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Experience Study

For the Five-Year Period

Ending June 30, 2010

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Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

April 14, 2011

Board of Trustees
School Employees Retirement System
of Ohio
300 East Broad Street
Suite 100
Columbus, OH 43215-3746

Dear Members of the Board:

We are pleased to submit the results of a study of the economic and demographic experience for the School Employees Retirement System of Ohio (SERS). The purpose of this investigation is to assess the reasonability of the actuarial assumptions for the System. This investigation covers the five-year period from July 1, 2005 to June 30, 2010. As a result of the investigation, it is recommended that revised assumptions be adopted by the Board for future use.

The experience study includes all active members, retired members and beneficiaries of deceased members. The mortality, disability and retirement experience was studied separately for males and females. Incidences of withdrawal and compensation increases were investigated without regard to gender.

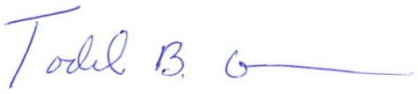
This report shows comparisons between the actual and expected cases of separation from active service, actual and expected number of deaths, and actual and expected salary increases. Tables and graphs are used to show the actual decrement rates, the expected decrement rates and, where applicable, the proposed decrement rates.

The recommended decrement tables are shown in Appendix D of this report. In the actuary's judgment, the recommended rates are suitable for use until further experience indicates that modifications are needed.

Actuarial assumptions are used to measure and budget future costs. Changing assumptions will not change the actual cost of future benefits. Once the assumptions have been adopted, the actuarial valuation measures the adequacy of the contributions rates set in the Ohio Revised Code.

The experience study was performed by, and under the supervision of, independent actuaries who are members of the American Academy of Actuaries with experience in performing valuations for public retirement systems. The undersigned meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,



Thomas J. Cavanaugh, FSA, FCA, EA, MAAA
Chief Executive Officer

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Principal and Consulting Actuary

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Summary of Results

The following summarizes the findings and recommendations with regard to the assumptions utilized by the School Employees Retirement System of Ohio (SERS). Explanations for the recommendations are found in the sections that follow.

Recommended Economic Assumption Changes

The table below lists the three economic assumptions used in the actuarial valuation and their current and proposed rates. We recommend a reduction in the assumed rate of price inflation and a decrease in the assumed rate of real wage growth. For the assumed rate of return on assets we recommend a reduction from 8.00% to 7.75%.

Item	Current	Proposed
Price Inflation	3.50%	3.25%
Investment Return	8.00%	7.75%
Real Wage Growth	0.50%	0.75%

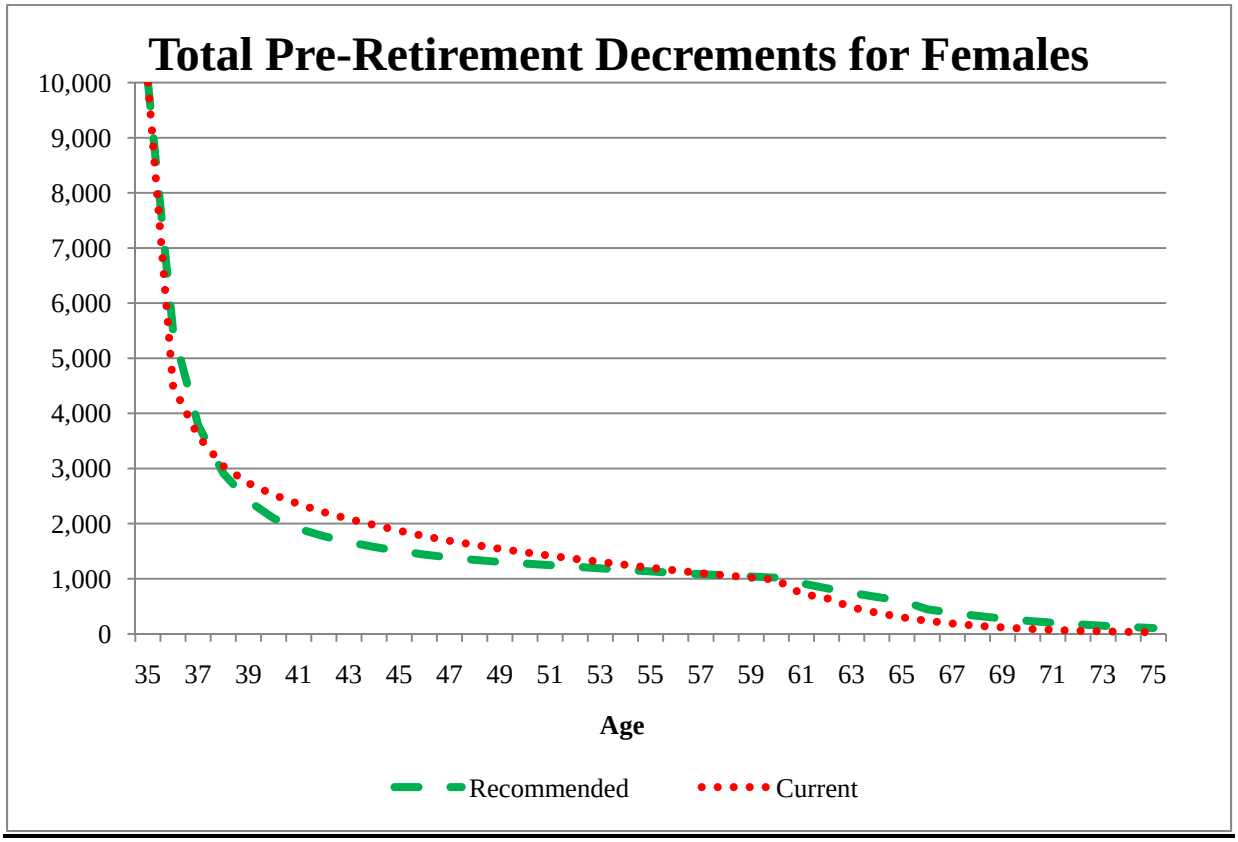
Recommended Demographic Assumption Changes

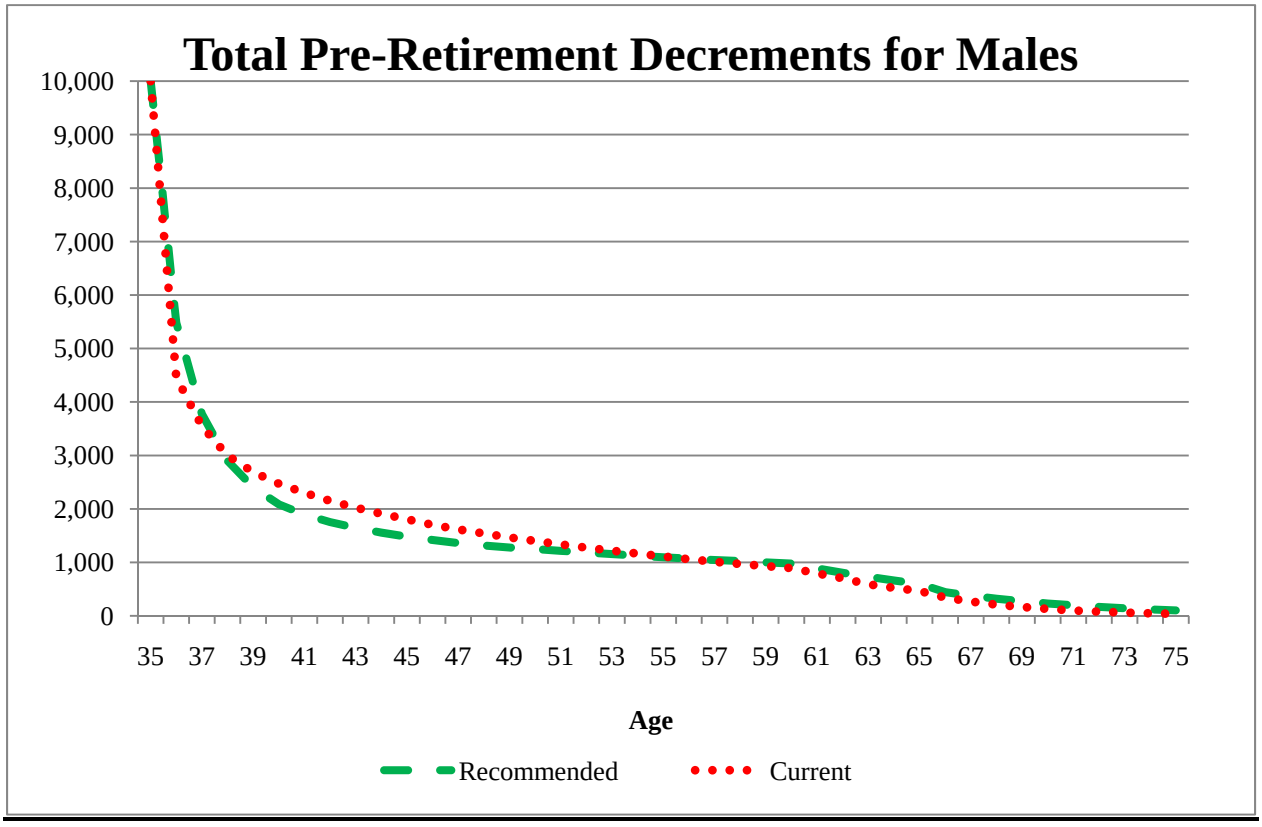
The table below lists the demographic assumptions that we recommend be changed based on the experience of the last five years.

Assumption Changes
Adjust rates of withdrawal
Decrease rates of disability retirements
Decrease rates of pre-retirement mortality
Adjust rates of service retirement
Decrease assumed rates of compensation increase

Demographic Impact

The charts on the following page detail the demographic impact of changing decrements for male and female active participants who are 35 years old at the time they become members of SERS. As one can see the results of the experience study only slightly modify anticipated behavior of the workforce. Overall the recommendation will increase withdrawals prior to retirement and decrease retirements once members are eligible for retirement. Since we are not recommending a change to post-employment mortality rates there is no change to anticipated post-retirement mortality experience.


Total Pre-Retirement Decrements for Females
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75
Age
Recommended
Current


Total Pre-Retirement Decrements for Males
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75
Age
Recommended
Current

Financial Impact

The tables below highlight the impact on the Basic Benefits Plan and the Retiree Health Care Plan based on the recommended changes noted on the previous page. The tables show the change in the unfunded accrued liability (UAL) and funded status for both Plans of the System as of June 30, 2010. Further cost impact information is provided in Section V.

BASIC BENEFITS VALUATION

Valuation As of June 30, 2010	Before Change Current Demographic Assumptions Investment Rate of Return = 8.00%	After Change Proposed Demographic Assumptions Investment Rate of Return = 7.75%
UAL	$4,312,493,741	$4,737,233,784
Funded Status		
Pension and Post Retirement Death Benefits	72.62%	70.65%
Medicare Part B	33.30%	32.38%

HEALTH CARE VALUATION

Valuation As of June 30, 2010	Before Change	After Change
UAL	$2,044,139,551	$2,160,582,657
Funded Status	13.72%	13.08%

We are not recommending a change in the investment return for the Health Care Plan (currently 5.25%) so the change shown is due solely to the demographic assumption recommendations. GASB requires the use of a discount rate for health care benefits that is reflective of the source of the funds used to pay those benefits. Since the health care benefits are projected to be fully pay-as-you-go within the next 10 years, a rate close to what would be earned on short-term investments is utilized.

Economic Assumptions

There are three economic assumptions used in performing the actuarial valuation for the School Employees Retirement System of Ohio (SERS). The assumptions are:

- Price Inflation
- Investment Return
- Wage Inflation

The Actuarial Standards Board has issued Actuarial Standard of Practice (ASOP) No. 27, *"Selection of Economic Assumptions for Measuring Pension Obligations"*, which provides guidance to actuaries in selecting economic assumptions for measuring obligations under defined benefit plans. As noted in ASOP No. 27, 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 based on a mixture of past experience and future expectations. These estimates therefore are best stated as a range utilizing the actuary's professional judgment. In setting the range and the single point within that range to use, 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.

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 followed by explanations of each assumption.

Item	Current	Proposed
Price Inflation	3.50%	3.25%
Real Rate of Return	4.50	4.50%
Investment Return	8.00%	7.75%
Price Inflation	3.50%	3.25%
Real Wage Growth	0.50	0.75
Wage Inflation	4.00%	4.00%

Price Inflation

Background: As seen in the table on the previous page, assumed price inflation is used as a component for both the investment return assumption and the wage inflation assumption. The latter two assumptions will be discussed in detail in the following sections.

It is important that the price inflation assumption be consistently applied throughout the economic assumptions utilized in an actuarial valuation. This is called for in ASOP No. 27 and is also required to meet the parameters for determining pension liabilities and expense under Governmental Accounting Standards Board (GASB) Statements No. 25 and 27.

The current price inflation assumption is 3.50% per year.

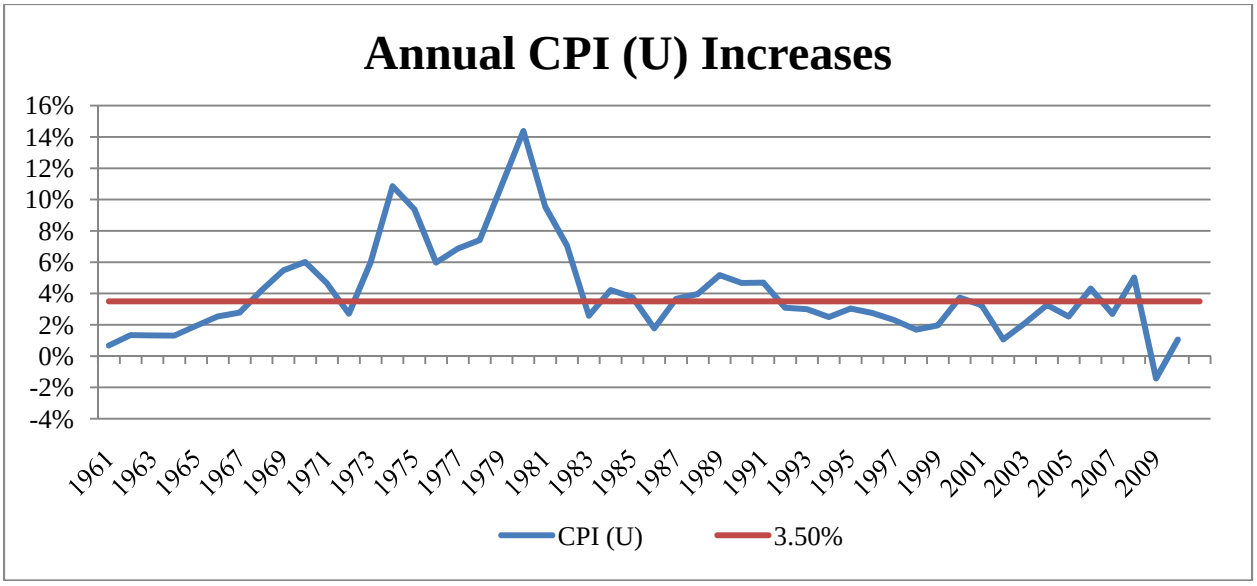
Past Experience: The Consumer Price Index, US City Average, All Urban Consumers, CPI (U), has been used as the basis for reviewing historical levels of price inflation. The level of that index in June of each of the last 50 years is provided in Appendix A.

In analyzing this data, average rates of inflation have been determined by measuring the compound growth rate of the CPI (U) over various time periods. The results are as follows:

Period	Average Annual Rate of Inflation
2005 – 2010	2.30%
2000 – 2010	2.37%
1990 – 2010	2.62%
1980 – 2010	3.28%
1970 - 2010	4.41%
1960 – 2010	4.07%
1926 - 2010	3.03%

Over shorter historic periods, the average annual rate of increase in the CPI-U has been below 3.00%. The years of high inflation occurring from 1973 to 1982 has a significant impact on the averages over periods which include these rates. We should add that since 1926, the average annual rate of inflation was 3.03%.

The graph below shows the annual increases in the CPI (U) over a 50-year period.



Additional information to consider when determining the reasonable range is obtained from measuring the spread on inflation protected treasury bills (TIPS) and from the prevailing economic forecasts. The spread between the nominal yield on treasury securities and the inflation indexed nominal yield on TIPS of the same maturity is referred to as the "breakeven rate of inflation" and represents the bond market's expectation of inflation over the period to maturity. The table below provides the calculation of the breakeven rate of inflation as of December 31, 2010 over various periods.

Years to Maturity	Bond Nominal Yield	TIPS Nominal Yield	Breakeven Rate of Inflation
10	3.30%	1.00%	2.30%
20	4.13%	1.59%	2.54%
30	4.34%	1.86%	2.48%

The bond market's expectation for the rate of inflation is significantly lower than historical average annual rates. Additionally, based upon information provided from the "Survey of Professional Forecasters" published by the Philadelphia Federal Reserve Bank, the median annual rate of inflation for the ten years beginning January 1, 2011 is 2.20%.

Recommendation: It is difficult to accurately predict inflation. Current economic forecasts and the bond market suggest lower inflation over the next ten to twenty years (which is a shorter time period than appropriate for our purposes) when compared to the historical averages. In the 2009 OASDI Trustees Report, the Chief Actuary for Social Security bases the 75-year cost projections on an intermediate inflation assumption of 2.8% with a range of 1.8% - 3.8%. We concur in general with a range of 2.0% - 4.0%, and recommend use of a 3.25% per year rate recognizing the likely inflation pressures built into the economy at the current time.

Price Inflation Assumption	
Current	3.50%
Reasonable Range	2.00% - 4.00%
Recommended	3.25%

Investment Return

Background: The assumed investment return is one of the most significant assumptions in the annual actuarial valuation process as it is used to discount the expected benefit payments for all active, inactive and retired members of the System. Minor changes in this assumption can have a major impact on valuation results. The investment return assumption should reflect the asset allocation target for the funds set by the Board.

The current assumption is 8.00%, consisting of a price inflation assumption of 3.50% and a real rate of return assumption of 4.50%. The return is net of all investment and administrative expenses.

Past Experience: The actuarial value of assets of the System are developed using a widely accepted asset-smoothing methodology that fully recognizes investment gains and losses over a four-year period. The recent experience for the retirement funds over the last five years is shown in the table below.

Nominal Total Rate of Return		
Year Ending 6/30	Market Value	Actuarial Value
2006	12.0%	8.6%
2007	18.8%	13.2%
2008	(6.5)%	7.9%
2009	(22.9)%	(12.2)%
2010	12.7%	11.9%
Average	2.8%	5.9%

Because of the significant variability in past year-to-year results and the inter-play of inflation on those results in the short term, we prefer to base our investment return assumption on the capital market assumptions utilized by the Board in setting investment policy and the asset allocation established by the Board as a result of that policy. This approach is referred to as the building block method in ASOP No. 27 in that assumptions for inflation, real return on assets and expenses are set separately and then combined to get the nominal investment return recommendation.

Historical Analysis: The historical 50-year real rate of return of the S&P 500 has averaged 5.46%, and the 50-year real rate of return of intermediate high quality bonds has averaged 2.84%. By weighting these rates by common allocation of large retirement funds (30%/70% to 70%/30%) we construct the reasonable range for real rates of return to be from 3.95% to 5.01%. The table below shows various annualized rates of return based on different time periods and different allocations between equities and bonds.

Time Span In Years	Real Returns by Portfolio Allocation Equities vs. Bonds			
	30%/70%	35%/65%	65%/35%	70%/30%
10	2.66%	2.52%	1.32%	1.06%
20	5.20	5.37	6.15	6.24
30	6.19	6.33	6.99	7.07
40	4.33	4.48	5.16	5.25
50	**3.95**	4.11	4.91	**5.01**

Analysis: The current capital market assumptions and asset allocation are shown in Appendix B. Using stochastic projection results provides an expected range of real rates of return over various time horizons. Looking at one year results produces an expected real return of 5.15% but also has a high standard deviation, which means there is high volatility. Over larger time horizons, the median return does not change much but the volatility declines significantly. The following table provides a summary of results.

Time Span In Years	Mean Real Return	Standard Deviation	Real Returns by Percentile				
			5th	25th	50th	75th	95th
1	5.59%	10.44%	-11.04%	-1.65%	5.15%	12.27%	23.75%
5	5.29	4.22	-1.35	2.37	5.10	8.01	12.35
10	5.24	3.14	0.00	3.07	5.15	7.31	10.50
20	5.21	2.29	1.54	3.67	5.16	6.72	9.07
30	5.20	1.87	2.17	3.93	5.18	6.41	8.31
40	5.23	1.63	2.56	4.11	5.21	6.32	7.90
50	5.24	1.46	2.82	**4.25**	5.25	**6.21**	7.68

The chart above shows the percentile rankings of 5,000 independent 50-year simulations that produce returns of less than the return at that particular percentile level over the given time span. Thus for the 20-year time span, 5% of the resulting real rates of return were below 1.54% and 95% were above that. As the time span increases, the results begin to merge. Over a 50-year time span, the result indicate there is a 25% chance that real return will be below 4.25% and a 25% chance they will be above 6.21%. In other words there is a 50% chance the real returns will be between 4.25% and 6.21%.

Administrative and Investment Expenses ($ thousands): The investment return is assumed to be net of administrative and investment expenses. The table below compares, for the last five years, the expense levels during the fiscal year to the market value of assets for the system at the end of the fiscal years.

FY Ending June 30	Administrative Expenses	Investment Expenses	Total Expenses	Market Value of Assets	Expense Ratio
2006	18,905	49,166	68,071	10,275,765	0.66
2007	19,361	57,393	76,754	12,097,591	0.63
2008	19,702	76,293	95,995	11,186,151	0.86
2009	20,500	65,703	86,203	8,510,557	1.01
2010	20,243	75,215	95,458	9,396,935	1.02

Over the five-year period the expense ratio averaged approximately 0.84%. We recommend a long term expense ratio of 0.75% for the net investment return assumption.

Recommendation: Using the building block approach of ASOP No. 27 and the projection results outlined above, we recommend a range for the investment return assumption of the 25th to 75th percentile real returns over the 50-year time span plus the recommended inflation assumption less the recommended expense ratio assumption. The following table details the range.

Item	25th Percentile	50th Percentile	75th Percentile
Real Rate of Return	4.25%	5.25%	6.21%
Inflation	3.25	3.25	3.25
Expenses	(0.75)	(0.75)	(0.75)
Net Investment Return	6.75%	7.75%	8.71%

The 50th percentile net return is 7.75% compared to the current assumed rate of return is 8.00%. The current assumed rate falls within the reasonable range of 6.75% to 8.71%. At this time we are recommending the Board adopt an assumed rate of return of 7.75%. If the Board chooses to adopt 7.75% assumed rate of return, this will have the impact of increasing liabilities. The impact is shown in more detail in Section V.

Investment Return Assumption	
Current	8.00%
Reasonable Range	6.75% - 8.71%
Recommended	7.75%

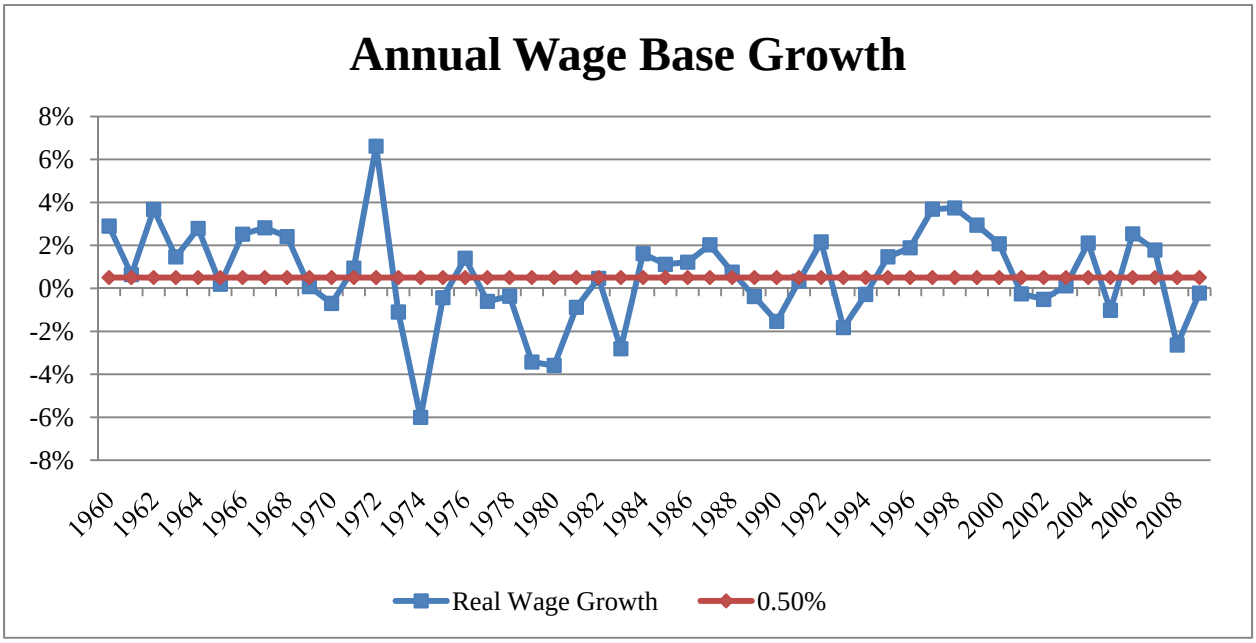
Wage Inflation

Background: The assumed future increases in salaries consist of an inflation component and a component for promotion and longevity, often called merit increases. Merit increases are generally age and/or service related, and will be studied in the demographic assumption section of the report. Wage inflation normally is above price inflation, which reflects the overall return on labor in the economy. The current wage inflation assumption is 4.00%, or 0.50% above price inflation.

Past Experience: The Social Security Administration publishes data on wage growth in the United States. Appendix C shows the last 50 calendar years' data. As we did in our analysis of inflation, in the table below, we show the wage inflation and a comparison with the price inflation over various time periods. Since wage data is only available through 2009 we use that year as the end point.

Period	Wage Inflation	Price Inflation	Real Wage Growth
1999-2009	2.94%	2.79%	0.15%
1989-2009	3.59	2.88	0.72
1979-2009	4.31	3.76	0.55
1969-2009	4.95	4.57	0.38
1959-2009	4.83	4.12	0.71

Thus, over the last 50 years, annual real wage growth has averaged 0.71%. The graph on the following page shows the annual increases in real wage growth over the entire 50-year period.



Recommendation: As we did with price inflation, we again look at the 2010 OASDI Trustees Report. The Chief Actuary for Social Security bases the 75-year cost projections on a national wage growth assumption 1.1% greater than the price inflation assumption of 2.8%. We concur in general with a range of .5% - 1.5%, and recommend use of a 0.75% per year rate at the current time.

Wage Inflation Assumption		
Current	4.00%	
	Reasonable Range	
Real Wage Growth	0.50%	1.50%
Inflation	3.25	3.25
Total	3.75%	4.75%
Recommended	4.00%	

Demographic Assumptions

There are several demographic assumptions used in the actuarial valuations performed for the School Employees Retirement System of Ohio. They are:

- Rates of Withdrawal
- Rates of Disability Retirement
- Rates of Pre-Retirement Mortality
- Rates of Service Retirement
- Rates of Post-retirement Mortality
- Rates of Post-retirement Disabled Mortality
- Rates of Salary Increase for Merit and Promotions

The Actuarial Standards Board has issued Actuarial Standard of Practice (ASOP) No. 35, *"Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations"*, which provides guidance to actuaries in selecting demographic assumptions for measuring obligations under defined benefit plans. In our opinion, the demographic assumptions recommended in this report have been developed in accordance with ASOP No. 35.

The purpose of a study of demographic experience is to compare what actually happened to the membership during the study period (June 30, 2005 through June 30, 2010) with what was expected to happen based on the assumptions used in the most recent actuarial valuations.

Detailed tabulations by age, service and/or gender are performed over the entire study period. These tabulations look at all active and retired members during the period as well as separately identifying those who experience a demographic event, also referred to as a decrement. In addition, the tabulation of all members together with the current assumptions permits the calculation of the number of expected decrements during the study period.

If the actual experience differs significantly from the overall expected results, or if the pattern of actual decrements, or rates of decrement, by age, gender, or service does not follow the expected pattern, new assumptions are recommended. Recommended changes usually do not follow the exact actual experience during the observation period. Judgment is required to extrapolate future experience from past trends and current member behavior. In addition non-recurring events, such as early retirement windows, need to be taken into account in determining the weight to give to recent experience.

The remainder of this section presents the results of the demographic study. We have prepared tables that show a comparison of the actual and expected decrements and the overall ratio of actual to expected results under the current assumptions. If a change is being proposed, the revised actual to expected ratios are shown as well.

Rates of Withdrawal

The rates of withdrawal adopted by the Board are used to determine the expected number of separations from active service that will occur prior to attaining the eligibility requirement for a retirement benefit as a result of resignation or dismissal.

The current assumption utilizes a service based approach that sets the withdrawal rates based on years of service. Withdrawal experience was investigated without regard to gender.

The analysis of the actual withdrawal experience for all members over the five-year period indicates an overall actual/expected ratio of 122%. This ratio indicates that more members withdrew during the study period than expected. The table below shows in detail the actual/expected ratio by years of service and in total.

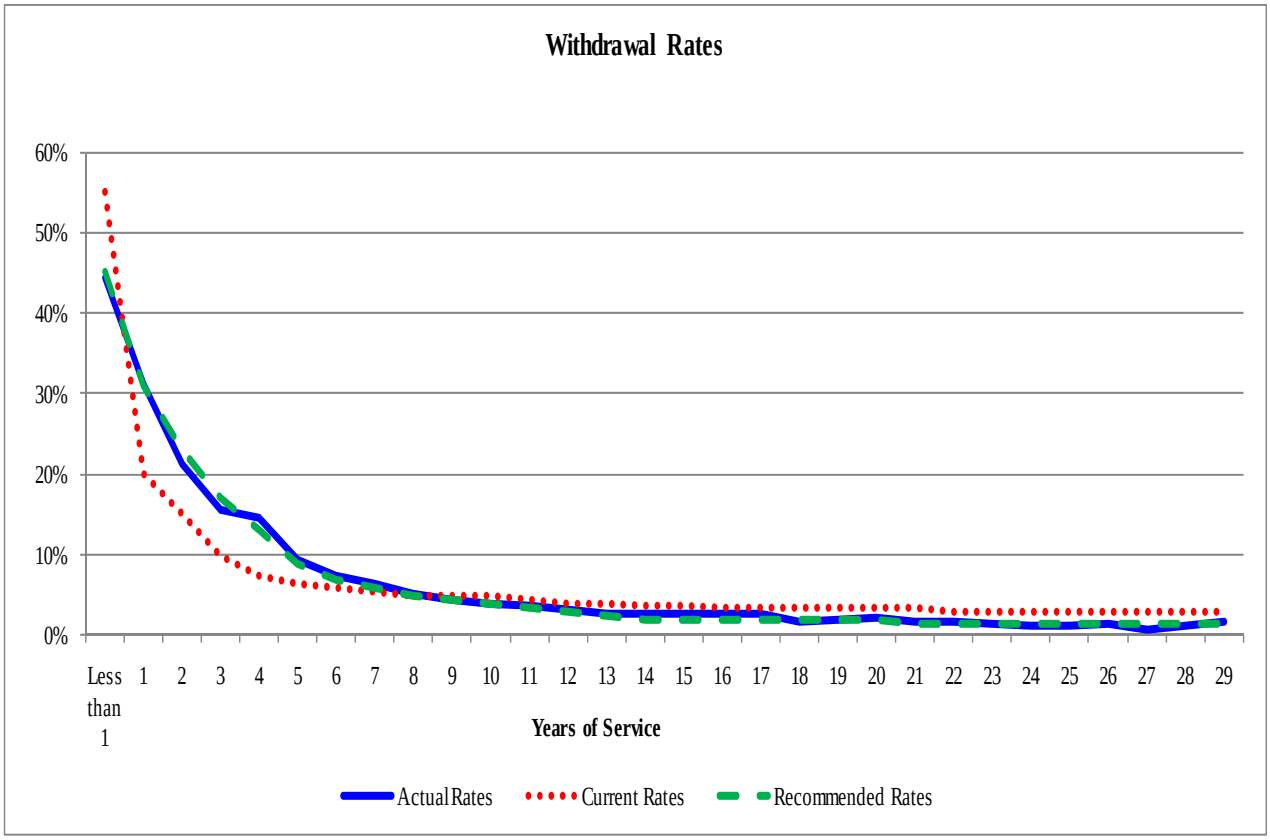
EXPERIENCE UNDER CURRENT ASSUMPTIONS

Years of Service	Withdrawal Experience		
	Actual	Expected	Ratio Actual/Expected
Less than 1	11,992	14,853.85	0.81
1	23,652	15,217.60	1.55
2	10,773	7,627.35	1.41
3	6,223	4,003.30	1.55
4	5,288	2,730.68	1.94
5	2,831	1,963.20	1.44
6	2,106	1,730.10	1.22
7	1,759	1,523.83	1.15
8	1,341	1,293.80	1.04
9	1,015	1,164.75	0.87
10	822	1,022.45	0.80
11	656	802.53	0.82
12	519	625.48	0.83
13	380	544.04	0.70
14	333	461.66	0.72
15	310	420.79	0.74
16	295	367.99	0.80
17	253	346.71	0.73
18	173	332.18	0.52
19	174	313.53	0.55
20	175	295.43	0.59
21	123	268.97	0.46
22	108	202.38	0.53
23	78	171.72	0.45
24	64	144.57	0.44
25	31	73.53	0.42
26	35	70.32	0.50
27	14	62.91	0.22
28	25	56.58	0.44
29	22	39.66	0.55
TOTAL	71,570	58,731.89	1.22

Findings and Recommendations

The data reflects a general increase in the rates of withdrawal for those members with less than nine years of service and a general decrease in rates of withdrawal for members with more than nine years of service. As a result, we recommend adjusting withdrawal rates to more closely reflect the actual experience. The complete tables of recommended withdrawal rates are shown in Appendix D.

The chart below shows (i) the actual average withdrawal rates by years of service during the past five years, (ii) the current assumed withdrawal rates, and (iii) the recommended withdrawal rates.



The actual/expected ratios based on the recommended assumptions are shown in the table on the following page. The overall ratio has been reduced from 122% to 100%.

EXPERIENCE UNDER PROPOSED ASSUMPTIONS

Years of Service	Withdrawal Experience		
	Actual	Proposed	Ratio Actual/Proposed
Less than 1	11,992	12,153.15	0.99
1	23,652	23,587.28	1.00
2	10,773	11,695.27	0.92
3	6,223	6,805.61	0.91
4	5,288	4,733.17	1.12
5	2,831	2,718.27	1.04
6	2,106	2,018.45	1.04
7	1,759	1,662.36	1.06
8	1,341	1,293.80	1.04
9	1,015	1,048.28	0.97
10	822	817.96	1.00
11	656	624.19	1.05
12	519	469.11	1.11
13	380	340.03	1.12
14	333	246.22	1.35
15	310	224.42	1.38
16	295	210.28	1.40
17	253	198.12	1.28
18	173	189.82	0.91
19	174	179.16	0.97
20	175	168.82	1.04
21	123	115.28	1.07
22	108	101.19	1.07
23	78	85.86	0.91
24	64	72.29	0.89
25	31	36.77	0.84
26	35	35.16	1.00
27	14	31.46	0.45
28	25	28.29	0.88
29	22	19.83	1.11
TOTAL	71,570	71,909.87	1.00

Rates of Pre-Retirement Mortality

The rates of pre-retirement mortality are used in the actuarial valuation to project the percentage of employees who are expected to terminate due to death.

Pre-retirement mortality experience was investigated separately for males and females.

The analysis of the actual pre-retirement mortality experience for male and female members over the five-year experience period yields an actual/expected ratio of 58% and 66% respectively. The table below details the actual/expected ratio by age group and in total, for males and females separately.

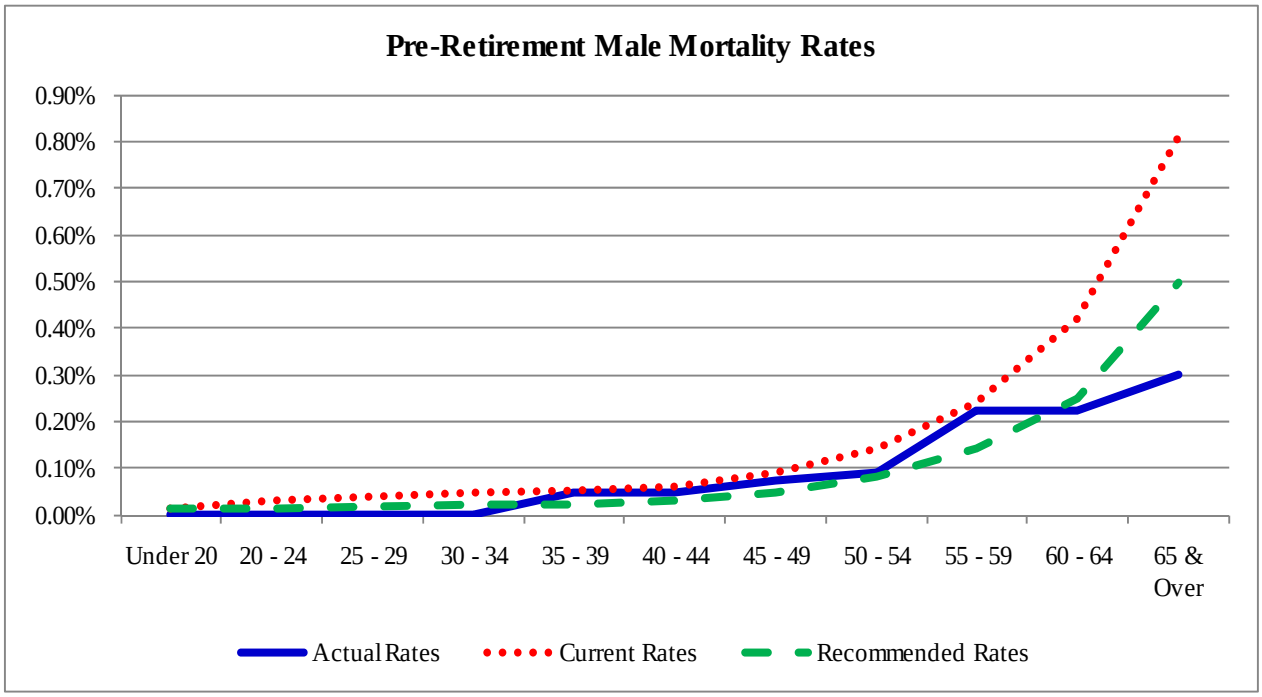
EXPERIENCE UNDER CURRENT ASSUMPTIONS

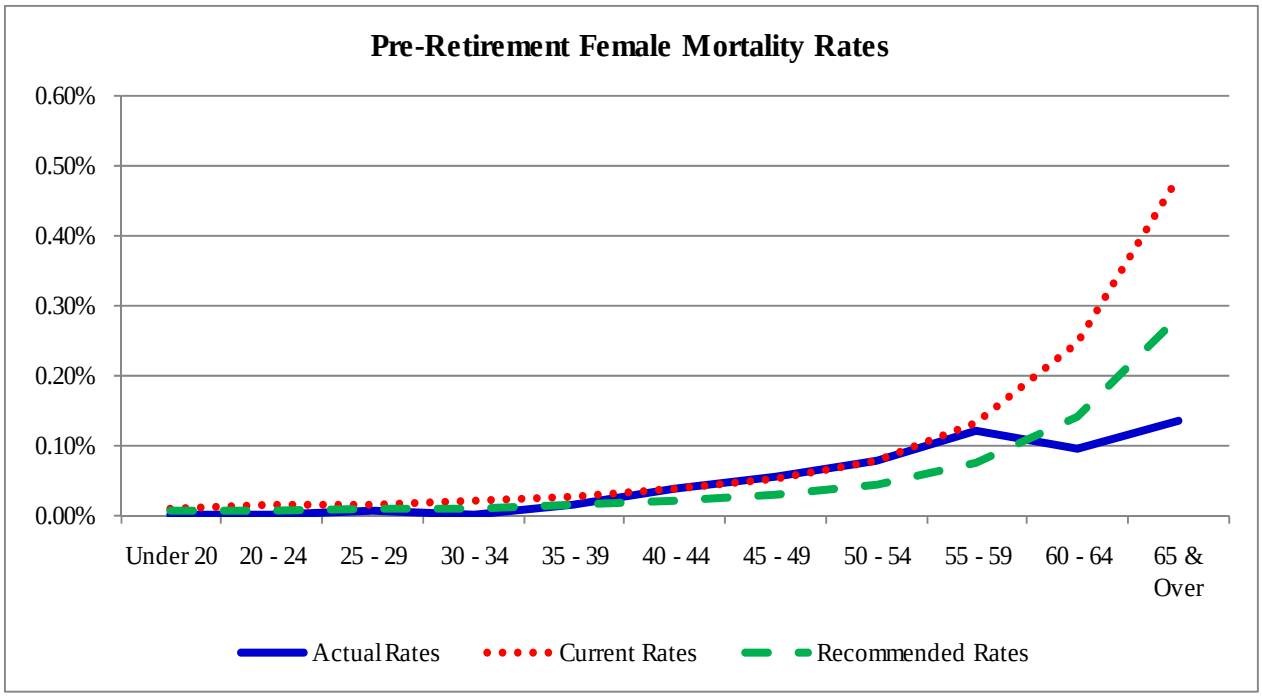
	Pre-Retirement Mortality Experience					
	Males			Females		
Age Group	Actual	Expected	Ratio Actual/Expected	Actual	Expected	Ratio Actual/Expected
Under 20	0	0.18	0.00	0	0.10	0.00
20 - 24	0	3.24	0.00	0	1.65	0.00
25 - 29	0	4.77	0.00	1	2.43	0.41
30 - 34	0	5.56	0.00	0	4.08	0.00
35 - 39	7	7.73	0.91	6	10.49	0.57
40 - 44	10	12.40	0.81	24	24.91	0.96
45 - 49	19	23.40	0.81	47	45.97	1.02
50 - 54	24	38.20	0.63	63	64.51	0.98
55 - 59	50	54.06	0.92	77	83.74	0.92
60 - 64	34	64.11	0.53	33	86.88	0.38
65 & Over	35	94.02	0.37	28	100.59	0.28
TOTAL	179	307.67	0.58	279	425.35	0.66

Findings and Recommendations

During the period under investigation, the actual rates of pre-retirement mortality were less than expected over all age groups. As a result, we recommend the rates of pre-retirement mortality be revised to more closely reflect the experience of the System. The proposed rates are 25% of the 1994 GAM Mortality table for ages 15 to 75.

The chart below shows (i) the actual mortality rates for employees by age group during the past five years, (ii) the current assumed mortality rates, and (iii) the recommended mortality rates.





The actual/expected ratios based on the recommended assumptions are shown in the table below. The total actual/expected ratio is 100% for male members and 116% for female members compared to 58% and 66% respectively for males and females under the current assumption.

EXPERIENCE UNDER PROPOSED ASSUMPTIONS

	Pre-Retirement Mortality Experience					
	Males			Females		
Age Group	Actual	Expected	Ratio Actual/Expected	Actual	Expected	Ratio Actual/Expected
Under 20	0	0.15	0.00	0	0.08	0.00
20 - 24	0	1.57	0.00	0	0.83	0.00
25 - 29	0	2.31	0.00	1	1.22	0.82
30 - 34	0	2.48	0.00	0	2.14	0.00
35 - 39	7	3.45	2.03	6	5.63	1.07
40 - 44	10	6.47	1.55	24	13.35	1.80
45 - 49	19	12.78	1.49	47	24.63	1.91
50 - 54	24	21.91	1.10	63	35.52	1.77
55 - 59	50	31.66	1.58	77	47.45	1.62
60 - 64	34	38.28	0.89	33	49.75	0.66
65 & Over	35	57.78	0.61	28	59.06	0.47
TOTAL	179	178.84	1.00	279	239.66	1.16

Rates of Disability Retirement

The rates of disability used in the actuarial valuation project the percentage of employees who are expected to become disabled each year.

Disability experience was investigated separately for males and females.

The analysis of the actual disability experience for male and female members over the five-year experience period yields an actual/expected ratio of 47% and 54% respectively. The table below details the actual/expected ratio by age group and in total, for males and females separately.

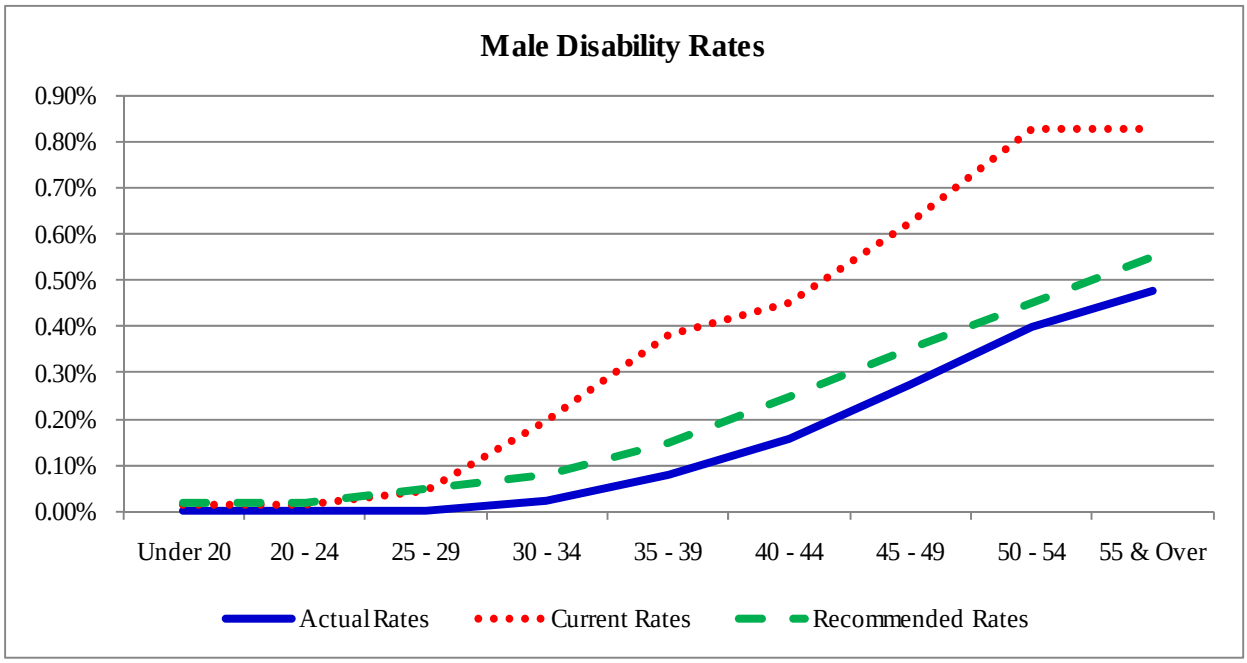
EXPERIENCE UNDER CURRENT ASSUMPTIONS

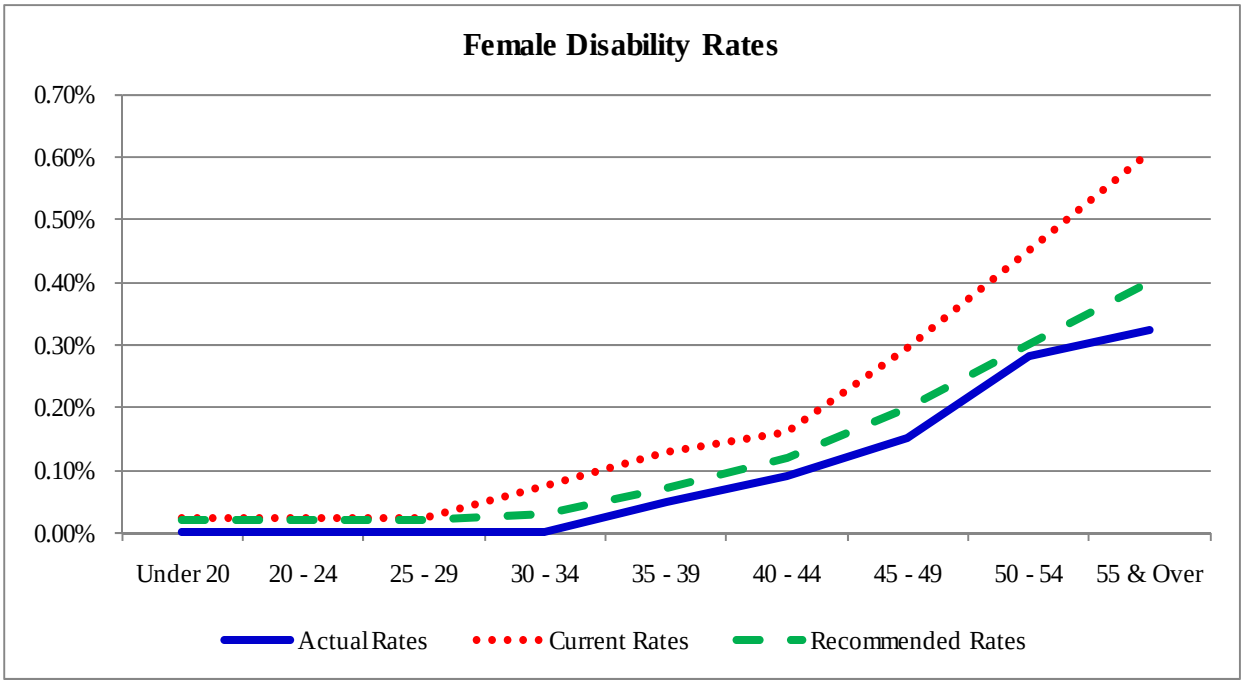
	Disability Experience					
	Males			Females		
			Ratio			Ratio
Age Group	Actual	Expected	Actual/Expected	Actual	Expected	Actual/Expected
Under 20	0	0.20	0.00	0	0	0.00
20 - 24	0	1.66	0.00	0	3	0.00
25 - 29	0	5.68	0.00	0	4	0.00
30 - 34	3	23.46	0.13	0	16	0.00
35 - 39	12	57.69	0.21	20	51	0.39
40 - 44	32	91.70	0.35	58	105	0.56
45 - 49	72	164.24	0.44	132	257	0.51
50 - 54	108	224.03	0.48	231	372	0.62
55 & Over	230	398.54	0.58	381	718	0.53
TOTAL	457	967.20	0.47	822	1,524	0.54

Findings and Recommendations

During the period under investigation, the actual rates of disability retirement were less than expected over all age groups. As a result, we recommend the rates of disability retirement be revised to more closely reflect the experience of the System. The complete table of recommended disability rates is shown in Appendix D.

The charts on the following page show (i) the actual disability rates for employees by age during the past five years, (ii) the current assumed disability rates, and (iii) the recommended disability rates.


Male Disability Rates
0.90%
0.80%
0.70%
0.60%
0.50%
0.40%
0.30%
0.20%
0.10%
0.00%
Under 20
20 - 24
25 - 29
30 - 34
35 - 39
40 - 44
45 - 49
50 - 54
55 & Over
Actual Rates
Current Rates
Recommended Rates


Female Disability Rates
0.70%
0.60%
0.50%
0.40%
0.30%
0.20%
0.10%
0.00%
Under 20
20 - 24
25 - 29
30 - 34
35 - 39
40 - 44
45 - 49
50 - 54
55 & Over
Actual Rates
Current Rates
Recommended Rates

The actual/expected ratios based on the recommended assumptions are shown in the table below. The total actual/expected ratio is 80% for male members and 81% for female members compared to 47% and 54% respectively for male and female members under the current assumption.

EXPERIENCE UNDER PROPOSED ASSUMPTIONS

	Disability Experience					
	Males			Females		
			Ratio			Ratio
Age Group	Actual	Proposed	Actual/Expected	Actual	Proposed	Actual/Expected
Under 20	0	0.26	0.00	0	0.22	0.00
20 - 24	0	2.21	0.00	0	2.31	0.00
25 - 29	0	6.40	0.00	0	3.19	0.00
30 - 34	3	9.53	0.31	0	6.37	0.00
35 - 39	12	22.72	0.53	20	27.76	0.72
40 - 44	32	50.83	0.63	58	77.19	0.75
45 - 49	72	92.44	0.78	132	174.17	0.76
50 - 54	108	122.20	0.88	231	246.48	0.94
55 & Over	230	265.69	0.87	381	472.37	0.81
TOTAL	457	572.28	0.80	822	1,010.06	0.81

Rates of Retirement

The retirement rates used in the actuarial valuation project the percentage of employees who are expected to retire during the upcoming year. The Plan provides for two types of retirements based on different eligibility requirements. The first one is for a normal retirement benefit. The second one is for an early retirement benefit which is reduced. Separate decrements have been developed for each type of retirement benefit.

Effective May 14, 2008 the Plan implemented a second tier benefit structure that increased the age and service requirements for normal and early retirement. At this time there have been no retirements for members hired after May 14, 2008. Due to the lack of observable experience, separate rates have not been developed for this group. As credible experience becomes available, separate decrements for normal and early retirements will be developed for this group.

Normal Retirement

The analysis of the actual retirement experience over the five-year period yields an actual/expected ratio of 72% for males and 79% for females.

EXPERIENCE UNDER CURRENT ASSUMPTIONS

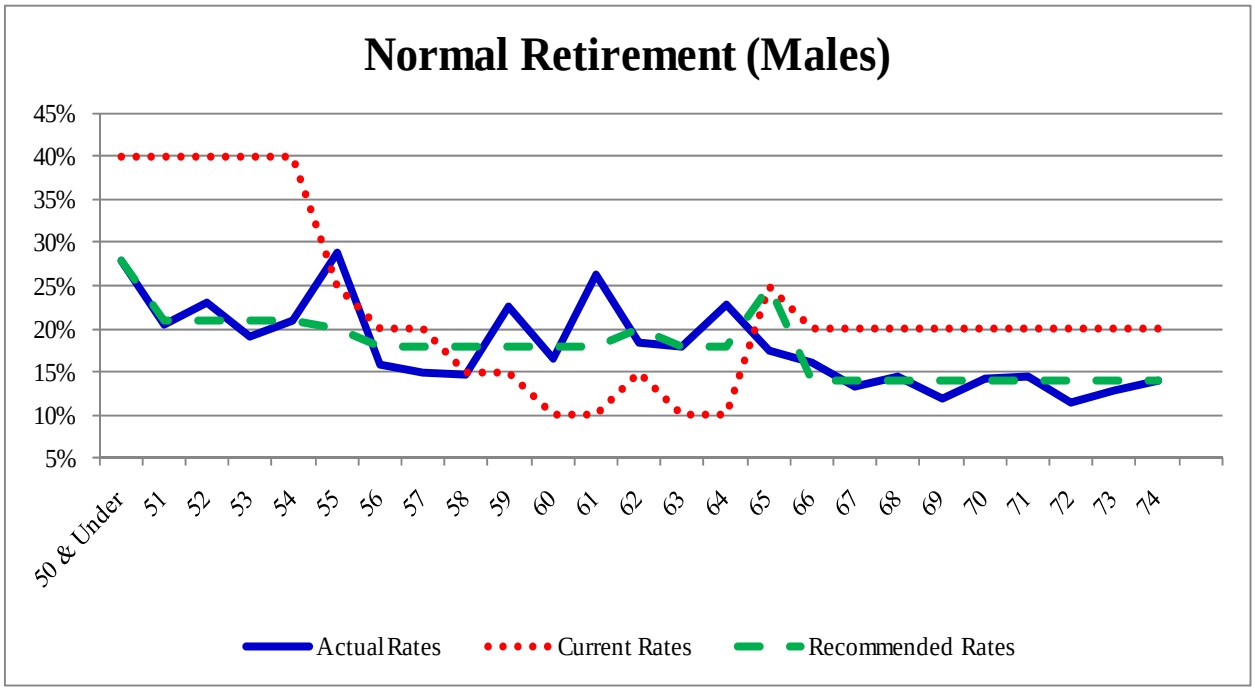
Number of Age Based Retirements						
	Current Rates					
	Males			Females		
Age	Actual	Expected	Ratio Actual/Expected	Actual	Expected	Ratio Actual/Proposed
50 & Under	142	203.20	0.70	94	125.73	0.75
51	54	105.60	0.51	49	73.59	0.67
52	70	121.60	0.58	37	72.60	0.51
53	58	120.80	0.48	54	80.19	0.67
54	63	120.40	0.52	63	91.74	0.69
55	86	74.50	1.15	72	75.50	0.95
56	36	45.20	0.80	49	53.80	0.91
57	30	40.00	0.75	60	64.20	0.93
58	28	28.50	0.98	47	69.60	0.68
59	40	26.70	1.50	54	83.00	0.65
60	24	14.40	1.67	90	85.60	1.05
61	32	12.20	2.62	89	72.15	1.23
62	19	15.45	1.23	107	78.90	1.36
63	14	7.80	1.79	108	56.00	1.93
64	19	8.30	2.29	98	54.40	1.80
65	254	363.50	0.70	651	859.00	0.76
66	193	239.40	0.81	410	529.20	0.77
67	129	192.20	0.67	315	435.00	0.72
68	110	153.00	0.72	230	351.00	0.66
69	75	125.80	0.60	221	289.40	0.76
70	79	110.20	0.72	186	233.80	0.80
71	69	94.80	0.73	137	187.00	0.73
72	42	74.00	0.57	120	155.80	0.77
73	41	63.40	0.65	84	122.60	0.69
74	36	51.00	0.71	59	101.20	0.58
TOTAL	1,743	2,411.95	0.72	3,484	4,401.00	0.79

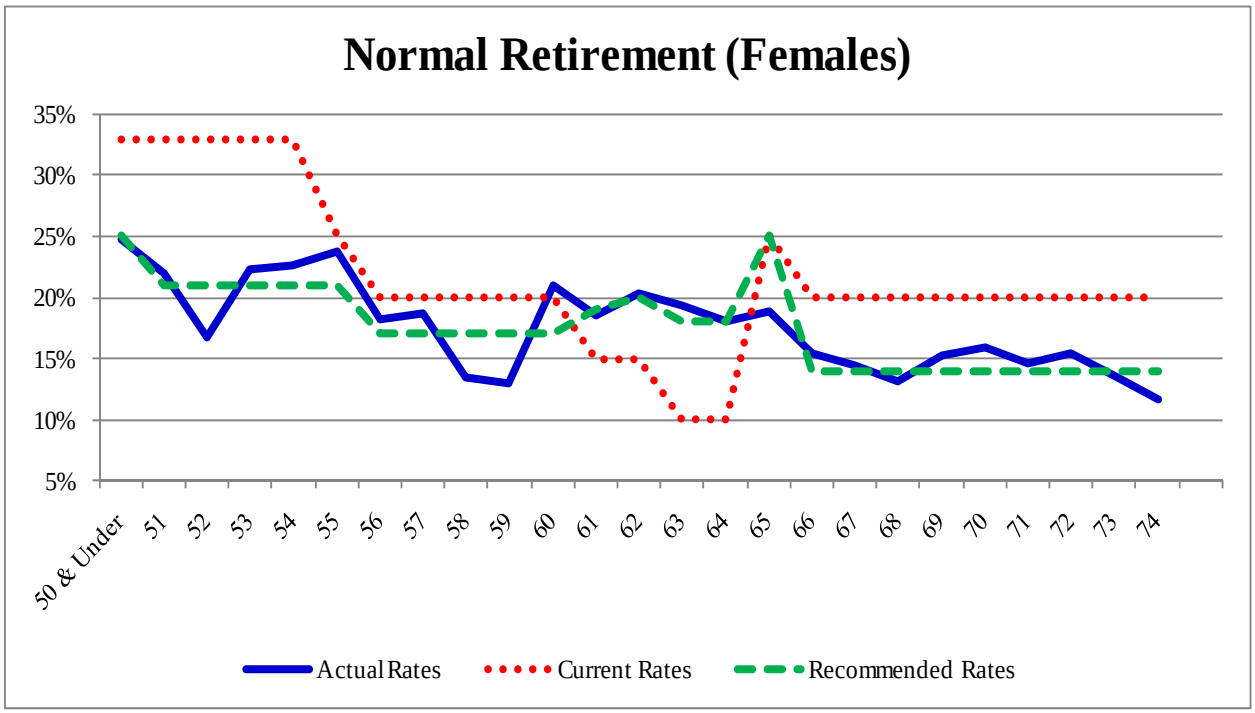
Findings and Recommendations

We recommend revising the normal retirement rates to more closely reflect actual experience. The complete tables of recommended retirement rates are shown in Appendix D.

The actual/expected ratios based on the recommended assumptions are 96% compared to 72% for males under the current assumption and 97% compared to 79% for females under the current assumptions.

The charts below show (i) the actual rates of retirement for employees by age during past five years, (ii) the current assumed rates of retirement and (iii) the recommended rates of retirement.





The table on the following page shows in detail the actual/expected ratios by individual age and total based on the recommended rates of retirement.

EXPERIENCE UNDER PROPOSED ASSUMPTIONS

Number of Age Based Retirements						
	Proposed Rates					
	Males			Females		
Age	Actual	Expected	Ratio Actual/Proposed	Actual	Expected	Ratio Actual/Proposed
50 & Under	142	142.24	1.00	94	95.25	0.99
51	54	55.44	0.97	49	46.83	1.05
52	70	63.84	1.10	37	46.20	0.80
53	58	63.42	0.91	54	51.03	1.06
54	63	63.21	1.00	63	58.38	1.08
55	86	59.60	1.44	72	63.42	1.14
56	36	40.68	0.88	49	45.73	1.07
57	30	36.00	0.83	60	54.57	1.10
58	28	34.20	0.82	47	59.16	0.79
59	40	32.04	1.25	54	70.55	0.77
60	24	25.92	0.93	90	72.76	1.24
61	32	21.96	1.46	89	91.39	0.97
62	19	20.60	0.92	107	105.20	1.02
63	14	14.04	1.00	108	100.80	1.07
64	19	14.94	1.27	98	97.92	1.00
65	254	363.50	0.70	651	859.00	0.76
66	193	167.58	1.15	410	370.44	1.11
67	129	134.54	0.96	315	304.50	1.03
68	110	107.10	1.03	230	245.70	0.94
69	75	88.06	0.85	221	202.58	1.09
70	79	77.14	1.02	186	163.66	1.14
71	69	66.36	1.04	137	130.90	1.05
72	42	51.80	0.81	120	109.06	1.10
73	41	44.38	0.92	84	85.82	0.98
74	36	35.70	1.01	59	70.84	0.83
TOTAL	1,743	1,824.29	0.96	3,484	3,601.69	0.97

Early Retirement

The analysis of the actual retirement experience over the five-year period yields an actual/expected ratio of 75% for males and 63% for females.

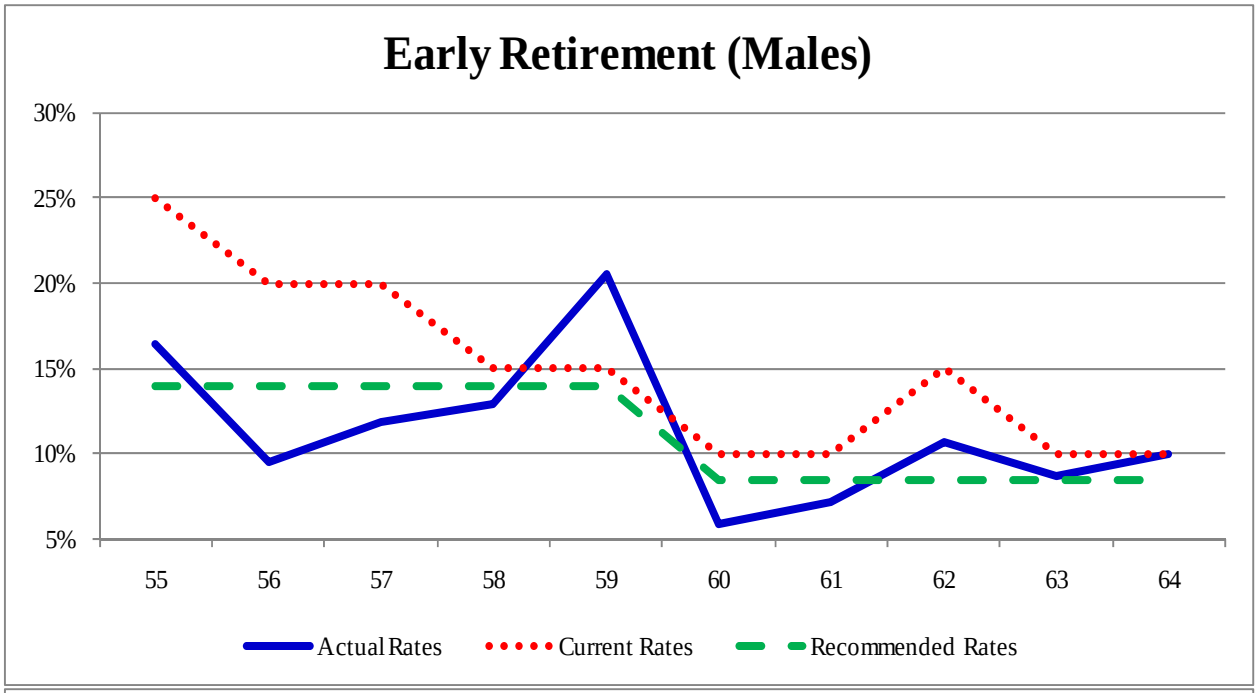
EXPERIENCE UNDER CURRENT ASSUMPTIONS

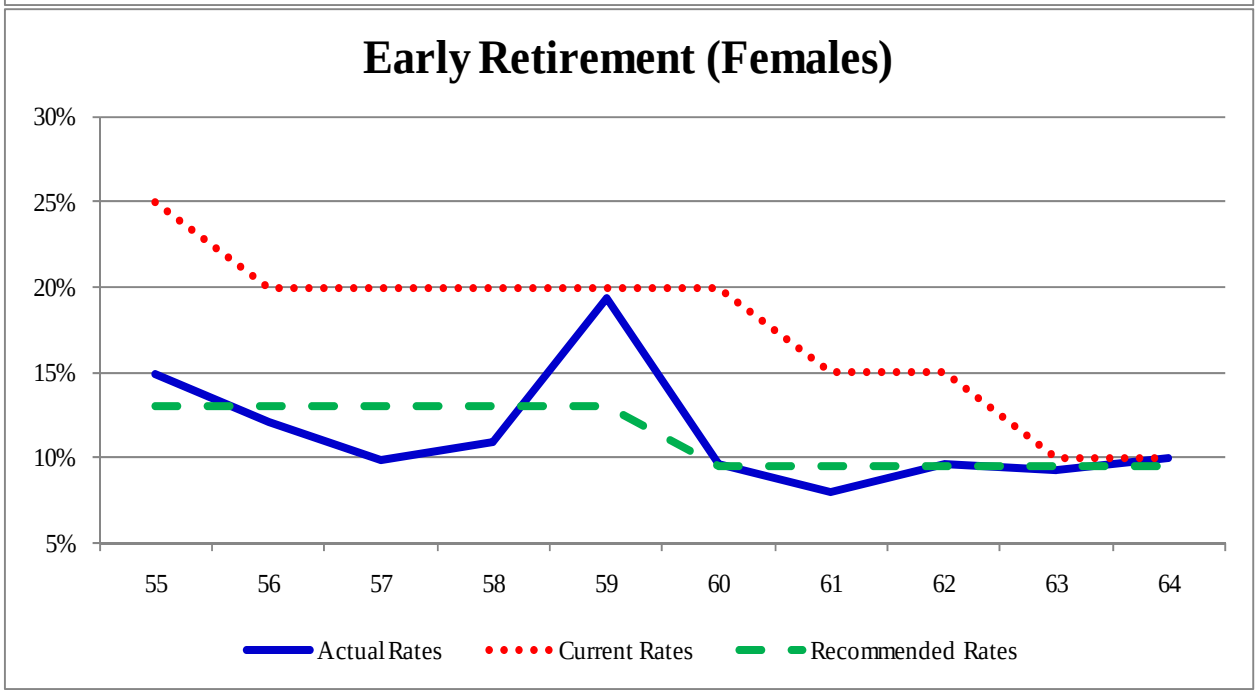
Number of Age Based Retirements						
	Current Rates					
	Males			Females		
Age	Actual	Expected	Ratio Actual/Expected	Actual	Expected	Ratio Actual/Expected
55	68	103.25	0.66	138	231.50	0.60
56	35	73.40	0.48	121	201.00	0.60
57	43	72.60	0.59	107	216.20	0.49
58	42	48.60	0.86	136	249.20	0.55
59	63	45.90	1.37	298	307.40	0.97
60	139	237.30	0.59	786	1,626.20	0.48
61	153	215.10	0.71	529	988.35	0.54
62	209	294.30	0.71	526	819.00	0.64
63	153	175.40	0.87	400	430.40	0.93
64	156	155.60	1.00	349	351.50	0.99
TOTAL	1,061	1,421	0.75	3,390	5,420.75	0.63

Findings and Recommendations

We recommend revising the early retirement rates to more closely reflect actual experience. The complete tables of recommended retirement rates are shown in Appendix D.

The charts on the following page show (i) the actual rates of retirement for employees by age during past five years, (ii) the current assumed rates of retirement and (iii) the recommended rates of retirement.


Early Retirement (Males)
30%
25%
20%
15%
10%
5%
55
56
57
58
59
60
61
62
63
64
Actual Rates
Current Rates
Recommended Rates


Early Retirement (Females)
30%
25%
20%
15%
10%
5%
55
56
57
58
59
60
61
62
63
64
Actual Rates
Current Rates
Recommended Rates

The actual/expected ratios based on the recommended assumptions are 98% for males compared to 75% under the current assumptions and 99% for females compared to 63% under the current assumptions.

The table below detail the actual/expected ratios by individual age and total based on the recommended rates of retirement.

EXPERIENCE UNDER PROPOSED ASSUMPTIONS

Number of Age Based Retirements						
	Propsed Rates					
	Males			Females		
			Ratio			Ratio
Age	Actual	Expected	Actual/Expected	Actual	Expected	Actual/Expected
55	68	57.82	1.18	138	120.38	1.15
56	35	51.38	0.68	121	130.65	0.93
57	43	50.82	0.85	107	140.53	0.76
58	42	45.36	0.93	136	161.98	0.84
59	63	42.84	1.47	298	199.81	1.49
60	139	201.71	0.69	786	772.45	1.02
61	153	182.84	0.84	529	625.96	0.85
62	209	166.77	1.25	526	518.70	1.01
63	153	149.09	1.03	400	408.88	0.98
64	156	132.26	1.18	349	333.93	1.05
TOTAL	1,061	1,080.88	0.98	3,390	3,413.26	0.99

Rates of Non-Disabled Post-Retirement Mortality

The post-retirement mortality rates used in the actuarial valuation project the percentage of non-disabled retirees and beneficiaries who are expected to die in the upcoming year. This assumption is a very material demographic assumption. Based upon the long term trend of mortality improvement, actuaries seek to maintain a sufficient margin in expected rates of mortality to account for future improvements in longevity.

The analysis of the actual post-retirement mortality experience over the five-year experience study period yields actual/expected ratios of 112% and 115% respectively for males and females. The table below details the actual/expected ratios by individual age group and total.

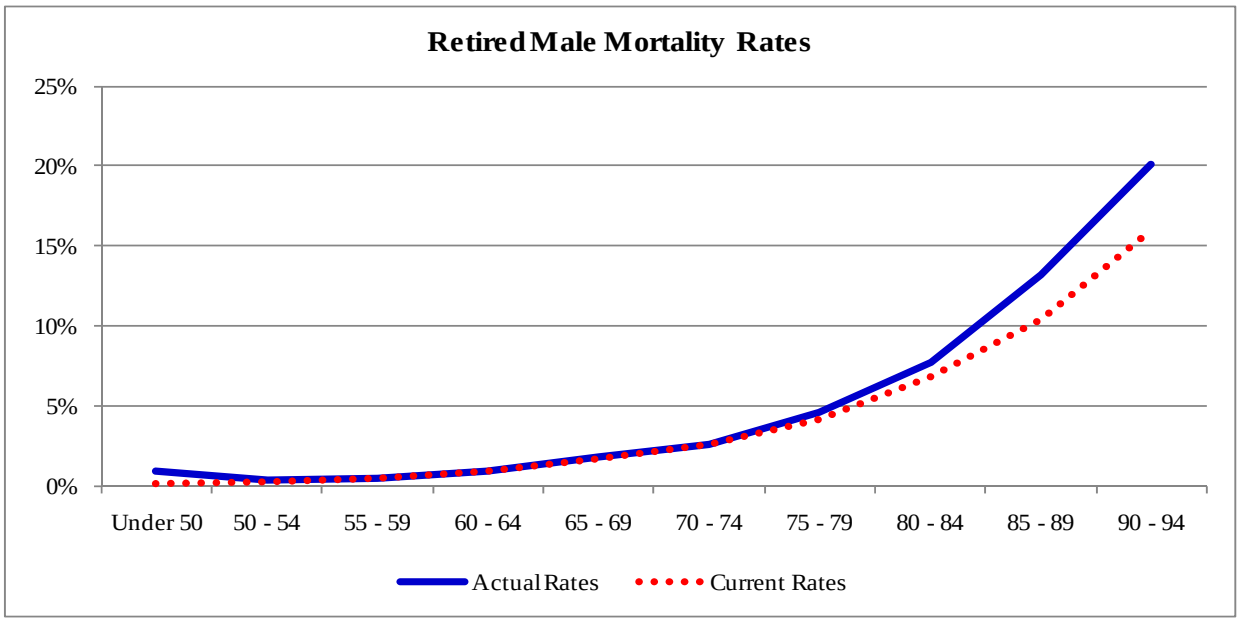
EXPERIENCE UNDER CURRENT ASSUMPTIONS

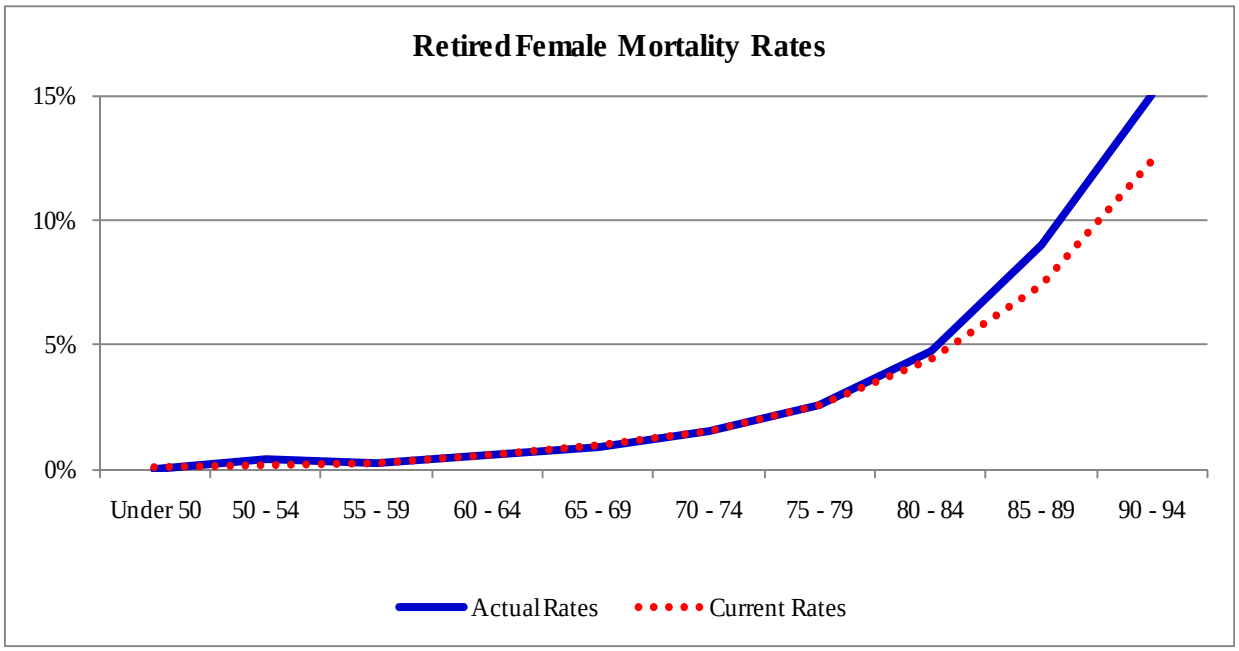
	Post-Retirement Mortality Experience					
	Current Rates					
	Males			Females		
Age Group	Actual	Expected	Ratio Actual/Expected	Actual	Expected	Ratio Actual/Expected
Under 50	4	0.38	10.53	3	0.21	14.29
50 - 54	5	3.97	1.26	7	1.60	4.38
55 - 59	17	13.73	1.24	14	10.92	1.28
60 - 64	49	51.39	0.95	112	107.00	1.05
65 - 69	208	184.56	1.13	312	347.78	0.90
70 - 74	348	349.64	1.00	616	589.99	1.04
75 - 79	627	577.73	1.09	961	915.97	1.05
80 - 84	872	818.56	1.07	1,561	1394.53	1.12
85 - 89	963	818.62	1.18	1,980	1595.67	1.24
90 - 94	586	504.02	1.16	1,358	1114.88	1.22
95 - 99	186	146.80	1.27	526	398.70	1.32
100 & Over	23	14.97	1.54	77	59.87	1.29
TOTAL	3,888	3,484.37	1.12	7,527	6537.12	1.15

Findings and Recommendations

Experience indicates that overall more members have died than expected during the study period, resulting in actuarial gains to the system. The table currently in use is the 1994 Group Annuity Mortality Table, set back one year for both men and women. This assumption maintains a reasonable margin (12% for males and 15% for females) for further mortality improvement. Therefore, we recommend no change to the rates of non-disabled post-retirement mortality at this time.

The charts below show (i) actual mortality rates for retirees by age group and (ii) the currently assumed mortality rates for retirees.





Rates of Disabled Post-Retirement Mortality

The disability mortality rates used in the actuarial valuations project the percentage of disabled retirees who are expected to die in the upcoming year for all members. Mortality for disabled retirees is expected to be higher than mortality for non-disabled retirees.

The analysis of the actual disabled mortality over the five-year experience study period yields actual/expected ratio of 122% and 135% respectively for disabled male and female retirees. The table below shows the actual/expected ratios by age groups and in total.

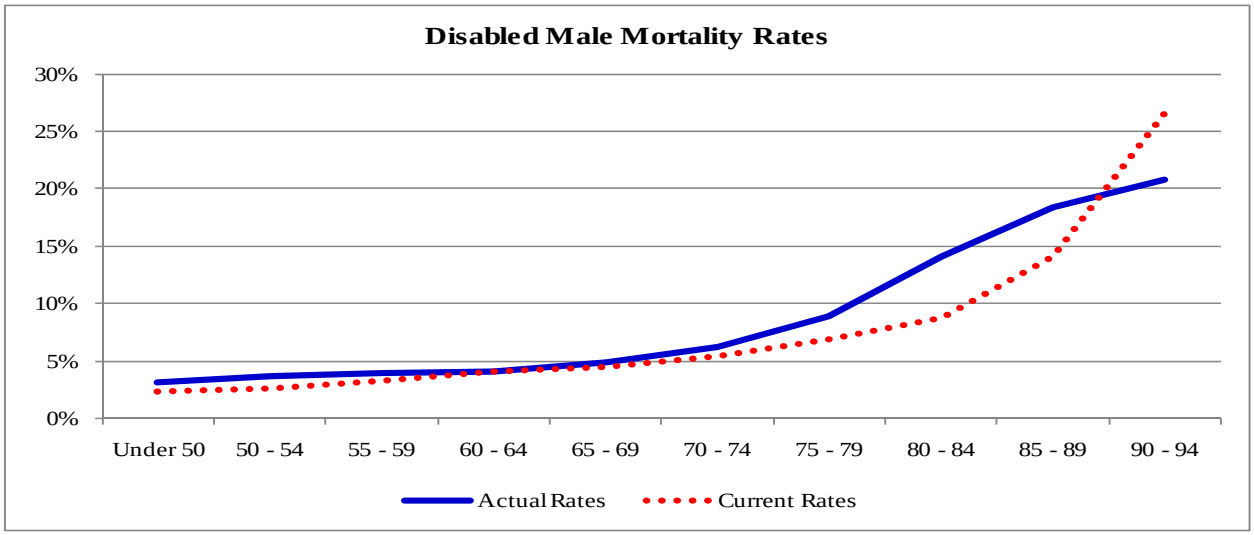
EXPERIENCE UNDER CURRENT ASSUMPTIONS

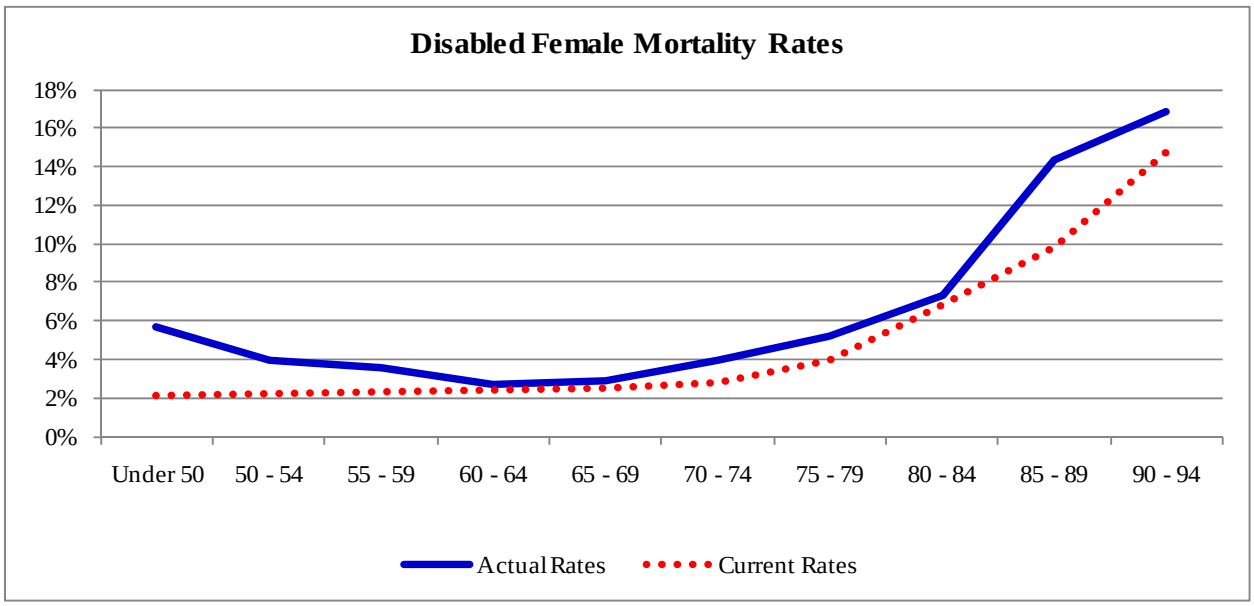
	Post-Disablement Mortality Experience					
	Current Rates					
	Males			Females		
Age Group	Actual	Expected	Ratio Actual/Expected	Actual	Expected	Ratio Actual/Expected
Under 25	0	0	0.00	0	0.00	0.00
25 - 29	0	0	0.00	0	0.00	0.00
30 - 34	0	0	0.00	2	0.08	25.00
35 - 39	2	1	2.20	1	0.95	1.05
40 - 44	9	5	1.90	16	5.40	2.96
45 - 49	15	14	1.10	46	18.35	2.51
50 - 54	39	27	1.46	75	42.54	1.76
55 - 59	66	53	1.23	105	69.21	1.52
60 - 64	69	68	1.01	98	86.71	1.13
65 - 69	55	51	1.08	87	74.66	1.17
70 - 74	44	38	1.15	88	62.51	1.41
75 - 79	47	36	1.29	87	66.90	1.30
80 - 84	53	33	1.60	75	70.14	1.07
85 - 89	36	28	1.31	74	50.26	1.47
90 - 94	5	6	0.79	20	17.54	1.14
95 - 99	1	0	2.08	6	10.29	0.58
100 & Over	0	0	0.00	1	4.00	0.25
TOTAL	441	361.39	1.22	781	579.54	1.35

Findings and Recommendations

Experience indicates that overall more disabled retired members have died than expected during the study period. As with the non-disabled lives experience there is a sufficient margin for possible mortality improvement among disabled lives using the current mortality assumption and we therefore recommend no change in the assumption at this time.

The charts below show (i) actual mortality rates for disabled retirees by age during the past five years and (ii) the currently assumed disabled mortality rates.





Rates of Salary Increase

Under the "building block" approach recommended in ASOP 27, this assumption is composed of three components; inflation, productivity (real wage increases), and merit/promotion. The inflation and productivity components are combined to produce the assumed rates of wage inflation. The rate represents the "across the board" average annual increase in salaries shown in the experience data. The merit component includes the additional increases in salary due to performance, seniority, promotions, etc.

The table below shows the actual/expected ratios for total salary increases over the five-year period.

EXPERIENCE UNDER CURRENT ASSUMPTIONS

Years of Service	Salaries End of Year (in thousands)		
	Current Rates		
	Actual	Expected	Ratio Actual/Expected
Under 1	774,037	766,868	1.009
1	623,198	667,209	0.934
2	597,882	642,451	0.931
3	606,984	646,034	0.940
4	631,098	669,991	0.942
5	658,976	690,733	0.954
6	668,536	696,896	0.959
7	654,653	676,264	0.968
8	611,369	627,771	0.974
9	555,102	564,673	0.983
10	501,807	506,142	0.991
11	454,643	460,363	0.988
12	412,847	418,491	0.987
13	385,010	389,971	0.987
14	362,757	367,612	0.987
15 & Up	4,117,621	4,180,967	0.985
TOTAL	12,616,520	12,972,436	0.970

Utilizing the "building block" approach, the first step in developing the merit based rates of increase is to remove the wage inflation component experienced during the investigation period from the actual salary rates of increase. The average annual rate of inflation over the five-year period ending June 30, 2010 was 2.30% and the current assumed real rate of wage inflation (wage inflation above price inflation or CPI) was 0.50%. These combined equal an annual rate of wage inflation of 2.80% over the five-year period. This was 1.20% less than the assumed wage inflation of 4.00%.

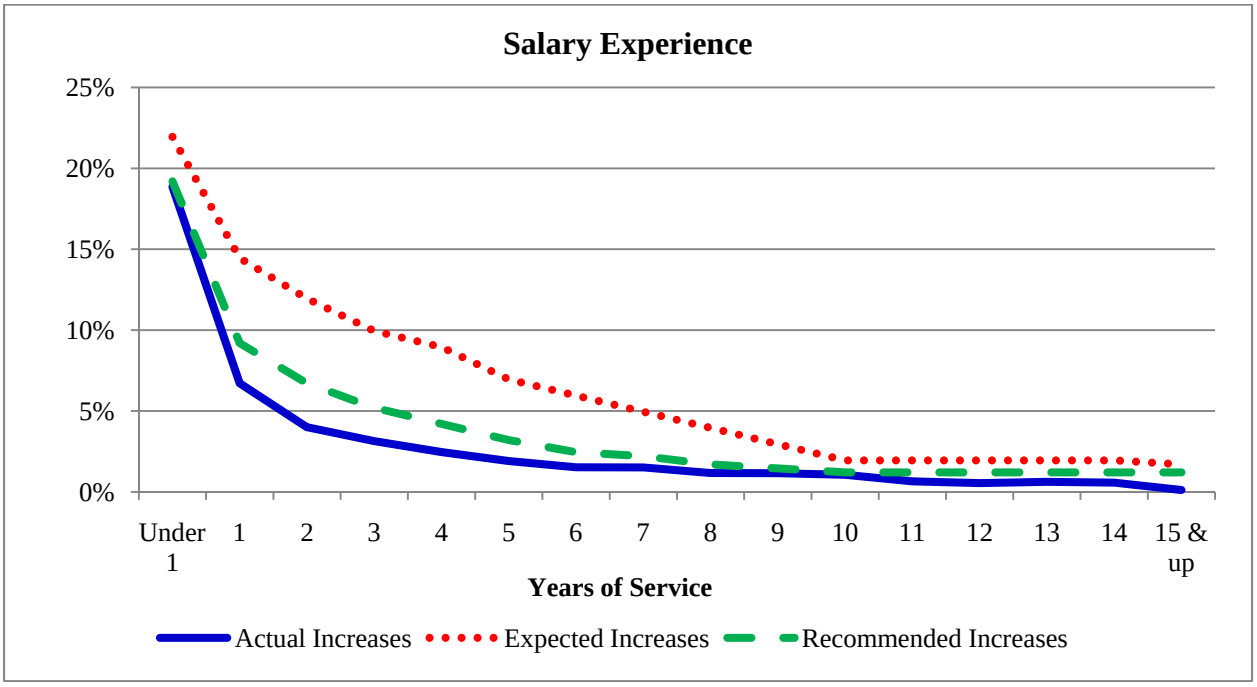
The table below provides an analysis concerning the development of the merit component of this assumption for all members. In addition to less than expected underlying wage inflation, the average merit increases were less than expected at all service points. Based on prior experience and the future outlook, we recommend lowering the merit component of the compensation increase assumption.

Years of Service	Actual Rate	Actual Merit Increase (Actual Less Wage Inflation)	Current Assumed Merit Increases
Under 1	21.66%	18.86%	20.75%
1	9.52%	6.72%	13.25%
2	6.79%	3.99%	10.75%
3	5.93%	3.13%	8.75%
4	5.26%	2.46%	7.75%
5	4.70%	1.90%	5.75%
6	4.32%	1.52%	4.75%
7	4.31%	1.51%	3.75%
8	3.96%	1.16%	2.75%
9	3.96%	1.16%	1.75%
10	3.85%	1.05%	0.75%
11	3.45%	0.65%	0.75%
12	3.34%	0.54%	0.75%
13	3.42%	0.62%	0.75%
14	3.37%	0.57%	0.75%
15	3.17%	0.37%	0.50%

Findings and Recommendations

Based on the analysis above, it appears that the merit component of the salary increases have been lower than expected during the experience period. The complete tables of recommended total compensation increase rates are shown in Appendix D.

The following graph shows a comparison of actual, current (expected) and proposed rates of salary increases by years of service.



The actual/expected ratio based on the recommended assumption is shown in the table below. The total actual/expected ratio is 99% compared to 97% under the current assumption.

Years of Service	Salaries End of Year (in thousands)		
	Proposed Rates		
	Actual	Expected	Ratio Actual/Expected
Under 1	774,037	776,204	0.997
1	623,198	637,334	0.978
2	597,882	613,058	0.975
3	606,984	618,817	0.981
4	631,098	641,513	0.984
5	658,976	667,132	0.988
6	668,536	674,467	0.991
7	654,653	659,005	0.993
8	611,369	614,539	0.995
9	555,102	556,664	0.997
10	501,807	502,519	0.999
11	454,643	457,068	0.995
12	412,847	415,495	0.994
13	385,010	387,178	0.994
14	362,757	364,980	0.994
15	4,117,621	4,160,960	0.990
TOTAL	12,616,520	12,746,933	0.990

Percent Married: Currently 80% of members are assumed to be married with the husband three years older than the wife. This is a common and reasonable assumption and we recommend maintaining this assumption.

Re-hired Retirees: The number of re-hired retirees has declined over the investigation period from 8,491 to 8,089. This result combined with the fact that a portion of employer contributions on re-hired retiree payroll is used to finance the unfunded accrued liability (UAL) suggests there is no material impact on the payroll growth assumption utilized in the actuarial valuation to determine the UAL contribution rate. Therefore no specific re-hired retiree assumption is deemed necessary.

Actuarial Cost Method: The cost method is used to allocate the present value of benefits between past service (actuarial accrued liability) and future service (normal cost). Currently the valuation uses the entry age normal cost method. This is the most widely used cost method of large public sector plans and has demonstrated the highest degree of stability as compared to alternative methods. We recommend no change in the use of this method.

Actuarial Value of Assets: The purpose of the asset smoothing is to dampen the impact that market volatility has on valuation results by spreading the unexpected market gains and losses over several years. Currently the System uses a four-year smoothing method that recognizes a portion of the difference between the market value of assets and the expected market value of assets, based on the assumed rate of return. The amount recognized each year is 25% of the difference between market value and expected market value. The actuarial value of assets cannot be less than 80% or more than 120% of market value. We recommend no change in the use of this method.

Amortization Method: The unfunded actuarial accrued liability is amortized using a level percentage of payroll method over the amortization period. The payroll growth assumption is used to determine the percentage of payroll required over the remaining amortization period to fully amortize the unfunded liability. The current payroll growth rate is 4.00%. We recommend no change in this assumption since it is still consistent with our long-term expected rate of wage inflation. Since 2001, the average annual payroll growth of the system has been 4.14%.

Summary and Cost of Changes

As a result of the experience investigation, we are recommending revised rates of withdrawal, disability, pre-retirement mortality, service retirement and assumed compensation increases for active members.

We have also provided recommendations for the economic assumptions to use for the Basic Benefit Plan. We recommend maintaining the current rate of return of 5.25% for the Health Care Plan.

When these proposed assumption changes are applied to the June 30, 2010 valuation, the results will change. The change in results represents the financial impact of adopting the proposed assumptions. The impact on the Basic Benefit Plan is show in the table below. The impact on the Retiree Health Care Plan is shown in the table on the following page.

BASIC BENEFIT PLAN

	Valuation 6/30/2010	Assumption Changes
Employer Contribution Rate:		
Normal Rate	3.79%	1.70%
UAAL	8.78%	9.40%
Total Employer Rate	12.57%	11.10%
Actuarial accrued liability	$15,221,613,181	$15,646,353,224
Actuarial value of assets	$10,909,119,440	$10,909,119,440
UAAL	$4,312,493,741	$4,737,233,784
Amortization Period	29	29

RETIREE HEALTH CARE PLAN

	Valuation 6/30/2010	Assumption Changes
Employer Contribution Rate:		
Normal Rate	3.09%	2.74%
UAAL	2.84%	3.00%
Total Required Employer Rate	5.93%	5.74%
Actuarial accrued liability	$2,369,143,720	$2,485,586,826
Actuarial value of assets	$325,004,169	$325,004,169
UAAL	$2,044,139,551	$2,160,582,657
Solvency Period	2018	2019
Amortization Period	30	30

Historical June CPI (U) Index

Year	CPI (U)	Year	CPI (U)
1959	29.10	1985	107.60
1960	29.60	1986	109.50
1961	29.80	1987	113.50
1962	30.20	1988	118.00
1963	30.60	1989	124.10
1964	31.00	1990	129.90
1965	31.60	1991	136.00
1966	32.40	1992	140.20
1967	33.30	1993	144.40
1968	34.70	1994	148.00
1969	36.60	1995	152.50
1970	38.80	1996	156.70
1971	40.60	1997	160.30
1972	41.70	1998	163.00
1973	44.20	1999	166.20
1974	49.00	2000	172.40
1975	53.60	2001	178.00
1976	56.80	2002	179.90
1977	60.70	2003	183.70
1978	65.20	2004	189.70
1979	72.30	2005	194.50
1980	82.70	2006	202.90
1981	90.60	2007	208.35
1982	97.00	2008	218.82
1983	99.50	2009	215.69
1984	103.70	2010	217.96

Capital Market Assumptions and Asset Allocation

Rates of Return and Standard Deviation by Asset Class

Asset Class	Real Return	Standard Deviation
Cash	0.00%	1.75%
US Stocks	5.00%	18.00%
Non-US Stocks	5.50%	21.00%
Fixed Income	1.50%	4.50%
Private Equity	10.00%	16.00%
Real Estate	5.00%	7.00%
Hedge Funds	7.50%	11.50%

Asset Class Correlation Coefficients

	Cash	US Stocks	Non-US Stocks	Fixed Income	Private Equity	Real Estate	Hedge Funds
Cash	1.00	0.05	0.00	0.10	0.19	0.38	0.30
US Stocks	0.05	1.00	0.88	-0.52	0.74	0.49	0.40
Non-US Stocks	0.00	0.88	1.00	-0.42	0.73	0.51	0.53
Fixed Income	0.10	-0.52	-0.42	1.00	-0.83	-0.23	-0.04
Private Equity	0.19	0.74	0.73	-0.83	1.00	0.40	-0.26
Real Estate	0.38	0.49	0.51	-0.23	0.40	1.00	0.52
Hedge Funds	0.30	0.40	0.53	-0.04	-0.26	0.52	1.00

Asset Allocation Targets

Asset Class	Allocation Percentages
Cash	1.00%
US Stocks	22.50%
Non-US Stocks	22.50%
Fixed Income	19.00%
Private Equity	10.00%
Real Estate	10.00%
Hedge Funds	15.00%

Social Security Administration Wage Index

Year	Wage Index	Annual Increase	Year	Wage Index	Annual Increase
1957	$3,641.72		1984	$16,135.07	5.88%
1958	3,673.80	0.88%	1985	16,822.51	4.26
1959	3,855.80	4.95	1986	17,321.82	2.97
1960	4,007.12	3.92	1987	18,426.51	6.38
1961	4,086.76	1.99	1988	19,334.04	4.93
1962	4,291.40	5.01	1989	20,099.55	3.96
1963	4,396.64	2.45	1990	21,027.98	4.62
1964	4,576.32	4.09	1991	21,811.60	3.73
1965	4,658.72	1.80	1992	22,935.42	5.15
1966	4,938.36	6.00	1993	23,132.67	0.86
1967	5,213.44	5.57	1994	23,753.53	2.68
1968	5,571.76	6.87	1995	24,705.66	4.01
1969	5,893.76	5.78	1996	25,913.90	4.89
1970	6,186.24	4.96	1997	27,426.00	5.84
1971	6,497.08	5.02	1998	28,861.44	5.23
1972	7,133.80	9.80	1999	30,469.84	5.57
1973	7,580.16	6.26	2000	32,154.82	5.53
1974	8,030.76	5.94	2001	32,921.92	2.39
1975	8,630.92	7.47	2002	33,252.09	1.00
1976	9,226.48	6.90	2003	34,064.95	2.44
1977	9,779.44	5.99	2004	35,648.55	4.65
1978	10,556.03	7.94	2005	36,952.94	3.66
1979	11,479.46	8.75	2006	38,651.41	4.60
1980	12,513.46	9.01	2007	40,405.48	4.54
1981	13,773.10	10.07	2008	41,334.97	2.30
1982	14,531.34	5.51	2009	40,711.61	-1.51
1983	15,239.24	4.87			

Recommended Rates of Withdrawal and Salary Increases

Years of Service	Rates of Withdrawal	Rates of Salary Increases
Less than 1	45.00%	22.00%
1	31.00%	12.00%
2	23.00%	9.50%
3	17.00%	8.00%
4	13.00%	7.00%
5	9.00%	6.00%
6	7.00%	5.25%
7	6.00%	5.00%
8	5.00%	4.50%
9	4.50%	4.25%
10	4.00%	4.00%
11	3.50%	4.00%
12	3.00%	4.00%
13	2.50%	4.00%
14	2.00%	4.00%
15	2.00%	4.00%
16	2.00%	4.00%
17	2.00%	4.00%
18	2.00%	4.00%
19	2.00%	4.00%
20	2.00%	4.00%
21	1.50%	4.00%
22	1.50%	4.00%
23	1.50%	4.00%
24	1.50%	4.00%
25	1.50%	4.00%
26	1.50%	4.00%
27	1.50%	4.00%
28	1.50%	4.00%
29	1.50%	4.00%

Recommended Rates of Retirement

	Unreduce Retirement		Reduced Retirement	
Age At Retirement	Males	Females	Males	Females
50 & Under	28.00%	25.00%		
51	21.00%	21.00%		
52	21.00%	21.00%		
53	21.00%	21.00%		
54	21.00%	21.00%		
55	20.00%	21.00%	14.00%	13.00%
56	18.00%	17.00%	14.00%	13.00%
57	18.00%	17.00%	14.00%	13.00%
58	18.00%	17.00%	14.00%	13.00%
59	18.00%	17.00%	14.00%	13.00%
60	18.00%	17.00%	8.50%	9.50%
61	18.00%	19.00%	8.50%	9.50%
62	20.00%	20.00%	8.50%	9.50%
63	18.00%	18.00%	8.50%	9.50%
64	18.00%	18.00%	8.50%	9.50%
65	25.00%	25.00%		
66	14.00%	14.00%		
67	14.00%	14.00%		
68	14.00%	14.00%		
69	14.00%	14.00%		
70	14.00%	14.00%		
71	14.00%	14.00%		
72	14.00%	14.00%		
73	14.00%	14.00%		
74	14.00%	14.00%		
75	100.00%	100.00%		

Recommended Rates of Disability

Age	Rates of Disability		Age	Rates of Disability	
	Male	Females		Male	Females
15	0.020%	0.020%	43	0.270%	0.136%
16	0.020%	0.020%	44	0.290%	0.152%
17	0.020%	0.020%	45	0.310%	0.168%
18	0.020%	0.020%	46	0.330%	0.184%
19	0.020%	0.020%	47	0.350%	0.200%
20	0.020%	0.020%	48	0.370%	0.220%
21	0.020%	0.020%	49	0.390%	0.240%
22	0.020%	0.020%	50	0.410%	0.260%
23	0.026%	0.020%	51	0.430%	0.280%
24	0.032%	0.020%	52	0.450%	0.300%
25	0.038%	0.020%	53	0.470%	0.320%
26	0.044%	0.020%	54	0.490%	0.340%
27	0.050%	0.020%	55	0.510%	0.360%
28	0.056%	0.022%	56	0.530%	0.380%
29	0.062%	0.024%	57	0.550%	0.400%
30	0.068%	0.026%	58	0.550%	0.400%
31	0.074%	0.028%	59	0.550%	0.400%
32	0.080%	0.030%	60	0.550%	0.400%
33	0.094%	0.038%	61	0.550%	0.400%
34	0.108%	0.046%	62	0.550%	0.400%
35	0.122%	0.054%	63	0.550%	0.400%
36	0.136%	0.062%	64	0.550%	0.400%
37	0.150%	0.070%	65	0.550%	0.400%
38	0.170%	0.080%	66	0.550%	0.400%
39	0.190%	0.090%	67	0.550%	0.400%
40	0.210%	0.100%	68	0.550%	0.400%
41	0.230%	0.110%	69	0.550%	0.400%
42	0.250%	0.120%	70	0.550%	0.400%