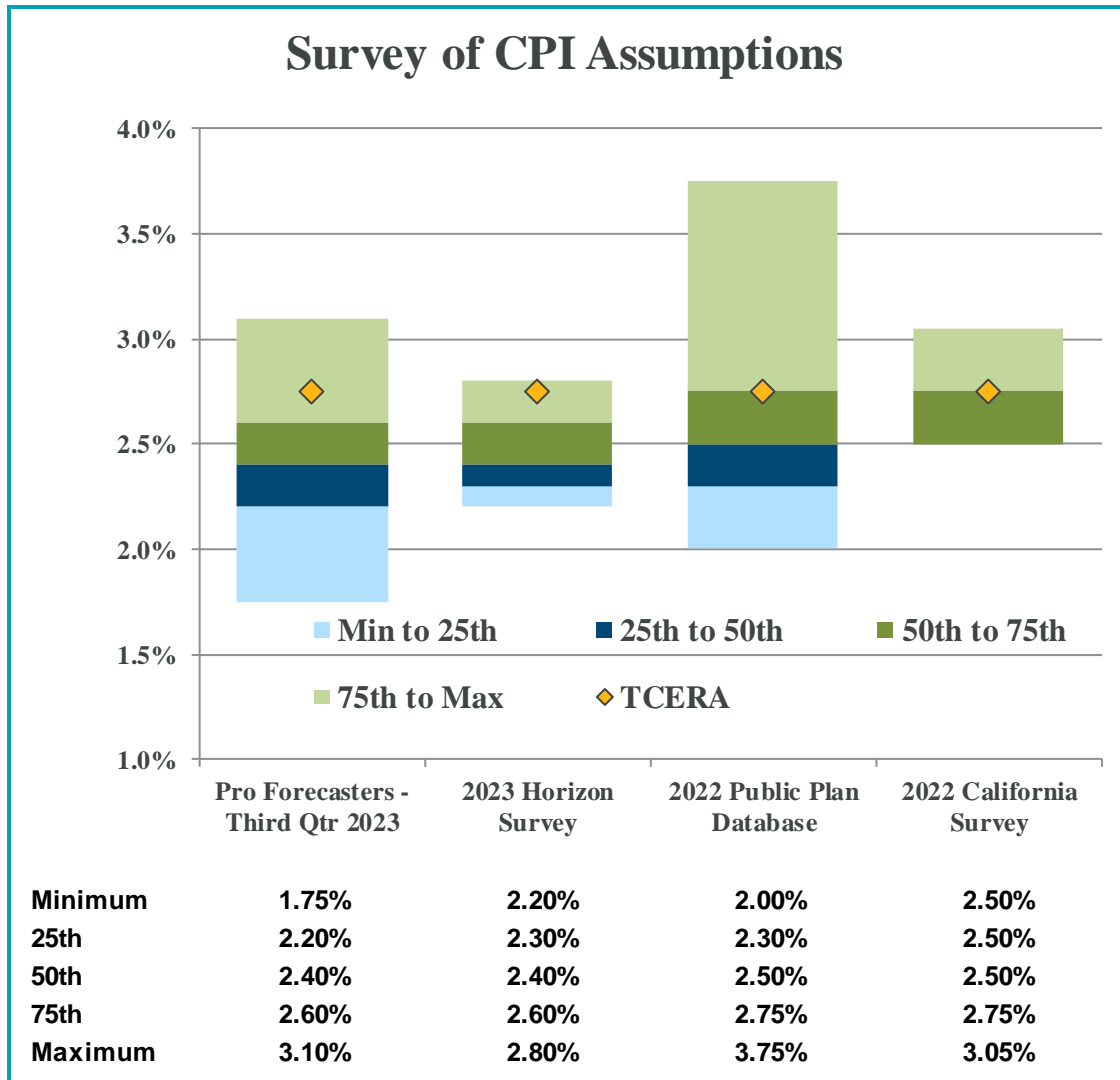
The Federal Reserve Bank of Philadelphia publishes a quarterly survey of professional economic forecasters that includes their forecasts of inflation over the next 10 years. The survey for the third quarter of 2023 shows a median inflation forecast of 2.40%, a minimum forecast of about 1.75% and a maximum forecast of 3.1%.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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**SECTION II – ECONOMIC ASSUMPTIONS
PRICE INFLATION**

Chart III-3 shows the distribution of the current 10-year forecasts for CPI-U from the professional survey published by the Federal Reserve Bank of Philadelphia compared to a survey of investment consultants performed by Horizon Actuarial Services, as well as a database of assumptions used by U.S. public pension plans and a Cheiron survey of assumptions used by California public pension plans. The median price inflation assumption is 2.50% for California public pension plans, and most plans use either 2.50% or 2.75%.

Chart II-3



Finally, Verus, the Board's investment consultant, uses a 10-year inflation assumption of 2.50%, which is similar to that of many other investment consultants.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION II – ECONOMIC ASSUMPTIONS
PRICE INFLATION**

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 2.25% and 2.75%. Therefore, we believe the Board's current inflation assumption of 2.75% is reasonable.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION II – ECONOMIC ASSUMPTIONS
WAGE INFLATION**

WAGE/PAYROLL 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.

It is acceptable to assume some additional level of base payroll increase beyond general inflation. Potential reasons contributing to the increase may include the presence of strong union representation in the collective bargaining process, competition in hiring among other similar employers, and regional factors – such as the local inflation index exceeding the national average, as has sometimes proven the case in parts of California. Also, the Social Security Administration projects real wage growth of 0.5% – 1.8% going forward in their Social Security solvency projections.

However, our recent experience with public sector employers in California has shown that real wage growth has remained stagnant, in some cases lagging behind inflation. In particular, the average rate of pay for TCERA's members has increased by only 5.1% annually over the past three years vs. Riverside area inflation (as measured by the CPI-U), which has increased at 6.4% per year over the same period.

We believe that the small non-inflationary base payroll growth assumption of 0.25% annually currently used by TCERA remains reasonable. If the 2.75% inflation rate is also maintained, 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.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION II – ECONOMIC ASSUMPTIONS
COLA GROWTH**

COLA GROWTH

Tier 1 members of TCERA are eligible to receive automatic Cost-of-Living Adjustments (COLAs), based on the growth in the Riverside-San Bernardino-Ontario Consumer Price Index (CPI) rounded to 0.5% and with a 3% cap on the annual COLA increase. Any increase in the CPI above the 3% maximum increase can be banked for future years in which the change in the CPI is below 3%. The COLAs for Tiers 2-4 are determined in the same manner, except the cap on the annual increase is 2%, which has resulted in higher banks for the members in pay status than for the Tier 1 members with the same retirement dates.

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. Given the high inflation in recent years, Tier 1 members who retired prior to April 2023 have amassed large COLA banks that will be used to supplement any future COLAs for years in which inflation is less than 3%. As most Tier 1 retirees are well into their 70s, we recommend increasing the COLA assumption for these members to 3%. However, as this change is intended to measure the liability associated with the existing COLA banks, we do not consider it a change related to future COLA growth which is dependent on the CPI.

Based on the continued use of the 2.75% inflation assumption, for members in Tier 1 not currently in pay status, we recommend continuing to assume 2.60% annual COLAs. Additionally, for members in Tiers 2-4, we recommend continuing to assume that the COLA growth will be equal to the 2% cap.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION II – ECONOMIC ASSUMPTIONS
DISCOUNT RATE**

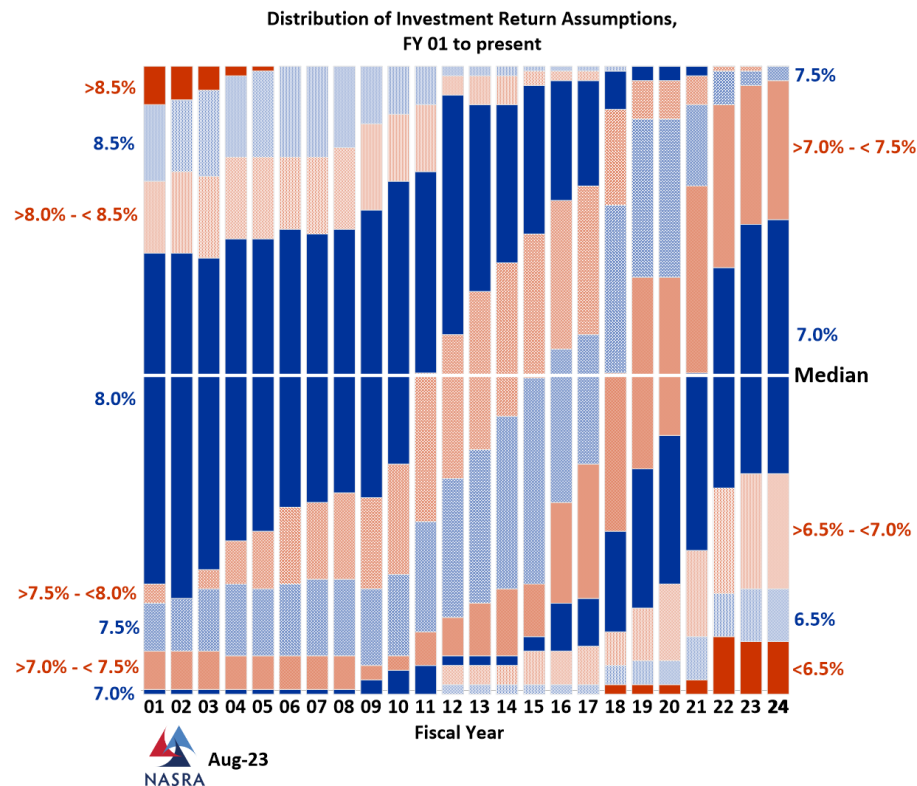
DISCOUNT RATE

The discount rate assumption is generally the most significant of all the assumptions employed in actuarial valuations. The discount rate is based on the long-term expected return on plan investments. In the short term, a higher discount rate results in lower expected contributions. However, over the long term, actual contributions will depend on actual investment returns and not the discount rate (or expected investment returns). If actual investment returns are lower than expected, contribution rates will increase in the future. It is important to set a realistic discount rate so that projections of future contributions for budgeting purposes will not be significantly 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-4 below shows the change in the distribution of assumptions since 2001. The median assumption is now 7.0% and the number of plans using a discount rate of 7.0% or lower has increased significantly.

Chart II-4

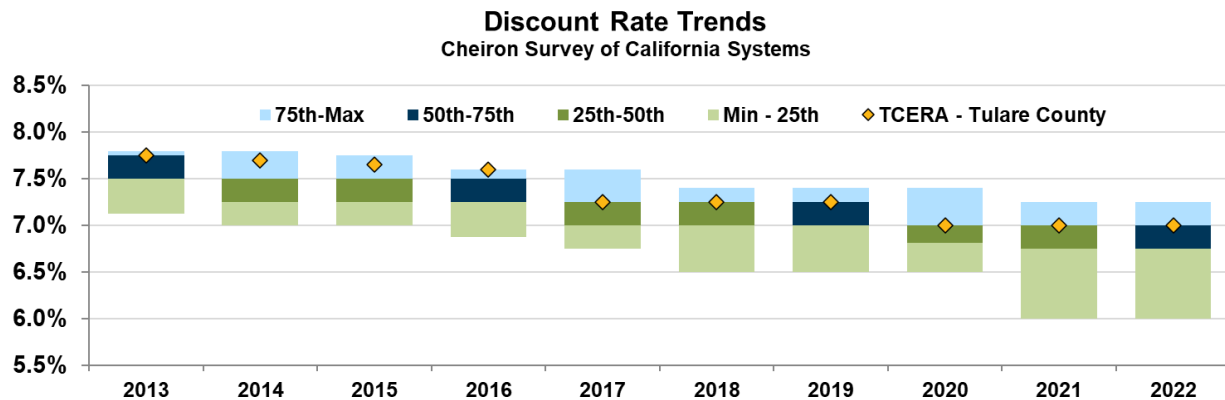


**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION II – ECONOMIC ASSUMPTIONS
DISCOUNT RATE**

Cheiron's survey of California public retirement systems shows a median assumption of 6.75%. In the survey prepared by Cheiron, 17 of the 39 systems surveyed used a discount rate assumption of 6.75% in their 2022 actuarial valuation, while 10 systems used a discount rate assumption of 7.00%. Chart II-5 below shows the change in discount rate assumptions for California systems from 2013 to 2022, with a gold marker showing the Plan's discount rate assumption over this period.

Chart II-5



Target Asset Allocation and Future Expectations

The discount rate assumption depends on the anticipated average level of inflation and the anticipated average real rate of return. The real rate of return is the investment return in excess of underlying inflation. The expected real rate of return depends on the asset allocation: the portion of assets in stocks, bonds, and other asset classes which make up the Plan's asset portfolio.

Table II-1 on the next page shows the expected geometric return for the Plan's current target asset allocation using the capital market assumptions (CMAs) of the Plan's investment consultant (Verus) and using a survey of multiple investment consultants published by Horizon Actuarial Services. For both sets of assumptions, we show the results from both the 2022 and 2023 expectations, given the extreme volatility of the markets, inflation, and interest rates over the past 24 months.

Table II-1 on the next page 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 (investment return in excess of inflation). Finally, the table shows the expectations under a variety of time horizons.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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**SECTION II – ECONOMIC ASSUMPTIONS
DISCOUNT RATE**

Table II-1

TCERA Portfolio Return Expectations (reflects 20bp adjustment for administrative and investment expenses)				
Consultant	Nominal	Inflation	Real	Standard Deviation
<u>2023 Expectations</u>				
Verus (10-year)	7.56%	2.50%	5.06%	12.88%
Verus (30-year)	7.42%	2.10%	5.32%	12.88%
Horizon (Survey, 10-year)	7.32%	2.55%	4.77%	12.59%
Horizon (Survey, 20+ year)	<u>7.64%</u>	<u>2.46%</u>	<u>5.18%</u>	<u>12.59%</u>
2023 Average	7.49%	2.40%	5.08%	12.73%
<u>2022 Expectations</u>				
Verus (10-year)	6.25%	2.50%	3.75%	12.74%
Verus (30-year)	6.59%	2.30%	4.29%	12.74%
Horizon (Survey, 10-year)	5.83%	2.47%	3.36%	12.44%
Horizon (Survey, 20+ year)	<u>6.94%</u>	<u>2.45%</u>	<u>4.49%</u>	<u>12.44%</u>
2022 Average	6.40%	2.43%	3.97%	12.59%
2022-2023 Average	6.95%	2.42%	4.53%	12.66%
Current Assumption	7.00%	2.75%	4.25%	

We note that the returns in Table II-1 above were reduced by 0.16% to reflect administrative expenses (based on recent experience) and another 0.04% to reflect non-management related investment expenses, which is consistent with recent experience.

With respect to investment expenses, the actuarial standards on selecting a return assumption (ASOP 27) state that in general, superior or inferior returns (net of fees) should not be assumed for active versus passive management; therefore, we do not recommend a significant adjustment to the modeled returns for the fees of the asset managers. However, a slight margin is appropriate to reflect other investment-related expenses, including those of the investment advisor and custodian.

The nominal (7.00%) assumption is very close to the average across the various capital market assumptions, while the overall average real return was slightly above the current assumption. All of the information above suggests that the Board's current nominal return of 7.0%, split between an inflation assumption of 2.75%, and the real return expectation at 4.25%, remains reasonable and appropriate.

We recommend that the Board and staff continue to conduct at least a brief discussion of this assumption annually, in consultation with the Plan's actuary and investment consultant, to determine if further changes are appropriate, in particular to consider whether additional reductions in the inflation and nominal return assumptions are warranted.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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**SECTION II – ECONOMIC ASSUMPTIONS
DISCOUNT RATE**

Finally, we note that no adjustments have been made to the expected rate of return or funding discount rate to account for the impact of the Supplemental Retiree Benefit Reserve (SRBR). The expected rate of return developed in this experience study report reflects the expected return on all assets of the Plan, regardless of whether used to fund the basic benefits of the Plan or supplemental benefits payable through the SRBR.

The actuarial valuation report includes an estimate of the potential liability associated with future potential transfers to the SRBR that could result from future investment gains. Our most recent estimate of the potential impact of these transfers on the net returns available to fund the non-SRBR benefits of the Plan was a reduction of approximately 0.3%. However, this estimate can vary significantly from year to year, based on fluctuations in the deferred losses reflected in the current Actuarial Value of Assets.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**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 TCERA, with some adjustments where future experience is expected to differ from historical experience and with deference to standard tables where TCERA 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 TCERA'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 increase or receive a promotion, so their salary increases tend to be greater than those for longer service employees. A longitudinal approach was used to analyze the merit increases for this study.

A *longitudinal* study reviews the average increase in pay for each level of service. To analyze the merit component, we subtracted the Plan's real wage growth – as measured by the annual increase in average valuation salary during the experience study period – from the annual pay increases experienced at each level of service.

Charts III-1 and III-2 on the following pages analyze the pay for General and Safety members, respectively, over the past six years. We also reviewed the experience over the most recent three-year period and found the experience to be similar and supportive of our recommended assumptions. Our charts show the current assumption (red line) compared to the actual experience (blue line) and the recommended assumption (green line). We backed out the wage growth – calculated as the change in average pay per active member – in order to isolate the merit, promotion, and longevity component.

We propose adjusting the Safety rates at three and four years of service to smoothen the decline in salary increases as one's career progresses, while setting an ultimate salary merit increase of 1.25% beginning at six years of service. We recommend continuing with the current assumption for General members (thus the red and green lines overlap).

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

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

Chart III-1: General

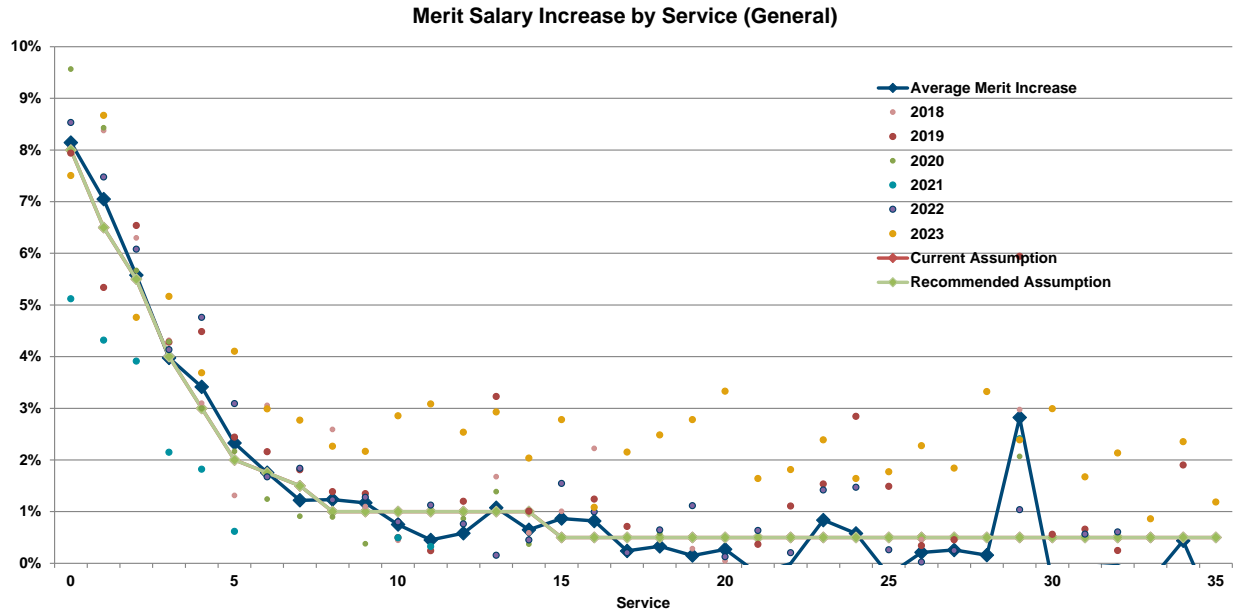
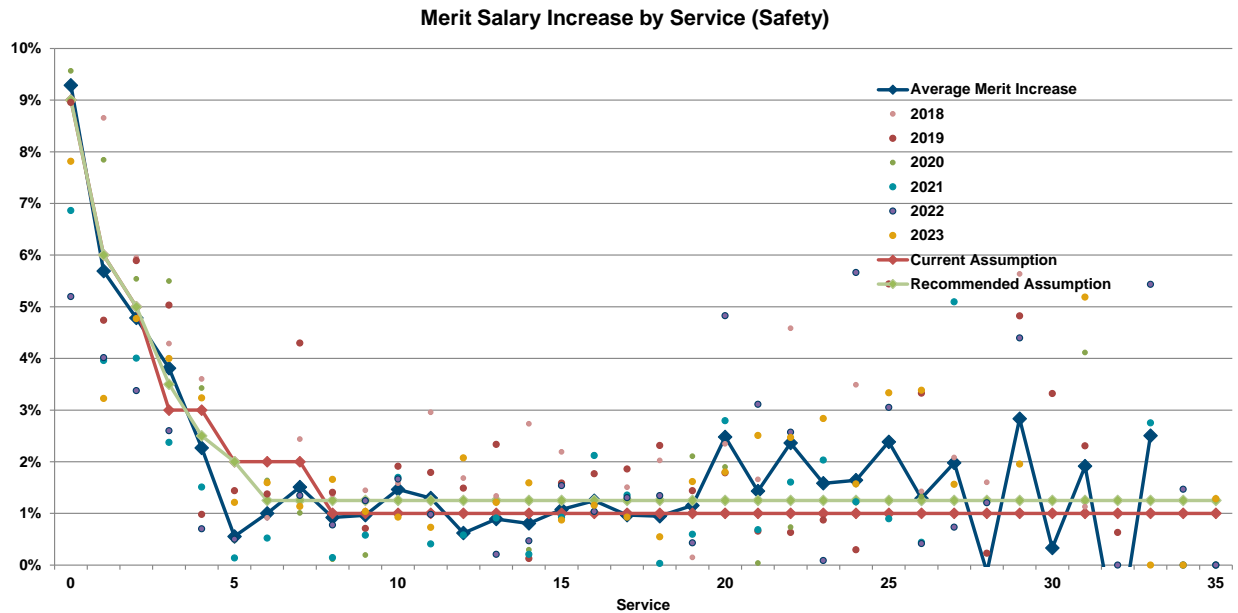


Chart III-2: Safety



SECTION III – DEMOGRAPHIC ASSUMPTIONS

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 has matched perfectly to historical experience during the study period, 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.

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 recommend 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 and to account for the past experience represented by the current assumption. For mortality rates, we compare TCERA's experience to that of a standard table and adjust the tables to bring the recommended assumption closer to an A/E ratio of 100%, taking into account the level and credibility of TCERA's experience.

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.

Finally, since the amount of data that is available over a three-year period to analyze the decrements is somewhat limited, and perhaps skewed due to the COVID-19 pandemic, we have added data from the two prior study periods (from 2014-2020) to add more credibility to these calculations. We also review the proposed assumptions for the most recent three-year period only, to confirm whether the assumptions were also reasonable for this period.

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

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES**

RETIREMENT RATES

The current retirement rates vary by group, age, and service and are applied to all members who are eligible to retire. We have combined the experience of the past three years with that of the prior two three-year periods in order to have a more robust dataset to review; the tables and charts which follow include the experience from 2014-2023.

Generally, at any given age, members with more service are more likely to retire than members with fewer years of service. We reviewed the TCERA actual retirement rates based on service groupings since TCERA is not large enough to justify assumptions for each age and service combination.

We continue to recommend separate assumptions by age for the following two service groups for General members: 1) members with less than 30 years of service, and 2) members with 30 or more years of service. We did not find that retirement rates are materially different between males and females for General members, so we continue to recommend combined male and female rates. We recommend no changes to rates for General members.

We continue to recommend separate assumptions by age for the following two service groups for Safety members: 1) members with less than 20 years of service and 2) members with 20 or more years of service. We recommend no changes to rates for Safety members.

We recommend the continued use of the same assumptions for all PEPRA members as the other members, with the exception that retirement rates are applied once the members are eligible for retirement (age 52 with 5 years of service for General PEPRA members, age 50 with 5 years of service for Safety PEPRA members). There is some expectation that General PEPRA members may retire later than those in other tiers due to their lower benefit levels. However, our initial analysis of the members who have retired under the General PEPRA formula indicates slightly higher rates of retirement than expected among these members, so there is no evidence as of yet to indicate different assumptions for these members are warranted. The Safety formulas for PEPRA and non-PEPRA members do not differ significantly, so we also recommend continuing to use the same assumptions for both groups.

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

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES**

Table III-R1 shows the calculation of actual-to-expected ratios for General members at all retirement-eligible service levels. Chart III-R1 shows the information graphically along with the 90% confidence interval.

The data shows lower actual retirement rates than expected under the current assumption. However, due to actual rates being close to the current rates at all age and service levels below age 70, we do not recommend any changes to the current assumption. There were fewer retirements than expected above age 70, but these members do not have a material impact on the results, and we believe a maximum retirement age of 75 represents a reasonable assumption for this population.

Table III-R1

General Retirement Rates									
Age	Exposures	Retirements			Retirement Rates			A/E Ratios	
		Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
50-54	2,348	103	120	120	4.4%	5.1%	5.1%	86%	86%
55-59	2,472	157	155	155	6.4%	6.3%	6.3%	101%	101%
60-64	1,700	267	264	264	15.7%	15.5%	15.5%	101%	101%
65-69	543	194	190	190	35.7%	35.0%	35.0%	102%	102%
70+	141	39	55	55	27.7%	38.7%	38.7%	71%	71%
Total	7,204	760	784	784	10.5%	10.9%	10.9%	97%	97%
R-squared			0.878	0.878					

Chart III-R1



**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
RETIREMENT RATES**

Table III-R2 shows the calculation of actual-to-expected ratios for Safety. Chart III-R2 shows the information graphically along with the 90% confidence interval.

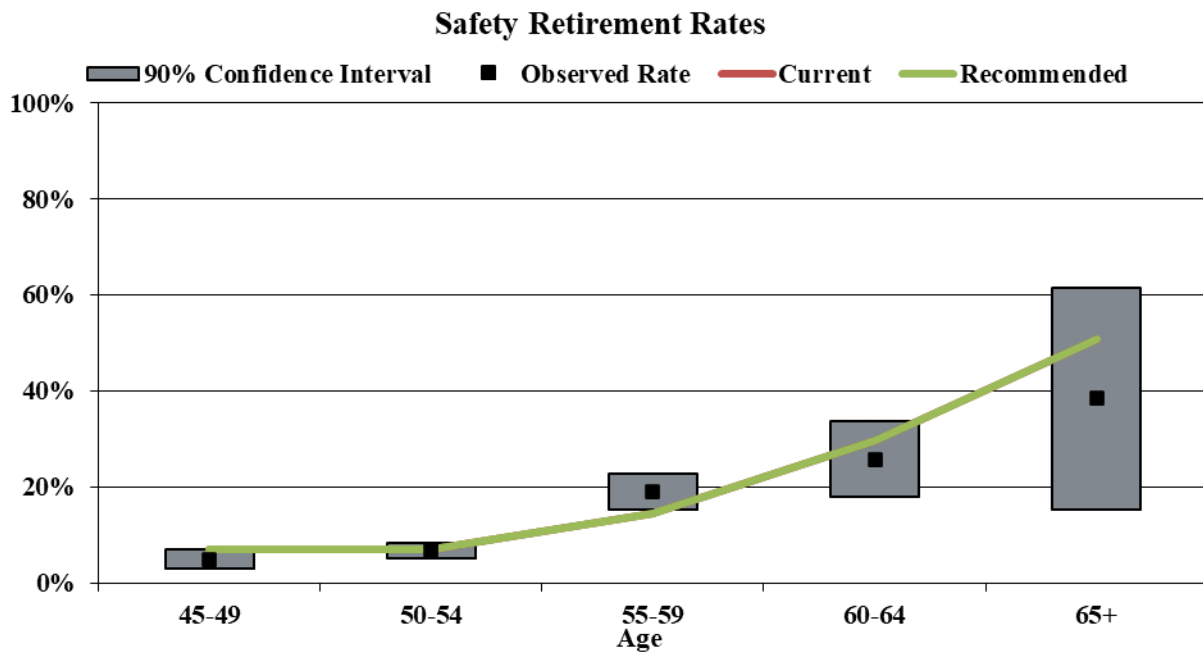
The data shows the overall level of retirements were very close to those expected, with the overall A/E ratio at 100%, and close to the confidence intervals at all age and service levels. Therefore, we do not recommend any changes to the current assumption.

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

Table III-R2

Safety Retirement Rates									
Age	Exposures	Retirements			Retirement Rates			A/E Ratios	
		Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
45-49	330	16	23	23	4.8%	7.0%	7.0%	69%	69%
50-54	668	45	47	47	6.7%	7.0%	7.0%	96%	96%
55-59	298	57	43	43	19.1%	14.5%	14.5%	132%	132%
60-64	89	23	26	26	25.8%	29.7%	29.7%	87%	87%
65+	13	5	7	7	38.5%	50.8%	50.8%	76%	76%
Total	1,398	146	146	146	10.4%	10.5%	10.5%	100%	100%
R-squared			0.730	0.730					

Chart III-R2



**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**

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 age and service for both General and Safety members, with unisex assumptions applied to both groups. Basing termination rates on both age and years of service 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.

After review of the actual termination trends, we recommend termination rates solely based on service with rates generally declining throughout the employee's working lifetime to an ultimate rate of 2.5% with 15 years of service. We did not find that termination rates are materially different between males and females for General members, so we continue to recommend using unisex tables.

Similarly, we recommend termination rates based on service only for Safety members with the same assumptions for both males and females.

To make the best use of the available member data, we study all terminations together – vested terminations, terminating members who withdraw their contributions, and members who transfer to a reciprocal pension plan – to determine an overall termination rate. We then analyze the percentages of terminating members who withdraw their contributions, transfer, or are eligible for a vested benefit. As with the retirement rate analysis, we combined the experience from the most recent three years (2020-2023) with the experience from the prior two studies (2014-2020).

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**

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

The data shows that the actual termination rates are slightly higher in aggregate than what the current assumption expects. The current rates are based on both age and service; however, the recommended rates are solely based on service. Despite the more simplistic approach, both the r-squared and A/E ratios improve based on the recommended rates to 0.997 and 107%, respectively.

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

Table III-T1

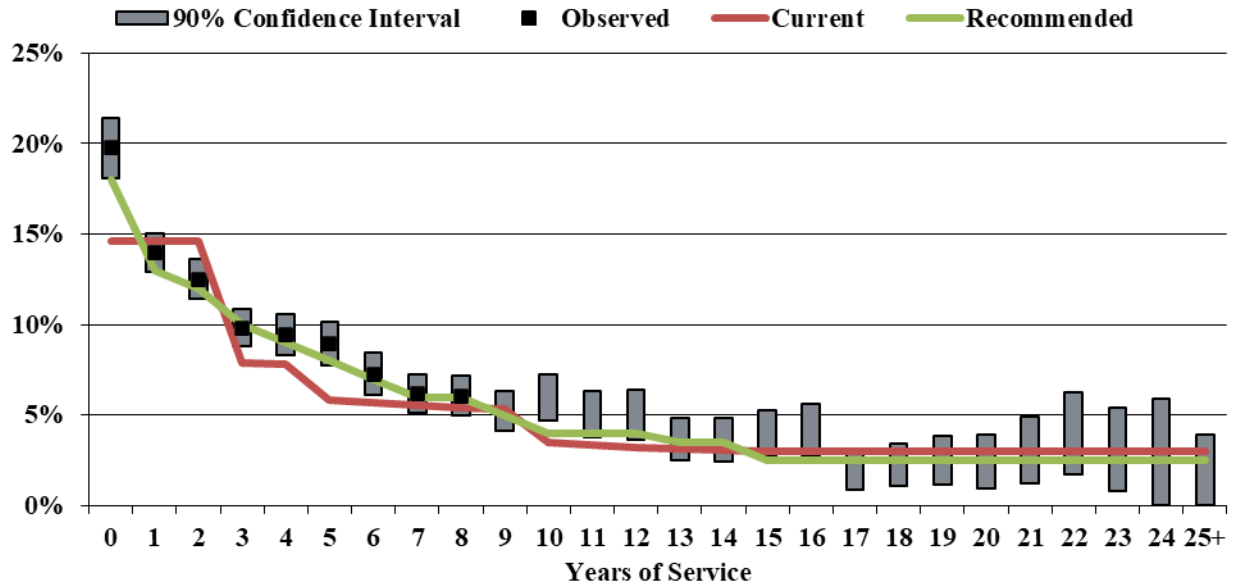
General Termination Rates									
Service	Exposures	Terminations			Termination Rates			A/E Ratios	
		Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
0	1,548	306	227	279	19.77%	14.65%	18.00%	135%	110%
1	2,775	388	406	361	13.98%	14.65%	13.00%	95%	108%
2	2,444	306	357	293	12.52%	14.62%	12.00%	86%	104%
3	2,217	218	174	222	9.83%	7.86%	10.00%	125%	98%
4	1,872	177	146	168	9.46%	7.78%	9.00%	122%	105%
5	1,505	135	88	120	8.97%	5.84%	8.00%	154%	112%
6	1,327	96	75	93	7.23%	5.67%	7.00%	128%	103%
7	1,294	80	71	78	6.18%	5.52%	6.00%	112%	103%
8	1,229	74	66	74	6.02%	5.39%	6.00%	112%	100%
9	1,157	60	61	58	5.19%	5.31%	5.00%	98%	104%
10	896	53	31	36	5.92%	3.47%	4.00%	171%	148%
11	741	37	25	30	4.99%	3.33%	4.00%	150%	125%
12	685	34	22	27	4.96%	3.22%	4.00%	154%	124%
13	680	25	21	24	3.68%	3.15%	3.50%	117%	105%
14	663	24	20	23	3.62%	3.08%	3.50%	118%	103%
15	624	25	19	16	4.01%	3.02%	2.50%	133%	160%
16	532	22	16	13	4.14%	3.00%	2.50%	138%	165%
17	441	8	13	11	1.81%	3.00%	2.50%	60%	73%
18	378	8	11	9	2.12%	3.00%	2.50%	71%	85%
19	340	8	10	9	2.35%	3.00%	2.50%	78%	94%
20	307	7	9	8	2.28%	3.00%	2.50%	76%	91%
21	245	7	7	6	2.86%	3.00%	2.50%	95%	114%
22	175	7	5	4	4.00%	3.00%	2.50%	133%	160%
23	130	4	4	3	3.08%	3.00%	2.50%	103%	123%
24	85	2	3	2	2.35%	3.00%	2.50%	78%	94%
25+	127	2	4	3	1.57%	3.00%	2.50%	52%	63%
Total	24,417	2,113	1,894	1,970	8.65%	7.76%	8.07%	112%	107%
R-squared			0.959	0.997					

TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023

SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Chart III-T1

General Termination Rates



**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**

Table III-T2 shows the calculation of actual-to-expected ratios for Safety members with less than 20 years of service. Chart III-T2 shows the information graphically along with the 90% confidence interval.

The data shows higher actual termination rates than expected under the current assumption. The recommended assumption increases the aggregate assumed rates of termination and decreases the aggregate A/E ratio from 128% to 119%. The r-squared also improves to 0.975.

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

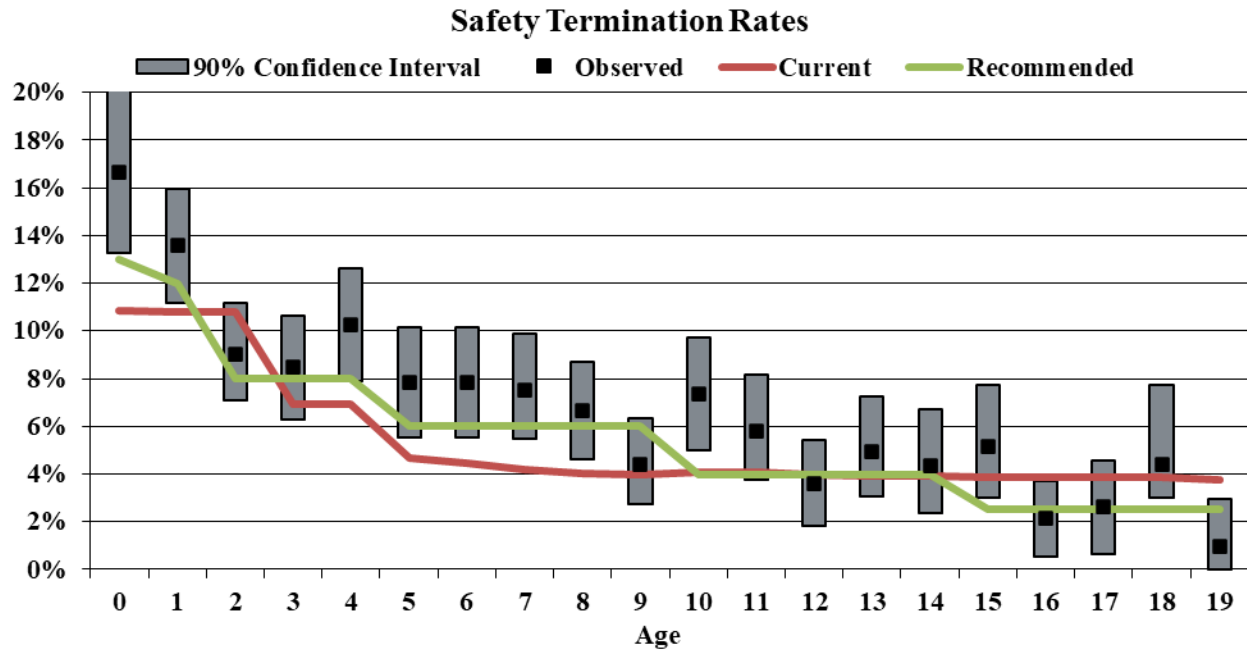
Table III-T2

Safety Termination Rates									
Service	Exposures	Terminations			Termination Rates			A/E Ratios	
		Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
0	294	49	32	38	16.67%	10.87%	13.00%	153%	128%
1	545	74	59	65	13.58%	10.82%	12.00%	126%	113%
2	509	46	55	41	9.04%	10.82%	8.00%	84%	113%
3	460	39	32	37	8.48%	6.95%	8.00%	122%	106%
4	419	43	29	34	10.26%	6.94%	8.00%	148%	128%
5	344	27	16	21	7.85%	4.66%	6.00%	168%	131%
6	344	27	15	21	7.85%	4.44%	6.00%	177%	131%
7	385	29	16	23	7.53%	4.19%	6.00%	180%	126%
8	391	26	16	23	6.65%	4.05%	6.00%	164%	111%
9	363	16	14	22	4.41%	3.99%	6.00%	110%	73%
10	340	25	14	14	7.35%	4.11%	4.00%	179%	184%
11	294	17	12	12	5.78%	4.06%	4.00%	142%	145%
12	277	10	11	11	3.61%	4.00%	4.00%	90%	90%
13	262	13	10	10	4.96%	3.94%	4.00%	126%	124%
14	253	11	10	10	4.35%	3.91%	4.00%	111%	109%
15	233	12	9	6	5.15%	3.88%	2.50%	133%	206%
16	188	4	7	5	2.13%	3.86%	2.50%	55%	85%
17	153	4	6	4	2.61%	3.85%	2.50%	68%	105%
18	137	6	5	3	4.38%	3.80%	2.50%	115%	175%
19	101	1	4	3	0.99%	3.75%	2.50%	26%	40%
Total	6,292	479	373	402	7.61%	5.93%	6.38%	128%	119%
R-squared			0.921	0.975					

TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023

SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES

Chart III-T2



**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**

TYPES OF TERMINATION

When a vested member terminates employment, the member has the option of receiving a refund of contributions with interest or a deferred annuity. If an employee terminates employment and works for a reciprocal employer (also referred to as a transfer), the employee's retirement benefit is based on the employee's service with TCERA and Final Compensation based on employment with the reciprocal employer.

Tables III-T3, III-T4, and III-T5 show the comparison of the actual rates to the current and recommended assumptions based on an analysis of members who terminated in the last nine years.

As seen in Table III-T3, the percentage of General male members who elected to receive a deferred vested retirement benefit (i.e., did not elect a refund of contributions) was lower than expected over the past nine years for General male members with at least 10 years of service. We therefore recommend decreasing the assumption pertaining to how many terminated vested General male members will to receive a deferred annuity rather than an immediate return of contributions.

Table III-T3

Types of Termination for General Male Members				
Service	Type of Termination	Actual	Current	Recommended
5 - 10	Refund of Contributions	26%	25%	25%
	Deferred Annuity	74%	75%	75%
10 - 15	Refund of Contributions	19%	15%	20%
	Deferred Annuity	81%	85%	80%
15 - 20	Refund of Contributions	26%	15%	20%
	Deferred Annuity	74%	85%	80%
20+	Refund of Contributions	27%	15%	20%
	Deferred Annuity	73%	85%	80%

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**

As seen in Table III-T4, the actual number of General female members electing a deferred annuity over the past nine years was close to the current assumed rate. We recommend only a slight decrease for those members with 10-15 years of service.

Table III-T4

Types of Termination for General Female Members				
Service	Type of Termination	Actual	Current	Recommended
5 - 10	Refund of Contributions	42%	45%	45%
	Deferred Annuity	58%	55%	55%
10 - 15	Refund of Contributions	40%	30%	35%
	Deferred Annuity	60%	70%	65%
15 - 20	Refund of Contributions	24%	25%	25%
	Deferred Annuity	76%	75%	75%
20+	Refund of Contributions	18%	25%	25%
	Deferred Annuity	82%	75%	75%

Similarly, the actual number of Safety members electing a deferred annuity over the past nine years was close to the current assumed rate with the exception of those with 15-20 years of service. These members elected to receive a deferred annuity more often than expected and thus we recommend increasing the assumption for these members from 60% to 80%.

Table III-T5

Types of Termination for Safety Members				
Service	Type of Termination	Actual	Current	Recommended
5 - 10	Refund of Contributions	36%	40%	40%
	Deferred Annuity	64%	60%	60%
10 - 15	Refund of Contributions	42%	40%	40%
	Deferred Annuity	58%	60%	60%
15 - 20	Refund of Contributions	18%	40%	20%
	Deferred Annuity	82%	60%	80%
20+	Refund of Contributions	8%	0%	0%
	Deferred Annuity	92%	100%	100%

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
TERMINATION RATES**

RECIPROCAL TRANSFERS

We reviewed new retirements from deferred vested status during the last nine years and the proportion of those retirements representing reciprocal transfers was 59% for General members, and 69% for Safety members. We use this approach of reviewing the percentage of those retiring from deferred status, versus the alternative approach of reviewing the reported rates of reciprocity upon termination, since reciprocity does not have to be reported until retirement. We recommend no change to the percentage of deferred vested members expected to establish reciprocity from the current assumptions of 60% for General members and 65% for Safety members.

RECIPROCAL PAY INCREASES

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 with the reciprocal employer. For this assumption, we recommend our typical approach of using the base wage growth assumption (currently 3.00%), plus the ultimate rate of merit/longevity increases of 0.50% for General members, and 1.25% for Safety members (updated from 1.00%), to project annual pay increases from the date of termination to the ultimate date of retirement. This approach results in no change from the current assumption of 3.50% for General members and an increase from 4.00% to 4.25% for Safety members.

DEFERRED RETIREMENT AGE

An analysis of all terminated members with a vested right to a benefit, who retired in the last six years, showed that on average General members retired at age 60.4 and Safety members retired at age 55.3, with little difference in the averages between those who did and did not establish reciprocity. We recommend maintaining the assumptions that deferred General members will commence receiving benefits at age 60, and age 55 for Safety members.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES**

DISABILITY RATES

TCERA's disability rates include rates for both ordinary and duty-related disability. For both types of disability, there are currently separate rates for General male members, General female members, and Safety members. The amount of disability experience is fairly limited, even with the experience of the past nine years included in the study period included. Only 96 duty-related disabilities and 36 ordinary disabilities occurred during the last nine years for General and Safety combined.

Actual duty disability rates were generally in-line with the current assumption for both General and Safety members. With this, and the very low actual duty-related disabilities over the past three years, we recommend maintaining the current unisex assumptions for both General and Safety.

The data shows that there were no ordinary disabilities among Safety members in the past three years. However, because the assumed rates are already low, we recommend maintaining the current ordinary disability assumption. Similarly, for General members, there were only two disabilities in the prior three years. We will continue to monitor the experience of the plan to determine if reductions in these rates will be warranted in the future.

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

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES**

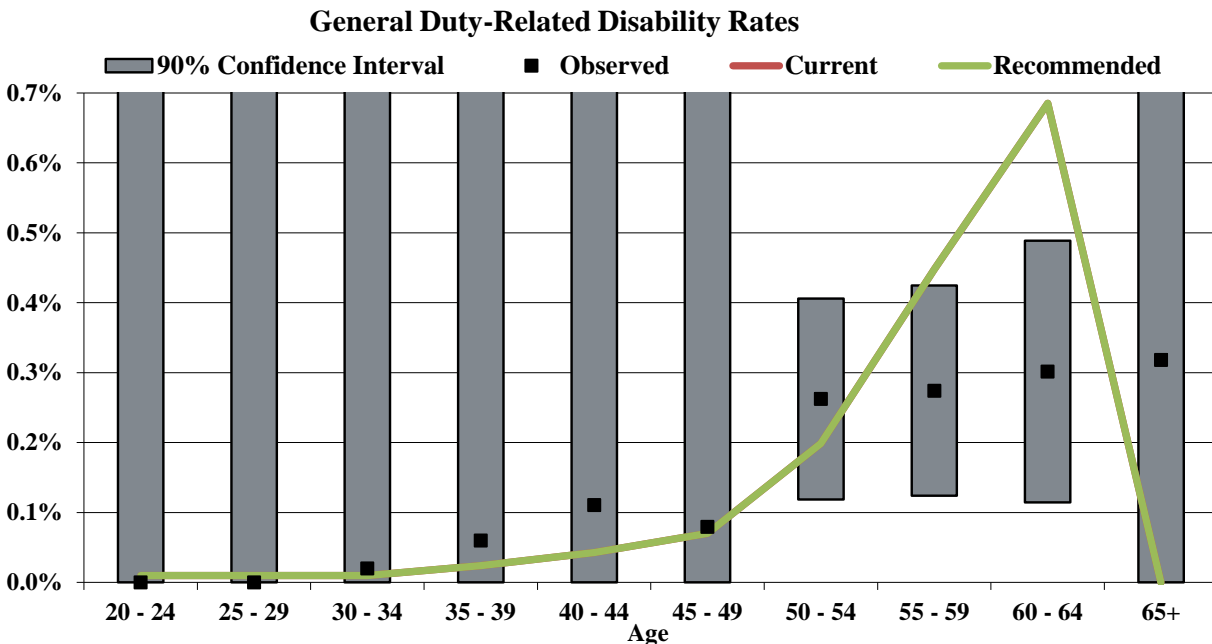
Table III-D1 shows the calculation of actual-to-expected ratios for duty-related disability rates for all General members. Chart III-D1 shows the information graphically along with the 90% confidence interval.

The data shows slightly lower actual disability rates than expected under the current assumption. However, due to having insufficient credible experience and the actual rates being close to the current rates, producing an A/E ratio of 91%, we do not recommend any changes to the current assumption.

Table III-D1

General Duty-Related Disability Rates									
Age	Exposures	Disabilities			Disability Rates			A/E Ratios	
		Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
20 - 24	748	0	0	0	0.00%	0.01%	0.01%	0%	0%
25 - 29	3,611	0	0	0	0.00%	0.01%	0.01%	0%	0%
30 - 34	5,022	1	1	1	0.02%	0.01%	0.01%	199%	199%
35 - 39	4,995	3	1	1	0.06%	0.02%	0.02%	251%	251%
40 - 44	4,519	5	2	2	0.11%	0.04%	0.04%	259%	259%
45 - 49	3,768	3	3	3	0.08%	0.07%	0.07%	113%	113%
50 - 54	3,430	9	7	7	0.26%	0.20%	0.20%	132%	132%
55 - 59	3,281	9	15	15	0.27%	0.45%	0.45%	61%	61%
60 - 64	2,322	7	16	16	0.30%	0.69%	0.69%	44%	44%
65+	943	3	0	0	0.32%	0.00%	0.00%	0%	0%
Total	32,639	40	44	44	0.1%	0.1%	0.1%	91%	91%
R-squared			0.231	0.231					

Chart III-D1



**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES**

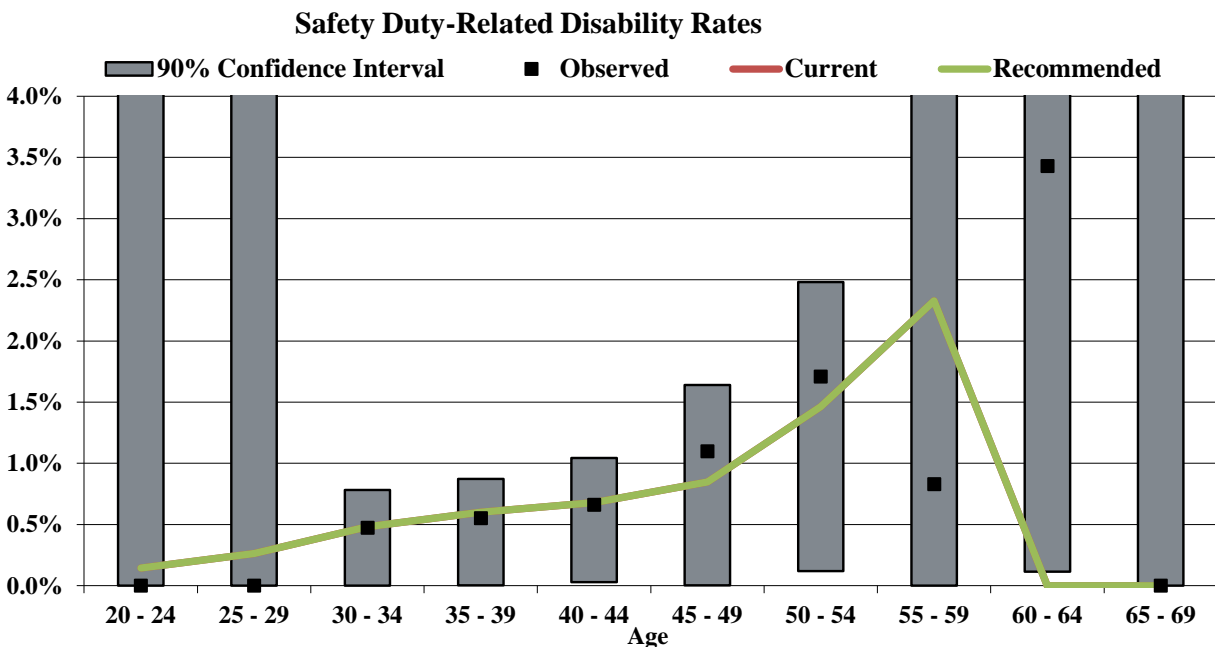
Table III-D2 shows the calculation of actual-to-expected ratios for duty-related disability rates for Safety members. Chart III-D2 shows the information graphically along with the 90% confidence interval.

The data shows the total number of actual duty-related disabilities to be the same as the total expected count, however, some of these occurrences were at different ages than expected. Due to having insufficient credible experience and the actual overall rates being close to the current rates, producing an A/E ratio of 101%, we do not recommend any changes to the current assumption.

Table III-D2

Safety Duty-Related Disability Rates									
Age	Exposures	Disabilities			Disability Rates			A/E Ratios	
		Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
20 - 24	246	0	0	0	0.00%	0.14%	0.14%	0%	0%
25 - 29	1,245	0	3	3	0.00%	0.26%	0.26%	0%	0%
30 - 34	1,475	7	7	7	0.47%	0.48%	0.48%	98%	98%
35 - 39	1,448	8	9	9	0.55%	0.60%	0.60%	92%	92%
40 - 44	1,212	8	8	8	0.66%	0.68%	0.68%	97%	97%
45 - 49	1,002	11	8	8	1.10%	0.85%	0.85%	130%	130%
50 - 54	761	13	11	11	1.71%	1.46%	1.46%	117%	117%
55 - 59	362	3	8	8	0.83%	2.33%	2.33%	36%	36%
60 - 64	175	6	0	0	3.43%	0.00%	0.00%	0%	0%
65+	0	0	0	0	0.00%	0.00%	0.00%	0%	0%
Total	7,926	56	56	56	0.7%	0.7%	0.7%	101%	101%
R-squared			0.171	0.171					

Chart III-D2



**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
DISABILITY RATES**

Tables III-D3 and III-D4 show the calculation of actual-to-expected ratios for ordinary disability rates for General members and Safety members, respectively.

Due to the lack of credible disability experience for these groups, we do not recommend any changes to the current assumptions.

Table III-D3

General Ordinary Disability Rates									
Age	Exposures	Disabilities			Disability Rates			A/E Ratios	
		Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
20 - 24	748	0	0	0	0.00%	0.00%	0.00%	0%	0%
25 - 29	3,611	0	0	0	0.00%	0.01%	0.01%	0%	0%
30 - 34	5,022	1	1	1	0.02%	0.01%	0.01%	199%	199%
35 - 39	4,995	2	4	4	0.04%	0.08%	0.08%	52%	52%
40 - 44	4,519	2	6	6	0.04%	0.13%	0.13%	33%	33%
45 - 49	3,768	3	7	7	0.08%	0.19%	0.19%	42%	42%
50 - 54	3,430	7	9	9	0.20%	0.28%	0.28%	74%	74%
55 - 59	3,281	8	12	12	0.24%	0.37%	0.37%	65%	65%
60 - 64	2,322	3	11	11	0.13%	0.48%	0.48%	27%	27%
65+	943	1	0	0	0.11%	0.00%	0.00%	0%	0%
Total	32,639	27	51	51	0.08%	0.16%	0.16%	53%	53%
R-squared			0.343	0.343					

Table III-D4

Safety Ordinary Disability Rates									
Age	Exposures	Disabilities			Disability Rates			A/E Ratios	
		Actual	Current	Recommended	Actual	Current	Recommended	Current	Recommended
20 - 24	246	0	0	0	0.00%	0.00%	0.00%	0%	0%
25 - 29	1,245	0	1	1	0.00%	0.05%	0.05%	0%	0%
30 - 34	1,475	1	1	1	0.07%	0.05%	0.05%	136%	136%
35 - 39	1,448	1	1	1	0.07%	0.05%	0.05%	138%	138%
40 - 44	1,212	4	1	1	0.33%	0.08%	0.08%	409%	409%
45 - 49	1,002	0	2	2	0.00%	0.16%	0.16%	0%	0%
50 - 54	761	2	3	3	0.26%	0.39%	0.39%	67%	67%
55 - 59	362	1	2	2	0.28%	0.63%	0.63%	44%	44%
60 - 64	175	0	0	0	0.00%	0.00%	0.00%	0%	0%
65+	0	0	0	0	0.00%	0.00%	0.00%	0%	0%
Total	7,926	9	10	10	0.11%	0.12%	0.12%	91%	91%
R-squared			0.025	0.025					

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

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 steps in our analysis are as follows:

1. Select a standard mortality table that is, based on experience, most closely matching the anticipated experience of TCERA.
2. Compare actual TCERA experience to what would have been predicted by the selected standard table for the period of the experience study.
3. Adjust the standard table either fully or partially depending on the level of credibility for TCERA 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.

In general, we recommend assumption changes when the Actual-to-Expected (A/E) ratio for the current assumption is significantly different than 100%.

At the time of the last experience study in 2020, we recommended the continued use of the RP-2014 mortality tables to predict near-term mortality experience for TCERA, with additional future improvements based on the most recent improvement scale produced by the Society of Actuaries' Retirement Plans Experience Committee (RPEC) at that time (the MP-2019 improvement scale). RPEC has also completed an extensive mortality study of public sector pension plans and issued a set of tables based on experience from this population. As part of this study, we reviewed TCERA's experience compared to both the RP-2014 base tables and the public sector base tables and found that the RP-2014 continues to provide a reasonable predictor of mortality experience for the TCERA population.

Since the prior experience study, RPEC has also continued to release new mortality improvement scales, with the most recent one (Scale MP-2021) reflecting two more years of Social Security data (2018-2019) than was used in the development of Scale MP-2019. It also reflects lower expected improvement rates than Scale MP-2019, based on further slowing in mortality improvement, even prior to the experience during the COVID-19 pandemic.

MP-2021, similar to MP-2019, represents the Society of Actuaries' recommended 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-2021 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.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

The TCERA experience is only partially credible based on standard statistical theory, even with an extended study period of six or nine years. TCERA healthy annuitants, besides General males, experienced overall higher rates of death than expected, with a 109% actual-to-expected ratio for General females, a 132% actual-to-expected ratio for Safety females (though experience in this category is limited), and a 106% actual-to-expected ratio for Safety males. TCERA healthy General males experienced overall lower rates of death than expected, with a 97% actual-to-expected ratio. We recommend an increase from the current adjustment of 8% to 10% to the RP-2014 base tables for General females and removing the adjustment to the RP-2014 base tables for General males. Additionally, we recommend a 5% adjustment for both Safety females and males, increased from no adjustment and a 4.5% adjustment, respectively.

As there is very little experience for TCERA disabled retirees, with only 60 deaths over the nine-year period for General and 19 deaths for Safety, we recommend no changes to the base tables for both General and Safety. Similarly, there were only 45 active deaths for General and 9 active deaths for Safety over the nine-year period, so we recommend the continued use of the non-annuitant rates associated with the base tables along with the same adjustments as for healthy annuitants. Furthermore, we recommend no change to the percentage of Safety deaths assumed to be duty-related due to lack of data.

Rather than weighting the experience based on the number of members living and dying, we have weighted the experience based on benefit size. 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.

Based on this information, we are recommending the following base mortality table assumptions:

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

Healthy General active members, retirees, and beneficiaries and Safety beneficiaries

- The sex distinct Retired Pensioners (RP) 2014 Combined Healthy Tables, published by the Society of Actuaries, with Generational improvements using Projection Scale MP-2021, with no adjustment for males and 10% for females to reflect Plan experience.

Healthy Safety active members and retirees

- The sex distinct Retired Pensioners (RP) 2014 Combined Healthy Tables with blue-collar adjustment, published by the Society of Actuaries, with Generational improvements using Projection Scale MP-2021, with 5% adjustment for both males and females to reflect Plan experience.

Disabled members

- The sex distinct Retired Pensioners (RP) 2014 Disabled Retiree Mortality Table, published by the Society of Actuaries, with Generational improvement using Projection Scale MP-2021.

Tables III-M1, III-M2, III-M3, and III-M4 on the following pages show the calculation of actual-to-expected healthy annuitant death ratios for General male, General female, Safety male, and Safety female members, respectively. Charts III-M1, III-M2, III-M3, and III-M4 show the information graphically along with the 90% confidence intervals.

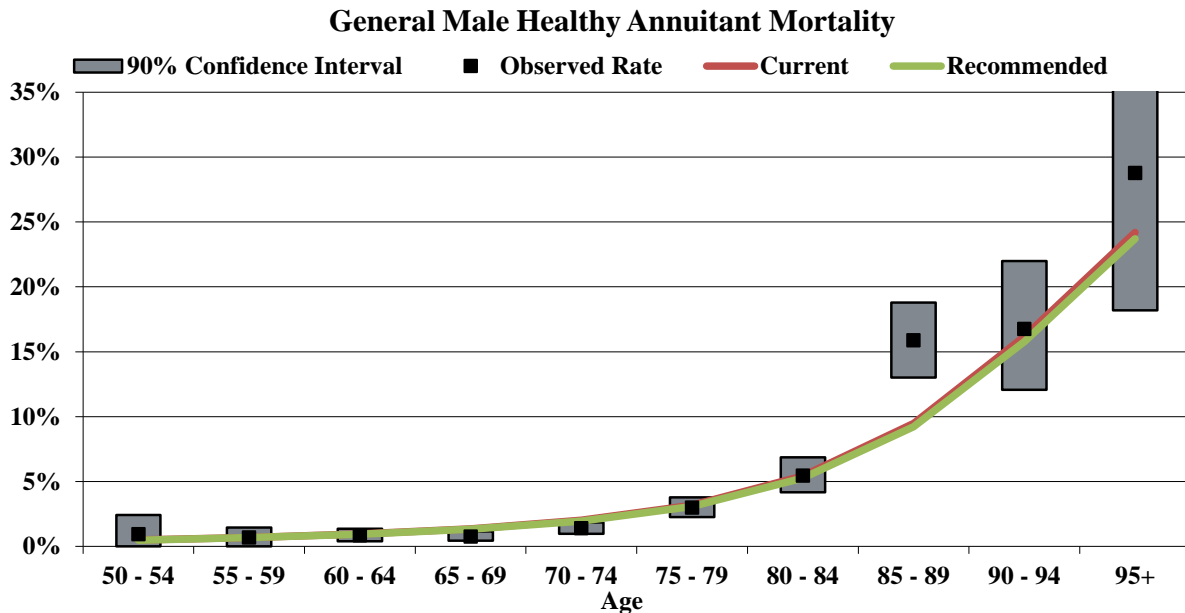
**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

Table III-M1

Healthy Annuitant Mortality - Base Table for General Males								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Recommended	Current	Recommended
50 - 54	124	1	97,087	909	484	468	188%	194%
55 - 59	414	2	541,065	3,696	3,721	3,655	99%	101%
60 - 64	1,024	11	1,853,832	15,978	17,763	17,519	90%	91%
65 - 69	1,832	24	4,470,103	34,394	60,493	58,886	57%	58%
70 - 74	1,963	45	4,859,710	68,177	97,928	94,674	70%	72%
75 - 79	1,325	47	2,995,359	89,850	94,924	92,126	95%	98%
80 - 84	744	50	1,351,699	73,738	73,254	71,219	101%	104%
85 - 89	415	60	678,700	107,774	64,324	62,595	168%	172%
90 - 94	141	32	265,095	44,424	42,900	41,834	104%	106%
95 +	55	15	99,759	28,702	24,130	23,644	119%	121%
Total	8,037	287	17,212,410	467,642	479,920	466,623	97%	100%
R-Squared					0.574	0.576		

Chart III-M1



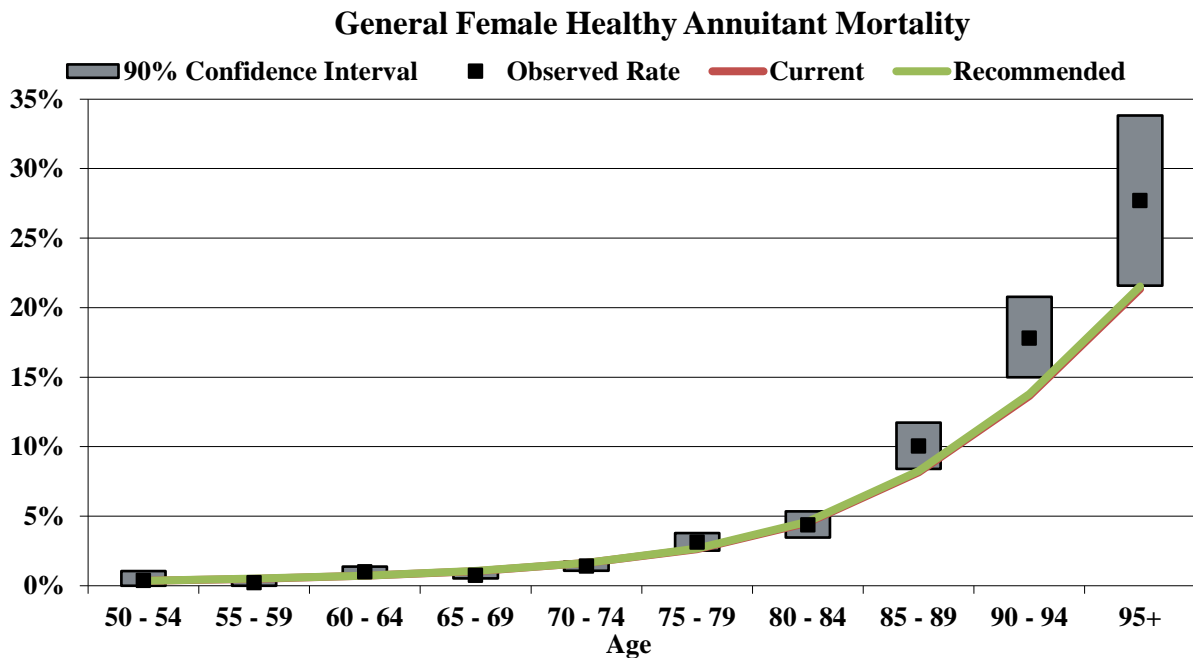
**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

Table III-M2

Healthy Annuitant Mortality - Base Table for General Females								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Recommended	Current	Recommended
50 - 54	286	2	269,053	1,041	923	950	113%	110%
55 - 59	933	4	1,196,008	2,732	5,776	5,980	47%	46%
60 - 64	2,126	19	3,648,323	36,428	25,804	26,257	141%	139%
65 - 69	3,226	29	5,595,350	42,395	58,429	58,826	73%	72%
70 - 74	3,144	49	5,103,540	71,922	83,044	83,903	87%	86%
75 - 79	2,063	57	3,204,392	100,688	84,273	85,527	119%	118%
80 - 84	1,274	58	1,783,133	78,193	80,670	81,798	97%	96%
85 - 89	904	88	1,214,922	122,178	99,029	100,137	123%	122%
90 - 94	467	77	572,810	101,981	78,222	78,993	130%	129%
95 +	139	39	129,275	35,829	27,600	27,815	130%	129%
Total	14,562	422	22,716,806	593,386	543,771	550,185	109%	108%
R-Squared					0.744	0.744		

Chart III-M2



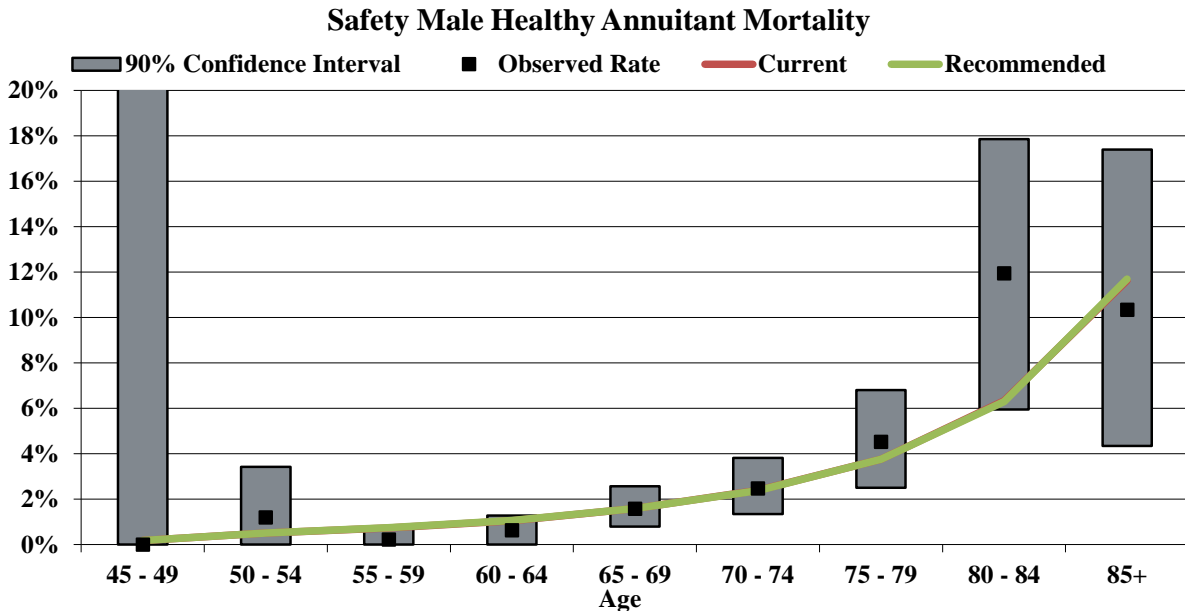
**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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**SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

Table III-M3

Healthy Annuitant Mortality - Base Table for Safety Males								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Recommended	Current	Recommended
45 - 49	12	0	22,869	0	42	41	0%	0%
50 - 54	117	1	213,588	2,576	1,103	1,100	234%	234%
55 - 59	375	1	1,324,189	3,053	9,768	9,858	31%	31%
60 - 64	471	4	1,754,369	11,074	18,476	18,716	60%	59%
65 - 69	505	8	1,997,019	31,538	31,833	31,822	99%	99%
70 - 74	445	8	1,674,363	41,486	40,150	39,820	103%	104%
75 - 79	279	15	951,122	43,019	35,767	35,747	120%	120%
80 - 84	84	9	283,176	33,841	17,942	17,821	189%	190%
85+	46	6	131,707	13,629	15,313	15,400	89%	88%
Total	2,334	52	8,352,402	180,216	170,394	170,326	106%	106%
R-Squared					0.408	0.407		

Chart III-M3



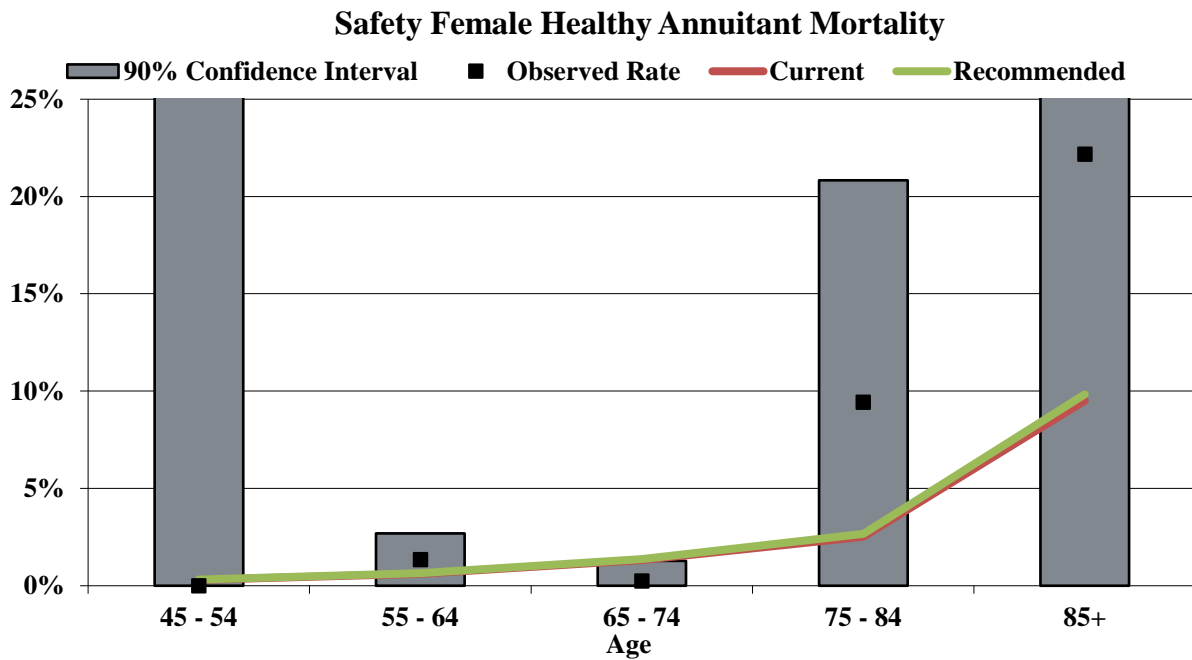
**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**SECTION III – DEMOGRAPHIC ASSUMPTIONS
MORTALITY RATES**

Table III-M4

Healthy Annuitant Mortality - Base Table for Safety Females								
Age Band	Exposures	Actual Deaths	Weighted Exposures	Weighted Deaths			A/E Ratios	
				Actual	Current	Recommended	Current	Recommended
45 - 54	47	0	96,103	0	289	307	0%	0%
55 - 64	186	1	513,117	6,871	3,157	3,332	218%	206%
65 - 74	156	1	536,530	1,308	7,052	7,353	19%	18%
75 - 84	24	1	72,281	6,812	1,818	1,925	375%	354%
85+	7	2	12,832	2,845	1,218	1,262	234%	225%
Total	420	5	1,230,862	17,837	13,535	14,179	132%	126%
R-Squared					0.022	0.023		

Chart III-M4



**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

**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 – 79 total disabled deaths and 54 total active deaths – over the nine-year period, which is not enough data to produce sufficiently credible assumptions. We recommend continuing the practice of aligning non-annuitant mortality assumptions with the respective healthy annuitant mortality assumptions discussed above.

Additionally, there is limited data for duty-related Safety member deaths. The data shows nine non-annuitant deaths for all Safety members over the nine-year study period. Given the lack of credible data, we recommend no change to the percentage of deaths assumed to be duty related.

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 RP-2014 tables with adjustments) projected using Scale MP-2021 from 2014 to 2047. These static projections are intended to approximate generational mortality improvements.

The projection periods are based upon the duration of active liabilities for the respective affected groups (approximately 21 years), and the period during which the associated employee contribution rates will be in use (central year of 2026). The employee contribution rates are also blended using a male/female weighting of 30%/70% for General Members and 75%/25% 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, 2024 through June 30, 2027. 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, 2023 through June 30, 2026.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

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

FAMILY COMPOSITION

Members who are married at the time of retirement are entitled to an unreduced 60% joint and survivor annuity.

An analysis of all retired General members showed that 77% of males are married and 58% of females are married. Over the last nine years, the percentages of members retiring with a spouse are 65% for males and 55% for females. We recommend reducing the marriage assumption for future female General retirees from 60% to 55% and no change the current assumption of 80% for future male General retirees.

An analysis of all retired Safety members showed that 82% of males and 55% of females are married. Over the last nine years, the percentages of members retiring with a spouse are 75% for males and 55% for females. We recommend reducing the marriage assumption for future male Safety retirees from 85% to 80% and reducing the assumption for future female Safety retirees from 65% to 55%.

An analysis of all retired General members showed that on average male members are 2.3 years older than their spouses and female members are 2.0 years younger than their spouses. Similarly, an analysis of all retired Safety members showed that on average male members are 2.3 years older than their spouses and female members are 2.5 years younger than their spouses. We recommend updating the current assumption for male members to be two years older than their spouse from the prior assumption of three years and maintaining the assumption that female members are two years younger than their spouse.

We performed an additional review of the recent retirement data and found that there is a small but consistent number of married retirees who elect an optional form of benefit other than the unreduced 60% Joint and Survivor allowance, which is the only subsidized form of payment available. By electing a different option, these married members are foregoing the value of the subsidy. Therefore, we are also recommending an additional assumption that 87.5% of all future retirees who are not retiring under a duty disability with eligible beneficiaries elect the unreduced benefit, and the remaining 12.5% will elect an optional form with a reduced benefit.

SICK LEAVE SERVICE LOAD

Members who are eligible for service retirement can convert unused sick leave to benefit service. An analysis of individual retirement calculations in the prior experience study showed that, on average, leave conversions added roughly 1.1% and 2.0% to benefit service for General members and Safety members, respectively. Consequently, we recommended adding a flat benefit service load of 1% for General members and 2% for Safety members in determining liabilities for future service retirements. As the experience associated with sick leave cash outs during the COVID period may not be representative of other time periods, we recommend maintaining the current sick leave service loads and revisiting this assumption at the time of the next Experience Study.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY REPORT AS OF JUNE 30, 2023**

APPENDIX A – SUMMARY OF RECOMMENDED ASSUMPTIONS

The recommended economic and demographic assumptions were adopted by the Board at their October 11, 2023 meeting. The assumptions are based on an experience study covering the period from July 1, 2020 through June 30, 2023 (which also incorporates data from July 1, 2014 through June 30, 2020).

1. Rate of Return

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

2. Inflation

The Consumer Price Index (CPI) is assumed to increase at the rate of 2.75% per year. This assumption is also used to project the compensation limit for PEPRA members.

3. Post Retirement COLA

Benefits are assumed to increase after retirement at the rate of 2.6% per year for Tier 1 participants and 2% per year for all participants in Tiers 2-4. An additional COLA of 0.4% per year (for a total COLA growth rate of 3.0%) is included for Tier 1 participants in pay status to reflect their accumulated COLA banks.

4. Internal Revenue Code Limits and PEPRA Pensionable Compensation Limits

The maximum benefit and maximum compensation limitations under Internal Revenue Code Sections 415 and 401(a)(17), respectively, are not reflected in the valuation for funding purposes. Any limitation is reflected in a member's benefit after retirement. The PEPRA compensation limit, which is \$146,042 for calendar year 2023 for members participating in Social Security, was applied.

5. Interest on Member Contributions

The annual credited interest rate on member contributions is assumed to be 7.00%.

6. Family Composition

Percentage married for deferred vested terminations and all active members who retire, become disabled, or die during active service is shown below. Spouses of male members are assumed to be female and two years younger. Spouses of female members are assumed to be male and two years older. Actual spouse demographic data is reflected following benefit commencement.

Division	Gender	Percentage
General	Male	80%
General	Female	55%
Safety	Male	80%
Safety	Female	55%

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY REPORT AS OF JUNE 30, 2023**

APPENDIX A – SUMMARY OF RECOMMENDED ASSUMPTIONS

87.5% of future retirees with eligible beneficiaries who do not have a service-related disability are assumed to elect the 60% Joint and Survivor allowance, with the remainder receiving an actuarially reduced form of benefit.

7. Increases in Pay

Wage inflation component: 3.00%

Additional longevity and promotion component:

Longevity and Promotion Increases		
Service	General	Safety
0	8.00%	9.00%
1	6.50%	6.00%
2	5.50%	5.00%
3	4.00%	3.50%
4	3.00%	2.50%
5	2.00%	2.00%
6	1.75%	1.25%
7	1.50%	1.25%
8	1.00%	1.25%
9	1.00%	1.25%
10	1.00%	1.25%
11	1.00%	1.25%
12	1.00%	1.25%
13	1.00%	1.25%
14	1.00%	1.25%
15+	0.50%	1.25%

8. Sick Leave Service Credit Upon Service Retirement

Active members' service retirement benefits are adjusted by a percentage, 1% for General and 2% for Safety, for anticipated conversions of sick leave to retirement service credit.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY REPORT AS OF JUNE 30, 2023**

APPENDIX A – SUMMARY OF RECOMMENDED ASSUMPTIONS

9. Termination

Years of Service	Rates of Termination	
	General	Safety
0	18.00%	13.00%
1	13.00%	12.00%
2	12.00%	8.00%
3	10.00%	8.00%
4	9.00%	8.00%
5	8.00%	6.00%
6	7.00%	6.00%
7	6.00%	6.00%
8	6.00%	6.00%
9	5.00%	6.00%
10	4.00%	4.00%
11	4.00%	4.00%
12	4.00%	4.00%
13	3.50%	4.00%
14	3.50%	4.00%
15	2.50%	2.50%
16	2.50%	2.50%
17	2.50%	2.50%
18	2.50%	2.50%
19	2.50%	2.50%
20 and over	2.50%	2.50%

Rates of termination apply to active Members who terminate their employment. Rates are assumed not to apply after eligibility for retirement.

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

General Members: Age 60
Safety Members: Age 55

10. Rates of Deferred Vested Termination

Rates of deferred vested termination are a percentage of the termination rates shown on the previous page.

Service	General Males	General Females	Safety
5-10	75%	55%	60%
10-15	80%	65%	60%
15-20	80%	75%	80%
20+	80%	75%	100%

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY REPORT AS OF JUNE 30, 2023**

APPENDIX A – SUMMARY OF RECOMMENDED ASSUMPTIONS

11. Reciprocal Transfers

60% of General and 65% of Safety deferred vested terminated 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 3.50% for General members and 4.25% for Safety members.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY REPORT AS OF JUNE 30, 2023**

APPENDIX A – SUMMARY OF RECOMMENDED ASSUMPTIONS

12. Rates of Disability

Disability rates of active participants are shown below.

Age	Rates of Disability					
	General - Males		General - Females		Safety	
	Ordinary	Duty	Ordinary	Duty	Ordinary	Duty
20	0.000%	0.010%	0.000%	0.010%	0.000%	0.110%
21	0.000%	0.010%	0.000%	0.010%	0.000%	0.120%
22	0.000%	0.010%	0.000%	0.010%	0.000%	0.130%
23	0.000%	0.010%	0.000%	0.010%	0.000%	0.140%
24	0.000%	0.010%	0.000%	0.010%	0.000%	0.150%
25	0.010%	0.010%	0.010%	0.010%	0.050%	0.170%
26	0.010%	0.010%	0.010%	0.010%	0.050%	0.200%
27	0.010%	0.010%	0.010%	0.010%	0.050%	0.250%
28	0.010%	0.010%	0.010%	0.010%	0.050%	0.300%
29	0.010%	0.010%	0.010%	0.010%	0.050%	0.350%
30	0.010%	0.010%	0.010%	0.010%	0.050%	0.400%
31	0.010%	0.010%	0.010%	0.010%	0.050%	0.450%
32	0.010%	0.010%	0.010%	0.010%	0.050%	0.500%
33	0.010%	0.010%	0.010%	0.010%	0.050%	0.520%
34	0.010%	0.010%	0.010%	0.010%	0.050%	0.540%
35	0.020%	0.020%	0.080%	0.020%	0.050%	0.560%
36	0.020%	0.020%	0.080%	0.020%	0.050%	0.580%
37	0.020%	0.020%	0.080%	0.020%	0.050%	0.600%
38	0.030%	0.030%	0.120%	0.030%	0.050%	0.620%
39	0.030%	0.030%	0.130%	0.030%	0.050%	0.640%
40	0.030%	0.030%	0.140%	0.030%	0.075%	0.660%
41	0.040%	0.045%	0.160%	0.045%	0.075%	0.670%
42	0.040%	0.045%	0.170%	0.045%	0.080%	0.680%
43	0.040%	0.045%	0.180%	0.045%	0.085%	0.690%
44	0.050%	0.050%	0.190%	0.050%	0.090%	0.700%
45	0.050%	0.055%	0.200%	0.055%	0.095%	0.750%
46	0.050%	0.060%	0.220%	0.060%	0.100%	0.800%
47	0.060%	0.070%	0.240%	0.070%	0.150%	0.850%
48	0.070%	0.080%	0.260%	0.080%	0.200%	0.900%
49	0.080%	0.090%	0.280%	0.090%	0.250%	0.950%
50	0.090%	0.100%	0.300%	0.100%	0.300%	1.000%
51	0.100%	0.150%	0.320%	0.150%	0.350%	1.250%
52	0.120%	0.200%	0.340%	0.200%	0.400%	1.500%
53	0.140%	0.250%	0.360%	0.250%	0.450%	1.750%
54	0.160%	0.300%	0.380%	0.300%	0.500%	2.000%
55	0.180%	0.350%	0.400%	0.350%	0.550%	2.250%
56	0.200%	0.400%	0.420%	0.400%	0.600%	2.300%
57	0.220%	0.450%	0.440%	0.450%	0.650%	2.350%
58	0.240%	0.500%	0.480%	0.500%	0.700%	2.400%
59	0.260%	0.550%	0.520%	0.550%	0.750%	2.450%
60	0.280%	0.600%	0.540%	0.600%	0.000%	0.000%
61	0.300%	0.650%	0.560%	0.650%	0.000%	0.000%
62	0.320%	0.700%	0.600%	0.700%	0.000%	0.000%
63	0.340%	0.750%	0.620%	0.750%	0.000%	0.000%
64	0.360%	0.800%	0.640%	0.800%	0.000%	0.000%
65 and over	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY REPORT AS OF JUNE 30, 2023**

APPENDIX A – SUMMARY OF RECOMMENDED ASSUMPTIONS

13. Rates of Mortality for Healthy Lives

Mortality rates for General actives, retirees, beneficiaries, terminated vested, and reciprocals are based on the sex distinct Retired Pensioner (RP) 2014 Combined Healthy Tables, published by the Society of Actuaries, with Generational improvement using Projection Scale MP-2021 from 2014, with no additional adjustment for males and an adjustment of 10% for females to reflect Plan experience.

Mortality rates for Safety actives, retirees, beneficiaries, terminated vested, and reciprocals are based on the sex distinct Retired Pensioner (RP) 2014 Combined Healthy Tables with blue-collar adjustment, published by the Society of Actuaries, with Generational improvement using Projection Scale MP-2021 from 2014, and increased by 5% for both males and females to reflect Plan experience.

14. Rates of Mortality for Retired Disabled Lives

Mortality rates for disabled retirees are based on the sex distinct Retired Pensioner (RP) 2014 Disabled Retiree Mortality Table, published by the Society of Actuaries, with Generational improvement using Projection Scale MP-2021 from 2014.

15. Duty-Related Deaths (Safety Employees Only)

Percentage of deaths assumed to be duty related	
Age	
20-24	37%
25-30	42%
31-34	45%
35-43	50%
44-45	52%
46-47	54%
48-49	56%
50-54	58%
55-56	60%
57-58	62%
59	63%

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY REPORT AS OF JUNE 30, 2023**

APPENDIX A – SUMMARY OF RECOMMENDED ASSUMPTIONS

16. Rates of Retirement

Rates of retirement are based on age and service according to the following below.

Age	General		Safety	
	Years of Service		Years of Service	
	Less than 30	30 or more	Less than 20	20 or more
45	0.00%	0.00%	7.00%	7.00%
46	0.00%	0.00%	7.00%	7.00%
47	0.00%	0.00%	7.00%	7.00%
48	0.00%	0.00%	7.00%	7.00%
49	0.00%	0.00%	7.00%	7.00%
50	5.00%	10.00%	7.00%	7.00%
51	5.00%	10.00%	7.00%	7.00%
52	5.00%	10.00%	7.00%	7.00%
53	5.00%	10.00%	7.00%	7.00%
54	5.00%	10.00%	7.00%	7.00%
55	6.00%	10.00%	10.00%	18.00%
56	6.00%	10.00%	10.00%	18.00%
57	6.00%	10.00%	10.00%	18.00%
58	6.00%	10.00%	10.00%	18.00%
59	6.00%	10.00%	10.00%	18.00%
60	15.00%	20.00%	20.00%	40.00%
61	15.00%	20.00%	20.00%	40.00%
62	15.00%	20.00%	20.00%	40.00%
63	15.00%	20.00%	20.00%	40.00%
64	15.00%	20.00%	20.00%	40.00%
65	35.00%	35.00%	40.00%	75.00%
66	35.00%	35.00%	40.00%	75.00%
67	35.00%	35.00%	40.00%	75.00%
68	35.00%	35.00%	40.00%	75.00%
69	35.00%	35.00%	40.00%	75.00%
70	35.00%	35.00%	100.00%	100.00%
71	35.00%	35.00%	100.00%	100.00%
72	35.00%	35.00%	100.00%	100.00%
73	35.00%	35.00%	100.00%	100.00%
74	35.00%	35.00%	100.00%	100.00%
75 and over	100.00%	100.00%	100.00%	100.00%

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

APPENDIX B – SUMMARY OF PRIOR ASSUMPTIONS

The TCERA Board has the authority to select economic and demographic assumptions for the Plan. The assumptions used in the most recent actuarial valuations reflected the results of an Experience Study performed by Cheiron covering the period July 1, 2017 through June 30, 2020.

1. Rate of Return

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

2. Inflation

The Consumer Price Index (CPI) is assumed to increase at the rate of 2.75% per year. This assumption is also used to project the compensation limit for PEPRA members.

3. Post Retirement COLA

Benefits are assumed to increase after retirement at the rate of 2.6% per year for Tier 1 and 2% per year for Tiers 2-4.

4. Internal Revenue Code Limits and PEPRA Pensionable Compensation Limits

The maximum benefit and maximum compensation limitations under Internal Revenue Code Sections 415 and 401(a)(17), respectively, are not reflected in the valuation for funding purposes. Any limitation is reflected in a member's benefit after retirement. The PEPRA compensation limit, which is \$146,042 for calendar year 2023 for members participating in Social Security, was applied.

5. Interest on Member Contributions

The annual credited interest rate on member contributions is assumed to be 7.00%.

6. Family Composition

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

Division	Gender	Percentage
General	Males	80%
General	Female	60%
Safety	Male	85%
Safety	Female	65%

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

APPENDIX B – SUMMARY OF PRIOR ASSUMPTIONS

7. Increases in Pay

Wage inflation component: 3.00%

Additional longevity and promotion component:

Longevity and Promotion Increases		
Service	General	Safety
0	8.00%	9.00%
1	6.50%	6.00%
2	5.50%	5.00%
3	4.00%	3.00%
4	3.00%	3.00%
5	2.00%	2.00%
6	1.75%	2.00%
7	1.50%	2.00%
8	1.00%	1.00%
9	1.00%	1.00%
10	1.00%	1.00%
11	1.00%	1.00%
12	1.00%	1.00%
13	1.00%	1.00%
14	1.00%	1.00%
15+	0.50%	1.00%

8. Sick Leave Service Credit Upon Service Retirement

Active members' service retirement benefits are adjusted by a percentage, 1% for General and 2% for Safety, for anticipated conversions of sick leave to retirement service credit.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

APPENDIX B – SUMMARY OF PRIOR ASSUMPTIONS

9. Termination

Age	Rates of Termination						
	General				Safety		
	Years of Service				Years of Service		
	Less than 3	3 to 5	5 to 10	10 or more	Less than 3	3 to 5	5 or more
20	15.00%	12.00%	10.00%	10.00%	11.00%	7.00%	6.00%
21	15.00%	12.00%	10.00%	10.00%	11.00%	7.00%	6.00%
22	15.00%	12.00%	10.00%	10.00%	11.00%	7.00%	6.00%
23	15.00%	12.00%	10.00%	10.00%	11.00%	7.00%	6.00%
24	15.00%	12.00%	10.00%	10.00%	11.00%	7.00%	6.00%
25	15.00%	8.00%	8.00%	8.00%	11.00%	7.00%	6.00%
26	15.00%	8.00%	8.00%	8.00%	11.00%	7.00%	6.00%
27	15.00%	8.00%	8.00%	8.00%	11.00%	7.00%	6.00%
28	15.00%	8.00%	8.00%	8.00%	11.00%	7.00%	6.00%
29	15.00%	8.00%	8.00%	8.00%	11.00%	7.00%	6.00%
30	15.00%	8.00%	6.00%	5.00%	11.00%	7.00%	4.50%
31	15.00%	8.00%	6.00%	5.00%	11.00%	7.00%	4.50%
32	15.00%	8.00%	6.00%	5.00%	11.00%	7.00%	4.50%
33	15.00%	8.00%	6.00%	5.00%	11.00%	7.00%	4.50%
34	15.00%	8.00%	6.00%	5.00%	11.00%	7.00%	4.50%
35	15.00%	8.00%	5.00%	3.00%	11.00%	7.00%	4.00%
36	15.00%	8.00%	5.00%	3.00%	11.00%	7.00%	4.00%
37	15.00%	8.00%	5.00%	3.00%	11.00%	7.00%	4.00%
38	15.00%	8.00%	5.00%	3.00%	11.00%	7.00%	4.00%
39	15.00%	8.00%	5.00%	3.00%	11.00%	7.00%	4.00%
40	14.25%	8.00%	5.00%	3.00%	11.00%	7.00%	4.00%
41	14.25%	8.00%	5.00%	3.00%	11.00%	7.00%	4.00%
42	14.25%	8.00%	5.00%	3.00%	11.00%	7.00%	4.00%
43	14.25%	8.00%	5.00%	3.00%	11.00%	7.00%	4.00%
44	14.25%	8.00%	5.00%	3.00%	11.00%	7.00%	4.00%
45	13.50%	8.00%	5.00%	3.00%	8.00%	6.00%	3.50%
46	13.50%	8.00%	5.00%	3.00%	8.00%	6.00%	3.50%
47	13.50%	8.00%	5.00%	3.00%	8.00%	6.00%	3.50%
48	13.50%	8.00%	5.00%	3.00%	8.00%	6.00%	3.50%
49	13.50%	8.00%	5.00%	3.00%	8.00%	6.00%	3.50%
50	12.75%	5.00%	5.00%	3.00%	8.00%	6.00%	0.00%
51	12.75%	5.00%	5.00%	3.00%	8.00%	6.00%	0.00%
52	12.75%	5.00%	5.00%	3.00%	8.00%	6.00%	0.00%
53	12.75%	5.00%	5.00%	3.00%	8.00%	6.00%	0.00%
54	12.75%	5.00%	5.00%	3.00%	8.00%	6.00%	0.00%
55	12.00%	5.00%	5.00%	3.00%	5.00%	6.00%	0.00%
56	12.00%	5.00%	5.00%	3.00%	5.00%	6.00%	0.00%
57	12.00%	5.00%	5.00%	3.00%	5.00%	6.00%	0.00%
58	12.00%	5.00%	5.00%	3.00%	5.00%	6.00%	0.00%
59	12.00%	5.00%	5.00%	3.00%	5.00%	6.00%	0.00%
60	11.25%	5.00%	5.00%	3.00%	0.00%	0.00%	0.00%
61	11.25%	5.00%	5.00%	3.00%	0.00%	0.00%	0.00%
62	11.25%	5.00%	5.00%	3.00%	0.00%	0.00%	0.00%
63	11.25%	5.00%	5.00%	3.00%	0.00%	0.00%	0.00%
64	11.25%	5.00%	5.00%	3.00%	0.00%	0.00%	0.00%
65 and over	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

APPENDIX B – SUMMARY OF PRIOR ASSUMPTIONS

Rates of termination apply to active Members who terminate their employment. Rates are assumed not to apply after eligibility for retirement.

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

General Members: Age 60
Safety Members: Age 55

10. Rates of Deferred Vested Termination

Rates of deferred vested termination are a percentage of the termination rates shown on the previous page.

Service	General Males	General Females	Safety
5-10	75%	55%	60%
10-15	85%	70%	60%
15-20	85%	75%	60%
20+	85%	75%	100%

11. Reciprocal Transfers

60% of General and 6% of Safety deferred vested terminated 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 3.50% for General members and 4.00% for Safety members.

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

APPENDIX B – SUMMARY OF PRIOR ASSUMPTIONS

12. Rates of Disability

Age	Rates of Disability					
	General – Males		General – Females		Safety	
	Ordinary	Duty	Ordinary	Duty	Ordinary	Duty
20	0.000%	0.010%	0.000%	0.010%	0.000%	0.110%
21	0.000%	0.010%	0.000%	0.010%	0.000%	0.120%
22	0.000%	0.010%	0.000%	0.010%	0.000%	0.130%
23	0.000%	0.010%	0.000%	0.010%	0.000%	0.140%
24	0.000%	0.010%	0.000%	0.010%	0.000%	0.150%
25	0.010%	0.010%	0.010%	0.010%	0.050%	0.170%
26	0.010%	0.010%	0.010%	0.010%	0.050%	0.200%
27	0.010%	0.010%	0.010%	0.010%	0.050%	0.250%
28	0.010%	0.010%	0.010%	0.010%	0.050%	0.300%
29	0.010%	0.010%	0.010%	0.010%	0.050%	0.350%
30	0.010%	0.010%	0.010%	0.010%	0.050%	0.400%
31	0.010%	0.010%	0.010%	0.010%	0.050%	0.450%
32	0.010%	0.010%	0.010%	0.010%	0.050%	0.500%
33	0.010%	0.010%	0.010%	0.010%	0.050%	0.520%
34	0.010%	0.010%	0.010%	0.010%	0.050%	0.540%
35	0.020%	0.020%	0.008%	0.020%	0.050%	0.560%
36	0.020%	0.020%	0.008%	0.020%	0.050%	0.580%
37	0.020%	0.020%	0.008%	0.020%	0.050%	0.600%
38	0.030%	0.030%	0.120%	0.030%	0.050%	0.620%
39	0.030%	0.030%	0.130%	0.030%	0.050%	0.640%
40	0.030%	0.030%	0.140%	0.030%	0.075%	0.660%
41	0.040%	0.045%	0.160%	0.045%	0.075%	0.670%
42	0.040%	0.045%	0.170%	0.045%	0.080%	0.680%
43	0.040%	0.045%	0.180%	0.045%	0.085%	0.690%
44	0.050%	0.050%	0.190%	0.050%	0.090%	0.700%
45	0.050%	0.055%	0.200%	0.055%	0.095%	0.750%
46	0.050%	0.060%	0.220%	0.060%	0.100%	0.800%
47	0.060%	0.070%	0.240%	0.070%	0.150%	0.850%
48	0.070%	0.080%	0.260%	0.080%	0.200%	0.900%
49	0.080%	0.090%	0.280%	0.090%	0.250%	0.950%
50	0.090%	0.100%	0.300%	0.100%	0.300%	1.000%
51	0.100%	0.150%	0.320%	0.150%	0.350%	1.250%
52	0.120%	0.200%	0.340%	0.200%	0.400%	1.500%
53	0.140%	0.250%	0.360%	0.250%	0.450%	1.750%
54	0.160%	0.300%	0.380%	0.300%	0.500%	2.000%
55	0.180%	0.350%	0.400%	0.350%	0.550%	2.250%
56	0.200%	0.400%	0.420%	0.400%	0.600%	2.300%
57	0.220%	0.450%	0.440%	0.450%	0.650%	2.350%
58	0.240%	0.500%	0.480%	0.500%	0.700%	2.400%
59	0.260%	0.550%	0.520%	0.550%	0.750%	2.450%
60	0.280%	0.600%	0.540%	0.600%	0.000%	0.000%
61	0.300%	0.650%	0.560%	0.650%	0.000%	0.000%
62	0.320%	0.700%	0.600%	0.700%	0.000%	0.000%
63	0.340%	0.750%	0.620%	0.750%	0.000%	0.000%
64	0.360%	0.800%	0.640%	0.800%	0.000%	0.000%
65 and over	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

APPENDIX B – SUMMARY OF PRIOR ASSUMPTIONS

13. Rates of Mortality for Healthy Lives

Mortality rates for General actives, retirees, beneficiaries, terminated vested, and reciprocals are based on the sex distinct Retired Pensioner (RP) 2014 Combined Healthy Tables, published by the Society of Actuaries, with Generational improvement using Projection Scale MP-2019 from 2014, and increased by 2.2% for males and 8.0% for females to reflect Plan experience.

Mortality rates for Safety actives, retirees, beneficiaries, terminated vested, and reciprocals are based on the sex distinct Retired Pensioner (RP) 2014 Combined Healthy Tables with blue-collar adjustment, published by the Society of Actuaries, with Generational improvement using Projection Scale MP-2019 from 2014, and increased by 4.5% for males to reflect Plan experience.

14. Rates of Mortality for Retired Disabled Lives

Mortality rates for disabled retirees are based on the sex distinct Retired Pensioner (RP) 2014 Generational Disabled Annuitant Mortality Table, published by the Society of Actuaries, with Generational improvement using Projection Scale MP-2019 from 2014.

15. Duty-Related Deaths (Safety Employees Only)

Percentage of deaths assumed to be duty related	
Age	
20-24	37%
25-30	42%
31-34	45%
35-43	50%
44-45	52%
46-47	54%
48-49	56%
50-54	58%
55-56	60%
57-58	62%
59	63%

**TULARE COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
EXPERIENCE STUDY AS OF JUNE 30, 2023**

APPENDIX B – SUMMARY OF PRIOR ASSUMPTIONS

16. Rates of Retirement

Rates of retirement are based on age and service according to the following below.

Age	General Years of Service		Safety Years of Service	
	Less than 30	30 or more	Less than 20	20 or more
45	0.00%	0.00%	7.00%	7.00%
46	0.00%	0.00%	7.00%	7.00%
47	0.00%	0.00%	7.00%	7.00%
48	0.00%	0.00%	7.00%	7.00%
49	0.00%	0.00%	7.00%	7.00%
50	5.00%	10.00%	7.00%	7.00%
51	5.00%	10.00%	7.00%	7.00%
52	5.00%	10.00%	7.00%	7.00%
53	5.00%	10.00%	7.00%	7.00%
54	5.00%	10.00%	7.00%	7.00%
55	6.00%	10.00%	10.00%	18.00%
56	6.00%	10.00%	10.00%	18.00%
57	6.00%	10.00%	10.00%	18.00%
58	6.00%	10.00%	10.00%	18.00%
59	6.00%	10.00%	10.00%	18.00%
60	15.00%	20.00%	20.00%	40.00%
61	15.00%	20.00%	20.00%	40.00%
62	15.00%	20.00%	20.00%	40.00%
63	15.00%	20.00%	20.00%	40.00%
64	15.00%	20.00%	20.00%	40.00%
65	35.00%	35.00%	40.00%	75.00%
66	35.00%	35.00%	40.00%	75.00%
67	35.00%	35.00%	40.00%	75.00%
68	35.00%	35.00%	40.00%	75.00%
69	35.00%	35.00%	40.00%	75.00%
70	35.00%	35.00%	100.00%	100.00%
71	35.00%	35.00%	100.00%	100.00%
72	35.00%	35.00%	100.00%	100.00%
73	35.00%	35.00%	100.00%	100.00%
74	35.00%	35.00%	100.00%	100.00%
75 and over	100.00%	100.00%	100.00%	100.00%



Classic Values, Innovative Advice