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April 7, 2009

PERSONAL & CONFIDENTIAL

State of Connecticut
State Employees Retirement Commission
55 Elm Street
Hartford, CT 06106

Re: 2003-2007 SERS Experience Study

Members of the Commission:

We are pleased to present the results of the 2003-2007 SERS Experience Study. The purpose of this report is to document the data presented to the Actuarial Subcommittee over the course of several months of work in 2008 and the conclusions of the Actuarial Subcommittee with respect to the selection of new assumptions. Section I contains a discussion of the economic assumptions used in the actuarial valuation. Details regarding demographic assumptions are found in Section II.

In preparing this study, we relied without audit on employee census data and financial information as of each June 30 from 2003 through 2007, furnished by the State of Connecticut. This information includes, but is not limited to, statutory provisions, employee data, and financial information. In our examination of these data, we have found them to be reasonably consistent and comparable with data used for other purposes. Since the valuation 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 calculations may need to be revised. If there are material defects in the data, it is possible that they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent. Such a review was beyond the scope of our assignment.

The calculations reported herein have been made on a basis consistent with our understanding of the Connecticut General Statutes with guidance from the Retirement Commission. Furthermore, the calculations were determined in conformance 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.

This analysis is solely for the internal use of the State Employees Retirement Commission. Milliman does not intend to benefit any third party recipient of this analysis. If these results are distributed to other parties, we request that it be copied in its entirety and distributed along with a copy of the July 1, 2008 SERS valuation report in its entirety as well, because that document provides background information that is important in understanding the basis for these results.

We are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,

Althea A. Schwartz, FSA
Consulting Actuary

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CONNECTICUT STATE EMPLOYEES RETIREMENT SYSTEM 2003-2007 EXPERIENCE STUDY

SUMMARY OF RESULTS

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ECONOMIC ASSUMPTIONS

A. OVERVIEW OF ECONOMIC ASSUMPTIONS

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

Recognizing that there is not one "right answer", the Standard calls for the actuary to develop a best estimate range for each economic assumption, and then recommend a specific point within that range. Each economic assumption should individually satisfy the 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 set forth in this report have been developed in accordance with ASOP No. 27.

The remainder of this section contains the study results for the following economic assumptions:

- Consumer Price Inflation
- Cost of Living Adjustments
- Wage Growth
- Salary Scale
- Payroll Growth Rate
- Investment Return

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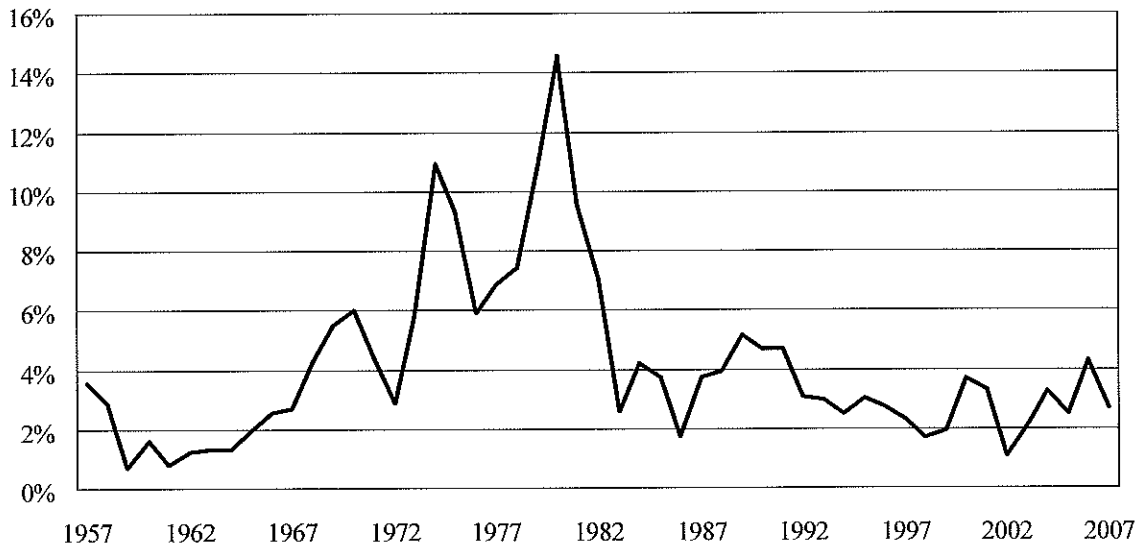
B. CONSUMER PRICE INFLATION

Use in the Valuation: Future price inflation has an indirect impact on the results of the actuarial valuation through the development of the assumptions for investment return, wage growth, and cost of living (COLA) increases.

The current assumption for price inflation is 3.75% per year.

Historical Perspective: We have used certain published economic statistics that have been accumulated on a monthly basis over the last 50 years. The data for price inflation is based on the Consumer Price Index, US City Average, All Urban Consumers (CPI). The data for periods ending in June of each year is shown graphically below.



There are numerous ways to review this data. The table below shows the compounded annual price inflation rate for various 10 year periods and for longer periods ended in June of 2007. Standard Deviation is a measure of the extent to which inflation varied from the Mean, or average, for the period.

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Period	Mean	Standard Deviation
1997-2007	2.66%	0.99%
1987-1997	3.51%	1.02%
1977-1987	6.46%	4.11%
1967-1977	6.19%	2.38%
1957-1967	1.69%	0.77%
1997-2007	2.66%	0.99%
1987-2007	3.08%	1.07%
1977-2007	4.20%	2.95%
1967-2007	4.69%	2.92%
1957-2007	4.09%	2.90%
75 years	3.70%	3.73%
25 years	3.11%	1.04%

Many economists forecast price inflation lower than the current assumption of 3.75%, but they may be looking at shorter periods than are appropriate for a pension valuation. To find an economic forecast with a long enough time frame to suit our purpose, 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 average annual increase in the CPI over the next 30 years under the intermediate cost assumptions was 2.8%. The reasonable range was stated as 1.8% to 3.8%.

Reasonable Range and Recommendation: We believe that the current assumption of 3.75% per year is at the high end of the reasonable range for the long-term future. Based on the history over the last 75 years, and future expectations, we recommend that the long-term assumed price inflation rate be lowered from 3.75% to 3.00%. This rate will be used to build the net investment return, wage growth, and COLA assumptions.

Price Inflation Rate	
Current Assumption	3.75%
Reasonable Range	1.8% - 3.8%
Recommended Assumption	3.00%

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C. COST OF LIVING ADJUSTMENTS

Use in the Valuation: Retired members receive annual benefit increases known as Cost of Living Adjustments, or COLAs. The annual COLA rates depend on the date of retirement:

Retirements	COLA Formula	Current Assumption
Prior to July 1, 1980	CPI, but not less than 3% nor more than 5%	3.75%
July 1, 1980 – July 1, 1999 *	3.00%	3.00%
After July 1, 1999 *	60% of CPI up to 6% and 75% of CPI over 6%, but not less than 2.5% nor more than 6%	2.75%

* Members who retired between July 1, 1997 and July 1, 1999 made an irrevocable choice between the Pre-1999 fixed 3% COLA and the Post-1999 COLA formula.

Historical Perspective: The COLA assumption for Pre-1980 and Post-1999 retirees is a function of both price inflation and the extent to which price inflation causes the COLA formulas to be at their respective boundaries (3%-5% for Pre-1980 and 2.5%-6% for Post-1999). As discussed in Section I B, we are recommending that the price inflation assumption be lowered from 3.75% to 3.00%.

To explore the impact of the formula boundaries, we used data on the Consumer Price Index, US City Average, All Urban Consumers (CPI). The data for periods ending in June of each year is shown in the CPI section of this report. Using stochastic modeling techniques, we generated sets of 5,000 random 75-year price inflation scenarios having a mean of our recommended price inflation rate of 3.00% and a standard deviation of 1.90%. For each scenario we determined the Pre-1980 and Post-1999 COLAs based on their respective formulas. We then calculated the mean COLA for each scenario. The results are shown below:

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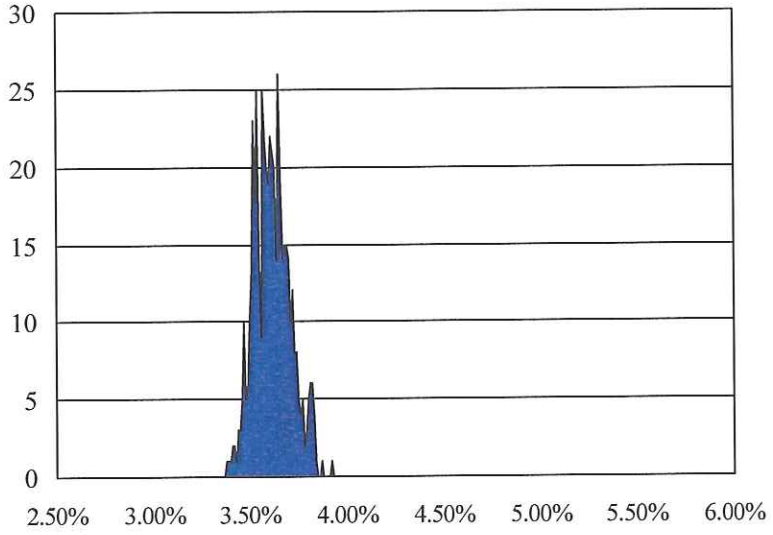
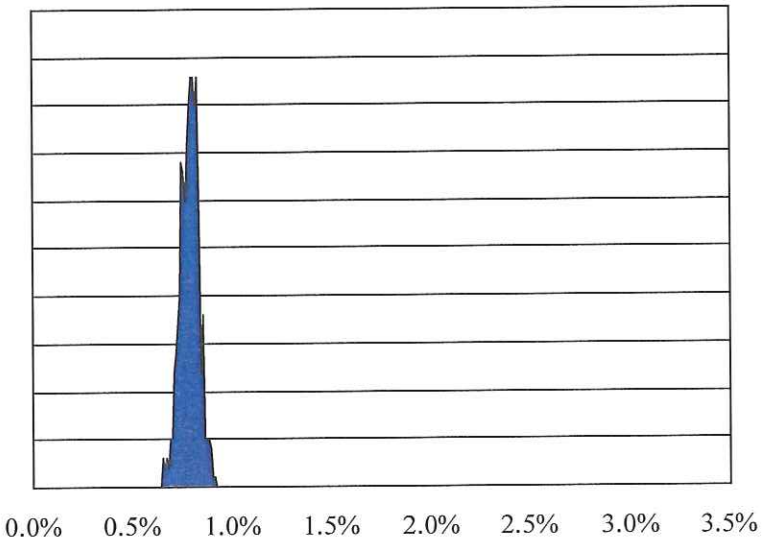
Pre-1980 Retirees:

COLA: 75-Year Mean



COLA: Standard Deviation



Overall mean: 3.61%
Overall standard deviation: 0.09%

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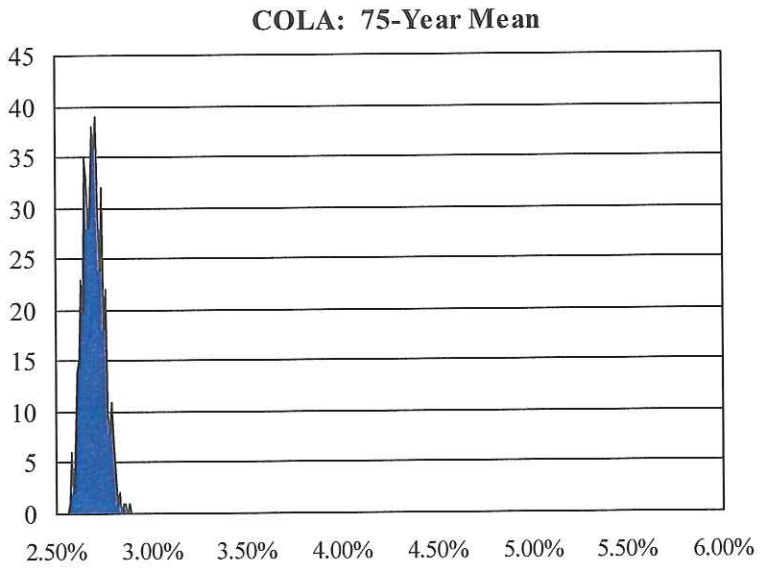
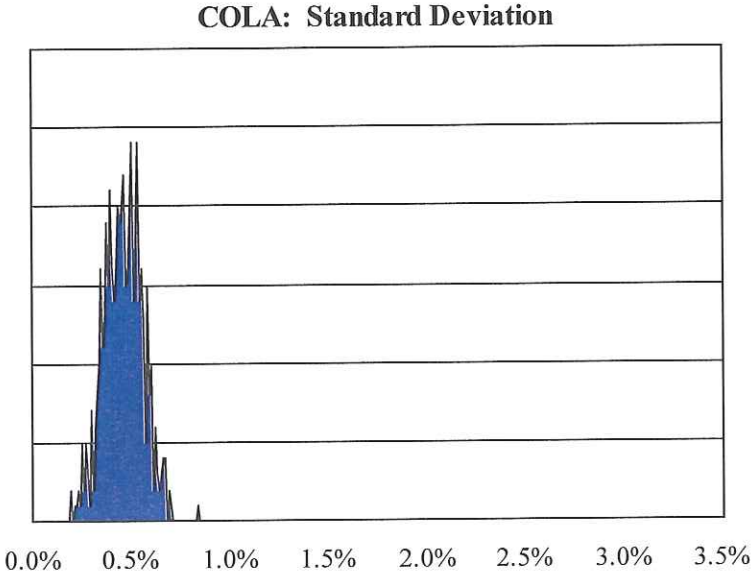
Post-1999 retirees:





Overall mean: 2.69%
Overall standard deviation: 0.05%

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Reasonable Range and Recommendation: Based on our judgment, we believe that a range of between 3.52% and 3.70% is reasonable for the Pre-1980 COLA and a range of between 2.64% and 2.74% is reasonable for the Post-1980 COLA. We recommend that the Pre-1980 COLA be lowered to 3.60% and the Post-1999 COLA be lowered to 2.70%.

	COLA Assumption	
	Pre-1980	**Post-1999**
Current Assumption	3.75%	2.75%
Reasonable Range	3.52% - 3.70%	2.64% - 2.74%
Recommended Assumption	3.60%	2.70%

SECTION I
ECONOMIC ASSUMPTIONS

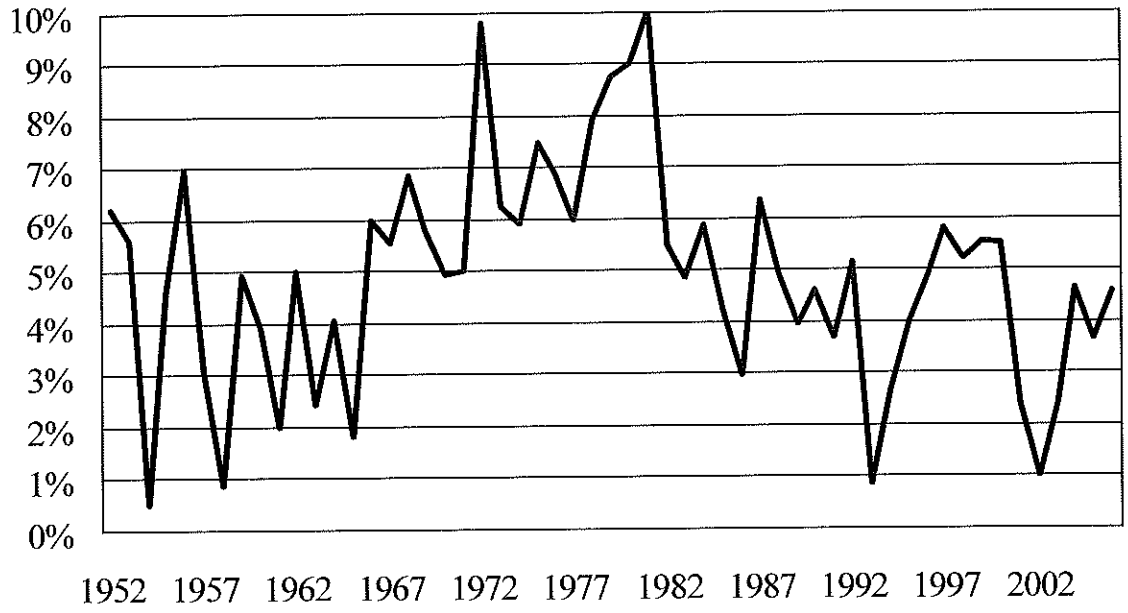
D. WAGE GROWTH AND PAYROLL GROWTH RATE

Use in the Valuation: Estimates of future salaries are based on two types of assumptions. Rates of increase in the general wage level of the membership are directly related to price inflation, while individual salary increases due to promotion and longevity occur even in the absence of price inflation. (The promotion and longevity assumptions, referred to as the salary scale, are discussed in the following section.) The excess of wage growth over price inflation represents the increase in the standard of living, also called productivity, or real wage growth.

The current total wage growth assumption is 4.25%; coupled with the current price inflation assumption of 3.75% this yields a real wage growth assumption of 0.50%.

The payroll growth rate is used to determine the amortization of the Unfunded Actuarial Liability. The amortization payment is designed remain level as a percentage of covered payroll over time. The current payroll growth rate assumption is 5.00% per year.

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*. The data for each year is shown graphically below.



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There are numerous ways to review this data. The tables below shows the compounded annual rates of wage growth for various 10 year periods, and for longer periods ended in June of 2006. (At the time of our study, wage data for 2007 was not yet available).

	Nominal Wage Growth Rate		Inflation (CPI)		Real Wage Growth Rate	
Period	**Mean**	**St Dev**	**Mean**	**St Dev**	**Mean**	**St Dev**
1986-1996	4.11%	1.51%	3.65%	0.93%	0.45%	1.59%
1976-1986	6.50%	2.31%	6.78%	3.98%	-0.35%	2.29%
1966-1976	6.45%	1.43%	5.77%	2.61%	0.62%	3.15%
1956-1966	3.41%	1.65%	1.78%	0.93%	1.62%	2.04%
1996-2006	4.08%	1.65%	2.62%	1.00%	1.46%	1.64%
1986-2006	4.09%	1.54%	3.13%	1.08%	0.95%	1.65%
1976-2006	4.89%	2.13%	4.34%	2.98%	0.52%	1.95%
1966-2006	5.28%	2.08%	4.69%	2.92%	0.54%	2.26%
1956-2006	4.90%	2.12%	4.10%	2.89%	0.76%	2.24%
1996-2006	4.08%	1.65%	2.62%	1.00%	1.46%	1.64%
50 years	4.90%	2.12%	4.10%	2.89%	0.76%	2.24%
25 years	4.21%	1.47%	3.28%	1.31%	0.92%	1.59%

We also looked at the wage growth forecasts prepared by the Office of the Chief Actuary of the Social Security Administration. In the 2008 Trustees Report, the projected long-term annual increase in the real wage growth rate was 1.1%. Coupled with their projected average annual increase in the CPI of 2.8%, the resulting nominal wage growth rate is 3.9%.

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Reasonable Range and Recommendation: Based on our judgment, we believe that a range of between 2.25% and 5.25% is reasonable for the total wage growth rate. We recommend that the total wage growth rate be decreased to 4.00%. This reflects the combined impact of a decrease in the price inflation assumption from 3.75% to 3.00%, and an increase in the real wage growth rate from 0.50% to 0.75%.

Total Wage Growth Rate			
Current Assumption	4.25%		
Reasonable Range			
Real Wage Growth Rate	0.50%	-	1.50%
Price Inflation	1.75	-	3.75
Total Wage Growth Rate	2.25%	-	5.25%
Recommended Assumption	4.00%		

A "merit" scale is added to the wage growth assumption to obtain the total rate of salary increases assumed to be earned each year by active members. The merit scale results are contained in the following section.

We recommend that the payroll growth rate be lowered to 4.00%, to be consistent with the total wage growth rate. This will also allow the amortization of the unfunded actuarial liability to be consistent with GASB standards in determining the Annual Required Contribution.

Payroll Growth Rate	
Current Assumption	5.00%
Recommended Assumption	4.00%

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E. MERIT SCALE

Current Assumption: Overall pay increases (that is, both real wage growth and pay increases related to merit, longevity, promotions, etc.) are assumed to vary by length of service per the following table:

Service	Rate
0	15.00%
1	15.00%
2	10.00%
3	7.00%
4	6.50%
5	6.00%
6	6.00%
7	6.00%
8	6.00%
9	5.50%
10	5.50%
11	5.00%
12	5.00%
13	4.50%
14	4.50%
15+	4.25%

Study Design: We looked at the impact of both service and age on annual salary increases for each individual in our study. The results indicate the combined impact of general wage growth, merit increases, and longevity increases. There were a number of individual annual salary increases that we identified as "outliers" (increases of more than 50% or decreases of more than 20%) particularly in the first two years of service. We suspect that many of these reflect breaks in service due to terminations and rehires, leaves of absence, periods out on workers compensation, periods of part time employment, and so forth. In order to avoid distortion, we removed such outliers from our study results.

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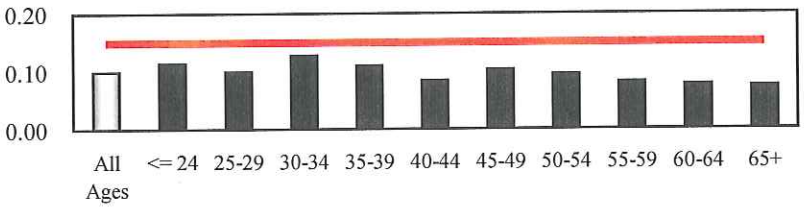
Results: The graphs below corresponding to different lengths of service. Each graph shows the results by age group, with the clear bar to the left indicating the experience across all age groups. Actual experience is shown in black; the results predicted by the current assumptions are shown in red. Note that the figures graphed are not net of wage inflation.

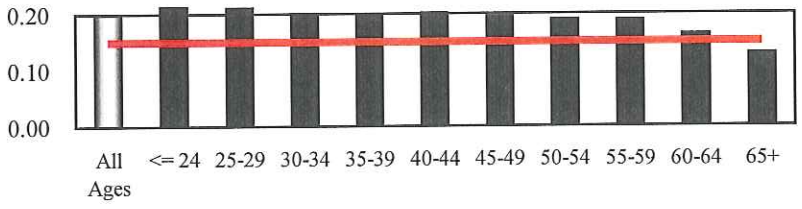
Year 0

9.98%
15.00%



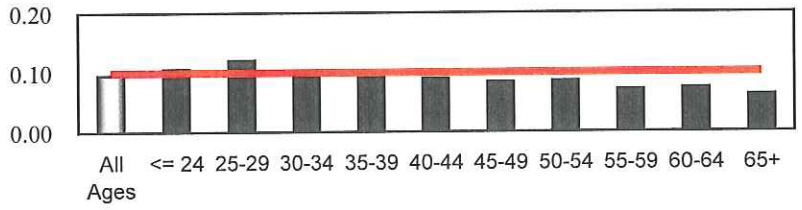
Year 1

19.89%
15.00%



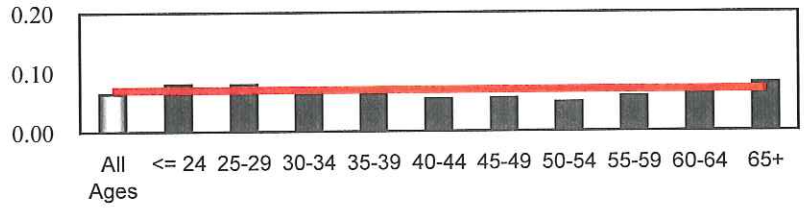
Year 2

9.54%
10.00%



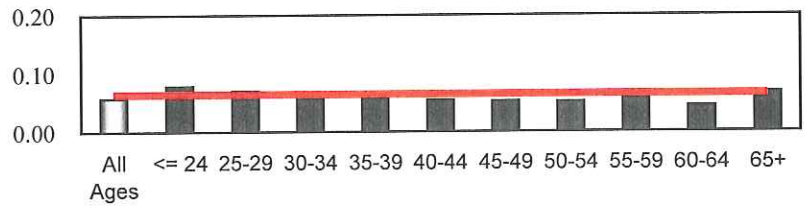
Year 3

6.42%
7.00%



Year 4

5.75%
6.50%



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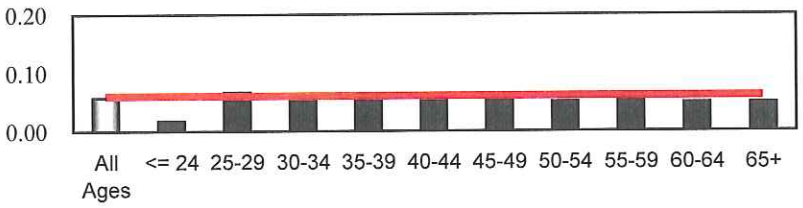
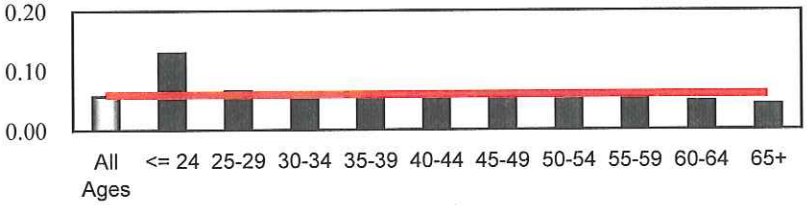
Year 5

5.77%
6.00%



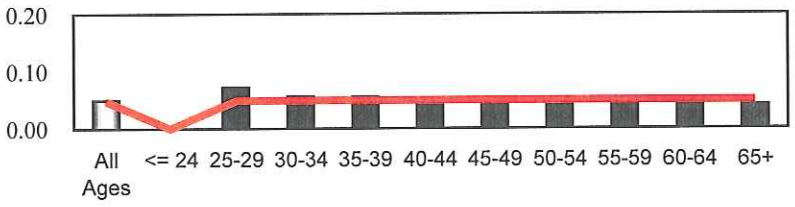
Years 6-9

5.67%
5.88%



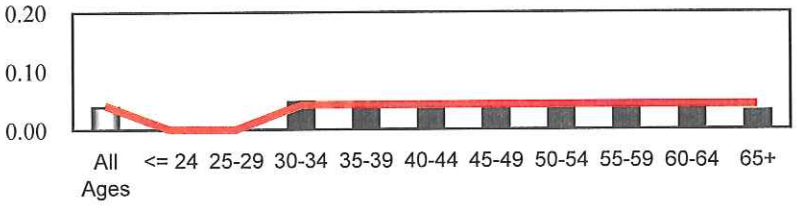
Years 10-14

4.96%
4.90%



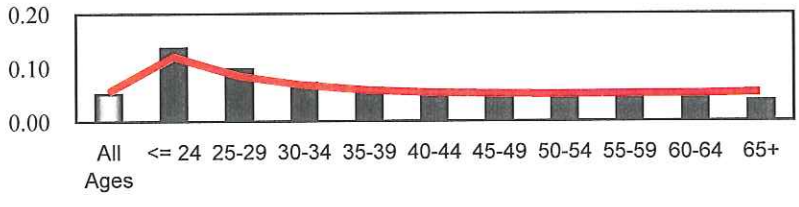
Years 15+

3.94%
4.25%



All Years

5.12%
5.57%



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Recommendation: Based on our judgment, we believe that some of the salary scale rates should be modified slightly and the "ultimate" rate of salary increases for longer service members should coincide with the nominal wage growth assumption of 4.00% developed in the previous section. Our recommended assumption is shown below:

Service	Rate
0	10.00%
1	10.00%
2	10.00%
3	6.25%
4	6.00%
5	5.75%
6	5.50%
7	5.50%
8	5.50%
9	5.50%
10	5.00%
11	5.00%
12	5.00%
13	5.00%
14	5.00%
15+	4.00%

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F. INVESTMENT RETURN

Use in the Valuation: The investment return assumption is one of the primary determinants in the calculation of the expected cost of the System's benefits, providing a discount of the future benefit payments reflecting the time value of money. The current investment return assumption is 8.50% per year, net of all expenses.

Historical Perspective: One of the inherent problems with analyzing historical data is that the results can look significantly different depending on the time frame used, since the year-to-year results tend to vary widely. For example, the unusually low equity returns during 2001-2003 have had a remarkable impact on rolling ten-year period returns when compared to just a few years earlier. Furthermore, the long-term approach we used to analyze price inflation does not necessarily reflect current expectations for the capital markets. Even though history provides a valuable perspective for setting this assumption, the economy of the past is not today's economy.

Projection Model using Capital Market Assumptions: In our opinion, a better approach builds upon forward-looking capital market assumptions. We were not provided with the capital market assumptions adopted by the Treasurer's investment consultants, so we used Milliman's capital market assumptions for this purpose:

Asset Class	Expected Real Return	Real Standard Deviation	Nominal Arithmetic Mean
US Stocks	4.88%	18.79%	9.48%
Developed Countries Equities	4.88%	20.01%	9.66%
Emerging Market Equities	4.88%	30.72%	11.88%
Private Equities	6.83%	30.26%	13.67%
Hedge Fund (Fund of Funds)	3.90%	10.05%	7.47%
Real Estate (Property)	3.90%	13.46%	7.77%
Core Fixed Income	2.14%	7.42%	5.42%
High Yield Bonds	3.27%	10.60%	6.82%
Foreign Fixed Income	2.30%	10.50%	5.81%
Inflation Indexed Bonds	2.00%	3.73%	5.13%
Cash	0.45%	1.64%	3.48%

Capital market assumptions are per Milliman's investment consulting practice; assumptions used by Treasurer's investment consultants were not made available to us for purposes of this study.

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We applied these assumptions based on the SERS allocation targets as contained in the Investment Policy Statement that was adopted on October 3, 2007:

Asset Class	Index	SERS Allocation Target
US Stocks	Wilshire 5000/Russell 3000	25.50%
Developed Countries Equities	MSCI EAFE	20.00%
Emerging Market Equities	S&P/IFCG Emerging Mkt	9.00%
Private Equities	Venture Economics	11.00%
Hedge Fund (Fund of Funds)	HFRI Fund of Funds	4.00%
Real Estate (Property)	NCREIF Property	5.00%
Core Fixed Income	Lehman Aggregate	13.00%
High Yield Bonds	Lehman High Yield	2.00%
Foreign Fixed Income	Citigroup Non-US Govs	4.00%
Inflation Indexed Bonds	ML Index	5.50%
Cash	Citigroup 90-Day T-Bills	1.00%
Total		100.00%

The expected real rate of return of a portfolio allocated according to the current SERS policy is 5.3% for one year, based on Milliman's capital market assumptions, which is equivalent to a nominal return of 8.3% using the new assumed inflation rate of 3.0%. However, the rate of return is subject to significant year-to-year volatility as evidenced by the high standard deviation. Volatility over time will lower the mean rate of return, but diversification by asset class narrows the range of expected returns. Stochastic modeling provides a guide to see if it is reasonable to expect this return to compound over longer periods of time.

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The results of our model are summarized below, showing expected nominal rates of return over time horizons of up to 75 years.

Horizon		Std	Percentile Results for Nominal Rate of Return				
in Years	Mean	Dev	5th	25th	50th	75th	95th
1	9.00%	12.28%	-9.95%	0.42%	8.31%	16.84%	30.28%
5	8.45	5.45	-0.27	4.71	8.31	12.05	17.64
10	8.38	3.85	2.17	5.75	8.31	10.94	14.83
20	8.35	2.72	3.93	6.50	8.31	10.16	12.88
30	8.34	2.22	4.72	**6.83**	8.31	**9.82**	12.03
50	8.33	1.72	5.52	7.16	8.31	9.48	11.18
75	8.32	1.40	6.03	7.37	8.31	9.27	10.65

In the first year, the mean nominal return is 9.00%, 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 real rate of return will be less than –9.95% and a 5% chance it will be greater than 30.28%. As the time horizon lengthens, the range of cumulative average results narrows.

For example, over a 30-year time horizon, there is a 25% chance the nominal rate of return will be less than 6.83% and a 25% chance the return will be greater than 9.82% (bold numbers near the bottom of the table above). Therefore, we can say the nominal return is just as likely to be within the range from 6.83% to 9.82% as not. The mean nominal return over 30 years is expected to be 8.34%.

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Administrative and Investment-Related Expenses: The investment return is assumed to be net of all administrative and investment-related expenses. The following table below shows the ratio of administrative expenses to the System assets over the last five years. The expense ratio is calculated as the total administrative expense divided by the ending asset balance at fair market value. Investment-related expenses are not reported to us; it appears that they are netted out of the investment return.

FYE June 30	System Assets	Administrative Expenses	Ratio
2003	$6,991,626,215	$310,622	0.004%
2004	7,677,392,663	338,592	0.004
2005	8,146,304,073	460,441	0.006
2006	8,789,643,845	403,382	0.005
2007	10,041,047,120	509,520	0.005

Based on this data, it appears the administrative expenses represent about 0.005% of System assets. The administrative expense ratios, measured in this way, have remained steady over this period even with the increase in the fair market value of assets.

Reasonable Range and Recommendations: Based on the ASOP No. 27 guidelines, we conclude that the reasonable range should be based on the expected nominal rates of return between the 25th and 75th percentile projected out 75 years, less administrative expenses.

Investment Return	
Current Assumption	8.50%
Reasonable Range	7.365% - 9.265%
Recommended Assumption	8.25%

SECTION II
DEMOGRAPHIC ASSUMPTIONS

A. TURNOVER AND PRE-RETIREMENT MORTALITY

As in the past, we have studied the combined forces of turnover and preretirement mortality. This is because the majority of terminating members and beneficiaries of members who die prior to retirement receive a refund of member contributions rather than a deferred benefit. Since we do not receive census data on members who have received refunds, we cannot distinguish between terminated and deceased members once they have left the System.

Current Assumption: Ten-year select and ultimate rates developed for nonhazardous duty members per the following table; rates are multiplied by 40% for hazardous duty members:

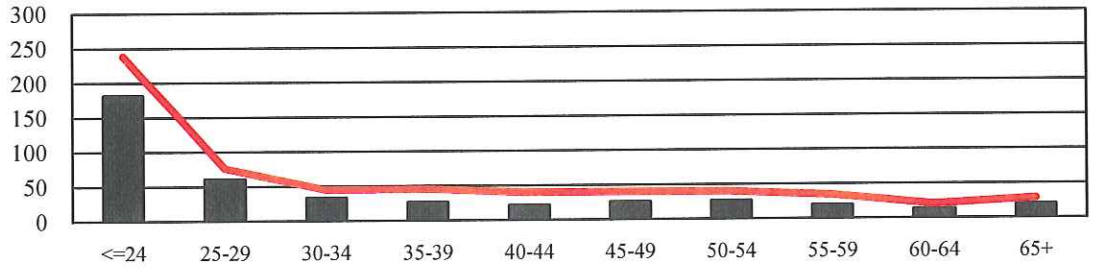
	Years of Service					
Age	0-1	2	3-4	5	6-9	10+
20	40%	30%	20%	15%	5%	5.0%
25	30	20	10	8	5	5.0
30	25	20	10	8	5	4.2
35	25	20	10	8	5	3.0
40	25	20	10	8	5	2.6
45	25	20	10	8	5	2.0
50	25	20	10	8	5	1.2
55+	25	20	10	8	5	0.0

Results: We analyzed the SERS data for 2003 through 2007 by length of service, age, hazardous versus nonhazardous classification, and gender. The graphs below show how the actual data during the study period compares to our current assumption. Please note that all graphs show the numbers of actual and expected withdrawals, not the rates. Actual experience is shown in black; results predicted by the current assumptions are shown in red. There is a separate exhibit for each combination of hazardous / nonhazardous and male / female. Each exhibit contains eight graphs corresponding to the different lengths of service underlying the structure of the current assumption.

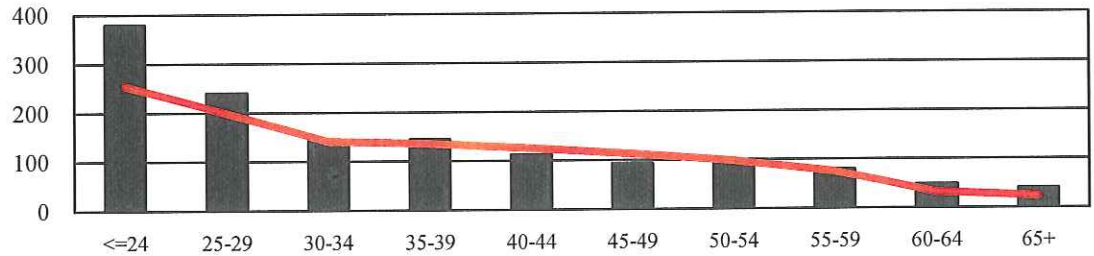
SECTION II
DEMOGRAPHIC ASSUMPTIONS

Nonhazardous Males

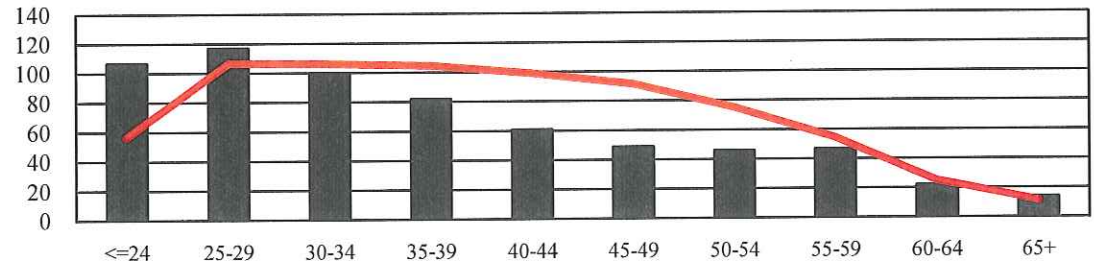
Year 0



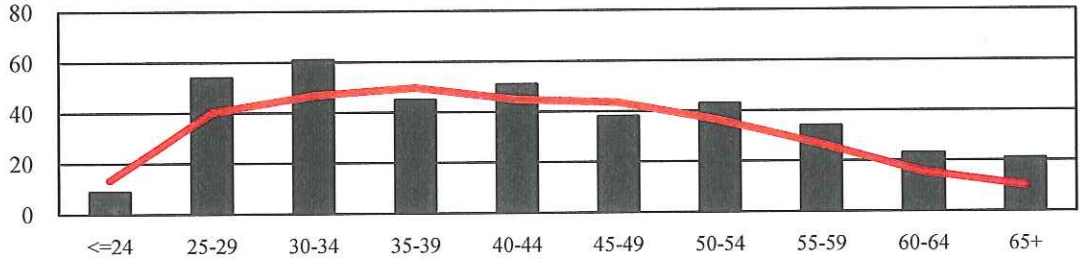
Year 1



Year 2



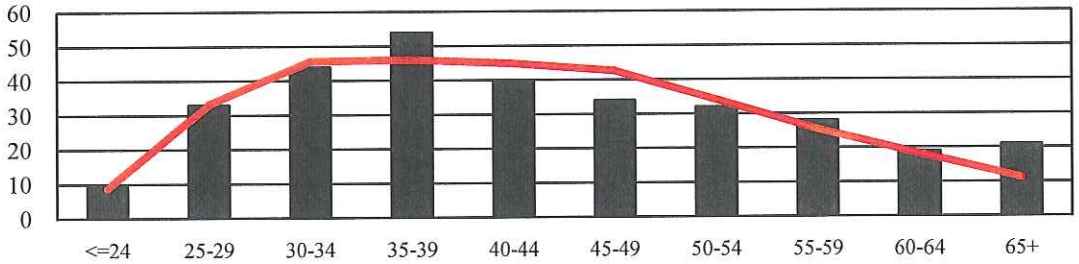
Year 3



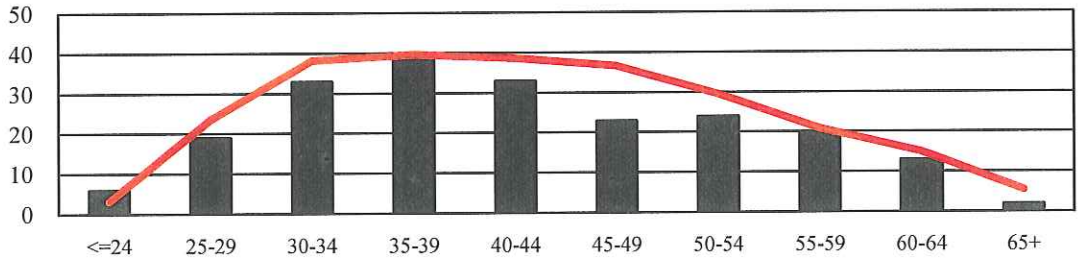
SECTION II
DEMOGRAPHIC ASSUMPTIONS

Nonhazardous Males

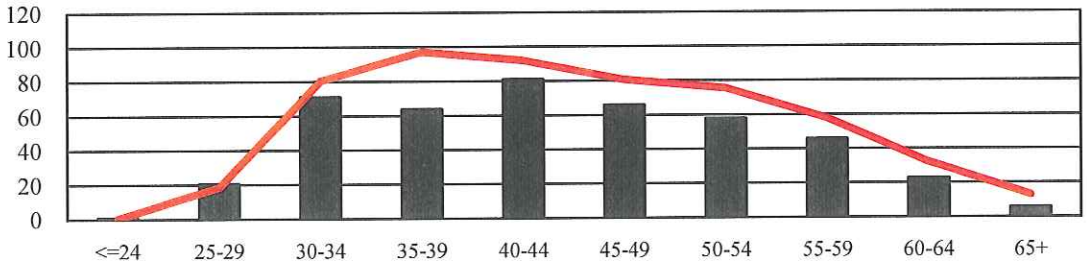
Year 4



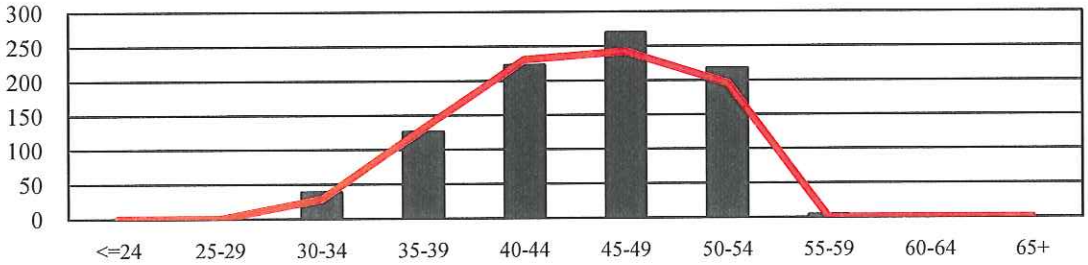
Year 5



Years 6-9



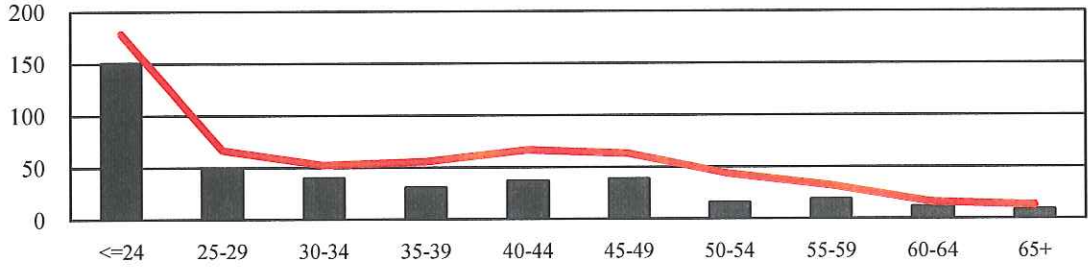
Years 10+



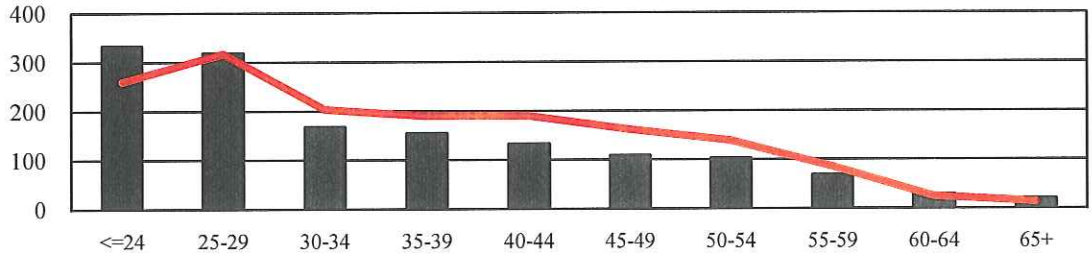
SECTION II
DEMOGRAPHIC ASSUMPTIONS

Nonhazardous Females

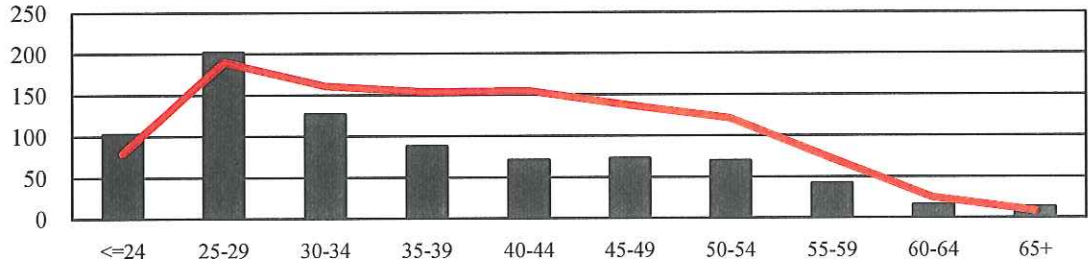
Year 0



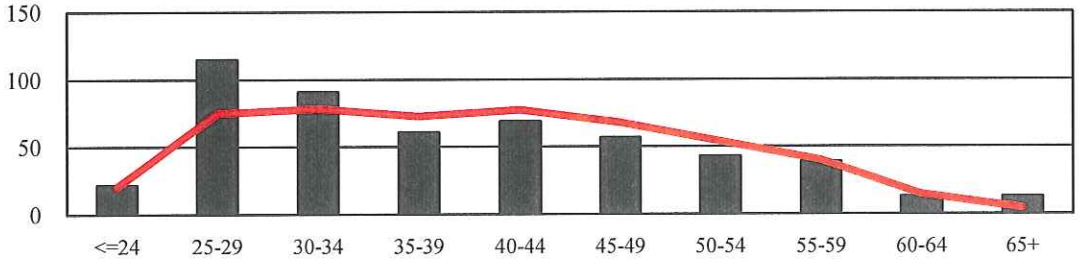
Year 1



Year 2



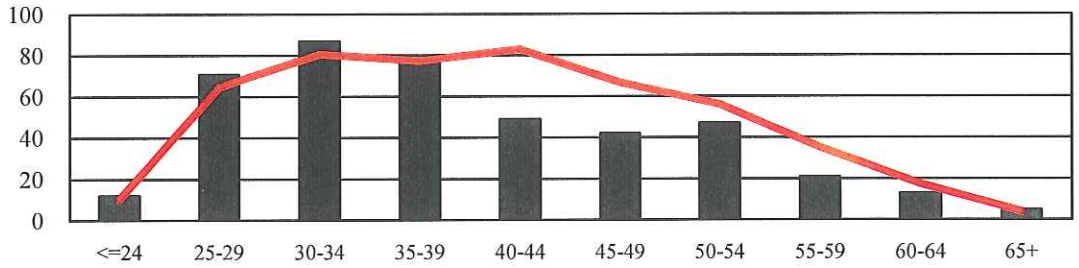
Year 3



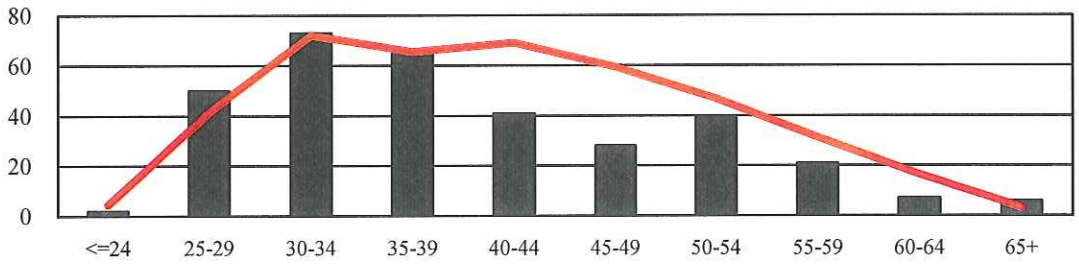
SECTION II
DEMOGRAPHIC ASSUMPTIONS

Nonhazardous Females

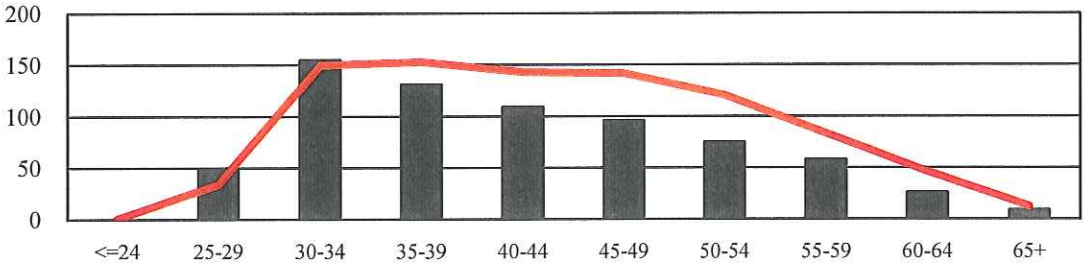
Year 4



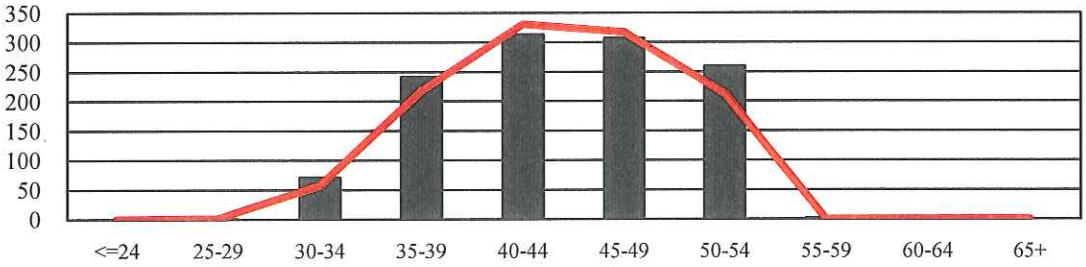
Year 5



Years 6-9



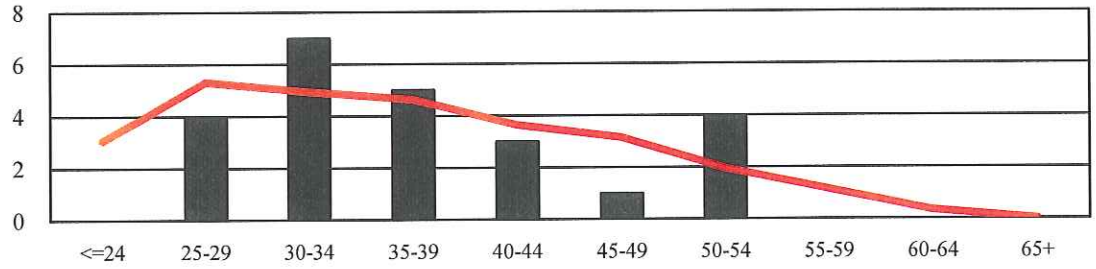
Years 10+



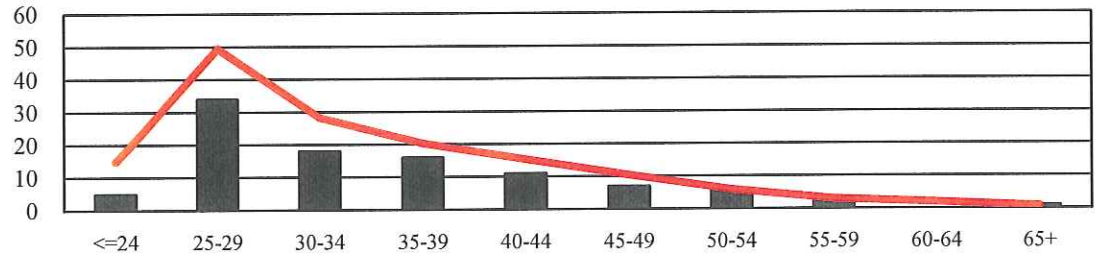
SECTION II
DEMOGRAPHIC ASSUMPTIONS

Hazardous Males

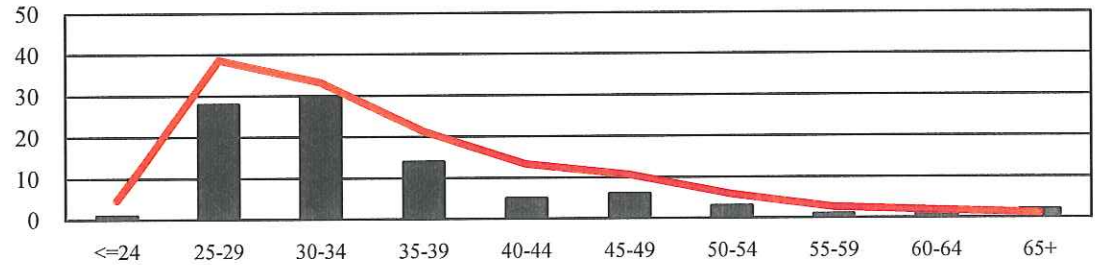
Year 0



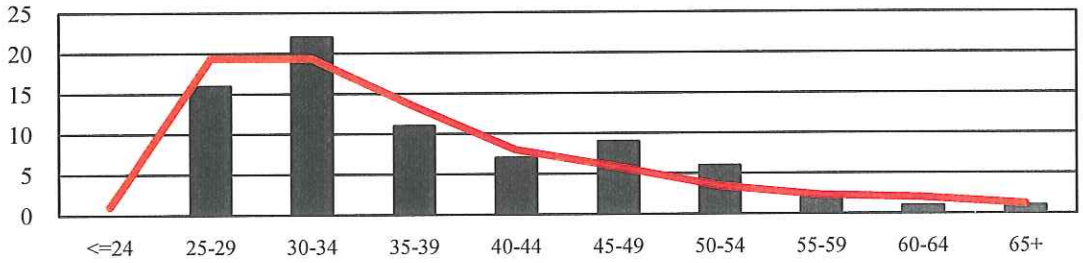
Year 1



Year 2



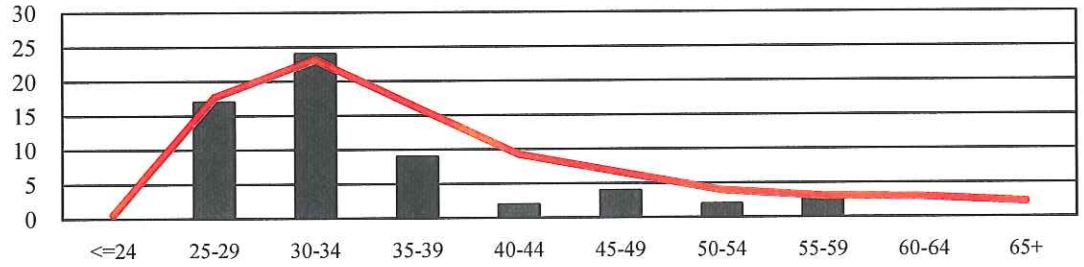
Year 3



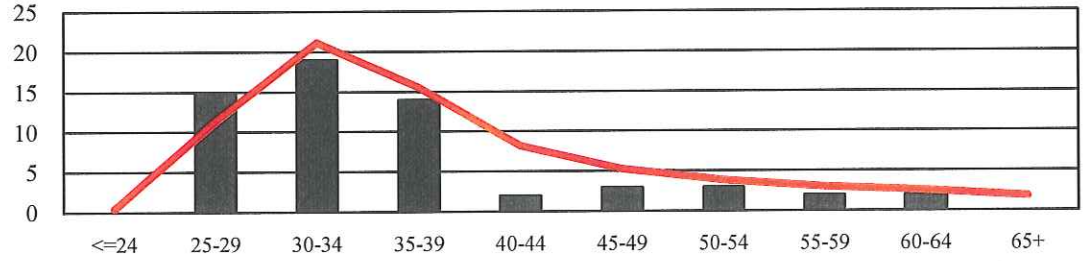
SECTION II
DEMOGRAPHIC ASSUMPTIONS

Hazardous Males

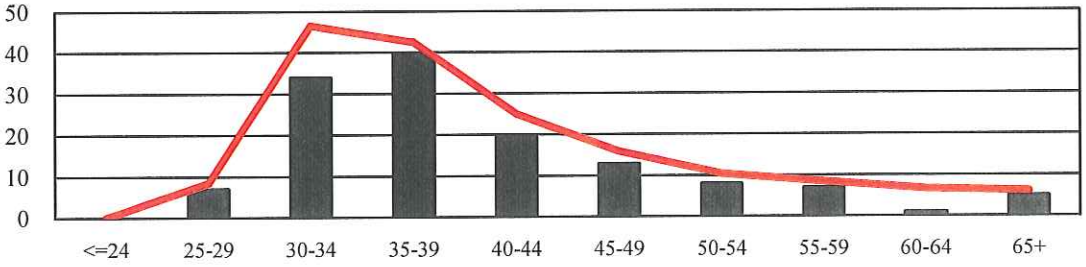
Year 4



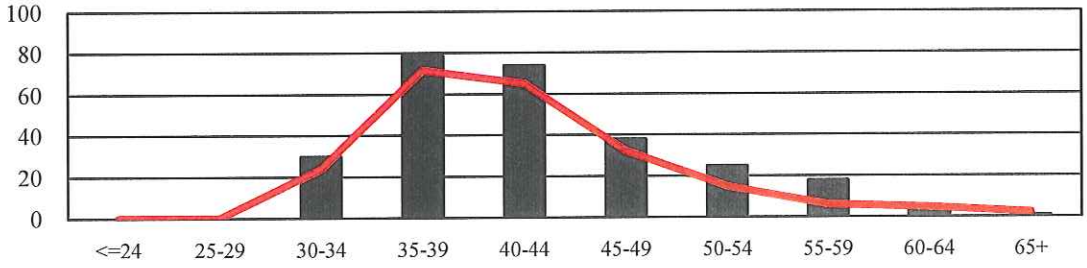
Year 5



Years 6-9



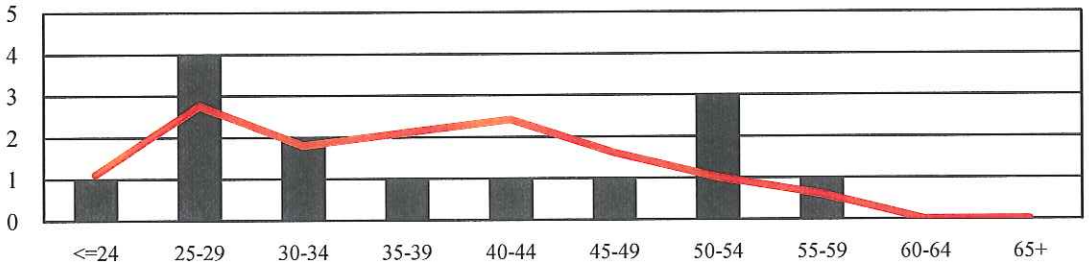
Years 10+



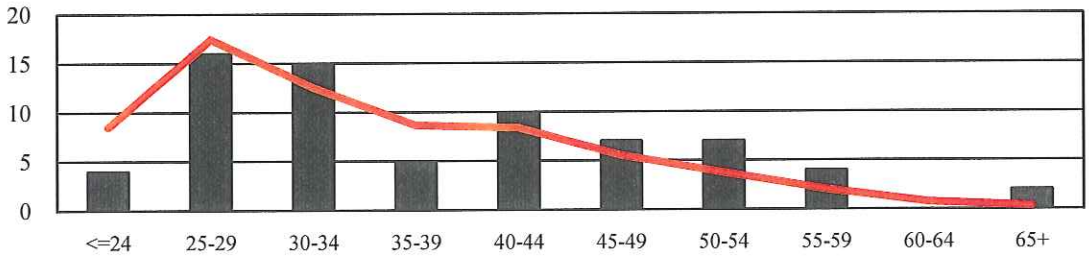
SECTION II
DEMOGRAPHIC ASSUMPTIONS

Hazardous Females

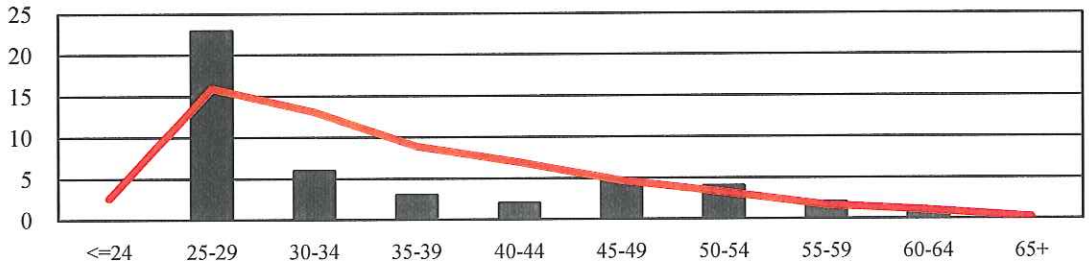
Year 0



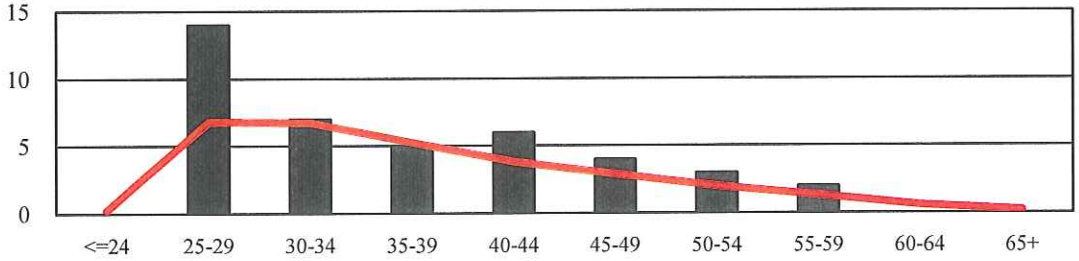
Year 1



Year 2



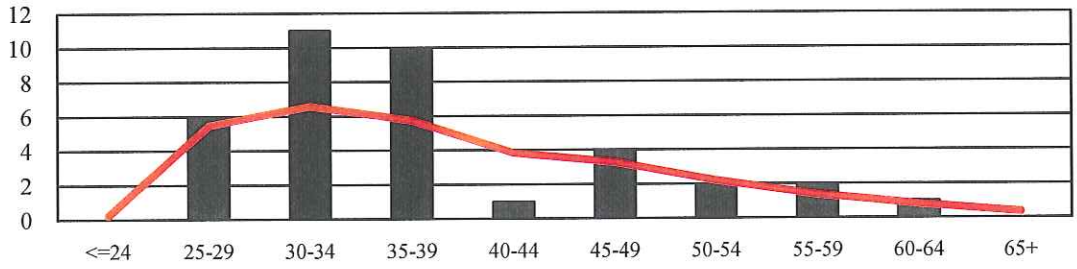
Year 3



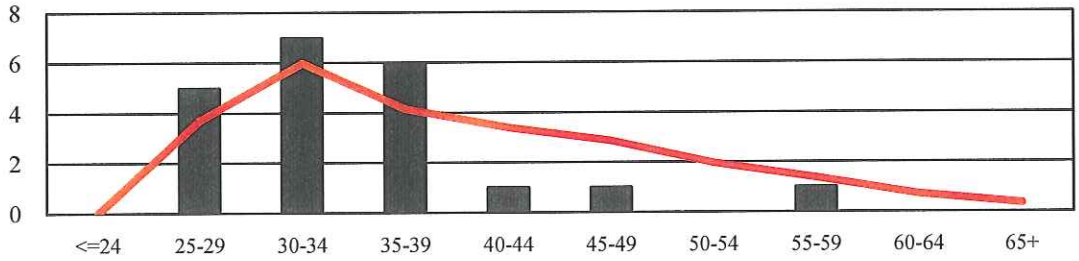
SECTION II
DEMOGRAPHIC ASSUMPTIONS

Hazardous Females

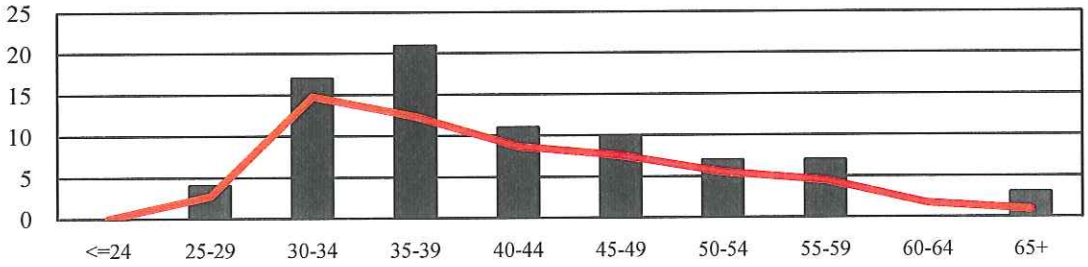
Year 4



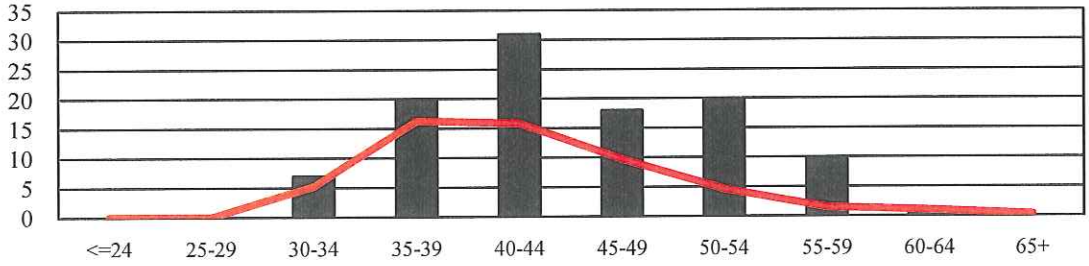
Year 5



Years 6-9



Years 10+



SECTION II
DEMOGRAPHIC ASSUMPTIONS

	Actual Number	Expected Number	Actual / Expected
Nonhazardous males			
Year 0	434	610	0.71
Year 1	1,385	1,199	1.16
Year 2	644	731	0.88
Year 3	379	327	1.16
Year 4	315	310	1.02
Year 5	212	251	0.84
Years 6-9	437	548	0.80
Years 10+	881	830	1.06
Total	4,687	4,807	0.98
Nonhazardous females			
Year 0	403	588	0.69
Year 1	1,440	1,588	0.91
Year 2	805	1,103	0.73
Year 3	523	506	1.03
Year 4	424	496	0.85
Year 5	333	410	0.81
Years 6-9	709	884	0.80
Years 10+	1,197	1,141	1.05
Total	5,834	6,716	0.87
Hazardous males			
Year 0	24	28	0.86
Year 1	101	150	0.67
Year 2	91	133	0.68
Year 3	75	76	0.99
Year 4	61	86	0.71
Year 5	60	73	0.82
Years 6-9	135	170	0.79
Years 10+	269	221	1.22
Total	816	938	0.87
Hazardous females			
Year 0	14	13	1.08
Year 1	70	68	1.03
Year 2	46	58	0.79
Year 3	41	30	1.37
Year 4	37	30	1.23
Year 5	21	24	0.88
Years 6-9	80	59	1.36
Years 10+	107	55	1.95
Total	416	338	1.23

SECTION II
DEMOGRAPHIC ASSUMPTIONS

Actuary's Recommended Assumption: The current ten-year select and ultimate structure is still appropriate, but some changes to the specific rates should be made. Differences by gender should also be reflected. The recommended rates are shown below:

Rates below for non-hazardous ***male*** employees;
multiplied by 35% for hazardous male employees.

	Years of Service							
Age	**0**	**1**	**2**	**3**	**4**	**5**	**6-9**	**10+**
20	30	60	60	20	20	15	5	5.0
25	30	30	20	10	10	8	4	5.0
30	25	25	18	10	10	8	4	4.0
35	25	25	16	10	10	8	4	3.0
40	25	25	14	10	10	6	4	2.5
45	25	25	12	10	10	6	4	2.2
50	25	25	12	10	10	6	4	1.5
55+	25	25	12	10	10	6	4	0.0

Rates below for non-hazardous ***female*** employees;
multiplied by 55% for hazardous female employees.

	Years of Service							
Age	**0**	**1**	**2**	**3**	**4**	**5**	**6-9**	**10+**
20	30	50	30	20	20	15	5	5.0
25	25	30	20	16	11	10	5	5.0
30	20	20	16	12	11	9	5	4.0
35	20	20	12	9	10	8	4	3.0
40	15	18	10	9	7	5	4	2.5
45	15	18	10	9	7	5	3	2.0
50	15	18	10	9	7	5	3	1.5
55+	15	18	10	9	7	5	3	0.0

SECTION II
DEMOGRAPHIC ASSUMPTIONS

B. DISABILITY

Current Assumption: Non-service connected disabilities are assumed to be 25% of the United Auto Workers Disability Table. Service connected disabilities are assumed to be 0.11% at all ages for hazardous members and 0.03% at all ages for nonhazardous members.

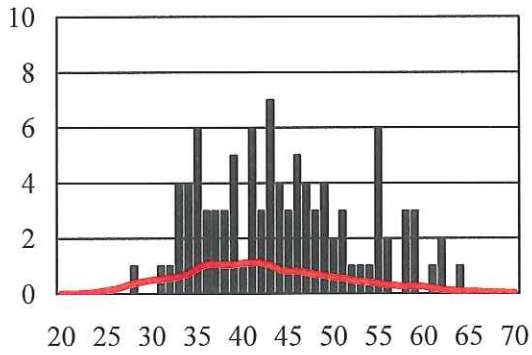
Study Design: We looked at the overall rates of disability by 5-year age groups and by hazardous versus nonhazardous classification. We also examined our assumption regarding service-connected disabilities.

Results: In recent years our study shows a significant increase in the number of disabilities. After discussions with the Retirement Division, it is clear that this is not due to an increase in the underlying rates of disability but rather due to a significant shortening in the time that elapses between when a member leaves active service and when that member starts receiving a disability pension. In prior experience studies, we have counted a member as becoming disabled if the member was active in one valuation and receiving a disability pension in the subsequent valuation. Prior to 2005, a member might have been active in one valuation, classified as a healthy retiree in the next valuation, and classified as a disabled retiree at some later date once the disability determination process had been completed. Such a member would not have been counted as a disability in prior experience studies, thus understating the true rate of disabilities. Starting in late 2005, the Retirement Division undertook an effort to speed up the disability processing with the result that many more members are receiving disability pensions shortly after leaving active service. We believe that the increase in the disability rates measured by this experience study reflect the true underlying rates of disability.

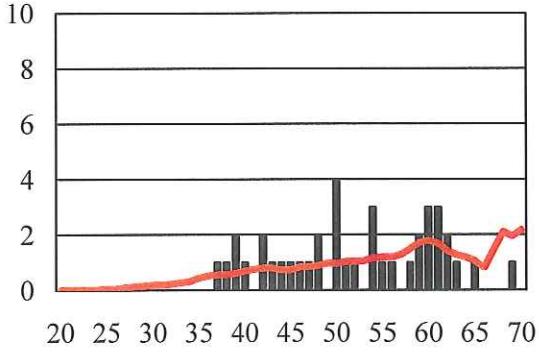
Because the change in processing took place starting in late 2005, we have limited the disability portion of this experience study to just the 2006 and 2007 years. The graphs below show how the recent experience compares to our current assumptions for each combination of hazardous/nonhazardous and with/without service disabilities. Please note that the graphs show the numbers of actual and expected disabilities, not the rates. Actual experience is shown in black; the results predicted by the current assumptions are shown in red.

SECTION II
DEMOGRAPHIC ASSUMPTIONS

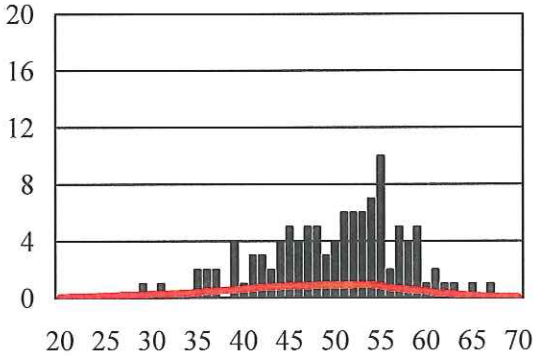
Hazardous, service related



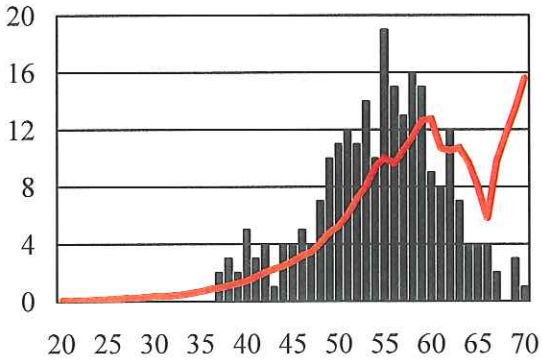
Hazardous, non service related



Non Hazardous, service related



Non Hazardous, non service related



	Actual Number	Expected Number	Actual / Expected
Hazardous, service related	97	24	4.04
Hazardous, non service related	39	44	0.89
Non Hazardous, service related	111	23	4.83
Non Hazardous, non service related	246	261	0.94

SECTION II
DEMOGRAPHIC ASSUMPTIONS

Actuary's Recommended Assumption: The assumption with respect to non-service connected disabilities should be changed from 25% of the United Auto Workers Disability Table to 30% of the 1975 Social Security Disability Table, which provides a better fit for the observed data. The rates of service connected disabilities should to be increased from 0.11% to 0.45% at all ages for hazardous members and from 0.03% to 0.14% at all ages for nonhazardous members.

SECTION II
DEMOGRAPHIC ASSUMPTIONS

C. RETIREMENT

Current Assumption: Rates per the following table vary by age, separately for hazardous and nonhazardous members; there are different rates for the first year in which the member is eligible for a benefit and for ages thereafter.

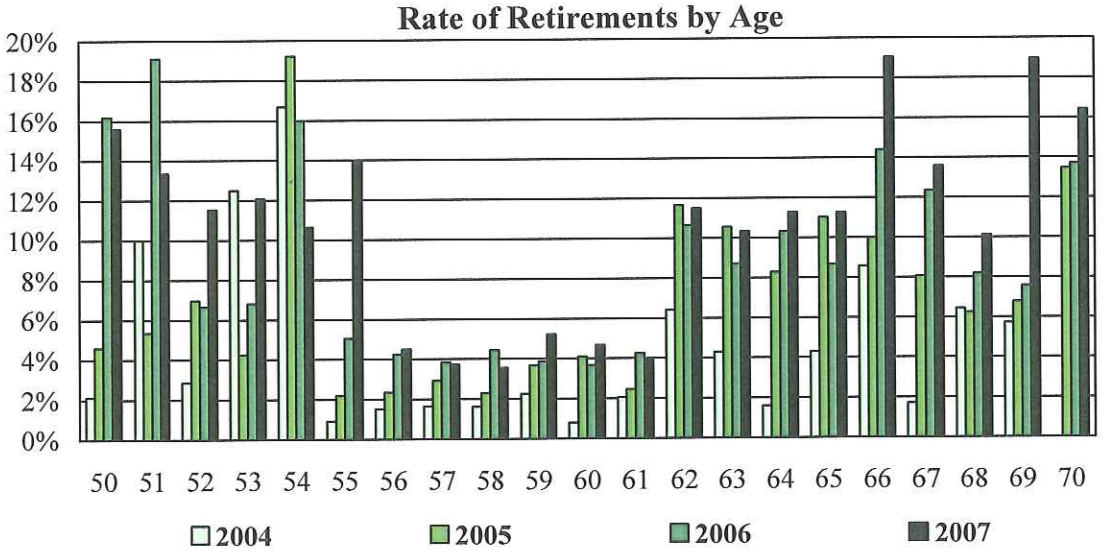
	Nonhazardous Members		
	First Year Eligible For		
Age	Reduced Benefits	Unreduced Benefits	Thereafter
55	17.5%	15.0%	12.5%
56-60	15.0	15.0	12.5
61	25.0	25.0	15.0
62	40.0	30.0	30.0
63	35.0	35.0	25.0
64	45.0	45.0	25.0
65	65.0	65.0	40.0
66-69	60.0	65.0	40.0
70	100.0	100.0	100.0

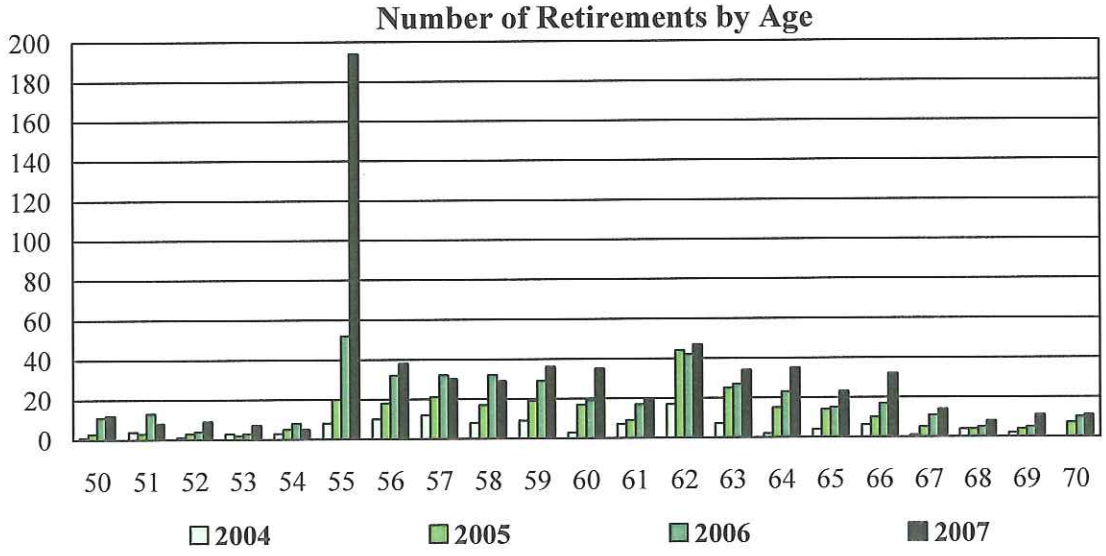
	Hazardous Members	
Age	First Year Eligible	Thereafter
Through 44	25%	15%
45-48	25	20
49-53	10	20
54-55	10	25
56-59	10	40
60-69	25	40
70	100	100

Study Design: We looked at the rates of retirement separately for the first year in which the member is eligible for an early (reduced) retirement benefit and for a normal (unreduced) retirement benefit, as well as for all other ages.

SECTION II
DEMOGRAPHIC ASSUMPTIONS

The 2003 ERIP complicates the analysis of the retirement experience, both because an unusually high number of retirements took place that would not ordinarily have occurred, and because unusually low retirements typically follow an incentive program. As the graphs below show, retirements climbed steadily from 2004 (just after the ERIP) to 2007.



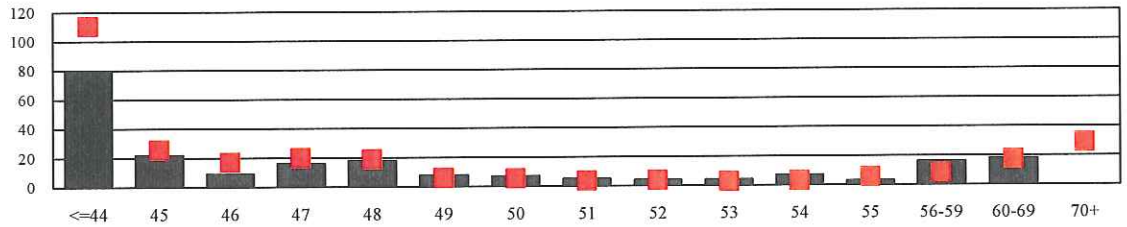


SECTION II
DEMOGRAPHIC ASSUMPTIONS

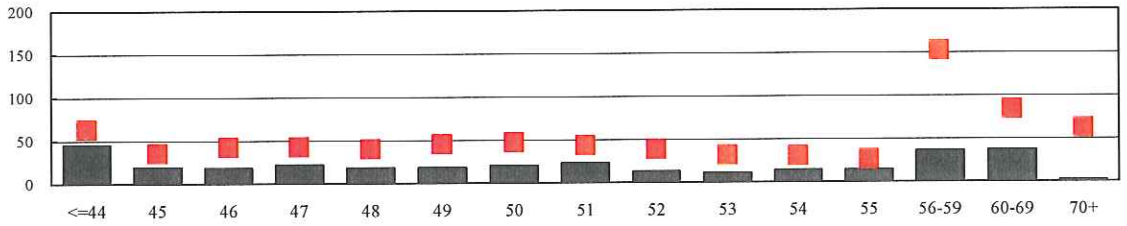
Results: The graphs below show the numbers of actual and expected retirements during the study period. Please note that the graphs show the numbers of actual and expected retirements, not the rates. Actual experience is shown in black; the results predicted by the current assumptions are shown in red. There are separate graphs for hazardous and nonhazardous members.

Hazardous

First eligible for retirement



All other ages

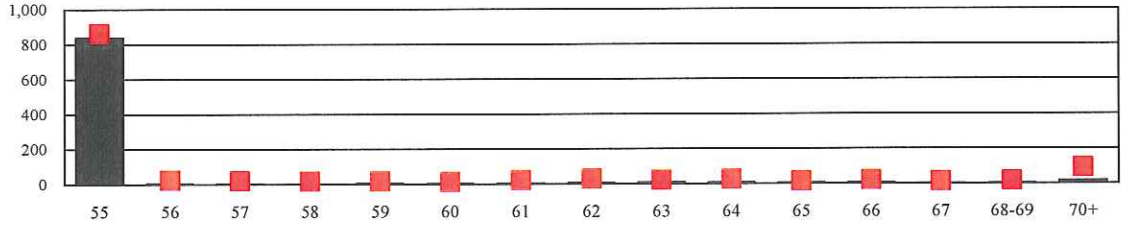


	Actual Number	Expected Number	Actual / Expected
First eligible for retirement	217	276	0.79
All other ages	310	785	0.39

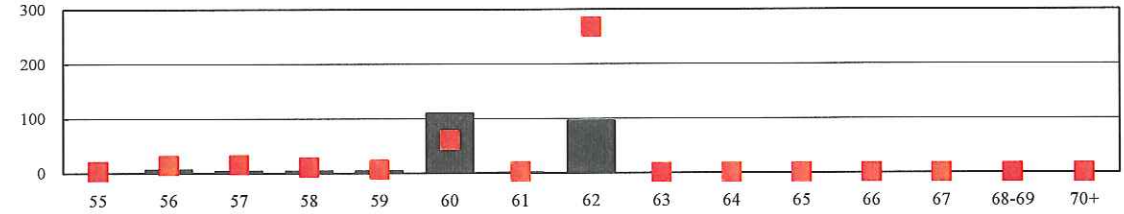
SECTION II
DEMOGRAPHIC ASSUMPTIONS

Nonhazardous

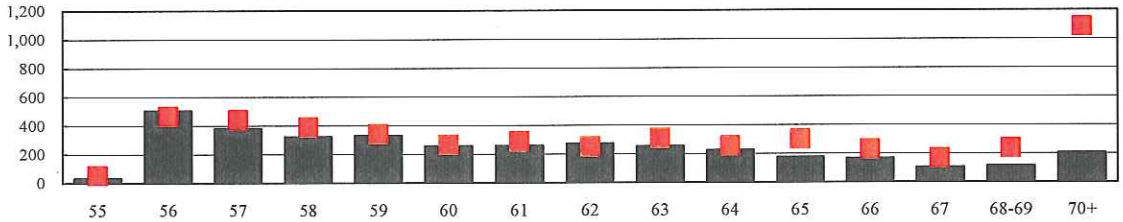
First eligible for early retirement



First eligible for normal retirement



All other ages



	Actual Number	Expected Number	Actual / Expected
First eligible for early retirement	929	1,213	0.77
First eligible for normal retirement	225	378	0.60
All other ages	3,620	5,077	0.71

SECTION II
DEMOGRAPHIC ASSUMPTIONS

Actuary's Recommended Assumption: The existence of repeated ERIP programs (1992, 1997 and 2003) have complicated the analysis of retirement behavior. After discussion with the actuaries on the Commission, we believe that minor adjustments to our current assumptions are appropriate. The following rates should be adopted.

Nonhazardous Members			
	First Year Eligible For		
Age	Reduced Benefits	Unreduced Benefits	Thereafter
55	15.0%	15.0%	12.5%
56-59	10.0	15.0	12.5
60	10.0	25.0	12.5
61	20.0	25.0	15.0
62	20.0	10.0	30.0
63	20.0	35.0	25.0
64	20.0	45.0	25.0
65	50.0	65.0	25.0
66-69	50.0	65.0	25.0
70-79	50.0	100.0	20.0
80	100.0	100.0	100.0

Hazardous Members		
Age	First Year Eligible	Thereafter
Through 44	18%	10%
45-48	25	10
49-53	10	10
54-55	10	10
56-59	10	10
60-69	25	15
70-79	100	20
80	100	100

SECTION II
DEMOGRAPHIC ASSUMPTIONS

D. POST-RETIREMENT HEALTHY MORTALITY

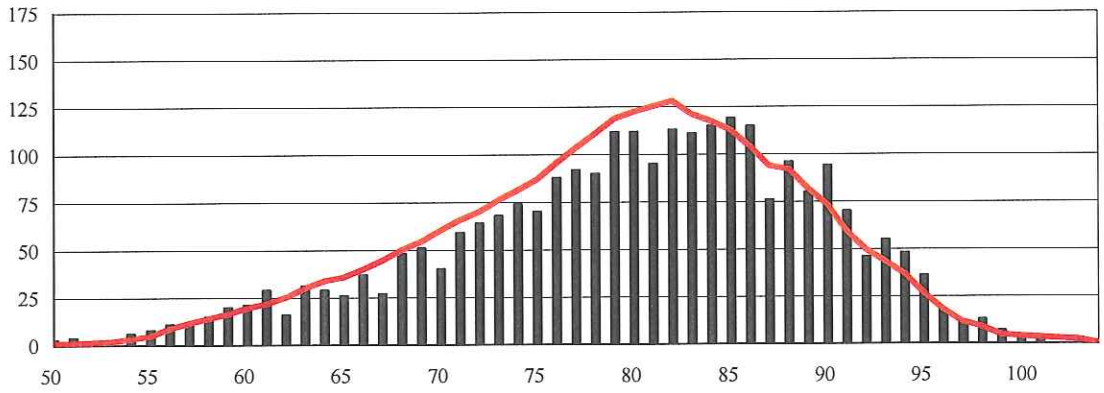
Current Assumption: The 1994 Group Annuity Mortality Table, separately for males and females.

Study Design: We looked at the rates of mortality among non-disabled retirees and beneficiaries, separately for males and females.

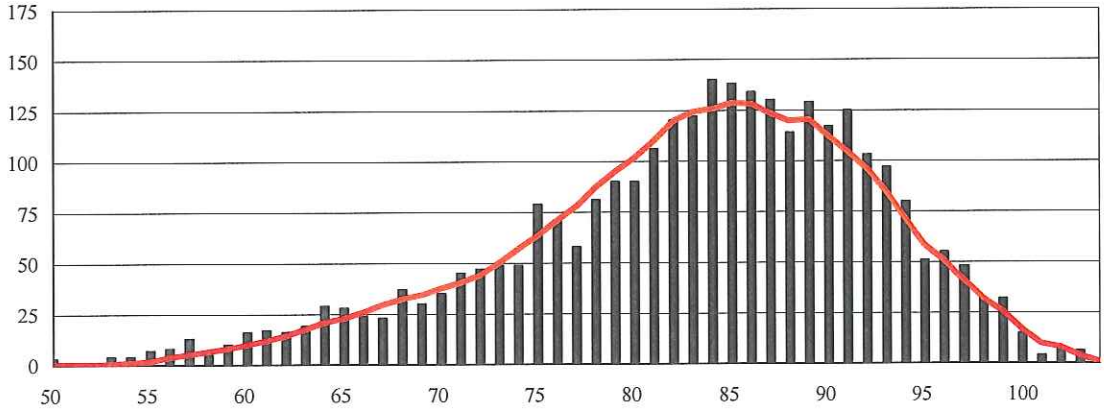
Results: The graphs below show the actual number of deaths during the study period along with the number of deaths predicted by the current mortality table. Please note that all graphs show the numbers of actual and expected deaths, not the rates. Actual experience is shown in black; the results predicted by the current assumptions are shown in red. There are separate graphs for males and females. The results show that there were more deaths than expected during the study period for female members and fewer deaths than expected for male members. For both males and females, the current assumption leads to more expected deaths than actual at younger ages and fewer expected deaths than actual at older ages.

SECTION II
DEMOGRAPHIC ASSUMPTIONS

Males



Females



	Actual Number	Expected Number	Actual / Expected
Males	2,592	2,737	0.95
Females	2,895	2,792	1.04

SECTION II
DEMOGRAPHIC ASSUMPTIONS

Actuary's Recommended Assumption: The mortality table should be updated and should provide a margin for future mortality improvement. We recommend that the healthy mortality assumption be updated to the RP2000 Mortality Table for Annuitants and Non-annuitants projected with Scale AA 15 years for Males and 25 years for Females.

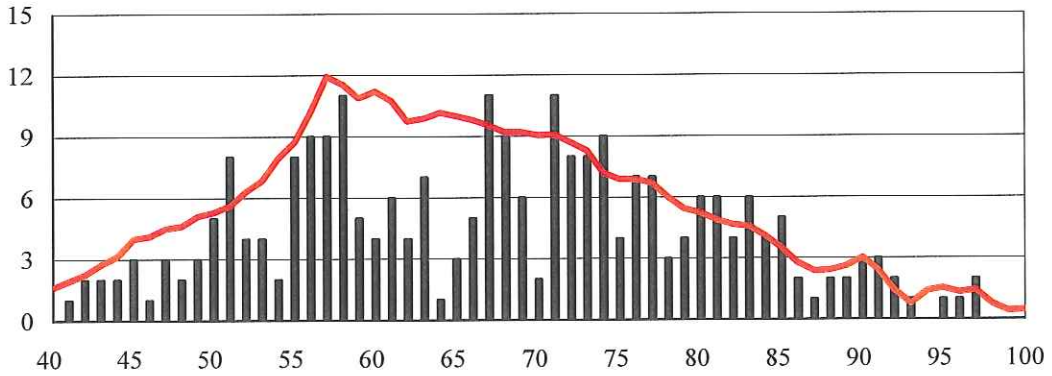
SECTION II
DEMOGRAPHIC ASSUMPTIONS

E. POST-RETIREMENT DISABLED MORTALITY

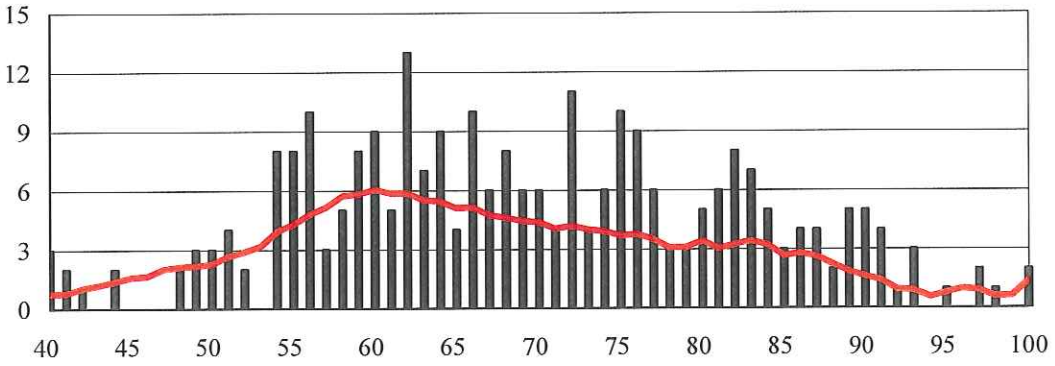
Current Assumption: 80% of PBGC Male Disabled Mortality with Social Security for Males and 60% of PBGC Female Disabled Mortality with Social Security for Females.

Results: The graphs below show the numbers of actual and expected deaths, separately for males and females. Actual experience is shown in black; the results predicted by the current assumptions are shown in red.

Males



Females



	Actual Number	Expected Number	Actual / Expected
Males	261	350	0.75
Females	275	188	1.46

SECTION II
DEMOGRAPHIC ASSUMPTIONS

Actuary's Recommended Assumption: The current assumption does not fit the observed experience well. We recommend that the disabled mortality assumption be changed to 75% of the RP2000 Male Mortality Table for Disabled Annuitants and 115% of the RP2000 Female Mortality Table for Disabled Annuitants.