

**Kern County Employees'  
Retirement Association**

**INVESTIGATION OF EXPERIENCE  
January 1, 2006 – June 30, 2008**

**November 11, 2008**



By

Karen I. Steffen

Fellow, Society of Actuaries  
Member, American Academy of Actuaries

and

Daniel R. Wade

Fellow, Society of Actuaries  
Member, American Academy of Actuaries



1301 Fifth Avenue  
Suite 3800  
Seattle, WA 98101-2605  
USA

Tel +1 206 624 7940  
Fax +1 206 623 3485

milliman.com

November 11, 2008

Board of Retirement  
Kern County Employees' Retirement Association  
1115 Truxtun Avenue, First Floor  
Bakersfield, CA 93301

Dear Members of the Board:

It is a pleasure to submit this report of our investigation of the experience of the Kern County Employees' Retirement Association (KCERA) for the period January 1, 2006 through June 30, 2008. The results of this investigation are the basis for the actuarial assumptions and methods to be used in the actuarial valuation to be performed as of June 30, 2008.

The purpose of this report is to communicate the results of our review of the actuarial methods and the economic and demographic assumptions to be used in the completion of the upcoming June 30, 2008 valuation. Several of our recommendations represent changes from the prior methods or assumptions and are designed to better anticipate the emerging experience of KCERA.

We have provided financial information showing the estimated impact of the recommended assumptions, if they had been reflected in the December 31, 2007 actuarial valuation. We believe the recommended assumptions provide a reasonable estimate of anticipated experience affecting KCERA. Nevertheless, the emerging costs will vary from those presented in this report to the extent that actual experience differs from that projected by the actuarial assumptions. Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as the following:

- Plan experience differing from the actuarial assumptions,
- Future changes in the actuarial assumptions,
- Increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as potential additional contribution requirements due to changes in the plan's funded status), and
- Changes in the plan provisions or accounting standards.

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

In preparing this report, we relied without audit on information (some oral and some in writing) supplied by KCERA's staff. This information includes, but is not limited to, statutory provisions, employee data, and financial information. In our examination, after discussion with KCERA and certain adjustments, we have found the data to be reasonably consistent and comparable with

This product was prepared solely for KCERA for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

data used for other purposes. Since the experience study results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete or missing. It should be noted that if any data or other information is inaccurate or incomplete, our determinations might need to be revised.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Guides to Professional Conduct, amplifying Opinions, and supporting Recommendations of the American Academy of Actuaries.

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

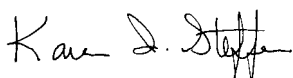
Milliman has been engaged by KCERA as an independent actuary. Any distribution of this report must be in its entirety, including this cover letter, unless prior written consent is obtained from Milliman. Milliman's work product was prepared exclusively for KCERA for a specific and limited purpose. It is a complex, technical analysis that assumes a high level of knowledge concerning KCERA's operations, and uses KCERA's data, which Milliman has not audited. It is not for the use or benefit of any third party for any purpose. Any third party recipient of Milliman's work product who desires professional guidance should not rely upon Milliman's work product, but should engage qualified professionals for advice appropriate to its own specific needs.

We would like to acknowledge the help in the preparation of the data for this investigation given by the KCERA staff. We look forward to our discussions and the opportunity to respond to your questions and comments at your next meeting.

I, Karen I. Steffen, am a member of the American Academy of Actuaries and a Fellow of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

I, Daniel R. Wade, am a member of the American Academy of Actuaries and an Fellow of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,

A handwritten signature in black ink that reads "Karen I. Steffen".

Karen I. Steffen, FSA, EA, MAAA  
Consulting Actuary  
KIS/DRW/nlo

A handwritten signature in black ink that reads "Daniel Wade".

Daniel R. Wade, FSA, EA, MAAA  
Consulting Actuary

**KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
INVESTIGATION OF EXPERIENCE (2006-2008)**

**Table of Contents**

	<b>Page</b>
<b>Section 1: Executive Summary .....</b>	<b>1</b>
<b>Section 2: Economic Assumptions.....</b>	<b>9</b>
Exhibit 2-1 US City Average, All Urban Consumers (CPI-U) - December .....	13
<b>Section 3: Actuarial Methods and Other Miscellaneous Assumptions .....</b>	<b>29</b>
<b>Section 4: Salary Increases Due to Promotion and Longevity (Merit).....</b>	<b>33</b>
Exhibit 4-1 Total Annual Rates of Increase in Salary Due to Merit and Longevity .....	34
<b>Section 5: Mortality .....</b>	<b>35</b>
Exhibit 5-1 Mortality for Service Retirees General Males .....	37
Exhibit 5-2 Mortality for Service Retirees General Females.....	37
Exhibit 5-3 Mortality for Service Retirees Safety Males.....	38
Exhibit 5-4 Mortality for Disabled Retirees General Males .....	38
Exhibit 5-5 Mortality for Disabled Retirees General Females.....	39
Exhibit 5-6 Mortality for Disabled Retirees Safety Males.....	39
<b>Section 6: Service Retirements .....</b>	<b>41</b>
Exhibit 6-1 Retirement Rates General Males .....	43
Exhibit 6-2 Retirement Rates General Females .....	44
Exhibit 6-3 Retirement Rates Safety Males/Females .....	45
<b>Section 7: Disability Retirement.....</b>	<b>47</b>
<b>Section 8: Other Terminations of Employment .....</b>	<b>49</b>
Exhibit 8-1 Termination by Years of Service – General Members.....	50
Exhibit 8-2 Termination by Years of Service – Safety Members .....	51
<b>Section 9: Probability of Refund upon Vested Termination .....</b>	<b>53</b>
Exhibit 9-1 Probability of Refund upon Vested Termination – General .....	54
Exhibit 9-2 Probability of Refund upon Vested Termination – Safety.....	55
Exhibit 9-2 Probability of Refund upon Vested Termination – Safety.....	55
<b>Appendix A: Summary of Proposed Assumptions .....</b>	<b>A-1</b>
Table A-1: Summary of Valuation Assumptions as of June 30, 2008 .....	A-8
Schedule 1: Assumed Rate of Salary Increase .....	A-9
Schedule 2: Mortality for Members Retired for Service .....	A-10
Schedule 3: Mortality for Members Retired for Disability.....	A-11
Schedule 4: Probability of Separation from Active Service General Members – Male.....	A-12
Schedule 5: Probability of Separation from Active Service General Members – Female.....	A-13
Schedule 6: Probability of Separation from Active Service Safety Members .....	A-14
Schedule 7: Immediate Refund of Contributions upon Termination of Employment.....	A-15

# KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTIGATION OF EXPERIENCE (2006-2008)

## Section 1: Executive Summary

---



### Overview

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

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

### Summary of Results

This section describes the key findings of this investigation of experience of the Kern County Employees' Retirement Association for the period January 1, 2006 through June 30, 2008. Normally the study is performed every three years. However, effective with the June 30, 2008 valuation KCERA is moving from a December 31 valuation date to a June 30 valuation date. Thus, this study only covers a period of 30 months since the last study. We are recommending several changes to both the demographic and economic assumptions. We will refer to our recommended assumptions as the "proposed" assumptions.

Note that in addition to these recommended changes, we have shown an alternative investment return assumption, as discussed later in this report. We would describe the current investment return assumption of 8.00% as aggressive, given the excess earnings provisions and the current expectations for capital markets and inflation. We feel that our proposed assumption of 7.75% better matches the current environment. If the Board wished to move to the alternative assumption of 7.50%, it could provide some level of conservatism.

We will discuss all assumptions, including both the proposed and alternative investment return assumption with the Board at the November 19, 2008 meeting.

**Summary of Results  
(continued)**

The following table shows a summary of our recommendations for all assumptions and methods studied.

Assumption	Recommendation
Inflation	Reduce from 3.50% to 3.25%
Investment Return	Reduce from 8.00% to 7.75% (Alternative 7.50%)
Wage Growth	No Change
Funding Method	No Change
Merit Salary Scale	No Change
Retirement	Update Rates for Safety and General Male
Disability	Reduce Rates
Termination	Update Rates
Probability of Refund	Increase Rates
Mortality	Reduce Rates for Healthy (increase life expectancies). Update Rates for Disabled.
Prob. Elig. Survivor	No Change
Reciprocity	Decrease Rate

The impact on the contribution rates and funded ratio is discussed further in the Financial Impact section at the end of the Executive Summary.

**Economic Assumptions**

In Section 2, we discuss the economic assumptions: price inflation, general wage growth (includes price inflation and productivity) and the investment return assumption. We have recommended that the Board decrease both the inflation assumption and the investment return assumption. We recommend maintaining the assumption for general wage growth. However, because we recommend a decrease in the inflation assumption, maintaining the wage growth assumption requires increasing the assumption for real wage growth (net of inflation).

As discussed in Section 2, inflation has historically averaged less than the current 3.50% assumption and this is particularly true for recent history. In addition, forecasts for inflation in the future are much lower. The capital market assumptions of investment consultants are projecting inflation at 2.25% to 2.75% over the next 10 years.

In Section 2, we provide a lengthy discussion of the investment return assumption and our reasons for recommending the use of a lower assumption.

## Demographic Assumptions

In Section 3 through 9, we discuss the demographic assumptions. Unlike the economic assumptions which are more global in nature, these assumptions are based heavily on recent KCERA experience. Demographic assumptions are used to project future member behavior (e.g., when will a member retire? How long will the member live?).

Based on this study, the actual demographic experience was generally close to what the assumptions predicted. Accordingly, in cases where we have recommended changes, the changes have been small.

When reviewing the sections on demographic assumptions, please note the following:

- Our analysis uses the Actual-to-Expected (A/E) ratio to measure how well the current assumptions fit actual experience. For example, if the service retirement A/E is 120%, it indicates that there were 20% more service retirements than expected, and that we should consider increasing the assumption. By increasing the expected rates, this results in a lower ratio (closer to 100%).
- When we refer to the “proposed” assumptions, these are the assumptions that we are recommending. The current assumptions are also referred to as the “expected” assumptions.
- For many of the assumptions, we show detailed graphs of our analysis showing the actual experience for the study (blue bar), the actual experience from the prior study (green bar), the current assumption (red line), and the new proposed assumptions (yellow line).
- The recommended rates are shown in detail in Appendix A.

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

In Section 4, we discuss the individual salary increases due to promotion and longevity – the merit component of salaries. Overall, the results of our salary study show some increases for 2006 and 2007 above what is predicted by the assumptions.

However, the pattern and level of increases were not radically different from those assumed. In addition, we are aware that this period included the approval of Memoranda of Understanding that included large salary equity adjustments for some SEIU employees and salary increases for management and confidential employees. Changes were also made for longevity pay on base wages.

After considering these factors, we do not feel that there is sufficient evidence to make a change in the assumption and are not recommending any changes.



## Mortality

The retired mortality assumption is used to predict the life expectancy of both members currently in pay status and those expected to receive a benefit in the future.

Overall, the actual number of deaths for the current group of retirees (both service and disabled) was reasonably close to the assumptions. This is indicated by an actual-to-expected (A/E) ratio of 111%. That is, there were 11% more deaths than the current assumptions would have predicted.

We are recommending a small reduction in the mortality rates for service retirees and beneficiaries to reflect that people are living longer. The reduced rates are represented by the fact that the yellow lines for the proposed rates are slightly lower than the red lines for the current rates in most of the charts in Section 5.

We have also recommended changes to the disability mortality. KCERA's experience indicates significantly higher mortality for disabled General members than for disabled Safety members.

Under the current assumptions, the Actual-to-Expected (A/E) ratio is 111% for all service and disability retirees combined, indicating that there were slightly fewer deaths than predicted. Under the revised assumptions, the A/E ratio is 118%, providing some margin for future improvements in mortality. Further analysis is shown in Section 5 of this report.

For active mortality (the probability of death while actively employed), we are recommending using a standard mortality table for active employees, with adjustments similar to those made to the mortality for KCERA's retired members.

## Service Retirement

Overall, the actual number of service retirements was less than the assumptions predicted for both General and Safety members. The following chart shows the results for all members eligible for retirement.

Service Retirements					
Class	Actual	Expected	Act / Exp	Proposed	Act / Prop
General	427	489	87%	480	89%
Safety	95	131	73%	111	86%
Total	522	620	84%	591	88%

We are recommending decreased rates of retirement for Safety members, adjustments to the pattern of retirement for General males, and no change to the rates of retirement for General female members. Further analysis is shown in Section 6 of this report.



## Disability Retirement

Overall, the actual number of disability retirements was lower than the assumptions predicted for all categories. The following chart shows the results for General and Safety disability retirements.

Disability Retirements					
Class	Actual	Expected	Act / Exp	Proposed	Act / Prop
General	29	74	39%	50	58%
Safety	27	64	42%	48	56%
Total	56	138	41%	98	57%

As indicated by the decreased number of expected disabilities under the proposed rates (98 proposed versus 138 expected under the current assumptions), we are recommending lower rates of disability retirement in all categories. Further analysis is shown in Section 7 of this report.

## Termination

The actual number of terminations for both General and Safety members was lower than the assumptions predicted. However, after excluding those with less than one year of service, the number of terminations was higher than predicted for both General and Safety.

Termination - Excluding First Year of Service					
Class	Actual	Expected	Act / Exp	Proposed	Act / Prop
General	743	608	122%	679	109%
Safety	80	71	112%	74	109%
Total	823	679	121%	753	109%

We are recommending slightly higher rates of termination for General members in mid-career. We are recommending decreasing the termination assumption for Safety members at low service levels, and increasing the termination assumption at high service levels to better reflect recent experience. Further analysis is shown in Section 8 of this report.

## Probability of Refund upon Vested Termination

The actual number of refunds for vested members at termination was greater than the assumptions predicted for both General and Safety members.

Probability of Refund					
Class	Actual	Expected	Act / Exp	Proposed	Act / Prop
General	128	97	132%	111	116%
Safety	19	11	170%	15	128%
Total	147	108	136%	126	117%

We are recommending increasing the rates of refund for General and Safety members. Further analysis is shown in Section 9 of this report.

## **Financial Impact of the Recommended Assumptions**

The exhibit on the following page shows the expected financial impact the proposed changes would have on KCERA's funding. Note that the proposed changes would increase the expected County contribution rate and decrease the Funded Ratio of the system.

The financial impact was evaluated by performing additional valuations with the December 31, 2007 valuation data and reflecting the proposed assumption changes including a 7.75% investment assumption. The actual financial impact will vary somewhat for the June 30, 2008 valuation due to year-to-year changes in the member population. All proposed demographic changes except mortality were grouped together into the total "Active Decrement Rate Changes" category below for cost analysis purposes.

## KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTIGATION OF EXPERIENCE (2006-2008)

December 31, 2007 Valuation

	<u>Funded Ratio</u>			<u>Employer Normal Cost Rate</u>			<u>UAAL Rate</u>			<u>Total Employer Rates***</u>		
	<u>General</u>	<u>Safety</u>	<u>Total</u>	<u>General</u>	<u>Safety</u>	<u>Total</u>	<u>General</u>	<u>Safety</u>	<u>Total</u>	<u>General</u>	<u>Safety</u>	<u>Total</u>
<b>Results with Prior Assumptions</b>	73.7%	83.0%	77.2%	19.76%	26.60%	21.41%	9.39%	11.14%	9.81%	29.14%	37.75%	31.22%
<b>Increase / (Decrease) due to Recommended Assumptions</b>												
Mortality Assumptions	-0.6%	-0.7%	-0.6%	0.27%	0.53%	0.33%	0.29%	0.61%	0.37%	0.56%	1.14%	0.70%
Other Demographic Assumption Changes*	0.0%	0.5%	0.2%	-0.91%	-1.58%	-1.07%	-0.03%	-0.43%	-0.12%	-0.94%	-2.00%	-1.20%
Economic Changes**	<u>-2.2%</u>	<u>-2.5%</u>	<u>-2.3%</u>	<u>1.15%</u>	<u>1.63%</u>	<u>1.27%</u>	<u>0.90%</u>	<u>1.81%</u>	<u>1.12%</u>	<u>2.05%</u>	<u>3.44%</u>	<u>2.38%</u>
<b>Total Impact of Changes</b>	-2.8%	-2.8%	-2.8%	0.51%	0.58%	0.52%	1.16%	1.99%	1.37%	1.67%	2.58%	1.89%
<b>Results if all Recommended Assumptions Adopted</b>	70.9%	80.2%	74.4%	20.26%	27.19%	21.93%	10.55%	13.14%	11.18%	30.81%	40.33%	33.11%

\*Includes changes to reciprocity rates, retirement rates, termination rates, disability rates, probability of electing a refund of contributions, and the probability of marriage at retirement.

\*\*Includes changes to the investment return assumption from 8.00% to 7.75%, as well as changes in the employee contribution rates, employee contribution interest accruals, and inflation.

\*\*\*Does not reflect the impact of the COLA Contribution Reserve.



This work product was prepared solely for KCERA for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

**Impact of the Recommended Assumptions on Member Contribution Rates**

If adopted, the recommended assumptions would result in increases to the member contribution rates. Safety 3 members have contribution rates that do not vary by entry age. Their rates are set to a level percentage for all members such that the total expected member contributions are equivalent to those that would have been collected using the individual entry age rates. The following are sample rates for entry age 35:

<b>Sample Changes in Member Rates</b>				
	<b>Entry Age</b>	<b>Current</b>	<b>Proposed</b>	<b>Increase</b>
<b>General Members - Tier 1</b>				
Integrated First \$350 of Monthly Comp	35	5.51%	5.79%	0.28%
Integrated Excess of \$350 of Monthly Comp	35	8.27%	8.68%	0.41%
Nontegrated All Compensation	35	8.27%	8.68%	0.41%
<b>General Members- Tier 2</b>				
Integrated First \$350 of Monthly Comp	35	3.83%	4.12%	0.29%
Integrated Excess of \$350 of Monthly Comp	35	5.75%	6.18%	0.43%
Nontegrated All Compensation	35	5.75%	6.18%	0.43%
<b>Safety Members - Excluding "Safety 3" Members</b>				
Integrated First \$350 of Monthly Comp	35	9.50%	9.88%	0.38%
Integrated Excess of \$350 of Monthly Comp	35	14.24%	14.82%	0.58%
<b>Safety 3 Members</b>				
Integrated First \$350 of Monthly Comp	All Ages	7.70%	8.20%	0.50%
Integrated Excess of \$350 of Monthly Comp	All Ages	11.56%	12.30%	0.74%

**Revised Assumptions and Methods**

Appendix A illustrates the Summary of Actuarial Assumptions as it will appear in the June 30, 2008 valuation report, if all recommended assumptions and methods are adopted. Proposed changes in assumptions are highlighted in yellow.

**KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
INVESTIGATION OF EXPERIENCE (2006-2008)**

**Section 2: Economic Assumptions**

---



Actuarial Standard of Practice (ASOP) No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*, provides guidance to actuaries giving advice on selecting economic assumptions for measuring obligations under defined benefit plans.

Because no one knows what the future holds, the best an actuary can do is to use professional judgment to estimate possible future economic outcomes. These estimates are based on a mixture of past experience, future expectations, and professional judgment. The actuary should consider a number of factors, including the purpose and nature of the measurement, and appropriate recent and long-term historical economic data. However, ASOP No. 27 explicitly advises the actuary not to give undue weight to recent experience.

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

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

This section will discuss the economic assumptions. In brief, they are as follows (changes are shown in bold):

<b>Economic Assumption</b>	<b>Current Assumption (Annual Rate)</b>	<b>Recommended (Annual Rate)</b>	<b>Alternative (Annual Rate)</b>
Consumer Price Inflation	3.50%	<b>3.25%</b>	<b>3.25%</b>
Investment Return (net of investment expenses)	8.00%	<b>7.75%</b>	<b>7.50%</b>
Wage Growth (includes inflation and productivity)	4.00%	4.00%	4.00%
Real Wage Inflation (wage growth less price inflation)	0.50%	<b>0.75%</b>	<b>0.75%</b>
Payroll Growth	Assumed to be the same as Wage Growth		

## 1. Price Inflation

### Use in the Valuation

When we refer to inflation in this report, we are referring to price inflation. The inflation assumption has an indirect impact on the results of the actuarial valuation through the development of the assumptions for investment return, general wage increases and the payroll increase assumption. It also has a direct impact on the valuation results as it will be used to determine the expected future COLA payments.

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

The current assumption for inflation is 3.50% per year.

### Historical Perspective

The data for inflation shown below is based on the national Consumer Price Index, US City Average, All Urban Consumers (CPI-U) as published by the Bureau of Labor Statistics. The data for periods ending in December of each year is documented in Exhibit 1 at the end of this section.

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

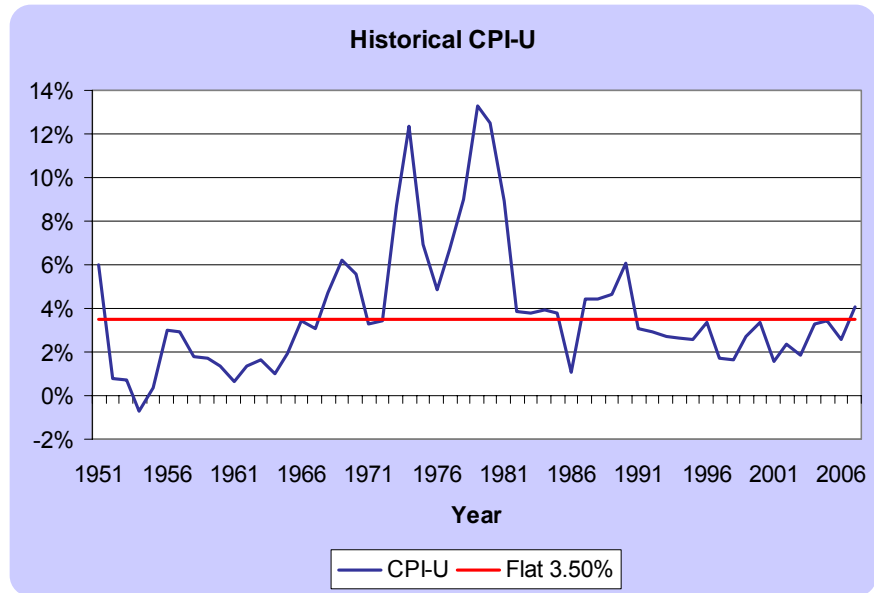
There are numerous ways to review historical data, with significantly differing results. The table below shows the compounded annual inflation rate for various 10-year periods, and for the longer 80-year period, ended in December 2007.

Decade	CPI Increase
1998-2007	2.7%
1988-1997	3.4%
1978-1987	6.4%
1968-1977	6.2%
1958-1967	1.8%
<b>Prior 80 Years</b>	
1928-2007	3.2%

These are national statistics. For comparison, the average CPI increase for the Los Angeles-Riverside-Orange County area has also been 3.2% for the same 80-year period.

**Historical  
Perspective  
(Continued)**

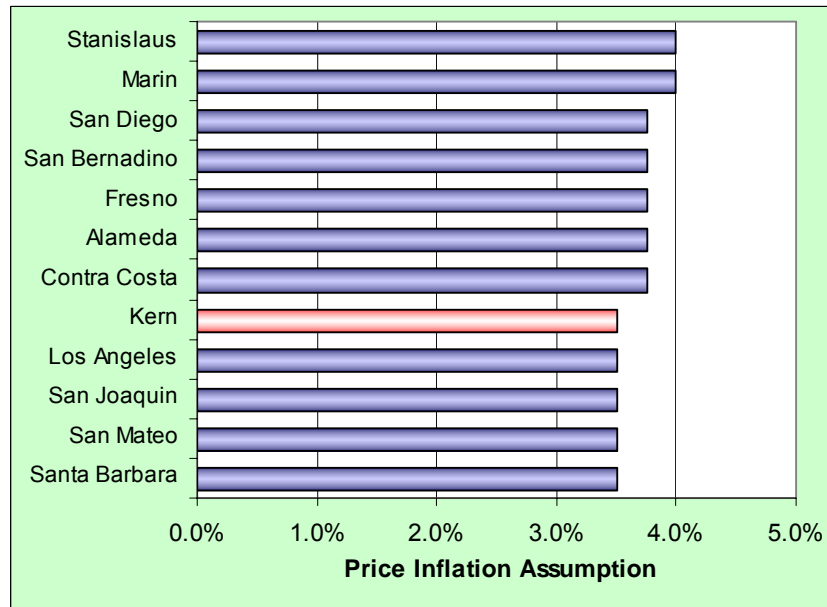
The following graph shows historical national CPI increases. Note that the actual CPI increase has been less than 3.50% during the most recent 15 years.



**Peer System  
Comparison**

According to the *Public Fund Survey* (a survey of approximately 100 statewide systems), the average inflation assumption for statewide systems has been steadily declining. As of the most recent study, the average rate is approximately 3.50%

Looking only at other selected '37 Act systems, the current inflation assumption is lower than or equal to the assumptions used in these other '37 Act systems.





## Forecasts of Inflation

Since the U.S. Treasury started issuing inflation indexed bonds, it is possible to determine the approximate rate of inflation anticipated by the financial markets by comparing the yields on inflation indexed bonds with traditional fixed government bonds.

Current market prices as of August 2008 suggest investors expect inflation to be about 2.28% over the next 10 years and 2.50% over the next 30 years. This rate is in line with the 2.25% amount forecast for the next 10 years by Wilshire, KCERA's investment consultant.

Many forecasters have been anticipating inflation lower than the current assumption of 3.50% for several years. These forecasts are often considered shorter time periods (10 years or less) than may be appropriate for a pension valuation.

To find an economic forecast with a time frame long enough to suit our purposes, we looked at the expected increase in the CPI by the Office of the Chief Actuary for the Social Security Administration. In the 2008 Trustees Report, the projected ultimate annual increase in the CPI over the next 75 years under the intermediate cost assumption was 2.80%. The low cost assumption was 1.80% and the high cost assumption was 3.80%.

## Best Estimate Range and Recommendation

The consumer price inflation assumption impacts KCERA's funding as it is used to project the COLA payments. It is also used to determine both the investment return assumption and the wage growth assumptions. We believe that the current assumption of 3.50% per year is somewhat on the high side, although it is still within the reasonable range.

Given the future expectations of inflation, the Board should consider lowering the assumption as recommended. We recommend a small adjustment to 3.25%.

CONSUMER PRICE INFLATION	
Current Assumption	3.50%
Best Estimate Range	2.00% - 4.00%
Recommended Assumption	3.25%

**KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
INVESTIGATION OF EXPERIENCE (2006-2008)**

**Exhibit 2-1**

**US City Average, All Urban Consumers (CPI-U) - December**

<b>December of:</b>	<b>INDEX</b>	<b>INCREASE</b>	<b>December of:</b>	<b>Index</b>	<b>Increase</b>
<b>1928</b>	17.1				
<b>1929</b>	17.2	0.6%	<b>1969</b>	37.7	6.2%
<b>1930</b>	16.1	-6.4	<b>1970</b>	39.8	5.6
<b>1931</b>	14.6	-9.3	<b>1971</b>	41.1	3.3
<b>1932</b>	13.1	-10.3	<b>1972</b>	42.5	3.4
<b>1933</b>	13.2	0.8	<b>1973</b>	46.2	8.7
<b>1934</b>	13.4	1.5	<b>1974</b>	51.9	12.3
<b>1935</b>	13.8	3.0	<b>1975</b>	55.5	6.9
<b>1936</b>	14.0	1.4	<b>1976</b>	58.2	4.9
<b>1937</b>	14.4	2.9	<b>1977</b>	62.1	6.7
<b>1938</b>	14.0	-2.8	<b>1978</b>	67.7	9.0
<b>1939</b>	14.0	0.0	<b>1979</b>	76.7	13.3
<b>1940</b>	14.1	0.7	<b>1980</b>	86.3	12.5
<b>1941</b>	15.5	9.9	<b>1981</b>	94.0	8.9
<b>1942</b>	16.9	9.0	<b>1982</b>	97.6	3.8
<b>1943</b>	17.4	3.0	<b>1983</b>	101.3	3.8
<b>1944</b>	17.8	2.3	<b>1984</b>	105.3	3.9
<b>1945</b>	18.2	2.2	<b>1985</b>	109.3	3.8
<b>1946</b>	21.5	18.1	<b>1986</b>	110.5	1.1
<b>1947</b>	23.4	8.8	<b>1987</b>	115.4	4.4
<b>1948</b>	24.1	3.0	<b>1988</b>	120.5	4.4
<b>1949</b>	23.6	-2.1	<b>1989</b>	126.1	4.6
<b>1950</b>	25.0	5.9	<b>1990</b>	133.8	6.1
<b>1951</b>	26.5	6.0	<b>1991</b>	137.9	3.1
<b>1952</b>	26.7	0.8	<b>1992</b>	141.9	2.9
<b>1953</b>	26.9	0.7	<b>1993</b>	145.8	2.7
<b>1954</b>	26.7	-0.7	<b>1994</b>	149.7	2.7
<b>1955</b>	26.8	0.4	<b>1995</b>	153.5	2.5
<b>1956</b>	27.6	3.0	<b>1996</b>	158.6	3.3
<b>1957</b>	28.4	2.9	<b>1997</b>	161.3	1.7
<b>1958</b>	28.9	1.8	<b>1998</b>	163.9	1.6
<b>1959</b>	29.4	1.7	<b>1999</b>	168.3	2.7
<b>1960</b>	29.8	1.4	<b>2000</b>	174.0	3.4
<b>1961</b>	30.0	0.7	<b>2001</b>	176.7	1.6
<b>1962</b>	30.4	1.3	<b>2002</b>	180.9	2.4
<b>1963</b>	30.9	1.6	<b>2003</b>	184.3	1.9
<b>1964</b>	31.2	1.0	<b>2004</b>	190.3	3.3
<b>1965</b>	31.8	1.9	<b>2005</b>	196.8	3.4
<b>1966</b>	32.9	3.5	<b>2006</b>	201.8	2.5
<b>1967</b>	33.9	3.0	<b>2007</b>	210.0	4.1
<b>1968</b>	35.5	4.7			

## 2. Wage Growth

### Use in the Valuation

Estimates of future salaries are based on two types of assumptions: 1) general wage increase and 2) merit increase. Rates of increase in the general wage level of the membership are directly related to inflation, while individual salary increases due to promotion and longevity occur even in the absence of inflation. The promotion and longevity assumptions, referred to as the merit scale, will be reviewed with the other demographic assumptions.

The current assumption is for 0.50% wage growth above the inflation assumption.

### Historical Perspective

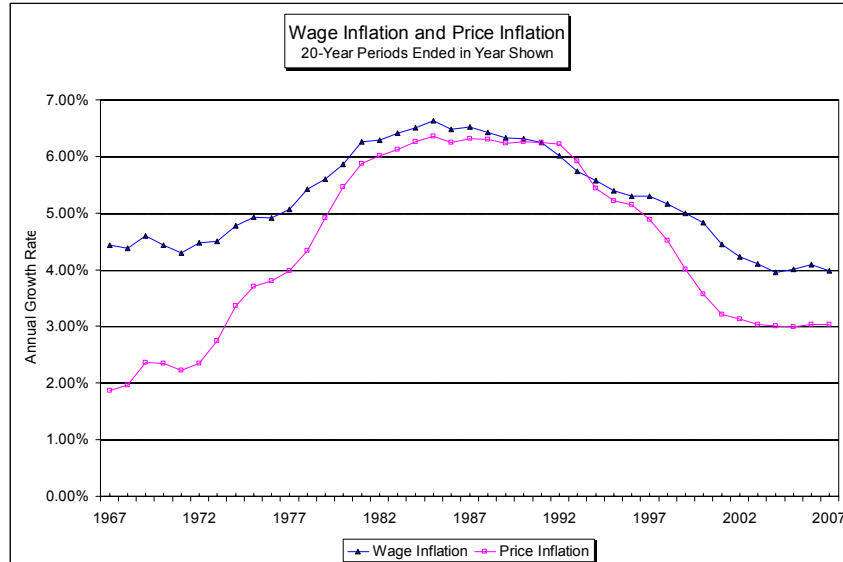
We have used statistics from the Social Security Administration on the National Average Wage back to 1951. For years prior to 1951, we studied the Total Private Nonagricultural Wages as published in *Historical Statistics of the U.S., Colonial Times to 1970*.

There are numerous ways to review this data. For consistency with our observations of other indices, the table below shows the compounded annual rates of wage growth for various 10-year periods, and for the longer 80-year period, ended in 2007. The excess of wage growth over price inflation represents “productivity” or the increase in the standard of living, (also called the real wage inflation rate).

Decade	Wage Growth	CPI Increase	Real Wage Inflation
1998-2007	4.0%	2.7%	1.3%
1988-1997	4.1%	3.4%	0.7%
1978-1987	6.5%	6.4%	0.1%
1968-1977	6.5%	6.2%	0.3%
1958-1967	3.7%	1.8%	1.9%
<b>Prior 80 Years</b>			
1928-2007	4.6%	3.2%	1.4%

**Historical  
Perspective  
(continued)**

The following chart can also be used to study patterns in wage growth compared to CPI increases. The chart displays the annualized rates of growth in prices and wages for each 20-year period through 2007. These wage statistics reflect the general wage growth, including inflation and productivity gains, but excluding pay increases due to an individual's promotion or longevity. The average over a 20-year period helps eliminate the effect of short-term influences and focuses instead on the long-term trends that affect the future actuarial experience of KCERA.



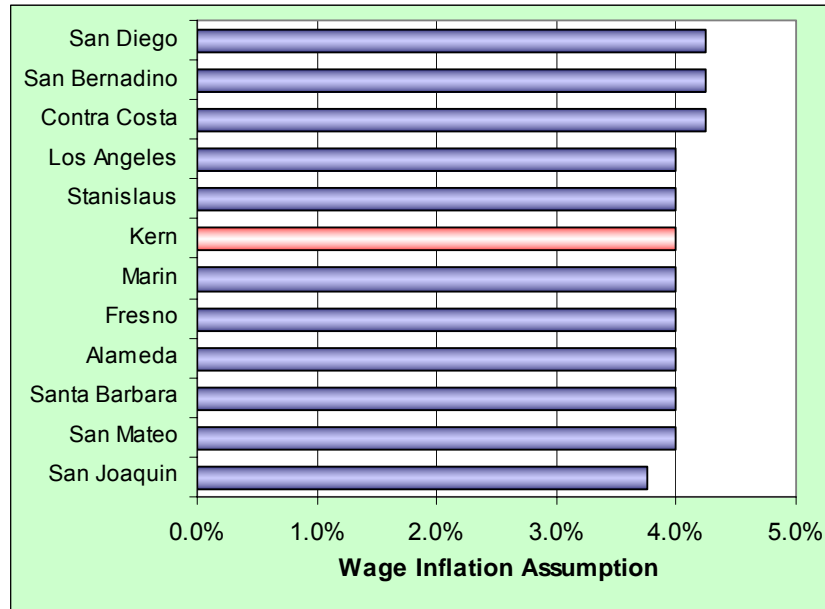
The excess of wage growth over price inflation represents the increase in the standard of living, also called the real wage inflation rate.

According to data from the U.S. Department of Commerce, Bureau of Economic Analysis, wages as a share of national income has been relatively constant for the last 80 years. Assuming this trend continues, then increases in productivity will cause real wages to increase.

## Peer System Comparison

The *Public Fund Survey* does not report the average wage growth assumption. Based on our experience with other systems, we believe the average for this group would be slightly greater than KCERA's assumption of 4.0%.

Looking at other selected '37 Act systems, the current wage growth assumption is in the mainstream.



## Forecasts of Future Wages

Wage inflation has been projected by the Office of the Chief Actuary of the Social Security Administration. In the 2008 Trustees Report, the long-term annual increase in the National Average Wage is estimated to be 1.1% higher than the Social Security intermediate inflation assumption of 2.8% per year. The range of the assumed real wage growth in the 2008 Trustees Report was from 0.6% to 1.6% per year.

**Reasonable  
Range and  
Recommendation**

We believe that a range between 0.50% and 1.50% is reasonable for the actuarial valuation. There has been a spike in the real wage inflation rate over the last 10 years; however, in each of the three prior decades, the actual experience was lower. We recommend that the long-term assumed real wage inflation rate be increased to 0.75% per year.

REAL WAGE INFLATION RATE	
Current Assumption	0.50%
Best Estimate Range	0.50% - 1.50%
Recommended Assumption	0.75%

The wage growth assumption is the total of the consumer price inflation assumption and the real wage inflation rate. If the real wage inflation assumption is increased to 0.75% and the price inflation assumption is lowered to 3.25%, this would result in the total wage growth assumption remaining at 4.00%.

**Payroll Increase  
Assumption**

In addition to setting salary assumptions for individual members, the aggregate payroll of KCERA is expected to increase, without accounting for the possibility of an increase in membership (our current and recommended assumption is that no growth in membership is assumed).

The current payroll increase assumption is equal to the general wage growth assumption of 4.00%. It is our general recommendation to continue to set these two assumptions to be equal, unless there is a specific circumstance that would call for an alternative assumption. We are recommending that the payroll increase assumption remain at 4.00%.

### 3. Investment Return

#### Use in the Valuation

The investment return assumption is one of the primary determinants in the calculation of the expected cost of the System's benefits, providing a discount of the future benefit payments that reflects the time value of money. This assumption has a direct impact on the calculation of liabilities, normal costs, member contribution rates, and the factors for optional forms of benefits.

The current investment return assumption for KCERA is 8.00% per year, net of administrative and investment-related expenses.

#### Method to Determine Best-Estimate Range for Investment Return

We have determined the best-estimate range for the investment return assumption based upon a model developed by Milliman's investment practice. As input to this model, we have used Milliman's assumptions for capital markets and the target asset allocation adopted by the KCERA Board. KCERA's target asset allocation is summarized in the following chart:

Asset Class	Target Allocation
Domestic Equities	25%
International Equities	25
Global Private Equities	6
Fixed Income	28
Real Return Assets	10
Absolute Return	6
Cash	0
Total	100%

Based upon information received from Wilshire, the KCERA Real Return Asset portfolio is currently 50% Treasury Inflation-Protected Securities (TIPS) and 50% Real Estate. The Real Estate component is divided equally between Private and Public Real Estate.

This model is used to provide the range of assumptions appropriate for compliance with Actuarial Standard of Practice No. 27, "Selection of Economic Assumptions for Measuring Pension Obligations." The Standard defines the Best-Estimate Range as "the narrowest range within which the actuary reasonably anticipates that the actual results, compounded over the measurement period, are more likely than not to fall."

By assuming the portfolio is re-balanced annually and that annual returns are lognormally distributed and independent from year-to-year, we can develop expected percentiles for the long-term distribution of annualized returns.



**Method to Determine Best-Estimate Range for Investment Return (continued)**

Using properties of the lognormal distribution, we calculate the 25<sup>th</sup> and 75<sup>th</sup> percentiles of the long-term total return distribution. This becomes our best-estimate range because 50% of the outcomes are expected to fall within this range and it is centered about the mean.

**Capital Market Assumptions**

Milliman’s investment practice has developed capital market assumptions for various asset classes as of June 30, 2008. Wilshire, KCERA’s investment consultant, has done the same as of December 31, 2007.

We also reviewed EnnisKnupp’s Capital Markets Modeling Survey. EnnisKnupp surveyed 21 different investment managers and six different investment consultants. When survey respondents reported a range for assumptions, the midpoint of the range was used.

Here is a summary of the expected long-term nominal geometric market returns by Milliman’s investment practice, Wilshire, and the median from the survey:

	U.S. Stocks	Non-U.S. Stocks	U.S. Bonds	Private Real Est.	Public Real Est.	Private Equities	Price Inflation
<b>Wilshire</b>	8.25%	8.25%	5.50%	6.50%	5.75%	11.25%	2.25%
<b>Milliman</b>	7.50%	7.50%	5.03%	6.50%	7.00%	9.50%	2.50%
<b>Survey</b>	8.00%	8.10%	5.00%	6.90%	6.80%	10.00%	2.50%

The assumptions for U.S. Bonds are based upon 25% High Yield and 75% Core Bonds.

As you can see, Wilshire’s assumptions tend to be higher than the survey median, despite a lower assumption for price inflation. The assumptions from Milliman’s investment practice tend to be lower.

The capital market assumptions were combined with the target asset allocation policy to generate expected real rates of returns (total return less assumed inflation) which were then combined with the recommended inflation assumption of 3.25%. The real rate of return is subject to significant year-to-year volatility as measured by the standard deviation. Volatility over time will lower the mean real rate of return but diversification by asset class will reduce the volatility and narrow the range of expected total returns for the entire portfolio.

**Capital Market Assumptions (continued)**

The results based upon Milliman’s assumptions are summarized as follows:

**Expected Investment Return with 3.25% Inflation**  
(after investment expenses, but prior to administrative expenses)

Horizon In Years	Percentile Results for Nominal Rate of Return				
	5 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	95 <sup>th</sup>
1	-8.68%	0.76%	7.89%	15.53%	27.47%
5	0.14%	4.64%	7.89%	11.24%	16.24%
10	2.35%	5.59%	7.89%	10.25%	13.73%
20	3.94%	6.26%	7.89%	9.55%	11.99%
<b>50</b>	5.38%	<b>6.85%</b>	<b>7.89%</b>	<b>8.94%</b>	10.47%

The geometric mean return is 7.89%, but due to the volatility associated with the asset allocation, the range of probable outcomes is quite large. For example, in the first year there is a 5% chance the rate of return will be less than -8.68% and a 5% chance it will be greater than 27.47%. As the time horizon lengthens the range of the cumulative average results narrows. Note that these are after investment expenses, but prior to adjusting for administrative expenses.

Over a 50-year time horizon, we estimate there is a 25% chance the nominal rate of return will be less than 6.85% and a 25% chance the return will be greater than 8.94% (bold numbers on the bottom line in the table above). Therefore, we can say the return is just as likely to be within the range from 6.85% to 8.94% as not.

We also used the model with the capital market assumptions from Wilshire, but substituting the 3.25% inflation assumption in place of the 2.25% assumption from Wilshire’s assumptions. This produced a median return of 8.69% compared to our result of 7.89%. The difference in these results is that Wilshire is projecting higher real returns across all asset classes, with the exception of real estate.

**Capital Market Assumptions (continued)**

The range of results using Wilshire's assumptions is summarized in the following:

**Expected Investment Return with 3.25% Inflation**

**Wilshire Capital Market Assumptions**

(after investment expenses, but prior to administrative expenses)

Horizon In Years	Percentile Results for Nominal Rate of Return				
	5 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	95 <sup>th</sup>
1	-6.70%	2.09%	8.69%	15.72%	26.65%
5	1.52%	5.69%	8.69%	11.78%	16.38%
10	3.57%	6.56%	8.69%	10.87%	14.08%
20	5.04%	7.18%	8.69%	10.23%	12.47%
<b>50</b>	6.37%	<b>7.73%</b>	<b>8.69%</b>	<b>9.66%</b>	11.07%

We were not able to do the same with the survey results from EnnisKnupp, because that survey did not provide the standard deviation and asset correlation assumptions required as input to the model. However, since the expected real returns for the survey were between the Milliman and Wilshire assumptions for most asset classes, it seems reasonable to assume that the expected investment returns would be between those of Milliman and Wilshire.

**Investment and Administrative Expenses**

The investment return used for the valuation is assumed to be net of all investment and administrative expenses. The following table shows the ratio of total expenses to the fair market value of KCERA assets over the last eight fiscal years ending June 30. The expense ratio is calculated as the total expense divided by the ending asset balance at fair market value.

(\$million)	Market	Net Investment		Adminstrative	
Year	Assets	Expense*	Ratio	Expense	Ratio
2000	\$1,667	\$5.1	0.31%	\$1.6	0.10%
2001	1,542	3.6	0.23	1.9	0.12
2002	1,436	4.2	0.29	2.2	0.15
2003	1,783	3.9	0.22	2.2	0.12
2004	2,031	4.8	0.24	2.5	0.12
2005	2,212	4.6	0.21	2.5	0.11
2006	2,438	7.5	0.31	2.5	0.10
2007	2,831	7.9	0.28	3.0	0.11

\* Does not include Securities Lending Fees.

**Investment and Administrative Expenses (continued)**

The ratio of expenses to market assets has been fairly stable over the past decade. This amount does not have a direct impact on the actuarial valuation results, but it does provide a measure of gross return on investments that will be needed to meet the actuarial assumption used for the valuation. For example, if the investment return assumption is set equal to 8.00%, then KCERA would need to earn a higher gross return on its assets in order to net the 8.00% for funding purposes.

Actively managed funds have much higher fees than passively managed (indexed) funds. Over the long run, it is reasonable to assume that investors will only pay active management fees if their active managers outperform their passive benchmarks by at least the difference between their active fee and the comparable fee for an index fund. Otherwise, the investor has the option to use an index fund. So, we think it is reasonable to assume that long-term average returns net of active investment management fees can be approximated by returns on indexed investments net of their fees.

**Best Estimate Range and Recommendations Based on Current Market Expectations**

Based on the ASOP No. 27 guidelines, we conclude that the reasonable range is the expected real rates of return between the 25<sup>th</sup> and 75<sup>th</sup> percentile projected out 50 years, plus the assumed inflation rate, less expenses.

Based upon our model, the recommended inflation assumption, and assuming 0.11% for administrative expenses, we have the following results:

Components of Return	Percentile Results		
	25th	50th	75th
Real Rate of Return	3.60%	4.64%	5.69%
Assumed Inflation	3.25%	3.25%	3.25%
Administrative Expenses	-0.11%	-0.11%	-0.11%
<b>Net Investment Return</b>	<b>6.74%</b>	<b>7.78%</b>	<b>8.83%</b>

Based upon this model, there is a 44% chance that the net return will meet the current 8.00% assumption or more over a 50-year period. In other words, a net return of 8.00% is at the 56<sup>th</sup> percentile for a 50-year investment horizon.

Generally we like to allow some room for conservatism when recommending the investment return assumption to provide a buffer against future adverse experience. Since the expected return of 7.78% is less than the assumed investment return of 8.00%, there is currently no buffer.

Another reason for a buffer is that a portion of “excess earnings” are credited to the Supplemental Retiree Benefit Reserve (SRBR), which will decrease the returns used to fund the regular pension benefits. This issue is discussed in further depth below.

**Best Estimate Range and Recommendations Based on Current Market Expectations (continued)**

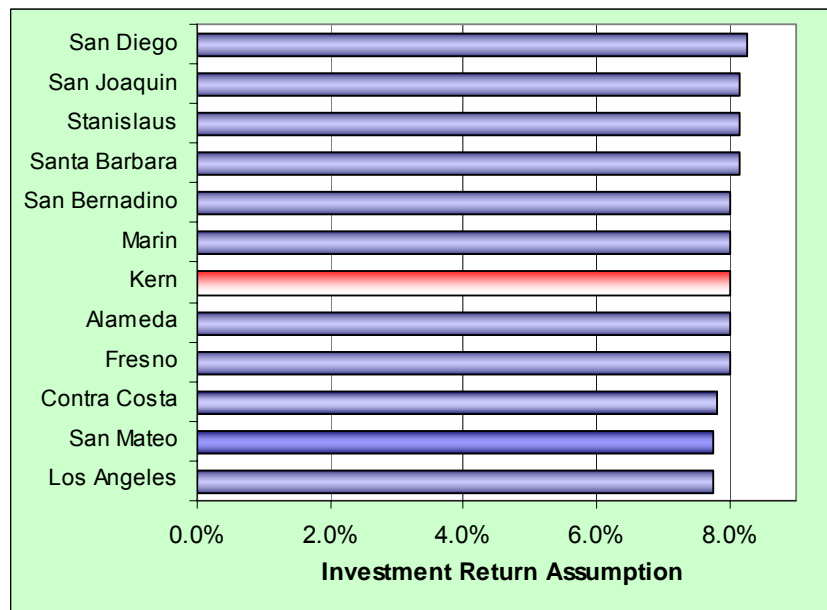
Based upon the model, there is a 51% chance that the net return will be 7.75% or more over a 50-year period, without consideration of excess earnings. In other words, a net return of 7.75% is the 49<sup>th</sup> percentile for a 50-year investment horizon.

It should be noted that this analysis is based on a 3.25% inflation assumption. As discussed earlier, alternative inflation assumptions may be reasonable. If the inflation assumption were different, that would impact the analysis above.

**Peer System Comparison**

According to the *Public Fund Survey*, the average investment return assumption for statewide systems has been slowly declining. As of the most recent study, the average rate is just under 8.0%

Looking at other selected '37 Act systems, KCERA's current assumption is very typical, as the return assumptions are bunched tightly around 8.0%, with only relatively small differences.



**Excess Earnings**

As an Article 5.5 or SRBR plan, when “excess earnings” occur, the Retirement Board is required to set aside a portion of those excess earnings of KCERA’s fund to the SRBR reserve account. Based upon KCERA’s interest crediting policy and the adoption of Section 31617 of the '37 Act, excess earnings would first need to fund the COLA Contribution Reserve (CCR) to pay the County’s share of the contributions for the regular 2% COLA benefits. After that, a 50% allocation of any remaining excess earnings is made to the SRBR reserve. In 2007, \$25.9 million was used to credit the CCR, while \$32.2 million was allocated to the SRBR reserve account, and another \$32.2 million was allocated to the valuation assets.

## Excess Earnings (continued)

The fund uses excess earnings to reduce contributions from employers and credit the SRBR when returns exceed expectations. However, there is no corresponding ability to collect additional revenue when investment returns lag expectations. Because of this, the excess earning provisions result in a reduction in the expected investment return available to fund KCERA's regular pension benefits.

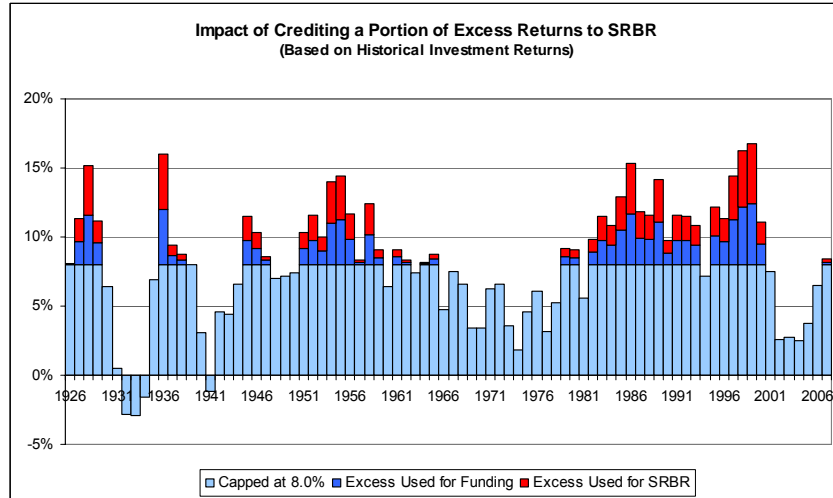
A fund with an asset allocation like KCERA's can expect volatile returns, including many years above 8.00% and many below 8.00%. If the total fund averages 8.00% and a portion of the excess actuarial returns are credited to the SRBR, the return on the valuation assets will be less than 8.00%. Based on historical returns (adjusted on a pro-rata basis to make the historical geometric return equal 8.00%) for a fund with KCERA's asset allocation and 5-year smoothing of gains and losses, we studied the impact of the investment return on the valuation assets. When assuming that 50% of excess earnings are allocated to SRBR, the impact was approximately a 0.6% reduction in investment returns.

Note that for purposes of this illustration we assumed that exactly one half of the return over 8.00% would be credited to the SRBR. As a practical matter, the actual mechanics of the Board's interest crediting policy are more complicated than that. The contingency reserve would mitigate the impact somewhat. The CCR will result in fewer contributions over time than if all of the earnings were used for the valuation reserves. This decreases the funded status when compared to a plan that uses all returns for funding the pension benefits.

A more complex model would be necessary to get a more exact estimate on an average reduction in the investment return due to the SRBR, but we believe that 0.6% is a reasonable estimate of the long-term impact to the fund.

**Excess Earnings  
(continued)**

The following graph illustrates how much of the return might be credited to the SRBR. It shows the returns described above, with the red bars representing the approximate 0.6% reduction in investment return.



In addition to the analysis regarding historical data, we did 10,000 simulations for 50 years with the capital market assumptions from both Milliman and Wilshire. As with the model of historical results, we made the simplifying assumption that half of the return would be credited to the SRBR. We also considered various levels for the investment return assumption. The following table summarizes our results:

	Milliman			Wilshire		
Investment Return Assumption for Valuation	8.00%	7.75%	7.50%	8.00%	7.75%	7.50%
Average Annualized Investment Returns on Market Value of Assets	7.78%	7.78%	7.78%	8.58%	8.58%	8.58%
Average Annualized Returns on Actuarial Value of Assets, after SRBR	<u>7.09%</u>	<u>7.00%</u>	<u>6.92%</u>	<u>7.65%</u>	<u>7.55%</u>	<u>7.45%</u>
Impact of SRBR and Asset Smoothing	0.69%	0.78%	0.86%	0.93%	1.03%	1.13%

Note that the “Milliman” section provides the results under Milliman’s capital market assumptions and “Wilshire” is based upon Wilshire’s capital market assumptions. The investment returns above are net of administrative expenses.

The simulated results suggest that the impact of the SRBR is even greater than the results implied by the model based upon historical returns.

Note that as the investment return assumption is lowered, all else equal, more returns will be classified as “excess earnings”. This will increase the portion of returns going to the CCR and SRBR, which will ultimately require additional contributions by the employers. This may cause the Board to be less inclined to lower the investment return assumption.



**Excess Earnings  
(continued)**

However, it appears unlikely that the current 8.00% assumption will be achieved after reflecting the SRBR provisions, regardless of which capital market assumptions are used. This means that the investment returns are likely to be insufficient to fund the base pension benefits if contributions are based upon that level of return.

**Other Factors for  
Board Consideration**

Since economic assumptions are subjective in nature, it is our recommendation that the Board be fully comfortable with the implications of the economic assumptions, particularly with the investment return assumption. There is an “actuarial risk” associated with the economic assumptions the same as there is an investment risk associated with a given portfolio mix.

Actuarial assumptions are used to measure and budget future costs. Changing assumptions will not change the actual cost of future benefits, although a change can result in increases to the amounts allocated to the SRBR. Aggressive assumptions anticipate good future experience ahead of time and factor it into budget estimates. Conservative assumptions, on the other hand, tend to recognize good experience only afterwards.

The choice of assumptions depends on a system’s risk tolerance. The final determination on whether or not a set of assumptions for KCERA was either conservative or aggressive will only be born out by future experience.

Without consideration of the excess earnings policy, the current investment return assumption is reasonable. It does not appear to be particularly conservative or aggressive.

**Conclusion**

Using Wilshire’s capital market assumptions, expected administrative expenses, the proposed inflation assumption, and a deduction to reflect the excess earnings provisions, the current assumption of 8.00% appears somewhat aggressive. The assumption becomes even more aggressive when using Milliman’s capital market assumptions with the proposed inflation assumption. The median returns in the investment professionals’ survey were between Wilshire’s assumptions and Milliman’s assumptions.

Based on portfolio analysis, the proposed inflation assumption of 3.25%, and the excess earnings program, we believe that a 7.75% investment return is a reasonable long-term assumption. The assumption of 7.75% maintains the current assumption for returns net of inflation ( $7.75\% - 3.25\% = 4.50\%$ ).

**Conclusion  
(continued)**

The Board may wish to consider moving the assumption to 7.50%, as that assumption better matches the results for the base pension benefits after reflection of the excess earnings program. A lower return assumption will result in more returns being classified as excess earnings, and leave less available to fund the base pension benefits.

When funding a pension plan, a long-term view should be taken. The same is true of the assumptions. There is always going to be volatility, but radical changes in assumptions should not be made without compelling reason.

As discussed in the inflation section, we are recommending a change in the inflation assumption to 3.25%. Although we are recommending lowering the inflation assumption for the second consecutive experience study, nearly all economists and investment advisors forecast price increases lower than the proposed 3.25%. If such low inflation is experienced over time, then it is likely KCERA's investment return will be lower than the proposed assumption of 7.75%.

<b>INVESTMENT RETURN (NET OF INVESTMENT EXPENSES)</b>	
Current Assumption	8.00%
Best Estimate Range*	6.25% - 8.50%
Recommended Assumption*	7.75%
Alternative Assumption*	7.50%

*\*Based on a 3.25% inflation assumption and recognizing the Excess Earnings provisions.*



This work product was prepared solely for KCERA for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

# KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTIGATION OF EXPERIENCE (2006-2008)

## Section 3: Actuarial Methods and Other Miscellaneous Assumptions



As part of the triennial investigation, we have reviewed the valuation methods and other issues related to the actuarial assumptions.

### Valuation Methods

- **Cost Method:** The actuarial valuation is prepared using the entry age actuarial cost method (CERL 31453.5). We believe that this cost method is appropriate for KCERA's valuation. We recommend no change.
- **Funding Method (amortization of UAAL):** The UAAL due to all sources is amortized over a 28-year period beginning with the December 31, 2007 valuation. We recommend no change.
- **Valuation of Assets:** We believe that the current asset valuation method which smoothes gains and losses over five years (actually 10 six-month periods) is appropriate for KCERA's valuation. We recommend no change.

### Other Miscellaneous Assumptions

- **Reciprocity:** Members who terminate may go to work for a reciprocal employer. This can result in an increase in the member's final compensation used in the calculation of their KCERA benefit. The current assumption is that 60% of future terminated vested members retire with a reciprocal employer. We reviewed this assumption and are recommending lowering this assumption to 50%. The results of the study are as follows:

Reciprocal Employer					
Class	Actual	Expected	Proposed	Act / Exp	Act / Prop
General	166	228	190	73%	87%
Safety	29	32	27	91%	107%
Total	195	260	217	75%	90%

**Other Miscellaneous Assumptions (continued)**

- Probability of Eligible Survivor:** Eligible surviving beneficiaries (spouses or qualified domestic partners of members) generally receive a 60% continuance of the member's benefit (100% continuance for service-connected disabilities). As part of our valuation, we assume that a certain percentage of members will have an eligible survivor at retirement. We studied this assumption and are recommending lowering the percentage of female active members married at retirement to 55%. The results of the study are as follows:

Retirees with Eligible Survivor					
Gender	Actual	Expected	Proposed	Act / Exp	Act / Prop
Male	77%	80%	80%	96%	96%
Female	49%	60%	55%	82%	89%

- Beneficiary Age and Sex:** To determine the value of a member's retirement or death benefit, we must estimate the value of the portion payable to the surviving eligible beneficiary. Since the value of the survivor's benefit is dependent upon his/her age, we must estimate that age. Based upon a study we did of KCERA retiree data, we found that, on average, the average husband is nearly three years older than his wife. For this reason, we feel that the current assumption that males are three years older should be continued.

Since the majority of eligible survivors are expected to be the opposite sex of the members, we will continue to assume that the survivor's sex is the opposite of the member.

- Deferred Retirement Age for Vested Termination:** We recommend continued use of age 50 for Safety members and age 60 for General members. These assumptions reflect the ages at which Safety and General Tier I members are entitled to full benefits. As more experience for Tier II becomes available, this assumption should be reviewed.
- Unisex Mortality Assumptions:** Unisex mortality assumptions are required for determination of the member contribution rates as well as the conversion factors for optional forms of benefit.

We are recommending changes in the retired and disabled mortality assumptions. If these changes are adopted, the unisex mortality assumptions will need to be updated to reflect the altered life expectancies.

**Other Miscellaneous Assumptions (continued)**

We recommend that the unisex mortality tables for General members continue to be based upon a one-third / two-thirds blend of the male and female mortality tables from the valuation assumptions. We also recommend continued use of a five-sixths / one-sixth blend for Safety members.

- Member Contribution Rates:** The proposed changes to the retired mortality assumptions and the investment return assumptions will impact the member contribution rates. Safety 3 members have contribution rates that do not vary by entry age. Their rates are set to a level percentage for all members such that the total expected member contributions are equivalent to those that would have been collected using the individual entry age rates. A sample of the changes to the member rates if the new rates are adopted follows:

Sample Changes in Member Rates				
	Entry Age	Current	Proposed	Increase
<b>General Members - Tier 1</b>				
Integrated First \$350 of Monthly Comp	35	5.51%	5.79%	0.28%
Integrated Excess of \$350 of Monthly Comp	35	8.27%	8.68%	0.41%
Nontegrated All Compensation	35	8.27%	8.68%	0.41%
<b>General Members- Tier 2</b>				
Integrated First \$350 of Monthly Comp	35	3.83%	4.12%	0.29%
Integrated Excess of \$350 of Monthly Comp	35	5.75%	6.18%	0.43%
Nontegrated All Compensation	35	5.75%	6.18%	0.43%
<b>Safety Members - Excluding "Safety 3" Members</b>				
Integrated First \$350 of Monthly Comp	35	9.50%	9.88%	0.38%
Integrated Excess of \$350 of Monthly Comp	35	14.24%	14.82%	0.58%
<b>Safety 3 Members</b>				
Integrated First \$350 of Monthly Comp	All Ages	7.70%	8.20%	0.50%
Integrated Excess of \$350 of Monthly Comp	All Ages	11.56%	12.30%	0.74%



This work product was prepared solely for KCERA for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.



# KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTIGATION OF EXPERIENCE (2006-2008)

## Section 4: Salary Increases Due to Promotion and Longevity (Merit)

---



### Results

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

- 1) Increases in each individual's salary due to promotion or longevity, which occur even in the absence of inflation (merit increases); and
- 2) Increases in the general wage level of the membership, which are directly related to inflation and increases in productivity.

In Section 2 we recommend that the second of these rates, the general wage inflation, remain at 4.00%.

Exhibit 4-1 shows the annual merit increases, net of the general wage growth assumption, over the period January 1, 2006 – December 31, 2007. Increases were higher earlier in a member's career (lower service) and then decreased over time, consistent with the current assumptions. Overall, the actual increases were higher than the predictions made by the current assumptions.

### Recommendation

As mentioned above and displayed in the charts below, the actual increases over the past two years have been a bit higher than would be predicted based upon the current assumptions.

However, the pattern and level of increases were not radically different from those assumed. In addition, we are aware that this period included the approval of Memoranda of Understanding that included large salary equity adjustments for some SEIU employees and salary increases for management and confidential employees. Changes were also made for longevity pay on base wages.

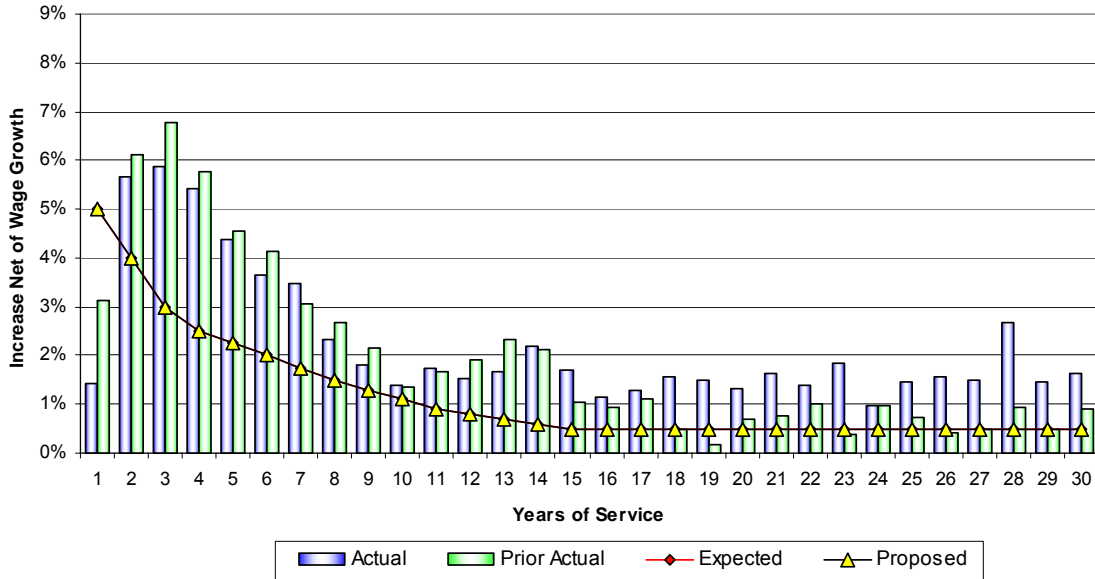
After considering these factors, we do not feel that there is sufficient evidence to make a change in the assumption and are not recommending any changes.

# KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTIGATION OF EXPERIENCE (2006-2008)

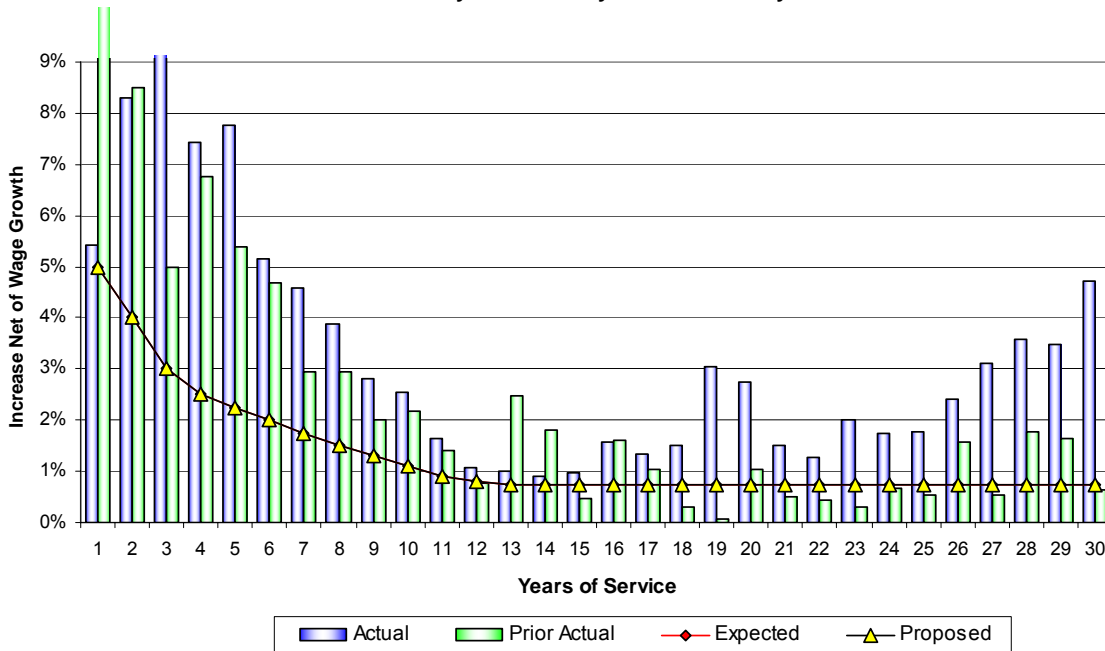
## Exhibit 4-1

### Total Annual Rates of Increase in Salary Due to Merit and Longevity (Excluding the General Wage Growth Assumption)

#### Merit Salary Increases by Service - General

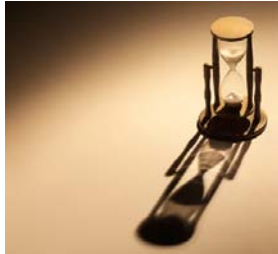


#### Merit Salary Increases by Service - Safety



# KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTIGATION OF EXPERIENCE (2006-2008)

## Section 5: Mortality



### Results

In this section, we look at the results of the study of actual and expected death rates of retired members. We studied rates of mortality among healthy and disabled retired members. Valuation mortality is a critical assumption, since, if members live longer than expected, we will be understating the true cost of the future plan obligations.

Overall, we found there were more deaths than the current rates predicted: 394 actual to 355 expected for a total ratio of 111%. We generally like to see some margin for future improvements in mortality (i.e., actual number greater than expected by about 10% or more).

The following is a comparison of the actual-to-expected deaths of retired members by class and gender for the study period.

Retiree Mortality					
<i>Service Retirement</i>					
Group	Deaths			Actual to Expected	Actual to Proposed
	Actual	Expected	Proposed		
General Male	130	107	104	121%	125%
General Female	192	168	161	114%	119%
Safety Male	27	29	29	93%	93%
Safety Female	1	1	1	100%	100%
<b>Total Svc Ret</b>	<b>350</b>	<b>305</b>	<b>295</b>	<b>115%</b>	<b>119%</b>
<i>Disability Retirement</i>					
Group	Deaths			Actual to Expected	Actual to Proposed
	Actual	Expected	Proposed		
General Male	12	15	13	80%	92%
General Female	22	14	15	157%	147%
Safety Male	9	19	11	47%	82%
Safety Female	1	2	1	50%	100%
<b>Total Dis Ret</b>	<b>44</b>	<b>50</b>	<b>40</b>	<b>88%</b>	<b>110%</b>
<b>Grand Total</b>	<b>394</b>	<b>355</b>	<b>335</b>	<b>111%</b>	<b>118%</b>

Results are shown graphically on the following pages. Note that analysis of Safety females is not shown in graph form due to the small number of actual and expected deaths.

Note that all beneficiaries are included with the General service retirement groups.

## Recommendation

The current rates are based upon the RP-2000 Mortality Table with Adjustments for White Collar Workers (RP-2000WC) as the base table for all groups, but adjusted to be either higher or lower than these rates (an age set back or set forward) to recognize KCERA's experience.

We are recommending a change to the RP-2000 Combined Healthy Mortality Table (RP-2000) as the base table, since this is a more standard table. As before, the tables are adjusted backward or forward to recognize KCERA's experience.

We are recommending modest decreases in mortality for service retirements and beneficiaries. We continue to recommend using the same rate for General service retirements, Safety service retirements, and beneficiaries with distinctions made only for the person's sex.

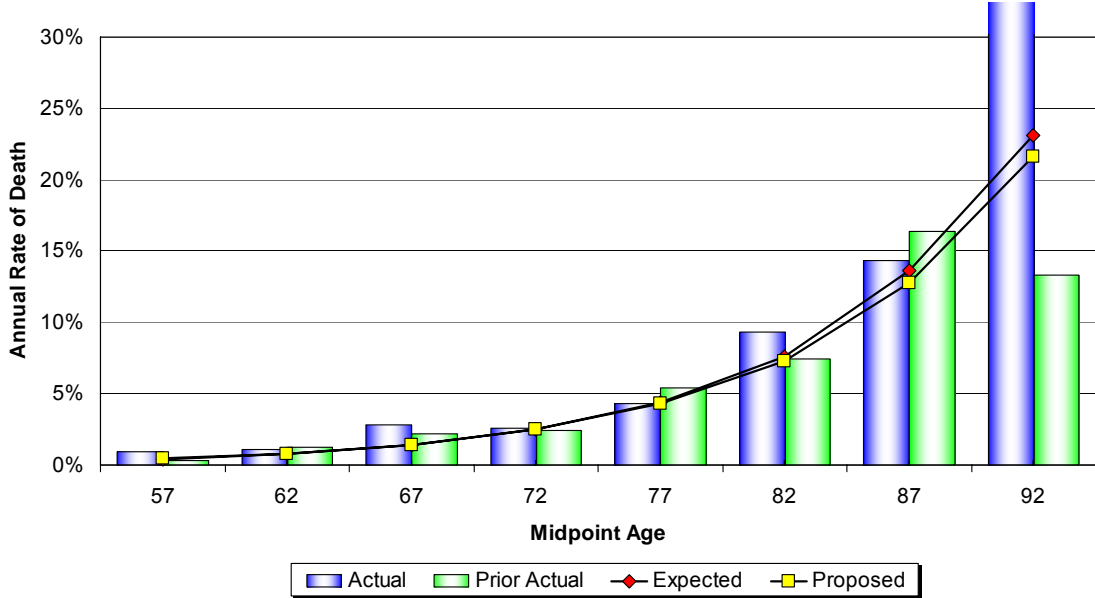
Note that the actual deaths were higher than expected for General service retirements and beneficiaries. However, deaths were actually slightly lower than expected for Safety members. Despite this, we felt that the experience for Safety members was very close to expectations and did not warrant a significant change at this time. This should be reviewed with the next experience study.

We are recommending the use of separate mortality tables for General disabled and Safety disabled. As the above chart shows, actual mortality for General disabled was higher than the previous assumptions indicated, while the actual mortality for Safety disabled was much lower than the previous assumptions suggested. We have made recommendations that better match the experience.

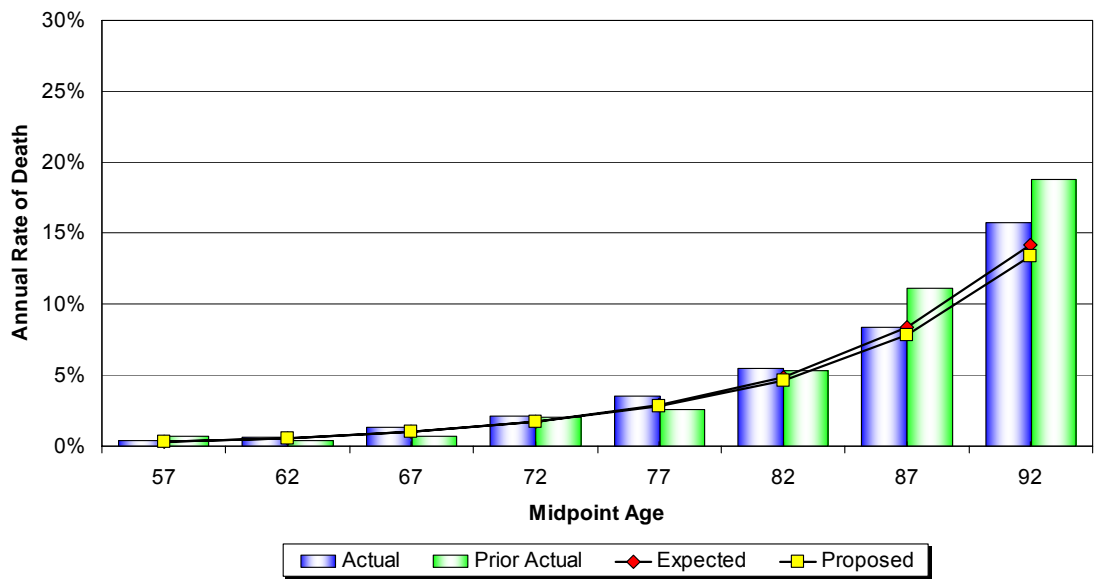
For active mortality (the probability of death while actively employed), we are recommending using a standard mortality table for active employees, with adjustments similar to those made to the mortality for KCERA's retired members. There was not enough experience for service-related death to perform a valid statistical analysis for active members' death while in service. We are recommending retaining the current assumption for service-related deaths to use the same assumptions set for the retired members.

**KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
INVESTIGATION OF EXPERIENCE (2006-2008)**

**Exhibit 5-1  
Mortality for Service Retirees  
General Males**

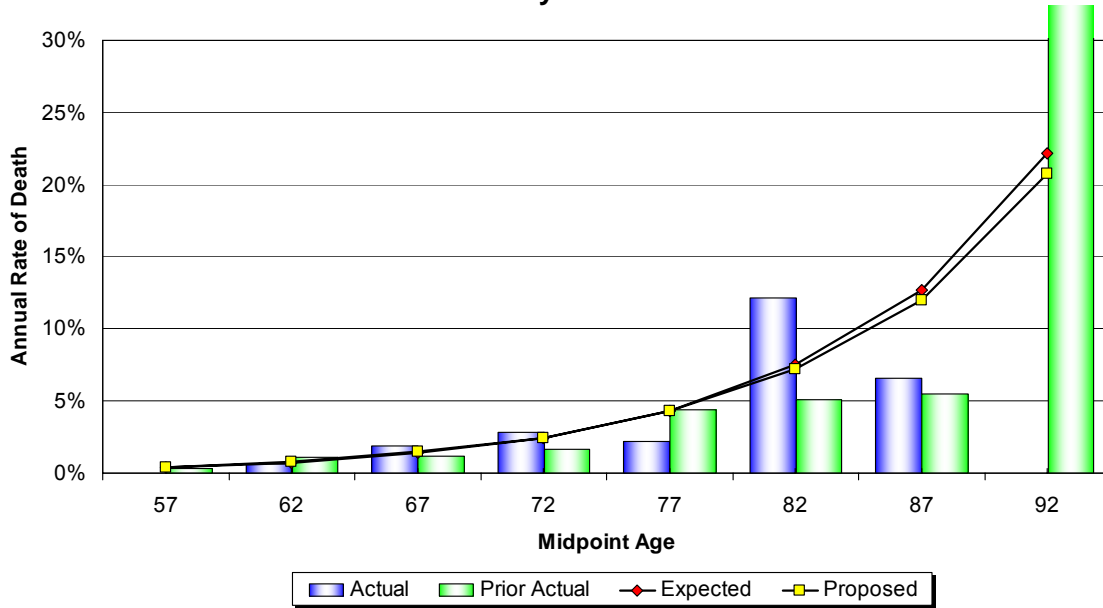


**Exhibit 5-2  
Mortality for Service Retirees  
General Females**

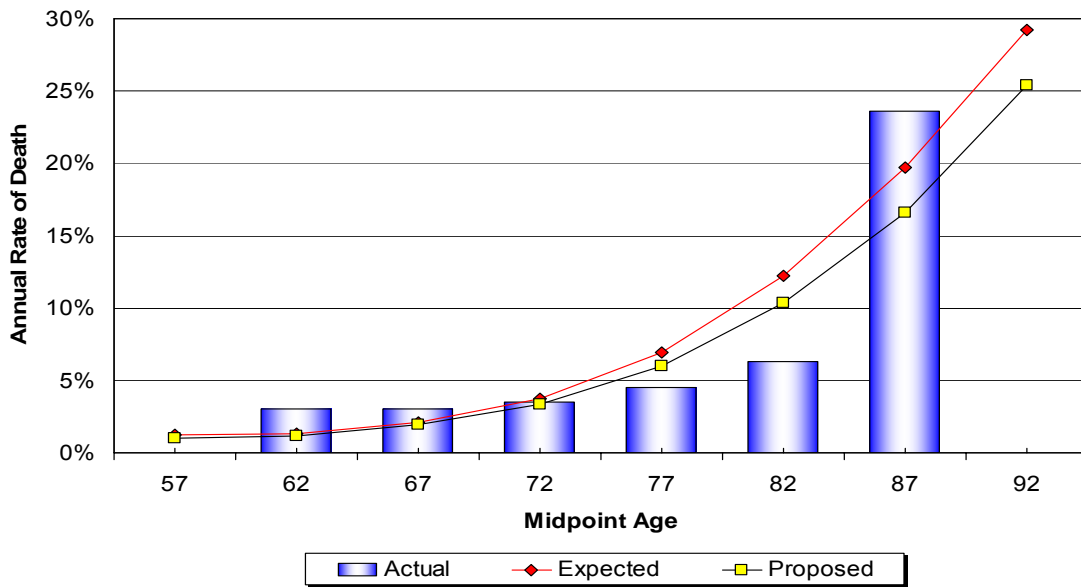


**KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
INVESTIGATION OF EXPERIENCE (2006-2008)**

**Exhibit 5-3  
Mortality for Service Retirees  
Safety Males**

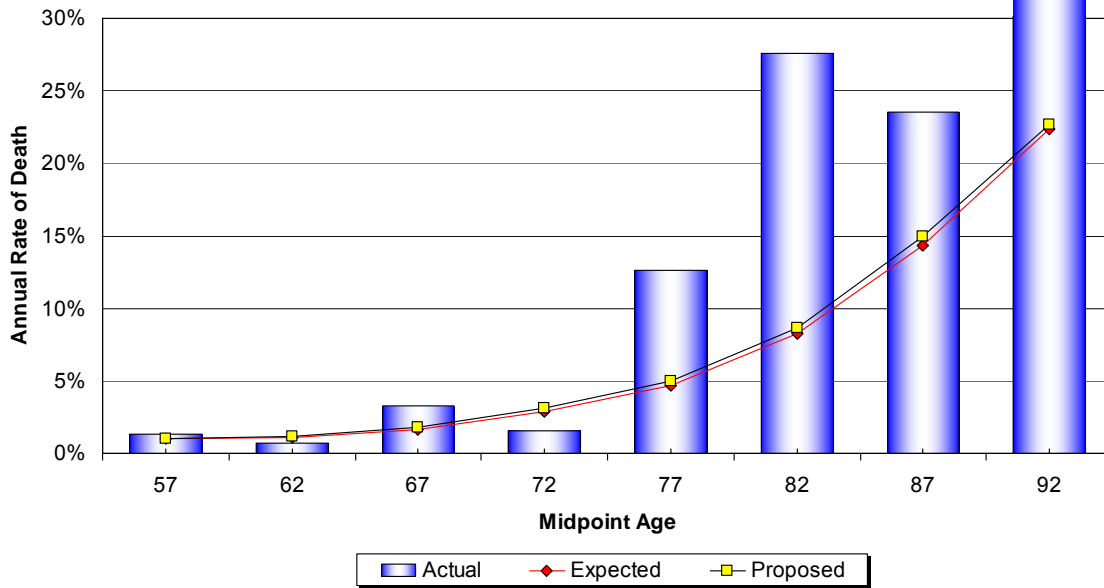


**Exhibit 5-4  
Mortality for Disabled Retirees  
General Males**

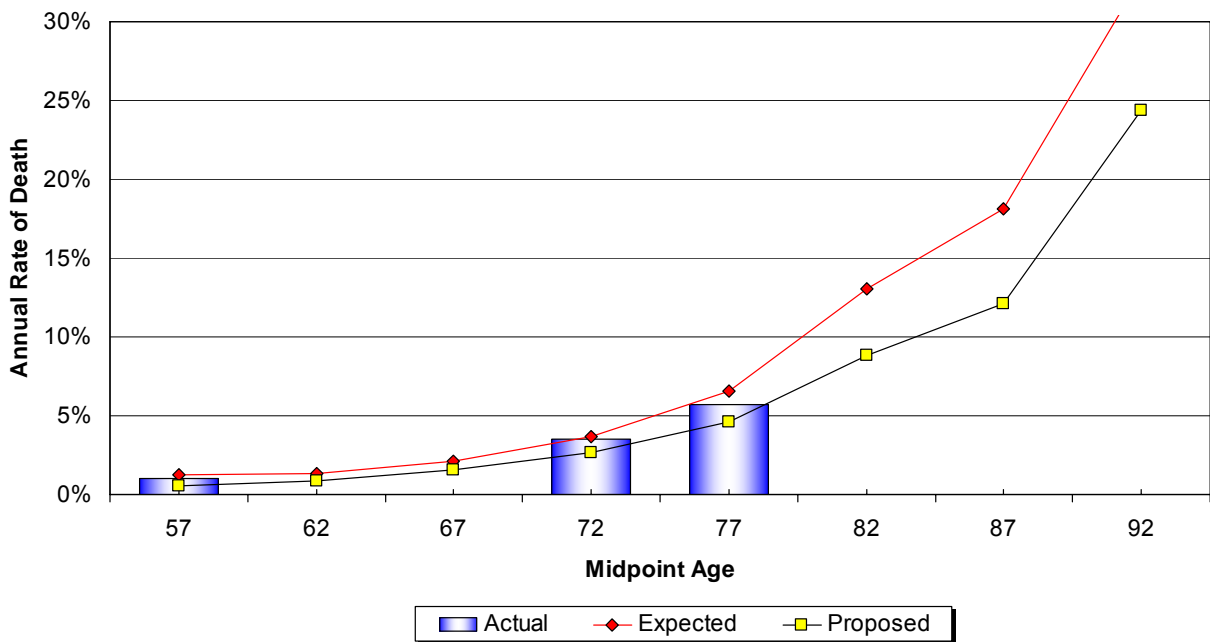


**KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
INVESTIGATION OF EXPERIENCE (2006-2008)**

**Exhibit 5-5  
Mortality for Disabled Retirees  
General Females**



**Exhibit 5-6  
Mortality for Disabled Retirees  
Safety Males**





This work product was prepared solely for KCERA for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.



# KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTIGATION OF EXPERIENCE (2006-2008)

## Section 6: Service Retirements



### Results

Exhibits 6-1 through 6-3 show the actual and expected rates of service retirement. Our analysis of rates of service retirement was by attained age.

Exhibits 6-1 through 6-3 study retirements for the following groups:

- Exhibit 6-1: General Members – Males
- Exhibit 6-2: General Members – Females
- Exhibit 6-3: Safety Members – Males and Females

For General female members, the total actual retirements from active service were reasonably in line with what the assumptions predicted.

For General male members, although the total number of actual retirements from active service was in line with what the assumptions predicted, the age-based pattern of retirement predicted by the assumptions differed from experience. The pattern of retirement by age for this group is illustrated in Exhibit 6-1.

For Safety (male and female) members, the total actual retirements from active service were lower than anticipated. The pattern of retirement by age for this group is illustrated in Exhibit 6-3.

Service Retirements			
Class	Actual	Expected	Act / Exp
General Male	159	185	86%
General Female	268	304	88%
Safety Male/Female	95	131	73%
Total	522	620	84%

### Recommendation

We are recommending no change to the retirement rates for General female members.

We are recommending the rates of retirement be decreased at older ages for Safety members to partially reflect the experience.

We are recommending the rates of retirement be increased at some ages and decreased at other ages for General male members to more accurately reflect the observed age-based pattern of retirement for these members.

**Recommendation  
(continued)**

Note that in cases like this where there is a deviation from current experience and the prior experience the assumptions are based on, our recommendation is usually to only make a partial adjustment for current experience.

A comparison of the actual and expected retirements under the recommended assumptions for General and Safety members is shown in the table below.

Service Retirements -- Proposed			
Class	Actual	Proposed	Act / Prop
General Male	159	176	90%
General Female	268	304	88%
Safety Male/Female	95	111	86%
Total	522	591	88%

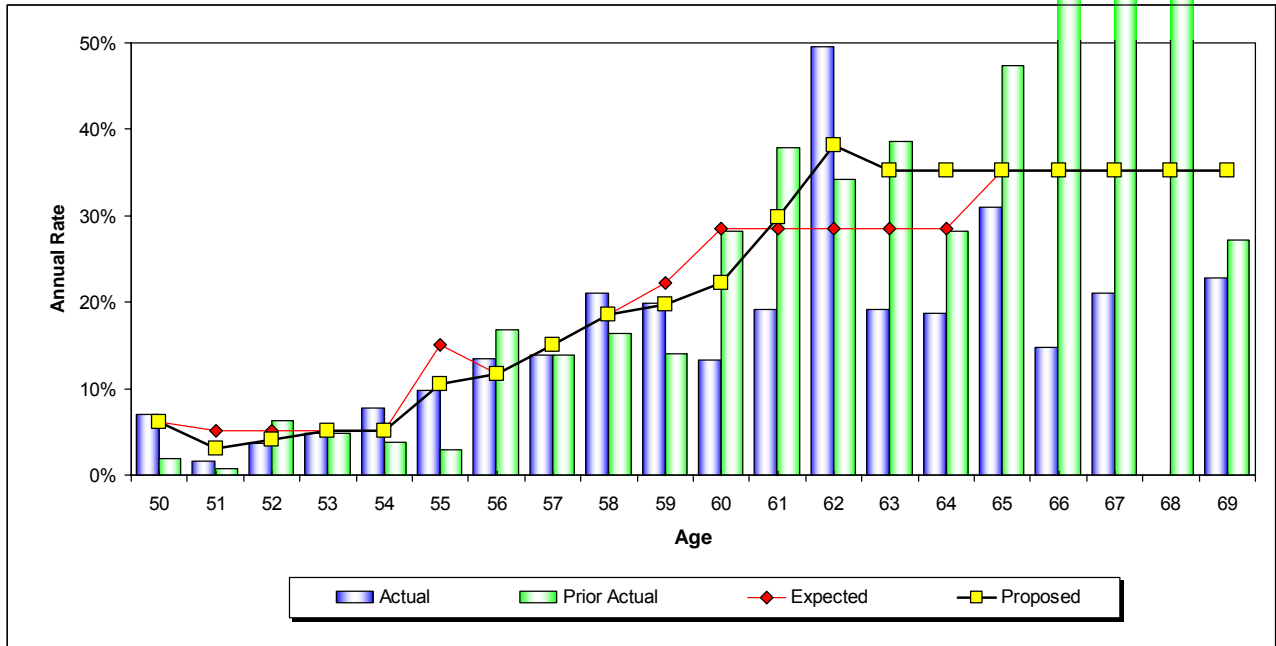
There is not enough Tier 2 experience to perform a statistically meaningful study.

We are recommending no change to the Tier 2 rates for ages 50 through 61. For ages 62 and beyond, the Tier 2 rates are equal to Tier 1 rates and we recommend that Tier 2 continue to match Tier 1 rates for those ages.

# KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTIGATION OF EXPERIENCE (2006-2008)

## Exhibit 6-1

### Retirement Rates General Males

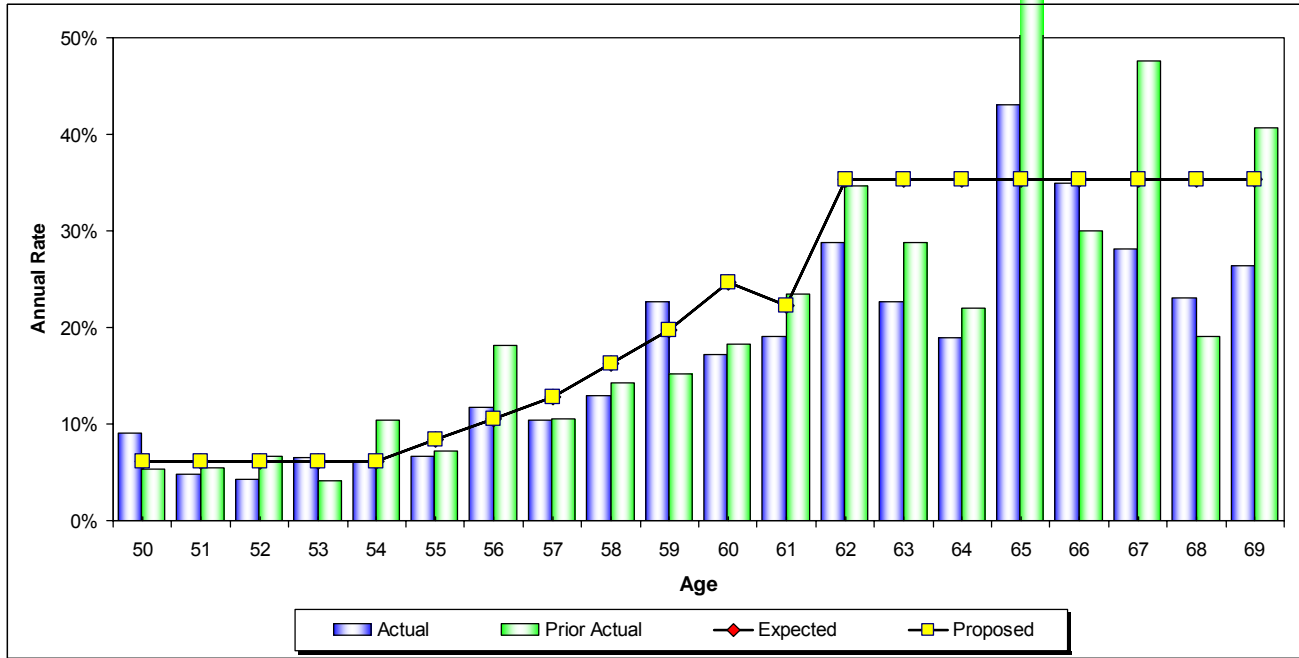


Ages 50-69	Expected	Actual	Proposed
Total Count	185	159	176
Actual / Expected	86%		90%

**KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
INVESTIGATION OF EXPERIENCE (2006-2008)**

**Exhibit 6-2**

**Retirement Rates  
General Females**

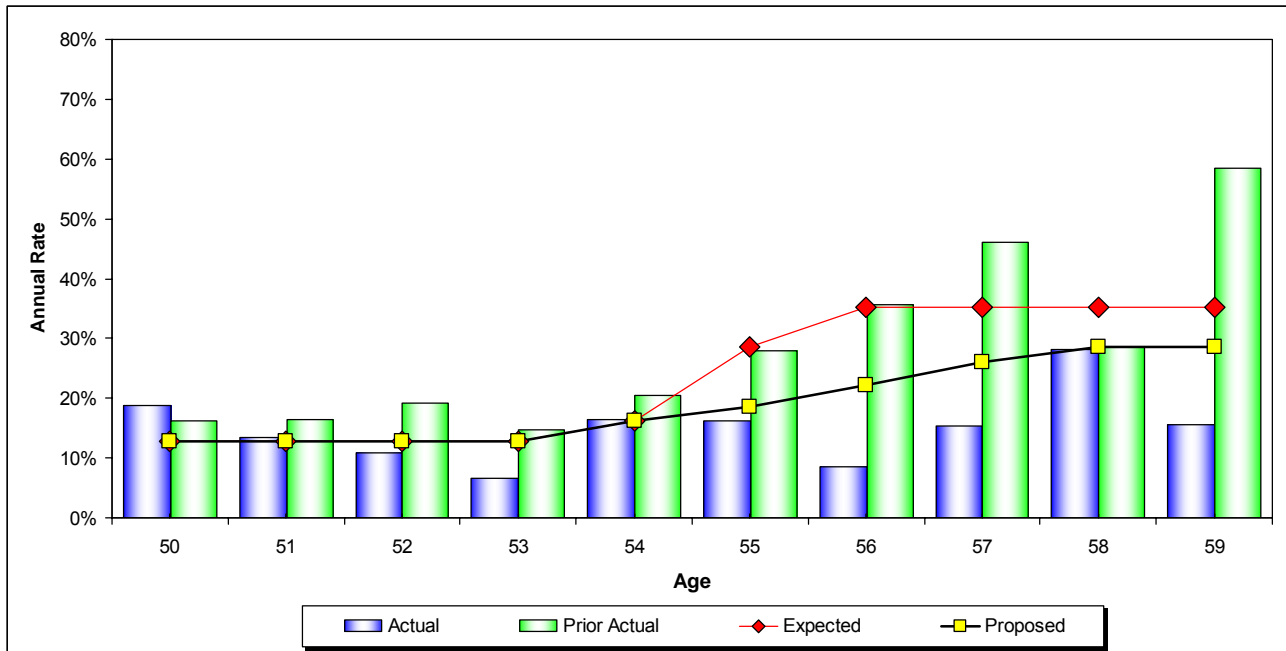


Ages 50-69	Expected	Actual	Proposed
Total Count	304	268	304
Actual / Expected	88%		88%

**KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
INVESTIGATION OF EXPERIENCE (2006-2008)**

**Exhibit 6-3**

**Retirement Rates  
Safety Males/Females**



Ages 50-59	Expected	Actual	Proposed
Total Count	131	95	111
Actual / Expected	73%		86%



This work product was prepared solely for KCERA for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

# KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTIGATION OF EXPERIENCE (2006-2008)

## Section 7: Disability Retirement



### Results

KCERA allows members to start receiving benefits prior to eligibility for service retirement if they become disabled. There are two types of disability:

- **Nonservice-Connected Disability:** This is available to a disabled member only if he has satisfied the vesting requirement.
- **Service-Connected Disability:** This is available only to members who are disabled for the performance of duty. There is no service requirement, and the service-connected disability benefit generally pays a larger benefit than nonservice-connected disability.

We have found that in many systems, including KCERA, there is an approximate six-month lag between the actual occurrence of a disability retirement and the subsequent approval and reporting of that same retirement. To account for this, we adjusted our study period for disability rates to the period January 1, 2006-December 31, 2007.

Even taking this six-month lag into account, the total adjusted number of disability retirements (service-connected and nonservice-connected combined) was lower than expected for all members.

Disability Retirement- General Members			
Group	Actual	Expected	Act / Exp
Male	12	25	48%
Female	17	49	35%
Total	29	74	39%

Disability Retirement- Safety Members			
Group	Actual	Expected	Act / Exp
Male/Female	27	64	42%

**Results –  
Comparison of  
Service and Ordinary  
Disability**

The total disability rates are split between ordinary and service disability in accordance with the approximate relative number of each reported in the experience data for General and Safety members.

The proportions of disabilities attributable to each cause in the study period are shown in the following chart. The “% Svc” column indicates the current assumption.

<b>Split between Service and Ordinary Disability</b>					
<b>Class</b>	<b>Svc</b>	<b>Ordinary</b>	<b>Total</b>	<b>Svc/Total</b>	<b>% Svc</b>
General	14	13	27	52%	60%
Safety	25	2	27	93%	100%

**Recommendation**

We are recommending lowering the rates of disability retirement for all members. We recommend continuing to use a 60%/40% split between service disability and ordinary disability for General members, and a 100%/0% split for Safety members.

<b>Disability Retirement- General Members</b>			
<b>Group</b>	<b>Actual</b>	<b>Proposed</b>	<b>Act / Prop</b>
Male	12	20	60%
Female	17	30	57%
Total	29	50	58%

<b>Disability Retirement- Safety Members</b>			
<b>Group</b>	<b>Actual</b>	<b>Proposed</b>	<b>Act / Prop</b>
Male/Female	27	48	56%



# KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTIGATION OF EXPERIENCE (2006-2008)

## Section 8: Other Terminations of Employment



### Results

This section of the report summarizes the results of our study of terminations of employment for reasons other than death, service retirement, or disability. Rates of termination vary by years of service – the greater the years of service the less likely a member is to terminate employment.

Overall, the actual number of terminations was slightly lower than expected for both General and Safety members. However, when the first year of service was excluded from consideration, the actual number of terminations was substantially higher than expected for both General and Safety Members. Data for members with less than one year of service is not always reliable; in addition, these members have a very minor impact on the total liability of the system.

Termination -- All Years of Service			
Group	Actual	Expected	Act / Exp
General Male/Female	1,050	1,105	95%
Safety Male/Female	98	105	93%

Termination -- Excluding First Year of Service			
Group	Actual	Expected	Act / Exp
General Male/Female	743	608	122%
Safety Male/Female	80	71	112%

### Recommendation

We have recommended increasing the termination assumption at certain service levels for General members.

We have recommended decreasing the termination assumption for Safety members at low service levels, and increasing the termination assumption for Safety members at high service levels.

The results of the study are shown in Exhibits 8-1 through 8-2. A summary of the revised results under the recommended assumptions is shown in the following tables.

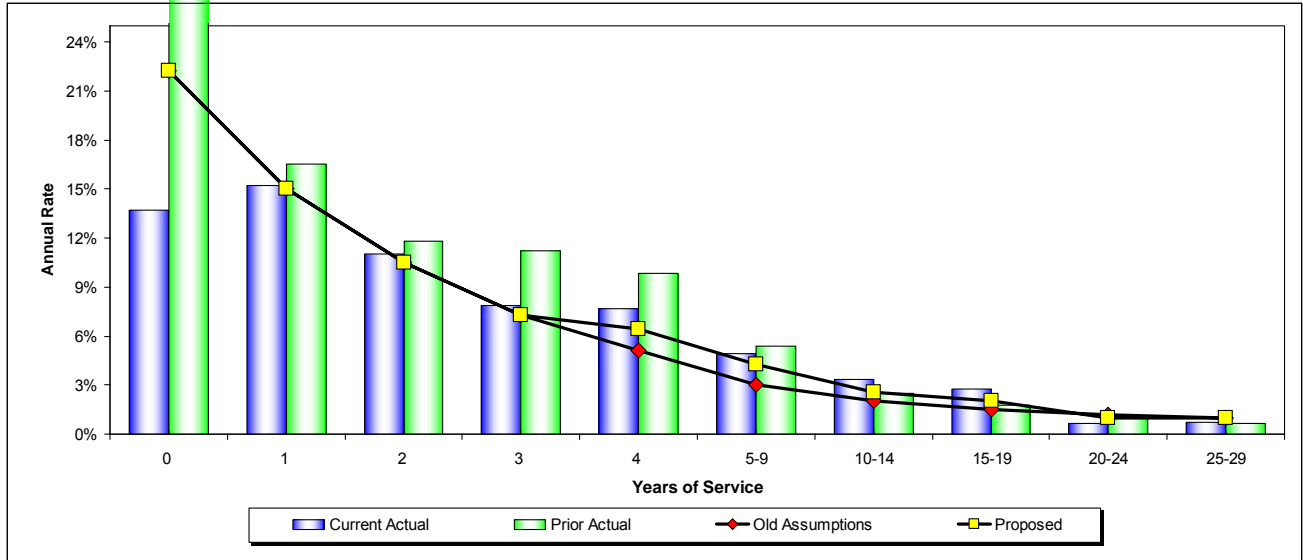
Termination -- All Years of Service			
Group	Actual	Proposed	Act / Prop
General Male/Female	1,050	1,176	89%
Safety Male/Female	98	103	95%

Termination -- Excluding First Year of Service			
Group	Actual	Proposed	Act / Prop
General Male/Female	743	679	109%
Safety Male/Female	80	74	109%

# KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTIGATION OF EXPERIENCE (2006-2008)

## Exhibit 8-1

### Termination by Years of Service – General Members

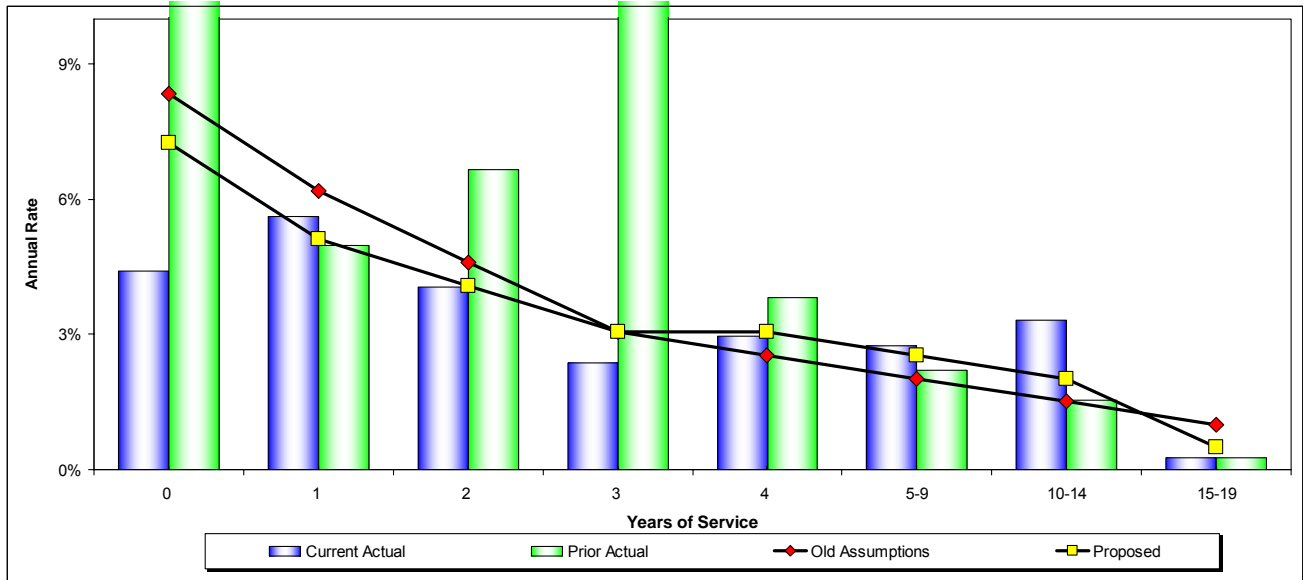


	All Years (2006-08)		
	Expected	Actual	Proposed
Total Count	1,105	1,050	1,176
Actual / Expected	95%		89%
	Excluding First Year (Service = 0)		
	Expected	Actual	Proposed
Total Count	608	743	679
Actual / Expected	122%		109%

# KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTIGATION OF EXPERIENCE (2006-2008)

## Exhibit 8-2

### Termination by Years of Service – Safety Members



	2006 - 2008 Data		
	Expected	Actual	Proposed
Total Count	105	98	103
Actual / Expected	93%		95%
	Excluding First Year (Service = 0)		
	Expected	Actual	Proposed
Total Count	71	80	74
Actual / Expected	112%		109%



This work product was prepared solely for KCERA for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

# KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTIGATION OF EXPERIENCE (2006-2008)

## Section 9: Probability of Refund upon Vested Termination



This section of the report deals with the rates at which employees elect a refund of their contributions upon termination of service. We only consider vested members who are not yet eligible for service retirement. Under the current assumptions, members who terminate with fewer years of service have a greater probability of electing to withdraw their contributions. All nonvested members are assumed to take a refund at termination.

### Results

Exhibit 9-1 summarizes the results of our study. The results are consistent with our assumptions in that members have a higher likelihood of electing a refund at lower years of service; however, the actual total number of refunds was higher than the assumptions predicted for both General and Safety members.

Probability of Refund					
Class	Actual	Expected	Act / Exp	Proposed	Act / Prop
General	128	97	132%	111	116%
Safety	19	11	170%	15	128%
Total	147	108	136%	126	117%

Note that for General members, there are very few terminations with 20 or more years of service prior to eligibility for retirement. For Safety members, there are none.

### Recommendation

Based on the experience, we recommend increases in the assumed rates at which both General and Safety members withdraw their contributions from KCERA.

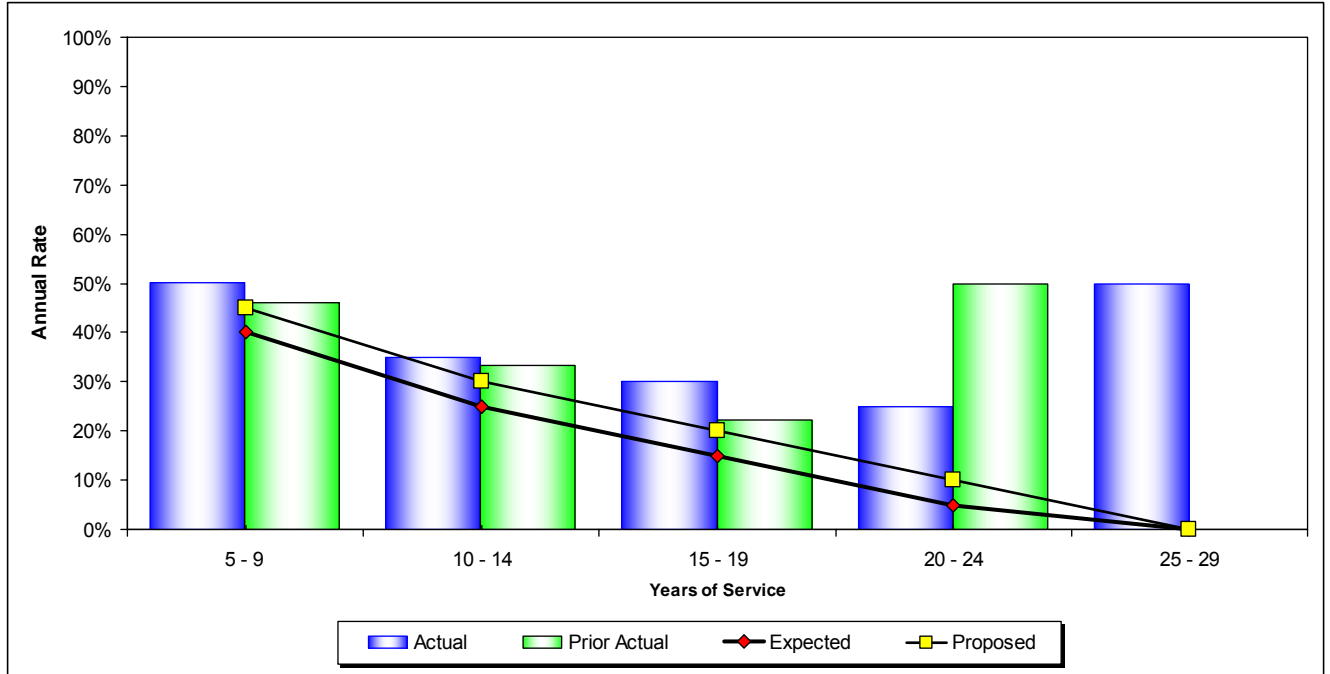
This trend of more refunds of contributions may continue as a greater number of members are required to make contributions beyond five years of service. However, it should be noted that this trend of more refunds is contrary to what we have observed with other retirement systems.

Note that the higher probability of refund at the longer periods of service is a reflection of the low number of members not yet eligible for retirement. For example, in the 2008 study, only four General members terminated with 20-24 years of service and were not eligible for retirement. One of them elected a refund.

**KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
INVESTIGATION OF EXPERIENCE (2006-2008)**

**Exhibit 9-1**

**Probability of Refund upon Vested Termination – General**

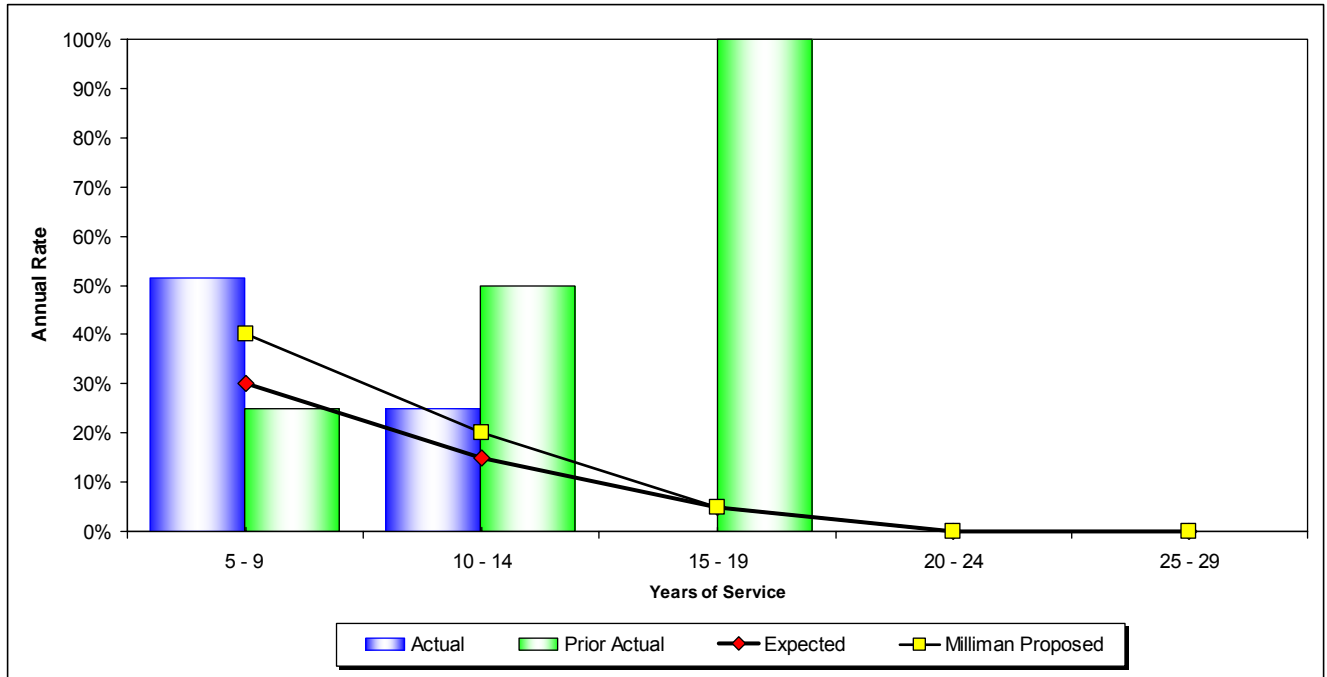


	2006 - 2008 Data		
	Expected	Actual	Proposed
Total Count	97	128	111
Actual / Expected	132%		116%

**KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
INVESTIGATION OF EXPERIENCE (2006-2008)**

**Exhibit 9-2**

**Probability of Refund upon Vested Termination – Safety**



	2006 - 2008 Data		
	Expected	Actual	Proposed
Total Count	11	19	15
Actual / Expected	170%		128%

# KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTIGATION OF EXPERIENCE (2006-2008)

## Appendix A: Summary of Proposed Assumptions

---



The actuarial procedures and assumptions to be used in the June 30, 2008 valuation are described in this section. The assumptions were reviewed and changed as a result of the 2008 Investigation of Experience Study. Assumptions that have been changed since the December 31, 2007 valuation as a result of this study are highlighted in **yellow** in the section that follows.

The actuarial assumptions used in the valuations are intended to estimate the future experience of the members of KCERA and of KCERA itself in areas that affect the projected benefit flow and anticipated investment earnings. Any variations in future experience from that expected from these assumptions will result in corresponding changes in the estimated costs of KCERA's benefits.

Table A-1 summarizes the assumptions. The mortality rates are taken from the sources listed.

Schedule 1 presents the expected annual percentage increase in salaries.

Schedule 2 and 3 show how members are expected to leave retired status due to death.

Schedules 4, 5 and 6 present the probabilities a member will leave the system for various reasons.

Schedule 7 presents the probability of refund of contributions upon termination of employment while vested.



## ECONOMIC ASSUMPTIONS

Investment Earnings and Expenses:	The future investment earnings of the assets of KCERA are assumed to accrue at an annual rate of <b>7.75%</b> , compounded annually, net of both investment and administrative expenses.
Postretirement Benefit Increases:	Postretirement increases are assumed for the valuation in accordance with the benefits provided as described in Appendix B of the valuation report. These adjustments are assumed payable each year in the future as they are less than the expected increase in the Consumer Price Index of 3.5% per year.
Salary Increase – Total Payroll:	4.0% per year.
Salary Increase – Individual:	Rates varying by service, as shown in Schedule 1.
Inflation (CPI):	<b>3.25%</b> per year.
Interest on Member Contributions:	The annual credited interest rate on member contributions is assumed to be <b>7.75%</b> compounded semi-annually.

## DEMOGRAPHIC ASSUMPTIONS

Postretirement mortality:	
• Service Retirement – General:	<b>RP-2000 Combined Healthy Mortality.</b> <b>Rates are set back two years for females and one year for males.</b> Mortality rates for the adjusted table are shown in Schedule 2.
• Service Retirement – Safety:	Rates are the same as General.
• Disability Retirement – General:	<b>RP-2000 Combined Healthy Mortality.</b> <b>Rates set forward four years for females and two years for males. Rates are not less than 1.00% for both males and females.</b> Mortality rates for the adjusted table are shown in Schedule 3.

- Disability Retirement – Safety: RP-2000 Combined Healthy Mortality.  
Rates are not less than 0.50% for both males and females.  
Mortality rates for the adjusted table are shown in Schedule 3.
  - Beneficiary: Rates are the same as a service retiree of the same gender.
- Other Termination: Rates varying by years of service, as shown in Schedule 4 (for General males), 5 (for General females) and 6 (for Safety). Note that these decrements are not applied after eligibility for retirement.
- Probability of Refund: Rates varying by years of service, as shown in Schedule 7.
- Reciprocal Agency: For current active members, the probability of joining a reciprocal agency immediately after termination is 50% for Safety members and 50% for General members. For members who have already terminated vested with a deferred commencement, we use the code provided by the KCERA to determine if the person has joined a reciprocal agency. All terminating members are assumed to not be rehired.
- Deferred Retirement Age for Vested Termination: Age 50 for Safety members.  
Age 60 for General members.
- Salary Projection for Vested Termination with Reciprocity: Salaries are assumed to increase with wage inflation from termination with KCERA to benefit commencement. The assumed annual increase after termination of employment is 4.52% for General members and 4.78% for Safety members.
- Preretirement Mortality: Rates varying by age, as shown in Schedule 4 (for General males), 5 (for General females) and 6 (for Safety). Separate rates are used for ordinary death, service related death, and death while eligible to retire.
- Service Disability: Rates varying by age, as shown in Schedule 4 (for General males), 5 (for General females) and 6 (for Safety).

Ordinary Disability:	Rates varying by age, as shown in Schedule 4 (for General males), 5 (for General females) and 6 (for Safety).
Service Retirement:	<p>Rates varying by age, as shown in Schedule 4 (for General males), 5 (for General females) and 6 (for Safety). All general members who attain or who have attained age 70 in active service and all safety members who have attained age 60 in active service are assumed to retire immediately.</p> <p>The assumptions regarding termination of employment and service retirement are treated as a single set of decrements in regards to a particular member.</p> <p>For example, a general member hired at age 30 has a probability to withdraw from KCERA due to death, disability or other termination of employment until age 50. After age 50, the member could still withdraw due to death, disability or retirement. Thus, in no year during the member's projected employment would they be eligible for both a probability of other termination of employment and a probability of retirement.</p>
Form of Payment:	<p>Life annuity for single members. 60% contingent annuity for married members (100% contingent annuity if receiving service-related disability).</p> <p>SRBR benefits for married members are all assumed to be paid as a 60% contingent annuity.</p>
Percentage Married at Retirement:	80% of male active members and 55% of female active members are assumed to have a spouse or qualified domestic partner eligible for the 60% continuance at retirement. There is no explicit assumption for children's benefits. We believe the survivor benefits based on this marriage assumption are sufficient to cover children's benefits as they occur.
Spouse Ages:	<p>For active members reaching retirement, wives are assumed to be three years younger than husbands.</p> <p>Where spousal information was included for retirees, that information was used. If the age of the spouse was not provided, we have assumed that all spouses are still alive, and that female spouses are four years younger than their husbands.</p>

## ACTUARIAL METHODS

### Actuarial Cost Method:

The actuarial valuation is prepared using the entry age actuarial cost method (CERL 31453.5). Under the principles of this method, the actuarial present value of the projected benefits of each individual included in the valuation is allocated as a level percentage of the individual's projected compensation between entry age and assumed exit (until maximum retirement age).

The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided for at a valuation date by the sum of (a) the actuarial value of the assets, and (b) the actuarial present value of future normal costs is called the Unfunded Actuarial Accrued Liability (UAAL).

### Amortization Period:

The UAAL due to the change to the benefit formula for General Members is amortized as a level percentage of payroll over a 30-year period beginning with the December 31, 2005 valuation, or 27.5 years as of June 30, 2008.

The UAAL due to all other sources is amortized as a level percentage of payroll over a 27.5-year period beginning with the June 30, 2008 valuation.

Additional UAAL incurred through the granting of Golden Handshake agreements made in 2004 and 2005 was amortized over a three-year period from the year in which they were granted. Beginning January 1, 2006, any liability attributable to Golden Handshakes is paid by the employer at the time the handshake is granted.

### Actuarial Value of Assets:

The market value of assets is adjusted to recognize, over a five-year period, investment earnings greater than (or less than) the assumed investment return. Details are shown in Section 2, Assets, of this report.

The actuarial value, market value and book value are net of amounts allocated to the Supplemental Retiree Benefit Reserve and the Contingency Reserve.

**Replacement of Terminated Members:** The ages and relative salaries at entry of future members are assumed to follow a new entrant distribution based on the pattern of current members. Under this assumption, the normal cost rates for active members will remain fairly stable in future years unless there are changes in the governing law, the actuarial assumptions or the pattern of the new entrants.

**Growth in Membership:** For benefit determination purposes, no growth in the membership of KCERA is assumed. For funding purposes, if amortization is required, the total payroll of covered members is assumed to grow due to the combined effects of future wage increases of current active members and the replacement of the current active members by new employees. No growth in the total number of active members is assumed.

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

**Employer Contributions:** The employer contribution rate is set by the Retirement Board based on actuarial valuations.

**Member Contributions:** The member contribution rates vary by entry age and are described in the law. Code references are shown in Appendix D of this report. The methods and assumptions used are detailed below.

The individual member rates by entry age, plan and class are illustrated in Appendix D.

Member Contribution Rate  
Assumptions:

The following assumptions summarize the procedures used to compute member contribution rates based on entry age:

In general, the member rate is determined by the present value of the future benefit (PVFB) payable at retirement age, divided by the present value of all future salaries payable between age at entry and retirement age. For these purposes, per the CERL, the:

- A. Annuity factor used for general members is based on a one-third / two-thirds blend of the male and female mortality tables using current valuation assumptions. For Safety members it is based on a five-sixths / one-sixth blend.
- B. The annuity factor used in determining the present value of future benefits (PVFB) at entry age is equal to the life only annuity factor at 8%.
- C. The Final Compensation is based on the salary paid in the year prior to attaining the retirement age.

Example: For a General member who enters at age 59 or earlier, the Final Compensation at retirement (age 60) will be the monthly average of the annual salaries during age 59.

- D. Member Rates are assumed to increase with entry age. There are a few exceptions at the higher entry ages where the calculated rate is less than the previous entry age. In these cases the member contribution rate is adjusted so that it is no less than the value for the previous entry age. Also, the new Safety 3 rates do not vary by entry age.

**DATA SOURCES**

Asset Data:

The asset information is taken directly from statements furnished by the Retirement Office and used without audit.

Member Data:

The member data is supplied by the Retirement Office. It is reviewed for reasonableness and consistency, but no audit was performed. Milliman is not aware of any errors or omissions in the data that would have a significant effect on the results of our calculations.

**KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
INVESTIGATION OF EXPERIENCE (2006-2008)**

**Table A-1: Summary of Valuation Assumptions as of June 30, 2008**

I.	Economic assumptions		
A.	General wage increases	4.00%	
B.	Investment earnings	7.75%	
C.	Growth in active membership	0.00%	
D.	CPI inflation assumption	3.25%	
II.	Demographic assumptions		
A.	Salary increases due to service	Schedule 1	
B.	Retirement	Schedules 4-6	
C.	Disablement	Schedules 4-6	
D.	Mortality for active members after termination and service retired members	Schedule 2	
	Basis – RP-2000 Combined Healthy Mortality:		
	<u>Class of Members</u>	<u>Age Adjustment</u>	
	General – Males	-1 years	
	General – Females	-2 years	
	Safety – Males	-1 years	
	Safety – Females	-2 years	
E.	Mortality among disabled members	Schedule 3	
	Basis – RP-2000 Combined Healthy Mortality:		
	<u>Class of Members</u>	<u>Age Adjustment</u>	<u>Minimum Rate</u>
	General – Males	+2 years	1.00%
	General – Females	+4 years	1.00%
	Safety – Males	none	0.50%
	Safety – Females	none	0.50%
F.	Mortality for beneficiaries	Table A-2	
	Basis – Beneficiaries are assumed to be of the opposite sex and have the same mortality as General members.		
G.	Other terminations of employment	Schedules 4-6	
H.	Refund of contributions on vested termination	Schedule 7	

**KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
INVESTIGATION OF EXPERIENCE (2006-2008)**

**Schedule 1: Assumed Rate of Salary Increase**

**Annual Increase in Salary (before wage inflation)**

<b>Years of Service</b>	<b>General Members</b>	<b>Safety Members</b>
0	6.00%	6.00%
1	5.00%	5.00%
2	4.00%	4.00%
3	3.00%	3.00%
4	2.50%	2.50%
5	2.25%	2.25%
6	2.00%	2.00%
7	1.75%	1.75%
8	1.50%	1.50%
9	1.30%	1.30%
10	1.10%	1.10%
11	0.90%	0.90%
12	0.80%	0.80%
13	0.70%	0.75%
14	0.60%	0.75%
15 or More	0.50%	0.75%

**Annual Increase in Salary (with wage inflation)**

<b>Years of Service</b>	<b>General Members</b>	<b>Safety Members</b>
0	10.24%	10.24%
1	9.20%	9.20%
2	8.16%	8.16%
3	7.12%	7.12%
4	6.60%	6.60%
5	6.34%	6.34%
6	6.08%	6.08%
7	5.82%	5.82%
8	5.56%	5.56%
9	5.35%	5.35%
10	5.14%	5.14%
11	4.94%	4.94%
12	4.83%	4.83%
13	4.73%	4.78%
14	4.62%	4.78%
15 or More	4.52%	4.78%



**KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
INVESTIGATION OF EXPERIENCE (2006-2008)**

**Schedule 2: Mortality for Members Retired for Service**

<u>Age</u>	<u>General/Safety Male</u>	<u>General/Safety Female</u>
20	0.033%	0.019%
25	0.038%	0.020%
30	0.041%	0.024%
35	0.070%	0.039%
40	0.102%	0.060%
45	0.140%	0.094%
50	0.200%	0.143%
55	0.320%	0.221%
60	0.595%	0.392%
65	1.128%	0.765%
70	1.980%	1.345%
75	3.390%	2.297%
80	5.793%	3.760%
85	9.978%	6.251%
90	16.642%	10.730%

**KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
INVESTIGATION OF EXPERIENCE (2006-2008)**

**Schedule 3: Mortality for Members Retired for Disability**

<u>Age</u>	<u>General Male</u>	<u>General Female</u>	<u>Safety Male</u>	<u>Safety Female</u>
20	1.000%	1.000%	0.500%	0.500%
25	1.000%	1.000%	0.500%	0.500%
30	1.000%	1.000%	0.500%	0.500%
35	1.000%	1.000%	0.500%	0.500%
40	1.000%	1.000%	0.500%	0.500%
45	1.000%	1.000%	0.500%	0.500%
50	1.000%	1.000%	0.500%	0.500%
55	1.000%	1.000%	0.500%	0.500%
60	1.000%	1.000%	0.675%	0.506%
65	1.608%	1.486%	1.274%	0.971%
70	2.728%	2.546%	2.221%	1.674%
75	4.691%	4.151%	3.783%	2.811%
80	8.049%	6.952%	6.437%	4.588%
85	13.604%	11.915%	11.076%	7.745%
90	21.660%	18.280%	18.341%	13.168%

## KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTIGATION OF EXPERIENCE (2006-2008)

### Schedule 4: Probability of Separation from Active Service General Members – Male

(Number separating at each age per 10,000 working at that age)

Age	Ordinary Death	Service Death	Ordinary Disability	Service Disability	Service Retirement	Years of Service	Other Terminations
20	3	0	2	3	0	0	0.2000
21	3	0	2	3	0	1	0.1400
22	4	0	2	3	0	2	0.1000
23	4	0	2	3	0	3	0.0700
24	4	0	2	3	0	4	0.0620
25	4	0	2	3	0	5	0.0553
26	4	0	2	3	0	6	0.0487
27	4	0	2	3	0	7	0.0420
28	4	0	2	3	0	8	0.0386
29	4	0	2	4	0	9	0.0352
30	4	0	3	4	0	10	0.0318
31	4	0	3	4	0	11	0.0284
32	5	0	3	5	0	12	0.0250
33	6	0	3	5	0	13	0.0240
34	6	0	4	6	0	14	0.0230
35	7	0	4	6	0	15	0.0220
36	8	0	5	7	0	16	0.0210
37	8	0	5	8	0	17	0.0200
38	9	0	6	8	0	18	0.0180
39	10	0	6	9	0	19	0.0160
40	10	0	7	10	0	20	0.0140
41	11	0	7	11	0	21	0.0120
42	11	0	8	12	0	22	0.0100
43	12	0	8	13	0	23	0.0100
44	13	0	9	13	0	24	0.0100
45	14	0	9	14	0	25	0.0100
46	15	0	10	14	0	26	0.0100
47	16	0	10	15	0	27	0.0100
48	17	0	11	16	0	28	0.0100
49	19	0	12	17	0	29	0.0100
50	20	0	12	19	600	30 & Above	0.0100
51	21	0	13	20	300		
52	23	0	14	21	400		
53	24	0	15	22	500		
54	26	0	16	23	500		
55	28	0	16	25	1000		
56	30	0	17	26	1100		
57	33	0	18	27	1400		
58	36	0	19	28	1700		
59	40	0	20	29	1800		
60	44	0	20	31	2000		
61	49	0	21	32	2600		
62	54	0	22	33	3200		
63	59	0	23	34	3000		
64	65	0	24	35	3000		
65	70	0	24	37	3000		
66	76	0	25	38	3000		
67	81	0	26	39	3000		
68	86	0	27	40	3000		
69	91	0	28	41	3000		
70	95	0	0	0	10000		

**KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
INVESTIGATION OF EXPERIENCE (2006-2008)**

**Schedule 5: Probability of Separation from Active Service  
General Members – Female**

(Number separating at each age per 10,000 working at that age)

<u>Age</u>	<u>Ordinary Death</u>	<u>Service Death</u>	<u>Ordinary Disability</u>	<u>Service Disability</u>	<u>Service Retirement</u>	<u>Years of Service</u>	<u>Other Terminations</u>
20	2	0	2	3	0	0	0.2000
21	2	0	2	3	0	1	0.1400
22	2	0	2	3	0	2	0.1000
23	2	0	2	3	0	3	0.0700
24	2	0	2	3	0	4	0.0620
25	2	0	2	3	0	5	0.0553
26	2	0	2	3	0	6	0.0487
27	2	0	2	3	0	7	0.0420
28	2	0	2	3	0	8	0.0386
29	2	0	2	4	0	9	0.0352
30	2	0	3	4	0	10	0.0318
31	2	0	3	4	0	11	0.0284
32	3	0	3	5	0	12	0.0250
33	3	0	3	5	0	13	0.0240
34	4	0	3	5	0	14	0.0230
35	4	0	4	5	0	15	0.0220
36	4	0	4	6	0	16	0.0210
37	5	0	4	6	0	17	0.0200
38	5	0	4	7	0	18	0.0180
39	6	0	5	7	0	19	0.0160
40	6	0	5	8	0	20	0.0140
41	6	0	6	8	0	21	0.0120
42	7	0	6	9	0	22	0.0100
43	8	0	6	10	0	23	0.0100
44	9	0	7	10	0	24	0.0100
45	9	0	7	11	0	25	0.0100
46	10	0	8	11	0	26	0.0100
47	11	0	8	12	0	27	0.0100
48	12	0	8	13	0	28	0.0100
49	13	0	9	13	0	29	0.0100
50	14	0	9	14	600	30 & Above	0.0100
51	16	0	10	14	600		
52	17	0	10	15	600		
53	18	0	10	16	600		
54	20	0	11	16	600		
55	21	0	11	17	800		
56	23	0	12	17	1000		
57	25	0	12	18	1200		
58	28	0	13	20	1500		
59	30	0	14	22	1800		
60	33	0	16	23	2200		
61	36	0	17	25	2000		
62	39	0	18	27	3000		
63	43	0	19	29	3000		
64	47	0	20	31	3000		
65	50	0	22	32	3000		
66	54	0	23	34	3000		
67	58	0	24	36	3000		
68	62	0	25	38	3000		
69	66	0	26	40	3000		
70	69	0	0	0	10000		

## KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION INVESTIGATION OF EXPERIENCE (2006-2008)

### Schedule 6: Probability of Separation from Active Service Safety Members

(Number separating at each age per 10,000 working at that age)

Age	Ordinary Death*	Service Death	Ordinary Disability	Service Disability	Service Retirement	Years of Service	Other Terminations
20	3	2	0	10	0	0	0.0700
21	3	2	0	10	0	1	0.0500
22	4	2	0	10	0	2	0.0400
23	4	2	0	10	0	3	0.0300
24	4	2	0	10	0	4	0.0300
25	4	2	0	10	0	5	0.0283
26	4	2	0	10	0	6	0.0267
27	4	2	0	10	0	7	0.0250
28	4	2	0	12	0	8	0.0240
29	4	2	0	14	0	9	0.0230
30	4	2	0	16	0	10	0.0220
31	4	2	0	18	0	11	0.0210
32	5	2	0	20	0	12	0.0200
33	6	2	0	24	0	13	0.0170
34	6	2	0	28	0	14	0.0140
35	7	2	0	32	0	15	0.0110
36	8	2	0	36	0	16	0.0080
37	8	2	0	40	0	17	0.0050
38	9	2	0	44	0	18	0.0050
39	10	2	0	48	0	19	0.0000
40	10	2	0	52	0	20	0.0000
41	11	2	0	56	0	21	0.0000
42	11	2	0	60	0	22	0.0000
43	12	2	0	66	0	23	0.0000
44	13	2	0	72	0	24	0.0000
45	14	2	0	78	100	25	0.0000
46	15	2	0	84	50	26	0.0000
47	16	2	0	90	50	27	0.0000
48	17	2	0	108	100	28	0.0000
49	19	2	0	126	200	29	0.0000
50	20	2	0	144	1200	30 & Above	0.0000
51	21	2	0	162	1200		
52	23	2	0	180	1200		
53	24	2	0	204	1200		
54	26	2	0	228	1500		
55	28	2	0	252	1700		
56	30	2	0	276	2000		
57	33	2	0	300	2300		
58	36	2	0	300	2500		
59	40	2	0	300	2500		
60	44	2	0	300	10000		
61	49	0	0	300	0		
62	54	0	0	300	0		
63	59	0	0	300	0		
64	65	0	0	300	0		
65	70	0	0	0	0		
66	76	0	0	0	0		
67	81	0	0	0	0		
68	86	0	0	0	0		
69	91	0	0	0	0		
70	95	0	0	0	0		

\* Ordinary death rates for female Safety members are assumed to be the same as for female General members.



This work product was prepared solely for KCERA for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. **A-14**

**KERN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
INVESTIGATION OF EXPERIENCE (2006-2008)**

**Schedule 7: Immediate Refund of Contributions upon Termination of Employment**

<u>Years of Service</u>	<u>General</u>	<u>Safety</u>
0	100%	100%
1	100%	100%
2	100%	100%
3	100%	100%
4	100%	100%
5	45%	40%
6	45%	40%
7	45%	40%
8	42%	36%
9	39%	32%
10	36%	28%
11	33%	24%
12	30%	20%
13	28%	17%
14	26%	14%
15	24%	11%
16	22%	8%
17	20%	5%
18	18%	4%
19	16%	3%
20	14%	0%
21	12%	0%
22	10%	0%
23	8%	0%
24	6%	0%
25	4%	0%
26	2%	0%
27	0%	0%
28	0%	0%
29	0%	0%
30 & Up	0%	0%