GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

SOUTH CAROLINA RETIREMENT SYSTEM

2011 ACTUARIAL EXPERIENCE STUDY
FOR THE PERIOD ENDING JUNE 30, 2010

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October 23, 2011

State Budget and Control Board
South Carolina Retirement System
P.O. Box 11960
Columbia, SC 26211-1960

Dear Members of the Board:

Subject: Results of 2011 Experience Study

We are pleased to present our report of the 2011 Experience Investigation Study for the South Carolina Retirement System (SCRS) and the Police Officers Retirement System (PORS). Our report includes a discussion of the recent experience of the System, it presents our recommendations for new actuarial assumptions and methods, and it provides information about the actuarial impact of these recommendations on the liabilities and other key actuarial measures of SCRS.

Using the recommended set of actuarial assumptions should present a more accurate portrayal the of the System's financial condition and should reduce the magnitude of future experience gains and losses.

This experience investigation study was conducted in accordance with generally accepted actuarial principles and practices, and in full compliance with the Actuarial Standards of Practice as issued by the Actuarial Standards Board. All of the undersigned are members of and meet the Qualification Standards of the American Academy of Actuaries.

We wish to thank the SCRS staff for their assistance in this project.

Sincerely,

Joseph P. Newton, FSA, EA, MAAA
Senior Consultant and Actuary

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Table of Contents

	PAGE	COVER LETTER
	2	SUMMARY OF PROCESS
SECTION I	4	INTRODUCTION
SECTION II	8	SUMMARY OF RECOMMENDATIONS
SECTION III	13	ANALYSIS OF EXPERIENCE AND RECOMMENDATIONS
SECTION IV	40	ACTUARIAL IMPACT OF RECOMMENDATIONS
SECTION V	47	SUMMARY OF NEW ASSUMPTIONS (SCRS)
SECTION VI	59	SUMMARY OF NEW ASSUMPTIONS (PORS)
SECTION VII	68	SUMMARY OF DATA AND EXPERIENCE

Summary of Process

A periodic review and selection of the actuarial assumptions is one of many important components of understanding and managing the financial aspects of the South Carolina Retirement System. Use of outdated or inappropriate assumptions can result in understated costs which will lead to higher future contribution requirements or perhaps an inability to pay benefits when due; or, on the other hand, produce overstated costs which place an unnecessarily large burden on the current generation of members, employers, and taxpayers.

A single set of assumptions is typically not expected to be suitable forever. As the actual experience of the retirement changes, the assumptions should be reviewed and adjusted accordingly.

It is important to recognize that the impact from various outcomes and the ability to adjust from experience deviating from the assumption are not symmetric. Due to compounding economic forces, legal limitations, and moral obligations outcomes from underestimating future liabilities are much more difficult to manage than outcomes of overestimates, and that un-symmetric risk should be considered when the assumption set, investment policy and funding policy are created. As such, the assumption set used in the valuation process needs to represent the best estimate of the future experience of the System and be at least as likely, if not more than likely, to overestimate the future liabilities versus underestimate them.

Using this strategic mindset, each assumption was analyzed compared to the actual experience of SCRS and general experience of other large public employee retirement systems. Changes in certain assumptions and methods are suggested upon this comparison to remove any bias that may exist and to perhaps add in a slight margin for future adverse experience where appropriate. Next, the assumption set as a whole was analyzed for consistency and to ensure that the projection of liabilities was reasonable and consistent with historical trends.

The following report provides our recommended changes to the current actuarial assumptions.

SECTION I

INTRODUCTION

Introduction

In determining liabilities, contribution rates and funding periods for retirement plans, actuaries must make assumptions about the future. Among the assumptions that must be made are:

- Retirement rates
- Mortality rates
- Termination rates
- Disability rates
- Investment return rate
- Salary increase rates
- Inflation rate

For some of these assumptions, such as the mortality rates, past experience provides important evidence about the future. For other assumptions, such as the investment return rate, the link between past and future results is much weaker. In either case, though, actuaries should review their assumptions periodically and determine whether these assumptions are consistent with actual past experience and with anticipated future experience.

This study is generally based on experience during the five-year period of July 1, 2005 to June 30, 2010. The last experience study was prepared in 2008 by Milliman following completion of the July 1, 2007 actuarial valuation report.

In conducting experience studies, actuaries generally use data over a period of several years. This is necessary in order to gather enough data so that the results are statistically significant. In addition, if the study period is too short, the impact of the current economic conditions may lead to misleading results. It is known, for example, that the health of the general economy can impact salary increase rates and termination rates. Using results gathered during a short-term boom or bust will not be representative of the long-term trends in these assumptions. Also, the adoption of legislation, plan improvements or changes in salary schedules will sometimes cause a short-term distortion in the experience. For example, if an early retirement window was opened during the study period, we would usually see a short-term spike in the number of retirements followed by a dearth of retirements for the following two-to-four years. Using a longer period prevents giving too much weight to such short-term effects. On the other hand, using a much longer period increases the difficulty of identifying changes in behavior that may be occurring, such as mortality improvement or a change in the ages at which members retire. In our view, using a four to five-year period is reasonable. However, note that in our analysis of termination and salary increases, we incorporated eight years of experience to reduce the likelihood the assumptions are over adjusted due to short-term economic effects.

In an experience study, we first determine the number of deaths, retirements, etc. that occurred during the period. Then we determine the number expected to occur, based on the current actuarial assumptions. The number "expected" is determined by multiplying the probability of the occurrence at the given age, by the "exposures" at that same age. For example, let's look at a rate of retirement of 15% at age 55. The number of exposures can only be those members who are age 55 and eligible for retirement at that time. Thus they are considered "exposed" to that assumption. Finally we calculate the A/E ratio, where "A" is the actual number (of retirements, for example) and "E" is the expected number. If the current assumptions were "perfect", the A/E ratio would be 100%. When it varies much from this figure, it is a sign that a new assumption may be needed. (However, in some cases we prefer to set our assumptions to produce an A/E ratio a little above or below 100%, in order to introduce some conservatism.) Of course we not only look at the assumptions as a whole, but we also review how well they fit the actual results by gender, by age, and by service.

Finally, if the data leads the actuary to conclude that new tables are needed, the actuary "graduates" or smoothes the results since the raw results can be quite uneven from age to age or from service year to service year.

Please bear in mind that, while the recommended assumption set represents our best estimate, there are other reasonable assumption sets that could be supported. Some reasonable assumption sets would show higher or lower liabilities or costs.

Organization of Report

Section II of this report summarizes our recommended changes. Section III contains our findings and a more detailed analysis of our recommendation for each actuarial assumption. The impact of adopting our recommendations on liabilities and contribution rates is shown in Section IV. Section V & VI show a summary of the recommended assumptions. Finally, Section VII presents detailed summaries of the data and comparisons of the A/E ratios.

Plans

This study pertains to the following plans:

- South Carolina Retirement System (SCRS)
- Police Officers Retirement System (PORS)

Throughout the report, we will refer to each individual plan by SCRS and PORS. We will use the term "System" to refer to both plans.

SECTION VI EXHIBITS

The exhibits in Section VI should generally be self-explanatory. For example, on page 101, we show the exhibit analyzing the police service-based termination rates. The second column shows the total number of members who terminated during the study period. This excludes members who died, became disabled or retired. Column (3) shows the total exposures. This is the number of members who could have terminated during any of the years. In this exhibit, the exposures exclude anyone eligible for retirement. A member is counted in each year they could have terminated, so the total shown is the total exposures for the study period. Column (4) shows the probability of termination based on the raw data. That is, it is the result of dividing the actual number of terminations (col. 2) by the number exposed (col. 3). Column (5) shows the current termination rate and column (6) shows the new recommended termination rate. Columns (7) and (8) show the expected numbers of terminations based on the current and proposed termination assumptions. Columns (9) and (10) show the Actual-to-Expected ratios under the current and proposed termination assumptions.

SECTION II

SUMMARY OF RECOMMENDATIONS

Summary of Recommendations

Our recommended changes to the current actuarial assumptions may be summarized as follows:

Economic Assumptions

1. We recommend reducing the current 3.00% inflation assumption to 2.75%, placing it closer to recent inflation levels and closer to the levels expected in the financial markets, forecasts by economists, and investment professionals. As you will see, this change affects other economic assumptions.

2. Reduce the nominal investment return assumption from 8.00% to 7.50%, taking into account the lower inflation assumption and decreasing the expected net real return by 0.25%. Based on current capital market assumptions from NEPC and PCA, a 7.50% investment return would be in an ideal range that is between the expected arithmetic return based on the target asset allocation and the median expected geometric return (compounded over a 10 year period).

3. Reduce the productivity component of the salary scale assumption by 0.25%, from 1.00% to 0.75% for SCRS and from 1.50% to 1.25% for PORS. This recommendation reflects a reduction in the spread between inflation and salary increases experienced in the overall economy and the expectation of lower future salary increases due to continued budgetary constraints for employers. Combining with the inflation rate of 2.75% results in an ultimate wage inflation assumption of 3.50% for SCRS and 4.00% for PORS.

4. In accordance with the observed experience, increase the service-based promotional/longevity component of the salary scale for all groups.

5. In conjunction with the reduced price and wage inflation assumptions, reduce the payroll growth rate assumption from 4.00% to 3.50%. In addition, we recommend changing the current assumption that the proportion of payroll represented by members in TERI or RTW status will remain consistent throughout time. Due to changing demographics and the size of the baby boomer generation, the total number of members in these two programs will decrease from current levels over the next 10-15 years. We recommend an assumption that the payroll in this category will remain flat for 10 years and then begin to grow at the payroll growth rate. Changing the payroll growth assumption has no impact on the liabilities, but does assume there is a lower growth in the future payroll to amortize the UAAL, which results in an increase in the current contribution requirements.

6. It is our understanding that the Board's adoption of an investment return assumption that is less than 8.00% will lower the maximum amount of the automatic COLA from 2.0% to 1.0% for SCRS and completely eliminate the 2% automatic COLA for PORS. If correct, then we will need to discuss with Staff and Board the likelihood of granting future ad hoc COLAs for these

groups to identify whether a COLA assumption should be incorporated into the assumptions for these future increases.

Mortality Assumptions

7. Update the post-retirement mortality tables for non-disabled retirees to the RP-2000 mortality tables with adjustments to better fit the Plan's experience. In addition, we are proposing to add an explicit assumption for continuous increases in life expectancy by projecting future mortality improvements by scale AA. Because of this assumption of continuous improvement, life expectancies for today's younger active members are expected to be materially longer than those of today's retirees. This recommended assumption change has a significant impact on costs and liabilities.

8. Update the disabled post-retirement mortality assumption to the RP-2000 disabled mortality tables with adjustments to be a better fit to the Plan's experience.

9. Recommend adjustments to the current client specific table used for active mortality across all groups.

Other Demographic Assumptions

10. Change the structure of the retirement pattern from solely being age based with an additional increase at first eligibility to a distinct age based table if the member attains the age retirement condition first (age 65 for SCRS and age 60 for PORS) and service related pattern if the member attains the service retirement condition first (28 years of eligibility service for SCRS and 25 years of eligibility service for PORS). Overall, there were fewer actual retirements during the experience period than expected under the current assumption which is consistent with national trends. The recommended tables expect slightly lower patterns of retirement.

11. Recommend no change to the current termination assumptions for the first 10 years of employment for SCRS. Recommend changing the assumption during the ultimate period (after 10 years) to be based on years from retirement eligibility instead of the current age related assumptions. This methodology has shown to more closely match the experience for a plan with multiple retirement eligibility conditions (age 60&5, age 55&25, 28&out). Overall, the recommended assumptions will assume more members reach retirement once they are within 10 years of retirement.

    For PORS, the entry ages for members are clustered closer together at younger ages and a majority of members attain the 25&out condition for retirement eligibility. Therefore, we recommend modifying the structure of the termination assumption to be based only on the member's service. We also recommend increasing the overall termination rates to better match anticipated experience.

12. Recommend continued methodology for modeling the TERI and return to work (RTW) provisions by accruing all the liability for active members before they enter TERI or initially retire. This is a conservative approach versus accruing the liability over the total active career (including time in TERI or while returned to work).

    Recommend no longer differentiating between members who will enter the TERI program in the future from members who will utilize the RTW provisions. From the Plan's perspective, these two programs are similar in cost and in many circumstances the RTW provisions are slightly more favorable to the member.

13. Recommend adding an explicit assumption to model the experience that members often purchase service to enable them to immediately become eligible for retirement. An assumption will be added for portions of the active population to begin purchasing service to enable them to retire under the service only eligibility conditions when they are within five years away from retirement.

14. Make no change to the rates of disability.

15. Make no change to the current 100% marriage assumption and spousal age difference.

16. Make no change to the current unused sick leave or annual leave adjustments used in the calculation of a member's retirement benefit.

Actuarial Methods and Policies

17. Our recommendation is to change to a 5-year asset smoothing method without a corridor. Under this method, investment gains and losses will be recognized at the rate of 20% per year for each of the five years after they occur. Alternatively, if the 10-year smoothing method is continued to be used, we recommend adopting an asset corridor, such that the actuarial value of assets does not deviate more than 20% of the market value as of that date. If either recommendation is adopted, they would be applied on a prospective basis; so there will be no change to actuarial value of assets calculated as of June 30, 2010.

18. The individual Entry Age Normal cost method (EAN) is the current funding method being used to allocate the actuarial costs of the System. The Entry Age Normal method will generally produce relatively level contribution amounts as a percentage of payroll from year to year, and allocates costs among various generations of taxpayers in a reasonable manner. It is by far the most commonly used actuarial cost method for large public retirement systems. We continue to believe this is the most appropriate funding method and recommend no change.

    For members who have correlated service with another employer, the cost method will assume the member has no accrued liability at the date of hire and will accrue all benefits from the hire

date with the current employer. Service from the other employers will be used in determining retirement eligibilities, but not in allocating the accruals over the career of the employee.

19. Recommend the valuation process use correlated service from other Systems (SCRS and PORS) in the determination of the liabilities and contribution requirements. This service should be used in the valuation to determine the retirement eligibility for each member, which will more accurately calculate the projected liability.

20. Recommend using the actual aggregate valuation payroll from the prior year rolled forward with one year's payroll growth rate to determine the estimated valuation payroll for the next fiscal year as well as projecting covered payroll for future fiscal years. The current methodology performs this calculation at the individual member basis, increasing each currently active member's salary by one salary scale, including annualizing the salary for new members, and totaling the projected salaries. While the current method is commonly used, it can have a bias to overestimate covered payroll and can be inconsistent in the handling of TERI and RTW payroll because it will not include the payroll for members who left TERI or RTW status during the year. By using the projected aggregate covered payroll from the prior fiscal year for these groups, the entry and exit of members during the year will be more appropriately reflected.

SECTION III

ANALYSIS OF EXPERIENCE AND RECOMMENDATIONS

Analysis of Experience and Recommendations

We will begin by discussing the economic assumptions: inflation, expenses, the investment return rate, the salary increase assumption, and the rate of payroll growth. Next are the demographic assumptions: mortality, disability, termination and retirement. Finally, we will discuss all of the actuarial methods used.

ECONOMIC ASSUMPTIONS

Actuaries are guided by the Actuarial Standards of Practice (ASOP) adopted by the Actuarial Standards Board (ASB). One of these standards is ASOP No. 27, Selection of Economic Assumptions for Measuring Pension Obligations. This standard provides guidance to actuaries giving advice on selecting economic assumptions for measuring obligations under defined benefit plans.

As 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 economic assumptions are much more subjective in nature than the demographic assumptions. 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 current standard calls for the actuary to develop a best estimate range for each economic assumption, and then recommend a specific point within that range. (This standard is currently being revised, and an Exposure Daft of a revised standard has been published. Under the revised standard, the range concept is eliminated because it is considered too broad. Instead, the new standard will require the actuary to set an assumption, generally a single-point estimate)

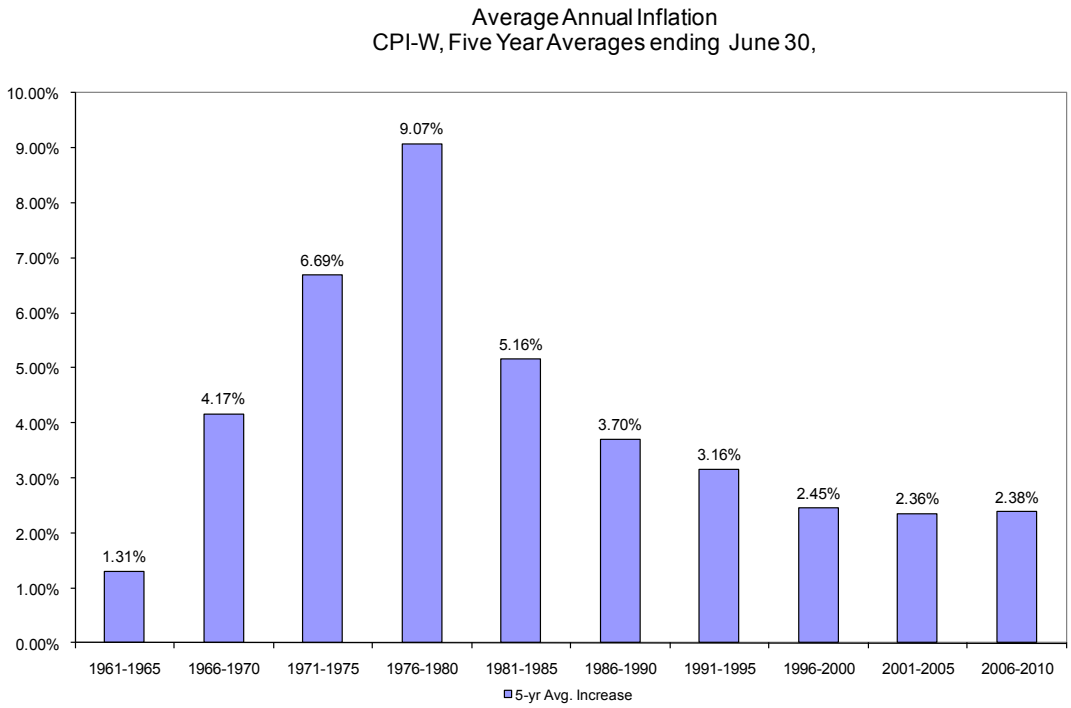
Each economic assumption should individually satisfy this standard. Furthermore, with respect to any particular valuation, each economic assumption should be consistent with every other economic assumption over the measurement period. This last point will be emphasized in this report as we are recommending a decrease to the inflation assumption, which impacts all of the other economic assumptions, as well as recommending a decrease in the spread above inflation for all of the individual assumptions to reflect lower anticipated economic growth.

Inflation rate

By “inflation,” we mean price inflation, as measured by annual increases in the Consumer Price Index (CPI). This inflation assumption underlies most of the other economic assumptions. It impacts investment return, salary increases, payroll growth, and cost-of-living increases. The current annual inflation assumption is 3.00%.

It should be noted that for most Retirement Systems, a higher inflation assumption is more aggressive when valuing the liability and cost. Even though a higher inflation assumption will project higher salary increases and possibly higher cost of living adjustments, a higher inflation assumption also provides a means to inflate the nominal investment return assumption which results in a lower liability and cost, and overstate the payroll growth assumption which will result in a lower cost over the short term.

The chart on the next page shows the average annual inflation in each of the ten consecutive five-year periods over the last fifty years:



The following table shows the average inflation over various periods, ending June 30, 2010:

Periods Ending June 30, 2010	Average Annual Increase in CPI-W
Last five (5) years	2.38%
Last ten (10) years	2.37%
Last fifteen (15) years	2.40%
Last twenty (20) years	2.59%
Last twenty-five (25) years	2.81%
Last thirty (30) years	3.20%
Since 1913 (first available year)	3.23%

Source: Bureau of Labor Statistics, CPI-W, all items, not seasonally adjusted

As you can see, while inflation has been relatively low over the last twenty-five years, if we look back over a period of 30 or more years, inflation has averaged slightly above 3.00% per year. However, it is hard to ignore the steady decline in inflation statistics over the last 25 years shown in the charts above.

Most of the investment consulting firms, in setting their capital market assumptions, currently assume that inflation will be less than 3.00%. However, the investment consulting firms typically set their assumptions based on a five or ten year outlook, while actuaries must make much longer projections. We examined the 2011 capital market assumption sets from several investment consulting firms and found their average assumption for inflation was 2.64%, with a range of 2.30% to 3.00%. NEPC, SCRS's investment consulting assumes an inflation rate of 3.00%.

Another source of information about future inflation is the market for US Treasury bonds. For example, the July 1, 2011 yield for 20-year inflation indexed Treasury bonds was 1.47% plus actual inflation. The yield for 20-year non-indexed US Treasury bonds was 4.12%. Simplistically, this means that on that day the bond market was predicting that inflation over the next twenty years would average 2.65% (4.12% – 1.47%) per year. A few years ago the US Treasury recently began reissuing 30-year TIPs, and the imputed 30-year inflation level is close to the 20-year level. The calculation using the 10 year bond projects 2.45%. This is consistent with most forecasts of inflation and overall economic growth being lower over the next decade.

However, this analysis is known to be imperfect. It ignores the inflation risk premium that buyers of US Treasury bonds often demand, and it ignores the differences in liquidity between US Treasury bonds and TIPS.

In the Social Security Administration's 2011 Trustees Report, the Office of the Chief Actuary is projecting a long-term average annual inflation rate of 2.8% under the intermediate cost assumption. (The inflation assumption is 1.8% and 3.8% respectively in the low cost and high cost projection scenarios.) These inflation assumptions were unchanged from their prior year's report.

The Philadelphia Federal Reserve conducts a quarterly survey of the Society of Professional Forecasters. Their most recent forecast (second quarter of 2011) was for inflation over the next ten years to average 2.40%. Most observers expect inflation to continue to be low as the economy works out of the recession. However, the Society of Professional Forecasters is implicitly assuming a 2.45% inflation rate from 2016-2020, so it is not just the next 2-3 years that is depressing inflation forecasts.

Using these sources, we believe the reasonable range for inflation is between 2.50% and 3.25%. We recommend reducing the current 3.00% assumption to 2.75%, placing it closer to recent inflation levels and closer to the levels expected in the financial markets. This is equal to PCA's forecast and 25 basis points lower than NEPC's inflation assumption. As you will see, this change also affects other economic assumptions.

Investment and administrative expenses

Since the trust fund pays investment and administrative expenses from plan assets, it is appropriate to make an assumption about expected expenses. The 2009-2010 Annual Investment Report disclosed that the total expenses for the plan, net of security lending activities, was $316,497,000 for fiscal year 2010. This is approximately 1.40% of total assets. Plan expenses may be explicitly assumed as a direct increase to the annual normal cost or implicitly assumed by developing an investment return assumption as a net return after payment of plan expenses. We believe the development of an implicit expense assumption to net against investment returns is an appropriate method for the valuation of the System.

It is prevalent practice for investment consulting firms to develop their forward-looking capital market and return assumptions as net of investment fees. This means the significant portion of future investment expenses such as advisory, management, performance based, and brokerage fees will be reflected by fact that the investment consultant's forward-looking return expectations have been lowered to reflect these anticipated expenses. This is especially the case for the investments that require intensive management or often have performances based fees, such as the case with alternative type investments.

However, there are numerous types of expenses that are incurred by the retirement system and we believe the investment consulting firms do not capture all of them in their estimates. These other expenses would be more administrative in nature such as internal administration, actuarial, audit, and custodial type's fees. These types of fees are smaller than investment related expenses, but nevertheless, also need to be reflected into developing a valuation interest rate assumption.

We believe a reasonable method to determine the amount of these other expenses is to identify those that are separately disclosed in the Systems Comprehensive Annual Financial Report (CAFR), which are presumably directly paid by the System, rather than as an offset to gross investment returns. The table below shows those administrative and other investment expenses

separately reported by the CAFR for each of the last five years expressed as a percentage of the assets, adjusted for cash flow:

Direct Expenses Expressed as a Percentage Assets			
Fiscal Year	Administrative	Investment	Total
2010	0.10%	0.25%	0.35%
2009	0.08%	0.17%	0.25%
2008	0.08%	0.24%	0.32%
2007	0.07%	0.14%	0.21%
2006	0.07%	0.12%	0.19%
Average	0.08%	0.18%	0.26%

The increase in the investment related expenses in 2008 through 2010 are likely as a result of the change in investment policy to utilize more active investment strategies as well as dedicate an increased portion of the System's portfolio to alternative investments.

Based on this information, we have assumed that other investment and administrative expenses will consume 0.30% (30 basis points) of each year's investment return. This other expense assumption is based on the 5-year average of the administrative expenses and the last 3-year average of the separately disclosed investment related expenses in the CAFR.

Therefore, in total, we are explicitly assuming a 0.30% expense assumption and the forward-looking capital market return estimates include an implicit annual expense assumption of 1.0% for a total annual expense assumption that is 1.30% of plan assets.

Investment Return Assumption

The investment return assumption is one of the principal assumptions in any actuarial valuation of a retirement plan. It is used to discount future expected benefit payments to the valuation date, in order to determine the liabilities of the plans. Even a small change to this assumption can produce significant changes to the liabilities and contribution rates.

ASOP 27 – Current Standard of Practice

Actuaries are required to comply with Actuarial Standard of Practice No. 27 (ASOP 27) in setting economic assumptions for retirement plans, including the assumed investment return rate.

In a public retirement system like SCRS, it is ultimately the Retirement Board's responsibility, as fiduciaries, to set the actuarial assumptions used in the actuarial valuations and used to set the contribution rates. It is the actuary's duty to provide the Board with information needed to make those decisions, and to make recommendations to the Board. Although the Board is the ultimate decision-making body, we are still bound by ASOP 27 in providing advice or recommendations to the Board.

The standard requires the actuary to identify the components of each assumption, to evaluate relevant data, and to set a best-estimate range. Then the actuary selects a point within this best-

estimate range. Alternatively, the actuary may simply set the assumption without specifying a best-estimate range. Additionally, the ASOP requires that all economic assumptions be consistent with one another.

The best-estimate range is "the narrowest range within which the actuary reasonably anticipates that the actual results, compounded over the measurement period, are more likely than not to fall." Therefore, we must believe that just over half the time the actual compound rate of return in the future will be within this range.

ASOP 27 – Proposed New Standard of Practice

For several reasons, the actuarial profession has decided that ASOP 27 should be updated, and a new exposure draft has been published. One criticism of the current standard is that the range of potential investment return assumptions that could be considered reasonable under the current standard is too wide and the new standard will require the actuary to set an assumption, based on a narrower range, perhaps even a single-point estimate. The standard does not conclude that any other assumption would be deemed unreasonable; there is some leeway for rounding and it's unlikely that a 0.25% difference is large enough to make one "right" and the other "unreasonable." Nonetheless, an actuary who believes x% is the single-point estimate may conclude that x+0.75% or even x+0.50% is unreasonable, even if it falls within an acceptable range under the current standard.

While the new standard is not yet effective and could be changed, we believe it is appropriate to consider the new standard in performing our analysis since the recommended valuation interest rate assumption would almost certainly be used for performing actuarial valuations in years after the new standard becomes in effect.

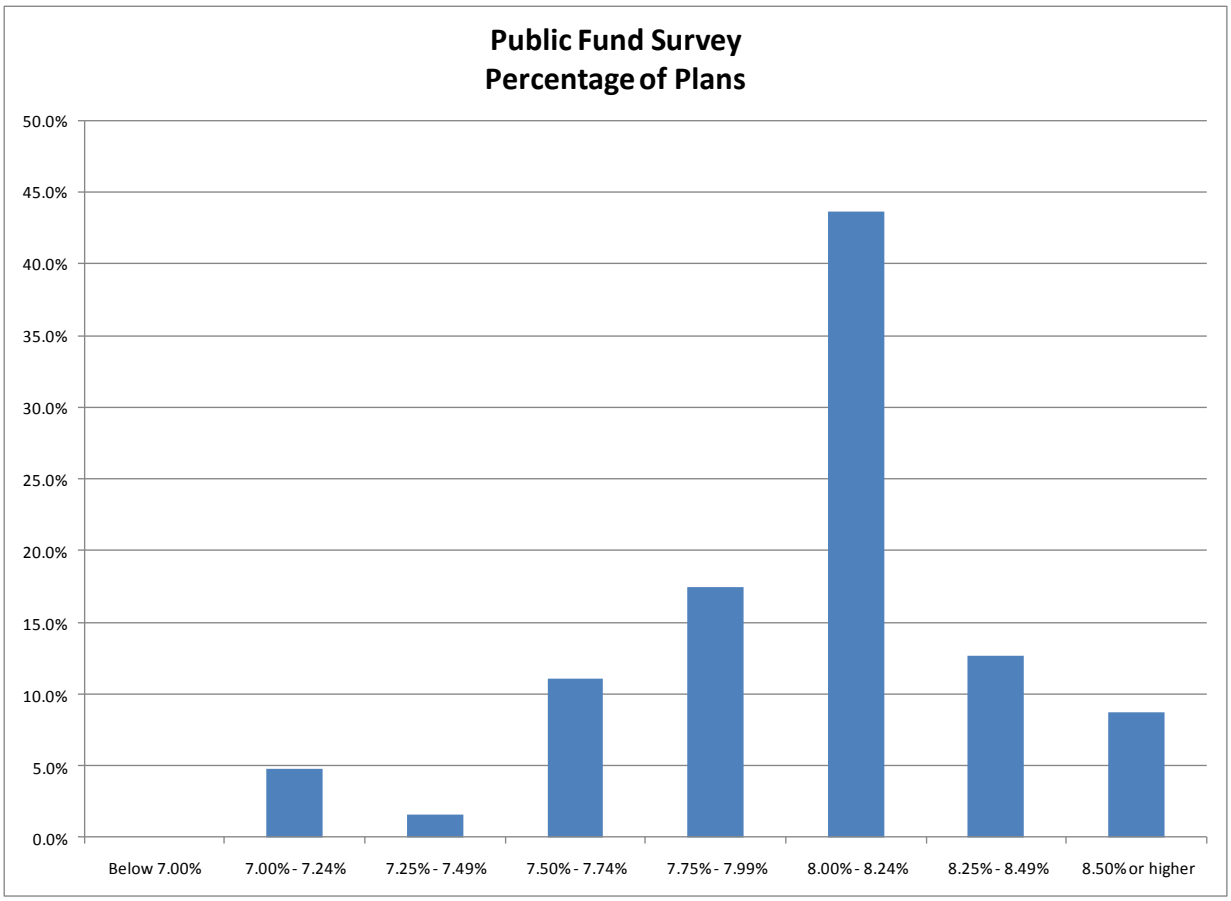
Structure of the Investment Return Assumption

We view the investment return assumption as having three components: the assumed rate of (price) inflation, the real return and an offset for expected investment and administrative expenses. The current 8.00% assumption is composed of a 3.00% assumed inflation rate plus a 5.00% assumed real return net of expenses. This "building block" approach is one explicitly permitted under ASOP 27.

We have already discussed the inflation assumption and the offset for expenses. The next section is an analysis of the real rate of return. However, the reader should note that the 0.25% decrease in the expected inflation rate implies that, even if the expected real return were unchanged, the nominal rate of return assumption should decrease by the same amount.

Comparison to Peers

Below is a table providing the prevalence of different investment return assumptions used by other statewide retirement systems. While we do not recommend the Board select an assumption based on prevalence information, it is still informative to see where SCRS is compared to its peers.

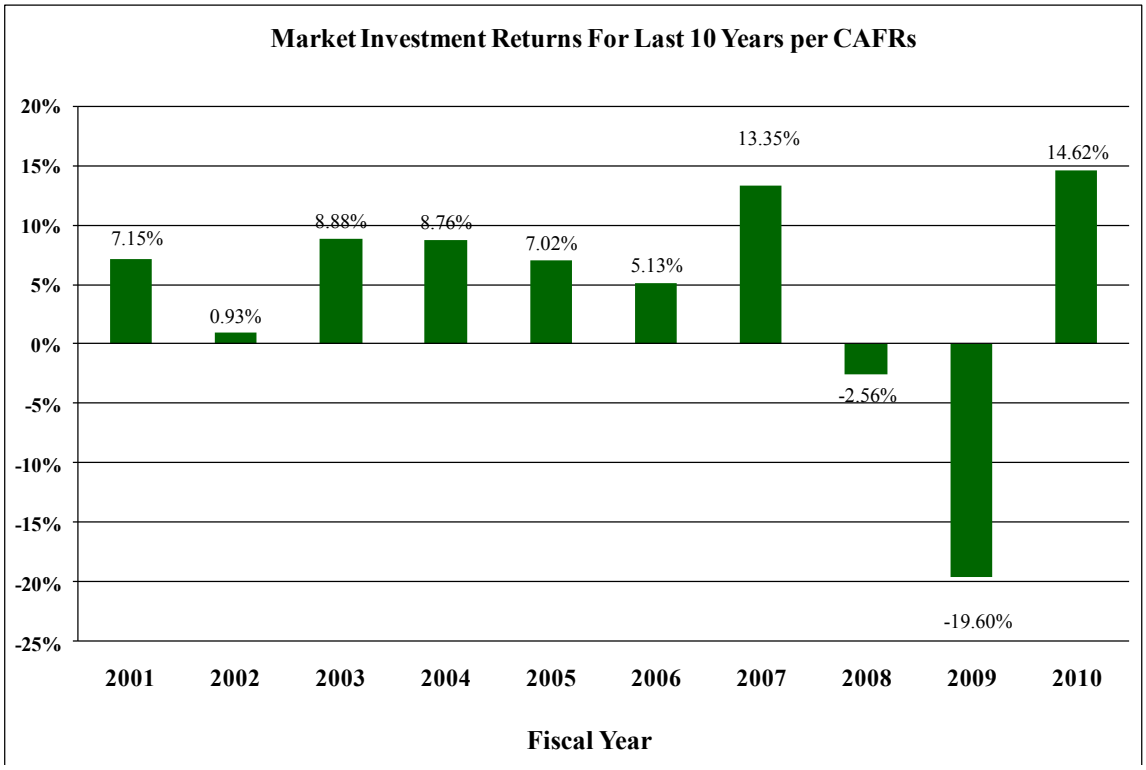


SCRS' current assumption is 8.00%.
Source: 2010 Public Funds Survey updated for known changes (n=126). Median investment return assumption: 8.00% nominal return.

While the table shows that an 8.00% assumption is currently the median, you should be aware that a comparison with this survey conducted in prior years shows there has been significant movement towards lower return assumptions. For example, in the last two years we are aware of at least 13 statewide retirement systems that have decreased their investment return assumption.

Experience

The following chart shows the year-by-year returns, for the last ten years, through 2010. While the plan did exceed the expected return assumption in four of the last ten years, the average market return during this period was only 3.96%, which is significantly less than the System's long-term return assumption.



However, for this assumption, past performance is not a reliable indicator of future performance. The actual asset allocation of the trust fund will significantly impact the overall performance, so returns achieved under a different allocation are not meaningful. Also, the rates of return for many asset classes continue to evolve as new forecast information becomes available.

Therefore, we believe the appropriate approach to selecting an investment return assumption is to determine the median expected portfolio return given the fund's target allocation and given a set of capital market assumptions.

Expected Real Returns

The allocation of assets within the universe of investment options will significantly impact the overall performance. Therefore, it is meaningful to identify the range of expected returns based on the fund's targeted allocation of investments and an overall set of capital market assumptions.

Since GRS does not provide investment consulting services, we reviewed capital market assumptions developed by NEPC, SCRSIC's investment consultant, as well as PCA, an investment consulting firm that GRS engaged to assist in the independent assessment.

The SCRS Investment Commission has employed an investment policy that includes the use of active investment management, alternative investments as well as a strategic initiative designed to generate portable alpha, i.e. a return in excess of the benchmark without materially adding risk to the investment portfolio.

When an analysis is performed to determine historical investment performance, calculating an average return based on a geometric basis is more appropriate for measuring the accumulation of wealth because it takes into account the return volatility (a.k.a. volatility drag). However, forecasting returns using a geometric average measure will generally result in a downward biased measure. On the other hand, forecasting a return using a measure based on an arithmetic average tends to have an upward bias in forward-looking estimates. The following is the synopsis from a 2003 article on this subject in the Financial Analysts Journal:

> *An unbiased forecast of the terminal value of a portfolio requires compounding of its initial value at its arithmetic mean return for the length of the investment period. Compounding at the arithmetic average historical return, however, results in an upwardly biased forecast. This bias does not necessarily disappear even if the sample average return is itself an unbiased estimator of the true mean, the average is computed from a long data series, and returns are generated according to a stable distribution. In contrast, forecasts obtained by compounding at the geometric average will generally be biased downward. The biases are empirically significant. For investment horizons of 40 years, the difference in forecasts of cumulative performance can easily exceed a factor of 2. And the percentage difference in forecasts grows with the investment horizon, as well as with the imprecision in the estimate of the mean return. For typical investment horizons, the proper compounding rate is in between the arithmetic and geometric values.*
>
> *Geometric or Arithmetic Mean: A Reconsideration* ©2003*, Eric Jacquier, Alex Kane, and Alan J. Marcus*

Because of these effects, we recommend developing a single best point estimate that is somewhere between these two averages.

We begin our analysis with the return estimates calculated by NEPC and PCA, and applied adjustments for differences in inflation assumptions and expenses to identify a reasonable assumption to use for the actuarial valuation. The table below shows how we have applied those adjustments to derive the adjusted return averages shown in lines 6. The adjusted geometric return estimate shown in line 7 was determined in a similar manner.

Investment Consultant (IC)	**NEPC**	**PCA**
1. Expected Arithmetic Return – IC	**8.11%**[1]	**8.00%**[2]
2. IC's Inflation Assumption	3.00%	2.75%
3. Real Return (2. – 1.)	5.11%	5.25%
4. Actuary's Recommend Inflation	2.75%	2.75%
5. Actuary's Expense Assumption	(0.30%)	(0.30%)
6. Adjusted Arithmetic Return Estimate (3. + 4. + 5.)	**7.56%**	**7.70%**
7. Adjusted Geometric Return Estimate[3]	**6.95%**	**7.10%**

[1] Approximate arithmetic return developed using a 7.50% geometric return and an 11.0% standard deviation documented in the NEPC document titled 2011 Asset Allocation Update dated June 16, 2011.
[2] Per summary of PCA analysis dated August 1, 2011.
[3] Developed from the investment consultants' 5-year geometric returns.

The expected returns shown above include the expected benefit from the Investment Commission's active management style and a portable alpha program. However, we should note that generating alpha returns in the proposed manner has warrant in theory, but it may be many years, before the effectiveness of this strategy can be quantified.

We also reviewed the results of calculating the expected return based on the capital market assumptions developed by Callan, RV Kuhns, and Towers Watson. The results of this analysis show their capital market assumptions, anticipate returns between 7.65% and 7.75% on an arithmetic basis and 7.09% and 7.33% on a geometric basis, which are consistent with results shown on lines 6 and 7 in the table above.

Recommendation

Given all this information, we recommend decreasing the investment return assumption from 8.00% to 7.50%. This assumption would be composed of a 0.25% decrease in the price inflation and 0.25% decrease in the real rate of return (net of expenses) components of the investment return. The 7.50% assumption is closer to the arithmetic average than the geometric average. We believe this is reasonable because the return assumptions developed by the investment consulting firms are focused on a five to ten year time horizon, which factor in the currently stressed economy. But, it is also uncertain whether investment returns after ten years will return to historical levels; therefore, we do not believe that setting a return assumption above the current arithmetic averages is appropriate.

Decreasing the investment return assumption will increase the plan's cost and liabilities. Not only is this the most subjective assumption, but it is also the most volatile. Lowering the investment return assumption will increase the probability that the return assumption is met and decrease the size of the investment loss that is incurred during years the actual investment return is less than assumed.

In addition, it is important to realize that the impact from various outcomes and the ability to adjust from experience deviating from the assumption are not symmetric. Due to compounding returns, legal limitations, and moral obligations it is much more difficult to manage a scenario of under-performance than over-performance. Therefore, scenarios of under-performance should be given more emphasis than those of over-performance.

Cost of Living Increase Assumption

It is our understanding that the Board's adoption of an investment return assumption that is less than 8.00% will lower the maximum amount of the automatic COLA from 2.0% to 1.0% for SCRS and completely eliminate the 2.0% automatic COLA for PORS. Retirees of SCRS and PORS may receive ad hoc COLAs up to the increase in CPI (4% cap) if certain financial conditions regarding the funding period and employer contribution rates are satisfied. If this correct, then we will need to discuss with Staff and Board the likelihood of granting future ad hoc COLAs for these groups to identify whether a COLA assumption should be incorporated into the assumptions for these future increases.

Based on current provisions, all annuitants in SCRS receive an automatic cost-of-living adjustment (COLA) each year equal to the annual percentage increase in the CPI, subject to a maximum of 2.00%. Although we assume price inflation will average 2.75%, inflation in any given year may be greater than or less than this. When it is less than 2.00%, the full increase will be given, based on the change in the CPI. However, when inflation is greater than 2.00%, only a 2.00% increase will be given. Therefore, the average COLA increase depends on the distribution of the CPI increases.

We performed an analysis based on an assumption that CPI increases are distributed normally with a mean of 2.75% and a standard deviation of 1.30% that would suggest the average COLA granted based on CPI limited to 2.0%% would be 1.77%. However, there are other mechanisms that could result in increases above the 2.00% limit which should be considered. Therefore, if the future expectations are for COLAs equal to current policy, we are recommending no change to the current 2.00% assumption.

Salary increase rates

In order to project future benefits, the actuary must project future salary increases. Salaries may increase for a variety of reasons:

- Across-the-board increases for all employees;
- Across-the-board increases for a given group of employees;
- Increases to a minimum salary schedule;
- Additional pay for additional duties;
- Step or service-related increases;
- Increases for acquisition of advanced degrees or specialized training;
- Promotions; or
- Merit increases, if available.

Our salary increase assumption is meant to reflect all of these types of increases, since all of these affect the salaries used in benefit calculations and upon which contributions are made.

The actuary should not look at the overall increases in payroll in setting this assumption, because payroll can grow at a rate different from the average pay increase for individual members. There are two reasons for this. First, when older, longer-service employees terminate, retire or die, they are generally replaced with new employees who have a lower salary. Because of this, in most populations that are not growing in size, the growth in total payroll is smaller than the average pay increase for members. Second, payroll can change due to an increase or decrease in the size of the group. Therefore, to analyze salary increases, we examine the actual increases for individuals.

We analyzed the salary increases based on the change in the member's reported pay from one year to the next. That is, we looked at each member who appeared as an active member in two consecutive valuations—these are called continuing members—and measured his/her salary increase.

Salary increases for governmental employees can vary significantly from year to year. When the employer's tax revenues stall or increase slowly, salary increases often are small or nonexistent. During good times, salary increases can be larger. Our experience across many governmental plans also shows many occasions in which salary increases will be low for a period of several years followed by a significant increase in one year. Therefore, for this assumption in particular, we prefer to use data over a longer period in establishing our assumptions. We used an eight-year period to analyze this assumption.

Below is a table showing the average increase given to continuing members by year for members in various groups:

Year Prior versus Year Ending	General Employees	Public School District Employees	PORS
2003	3.7%	3.8%	3.7%
2004	3.3%	3.6%	4.0%
2005	5.7%	6.7%	5.5%
2006	6.5%	5.8%	7.7%
2007	5.4%	6.3%	5.6%
2008	6.1%	6.8%	6.4%
2009	3.6%	5.7%	3.9%
2010	1.8%	3.0%	1.5%
Average	4.3%	5.2%	4.8%

The salary assumption can be thought of as consisting of wage inflation (that part of the pay increase which is given to all employees) and an additional component to reflect step increases and other increases correlated with service. Most actuaries recommend salary increase assumptions that include an element that depends on the member's age or service, especially for large, public retirement systems. It is typical to assume larger pay increases for younger or shorter-service employees. The experience shows salaries have been more closely correlated to service rather than age, as promotions and productivity increases tend to be greater in the first few years of a career, even if the new employee is older than the average new hire.

The current assumptions follow this pattern for all groups. Therefore, we divide the task of setting the salary increase into two pieces:

1. Determining the assumption for long-service employees (wage inflation)

2. Determining the additional increases to be applied to shorter-service employees

The next two subsections will discuss these components of the salary assumption.

Salary increase assumptions for long-service employees (wage inflation)

Many of the factors that result in pay increases are largely inapplicable or have diminished importance for longer-service employees. Step or service-related increase have stopped or are minimal. Promotions occur with less frequency. Additional training or acquisition of advanced degrees usually occurs early in the career. In theory, then, salary increases for longer-service employees are almost entirely driven by wage inflation. Wage inflation is the increase in the average wage of all members of the workforce. The current assumption for wage inflation is 4.00%. This can be thought of as the prior 3.00% price inflation assumption and 1.00% addition for productivity gains.

The Chief Actuarial Office for Social Security assumes a wage inflation of 4.00% (2.80% price inflation plus an additional 1.20%) in their 75 year projection forecasts under their intermediate projection assumptions.

Historically, wage inflation almost always exceeds price inflation. This is because wage inflation is in theory the result of (a) price inflation, and (b) productivity gains being passed through to wages. Since 1951, wage inflation has been about 1.00% a year larger than price inflation for the economy as a whole. However, for the last twenty years, overall wage inflation has outpaced price inflation by about 0.79%, and for the last ten years, wage inflation has exceeded price inflation by only 0.30%. This steady decline in the spread between wage growth and price inflation indicates that increases in productivity are not necessarily being shared with employees in the form of salary increases. The reasons provided by experts for this change in pattern range from increases in benefit (medical) costs being substituted for increases in salaries to corporations providing more rewards to shareholders and less to its employees.

Whatever the reason, note that the currently assumed 1.00% productivity growth is consistent with the 50-year average but noticeably larger than the last ten-year average for the economy as a whole. It is important that the wage inflation assumption be client specific and therefore we analyzed the assumption for SCRS experience.

When we examine SCRS's experience for long service members (i.e. members with more than 20 years of service), we find that over the last eight years, their increases have averaged as follows:

Employee Group	Average Salary Increase	Price Inflation	Difference
General Employees	3.72%	2.43%	1.29%
Public School District Employees	3.52%	2.43%	1.09%
PORS	3.91%	2.43%	1.48%

As you can see, on average, pay increases for long-service employees were 1.00% or more over inflation during the study period.

However, we believe the last decade will be viewed historically as a period with abnormally high wage increases in the public sector. Of the 0.30% increase above inflation for the overall economy, all of the real salary growth was from the public sector as private sector wages increased less than inflation. Also, salaries for public safety were increased dramatically post 9/11, and the effect of this is reflected in the 1.48% experience shown above. On the other hand, we know that the salary increases over the last couple of years have been very low and included very small productivity increases. With continued high unemployment and increasing budget pressures on employers, salary increases are likely to be below average for the next 5-10 years. With private sector wages being observed 0.30%-0.50% above inflation, we believe the public sector wage inflation will be closer to the private sector experience over time.

We are proposing a decrease in the productivity component of wage inflation for SCRS from 1.00% to 0.75%. Combined with the lower inflation assumption, the new long term salary scale assumption of 3.50% is composed of a 2.75% inflation rate plus 0.75% for productivity growth.

The current long term salary scale for PORS is 4.50%, which is comprised of 2.75% for inflation, 1.25% for productivity and 0.50% for a merit/seniority increase that extends throughout the member's entire career. We recommended a 0.50% decrease to the overall long term salary scale for members in PORS which will result in a 4.00% individual salary increase assumption for those long-career members.

Salary increase assumptions for shorter-service employees

To analyze the service-related salary assumption, we looked at the excess in the average increases for shorter employees over the average for longer-service employees. For example, public school district employees with three years of service received an average increase of 6.59%, which was 3.07% more than the average increase of 3.52% for the same type of employee with twenty-one or more years of service.

We then determined new service-related assumptions reflecting this data. In all cases, we increased the serve-related increases. This piece of the salary scale assumption behaves more like a demographic assumption than an economic assumption, and therefore, we have given high creditability to historical patterns.

Details of our analysis are shown in Section VII beginning on page 67.

Salary Increases – Combined Effect

The overall effect of the changes to the wage inflation assumption and to the step increases was to decrease the average increase for General Employees and PORS, but to increase the average increase for public school district employees.

Here is a table showing the average increases for continuing members for the eight years, reconciling the changes from the current to proposed assumptions:

Group	Current Assumptions	Change to Inflation	Change in Productivity	Change in Step Increases for Short Service Members	Proposed Assumptions
General Employees	4.37%	-0.25%	-0.25%	+0.35%	4.22%
Public School District Employees	4.51%	-0.25%	-0.25%	+1.11%	5.13%
PORS	5.16%	-0.25%	-0.25%	+0.29%	4.95%

Payroll growth rate

The salary increase rates discussed above are assumptions applied to individuals and are used in projecting future benefits. A separate payroll growth assumption (currently 4.00% annually) is used for determining the annual payment needed to amortize the unfunded actuarial accrued liability. The amortization payments are calculated to be a level percentage of payroll. Therefore, as payroll increases over time, these amortization payments will also increase.

Payroll can grow at a rate different from the average pay increase for individual members. There are two reasons for this. First, when older, longer-service members terminate, retire or die, they are generally replaced with new members who have a lower salary. Because of this, in most populations that are not growing in size, the growth in total payroll will be smaller than the average pay increase for members. Second, payroll can grow due to an increase in the size of the group. However, Governmental Accounting Standards Board Statements No. 25 and 27 (GASB 25 and GASB 27) prohibit actuaries from using anticipated membership growth in setting the payroll growth assumption.

In theory, payroll growth in the absence of membership growth should approximate the wage inflation assumption (proposed to be 3.50%). However, it may be preferred to set this assumption more conservatively, because we anticipate slower growth over the next twenty years as baby boomers retire and are replaced by younger members with lower salaries.

Over the last ten years, the payroll, adjusted for changes in membership, for SCRS and PORS has grown an average of 3.16% and 3.45% per year, respectively. We believe this information and analysis supports a 3.50% payroll growth rate (0.75% above inflation), which is a 50 basis point decrease from the current assumption for both SCRS and PORS. This change will increase the contribution rate needed to amortize the UAAL over the short term.

In addition, we recommend changing the current assumption that the proportion of payroll represented by members in TERI or RTW status will remain consistent throughout time. Due to changing demographics and the size of the baby boomer generation, the total number of members in these two programs will decrease from current levels over the next 10-15 years. We recommend an assumption that the payroll in this category will remain flat for 10 years and then begin to grow at the payroll growth rate. This has no impact on the calculation of the plan's liability, but assumes

the future payroll increases at a lower rate. However, since payroll is projected to be lower, the amortization of the UAAL will increase a percentage of pay (i.e. the contribution rate will increase).

DEMOGRAPHIC ASSUMPTIONS

Actuaries are guided by the Actuarial Standards of Practice (ASOP) adopted by the Actuarial Standards Board (ASB). One of these standards is ASOP No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*. This standard provides guidance to actuaries giving advice on selecting noneconomic assumptions for measuring obligations under defined benefit plans. We believe the recommended assumptions in this report were developed in compliance with this standard.

POST-RETIREMENT MORTALITY RATES (LIABILITY AND COST CALCULATIONS)

SCRS's actuarial liabilities depend in part on how long retirees live. If members live longer, benefits will be paid for a longer period of time, and the liability will be larger.

The current assumption uses separate mortality tables for: (a) Public School District Employees, (b) General Employees, and (c) PORS. Of course, we also use separate tables for males and females. Separate tables are also used for disabled retirees; these are discussed in the following subsection. We use different tables for Public School District Employees because our studies have consistently shown that they live longer on average than other state and local government employees. We have historically used different tables for the uniformed retirees, because the effects of their hazardous occupations were believed to have a negative effect on their life expectancy, however there has been a reversal of this trend because public safety members often must pass certain physical exams to be considered fit to perform their duties and evidence suggest that retiree mortality experience of public safety members are closing the gap when compared to retirees of general state and local governments.

For general employees, the current assumption is the 1994 Group Annuity Mortality Table. For females, the table is used without adjustment, but for males, the table is forward one year. (Set-backs and set-forwards are traditional actuarial techniques used to adjust a table to match the actual observed data. When a table is set forward one year, the actuary uses the table's rate for an age one year older than the person actually is. For example, the mortality rate used for a 60-year old male retiree is the rate in the 1994 Group Annuity Mortality Table for males at age 61.)

To analyze the data, we began by determining the expected number of deaths in each year at each age for males and females. For this analysis, we focused only on retirees and excluded beneficiaries due to the higher probability of inconsistent data from beneficiaries and the complexity of a member being a retiree and a beneficiary simultaneously. Disabled retirees, however, are excluded from this portion of the analysis. Next we compare the actual number to the expected number. The ratio of the actual deaths to the expected deaths—the A/E ratio—tells us whether the assumptions are reasonable. While 100% might indicate a match between the assumption and experience, for mortality we historically have aimed for a ratio between 110%

and 120%, i.e., 10% - 20% more actual deaths than expected, to introduce some conservatism since we expect life expectancies to continue to increase in the future. We also examined the results in five-year age groups, checking how well the pattern in the table matched actual experience. A summary of the results of this analysis are shown below:

Group	Public School District Employees		PORS		General Employees	
Gender	Males	Females	Males	Females*	Males	Females
Number of actual deaths	1,026	3,620	788	82	2,915	2,270
Number of expected deaths (under current assumptions)	1,084	3.687	924	64	3,141	2,181
A/E ratio (current)	95%	98%	85%	128%	93%	104%

* Female PORS does not have enough data to be credible. We have mimicked the PORS female assumptions based on the same adjustments made to PORS males.

More detail is shown on the tables in Section VII. See pages 70-75. As shown, for four of the five groups, the actual number of deaths in the covered group is less than the current assumption would expect, and for the other group the assumption and the experience is almost equal. As discussed above, there needs to be margin built into this assumption for anticipated future increases in life expectancy, and any margin built into the assumption when it was set in 2008 has been passed. It is worth noting that we have observed similar improvements in life expectancy with several other retirement systems.

What also stands out is the pace at which the experience appears to be changing over the last decade, especially for PORS. The following table provides the life expectancy of a 65 year old retiree developed using data from 2000-2003 and then from 2007-2010. As shown, the life expectancy is increasing for all SCRS retirees.

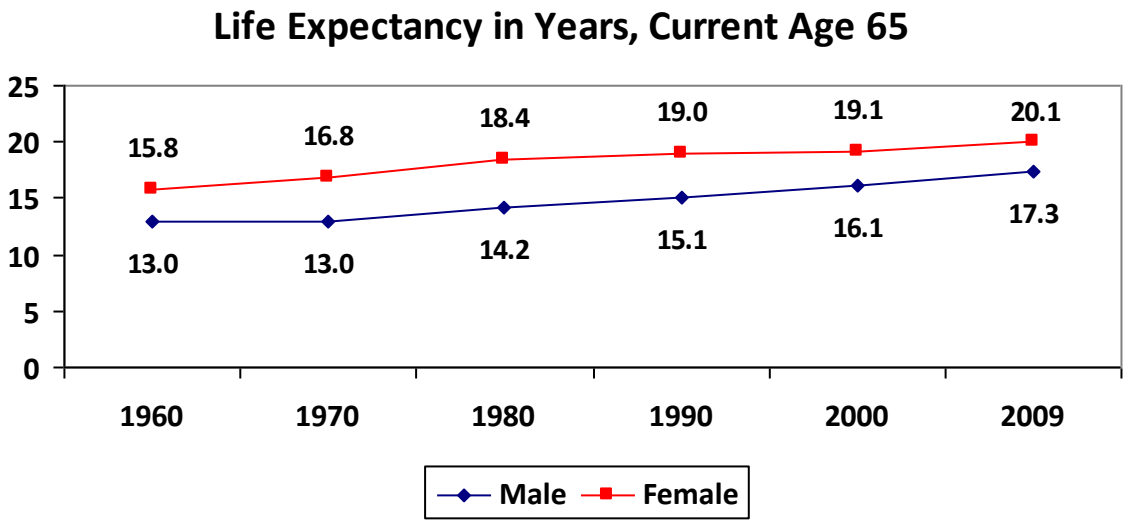
Group	Public School District Employees		PORS		General Employees	
Gender	Males	Females	Males	Females	Males	Females
Life Expectancy at Age 65 (Years)						
Using data from 2000-2003	17.2	21.3	14.8	N/A	17.0	20.8
Using data from 2007-2010	18.7	22.0	16.7	N/A	18.4	21.5
Increase	1.5	0.7	1.9	N/A	1.4	0.7

A recent trend in actuarial models is to use mortality tables that incorporate projected mortality improvements over time. This type of table (or series of tables) is called generational mortality. Historically, actuarial models have been constrained to static mortality tables due to two reasons (1) a general belief that there was a limit on the ultimate longevity and (2) the added complexity of

a generational mortality type model and limitations in valuation software capabilities. Thus, a static mortality table would be used and periodically updated to reflect the continued mortality improvements. Unfortunately, every time the System adopted lower mortality rates, a loss or increase in the unfunded liability would occur.

With advances in computing power, it has become more mainstream practice to incorporate generational mortality into the valuation models. The idea behind adopting a generational mortality model is to avoid the experience study "correction" factor. While minor adjustments may need to be made in the future, the constant bias towards needing to reduce mortality rates is avoided.

The expectation of continued increases in longevity is supported by national trends. The following graph provides the expected remaining lifetime in years for a 65 year old retiree measured beginning in 1960. Notice the recent uptrend in female longevity after almost two decades of relatively minimal improvement. This significant change in pattern (most of which has occurred since 2004) has led most of the profession to agree that future improvements will likely continue.



National Vital Statistics Reports, Vol 58, No 21, June 2010
National Vital Statistics Reports, Vol 59, No 4, March 2011

The issue of future mortality improvement is one that the governing bodies of our profession have recently become more concerned about. This has resulted in recent changes to the relevant Actuarial Standard of Practice, ASOP 35, Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations. The standard now requires pension actuaries to make and disclose an assumption as to expected mortality improvement after the valuation date. However, even without the revision to the standard, we would feel compelled to make a large allowance for mortality improvement based on the current trends.

Based on this analysis, we believe two changes are necessary:

- First, we need to select new base tables that better match current experience, and
- Second, establish a new approach to projecting future increases in life expectancy, since setting a 10-20% margin on the A/E ratios is has been insufficient to keep up with the actual increases in life expectancy

Therefore, we are recommending, first, the adoption of the following new base tables:

- For nondisabled general retirees (state and municipal employees): the RP-2000 Combined mortality table for males and females
  - With the male rates multiplied by 100%
  - With the female rates setback one year and multiplied by 90%
- For nondisabled retired public school district employees: the RP-2000 Combined mortality table for males and females with white collar adjustment,
  - With male rates multiplied by 110%
  - With female rates multiplied by 95%
- For nondisabled retired PORS members: the RP-2000 Combined mortality table for males and females with blue collar adjustment,
  - With male and female rates multiplied by 115%

Second, we will apply Scale AA, an industry standard mortality improvement table used in both pension and life insurance work. By doing this, future mortality rates will be projected to continually decrease each year in the future. Therefore, the life expectancy at age 65 for someone reaching 65 now will not be as long as the life expectancy for someone reaching 65 in 2020, and her life expectancy will not be as long as someone reaching 65 in 2040, etc. The following table provides the life expectancy for individuals retiring in future years based on the proposed assumption with full generational projection.

Proposed Life Expectancy for an Age 65 Retiree in Years					
Group	Year of Retirement				
	2010	2015	2020	2025	2030
General Employee - Male	19.3	19.6	20.0	20.4	20.7
General Employee - Female	22.1	22.3	22.5	22.7	22.9
Public School District Employees - Male	19.2	19.5	19.9	20.3	20.6
Public School District Employees - Female	22.1	22.4	22.6	22.8	22.9
PORS - Male	17.4	17.8	18.2	18.6	19.0
PORS - Female	19.4	19.7	19.9	20.1	20.4

Scale AA was released in conjunction with the RP-2000 tables, and is the most current projection table published by the profession. Under Scale AA, mortality rates will decrease 0.1% - 2.0% each year, depending on the age and sex.

Because of this assumption of continuous improvement, life expectancies for today's younger active members are expected to be materially longer than those of today's retirees, and this has a significant impact on costs and liabilities.

The base year for both tables is 2000. That is, improvement is projected from that year to each year in the future. In setting the multipliers on the base tables, we compared the base tables, projected to 2008, roughly the midpoint of the experience study data, with actual deaths. This is what is shown on the detailed tables in Section VII, pages 70-75. As you can see from these tables, the multipliers were set to produce an A/E ratio, before projection into the future, of about or just over 100%. Unlike a static mortality table where an A/E ratio between 110% and 120% is generally desired to allow for a margin, an A/E ratio of 100% is desirable when using generational mortality because the margin is built into *future* mortality rates.

Disabled Retiree Mortality Rates

This is a minor assumption, and it has little impact on the liabilities of SCRS. We recommend no change for General Employees and Public School District Employees who already use a multiple of the RP2000 Disabled Mortality table. For PORS, we are recommending updating the current assumption to use a multiple of the same table for consistency with the other mortality assumptions. Details are shown in Section VII on pages 76-81.

Active Mortality Rates

Similar to experience in other plans we work with, mortality rates for active members are much lower than mortality rates for retired members. Currently, for active mortality, a multiplier is applied the underlying client-specific table to provide an appropriate fit. We have recommended slight changes to better fit the recent experience.

Details are shown in Section Vii on pages 82-87.

Disability Rates

We analyzed disability separately for males and females, state employees and Public School District Employees and PORS, as well as for ordinary and accidental disability.

We compared the number of actual and expected disabilities by group, taking into account the fact that members with less than five years of service and members eligible for retirement are not eligible for ordinary disability.

The analysis shows a reasonably close match across the groups. Given the relatively small number of members becoming disabled each year, we are recommending no change to the current assumption. Details are shown in Section VII on pages 88-92.

TERMINATION RATES

Termination rates reflect members who leave for any reason other than death, disability, or service retirement. They apply whether the termination is voluntary or involuntary, and whether the member takes a refund or keeps his/her account balance on deposit. The current termination rates are separated between a select period for members with less than 10 years of service which reflect the member's age, service and sex, and an ultimate period which is based age and sex. The current termination rate structure for the first ten years of service provides a reasonable fit the observed experience and we do not recommend any changes to this segment of the rate structure for General Employee and Public School District Employees. However, as discussed below, we are recommending a change to the structure of the assumption to better model the behavior of members with more than 10 years of service.

General Employees and Public School District Employees

Select Period (Members less than 10 years of service)

In the aggregate, the current assumptions produce desired A/E ratios at or above 100%. For this assumption, A/E ratios over 100% are conservative. The results are shown below:

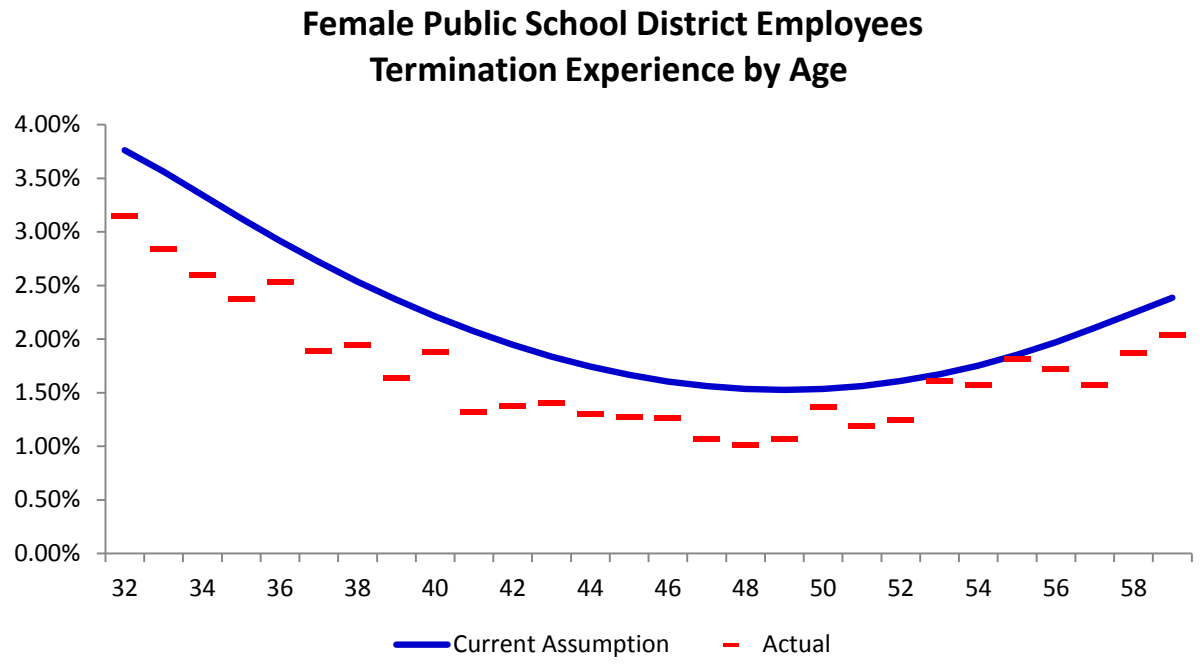
Termination Experience – Members with less than 10 years of Service				
	General Employees		Public School District Employees	
	Males	Females	Males	Females
Actual number	24,804	40,638	7,693	26,839
Expected number	24,632	40,726	7,220	25,186
A/E ratio (Current)	101%	100%	107%	107%

The above tables show the current tables match the current experience very well for General Employees and have some margin for conservatism for the Public School District Employees. Combined, they produce a desired level of margin at around 104%. Therefore, we are recommending no change to the current "select" termination assumptions.

Ultimate Period (Members with more than 10 years of service)

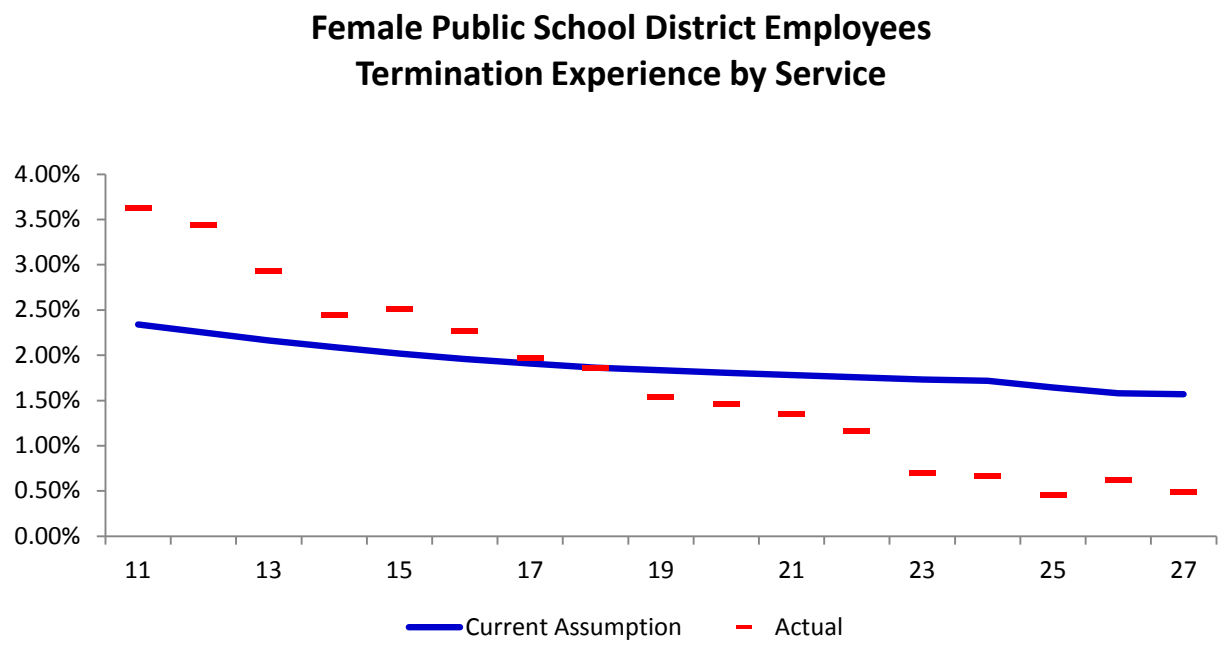
It is important to study the methodology of the assumptions to ensure that no unwanted bias exists. This is especially true for the termination assumption. The current assumption is based on age and service for the first ten years of a member's career, and then move into a table solely based on the member's age once they have more than ten years of service. This is a common approach for applying termination tables.

In the last few years, we have investigated the varying ways of setting up the "ultimate" rates. The following exhibit shows the current table for female Public School District Employees, along with the actual terminations during the period:



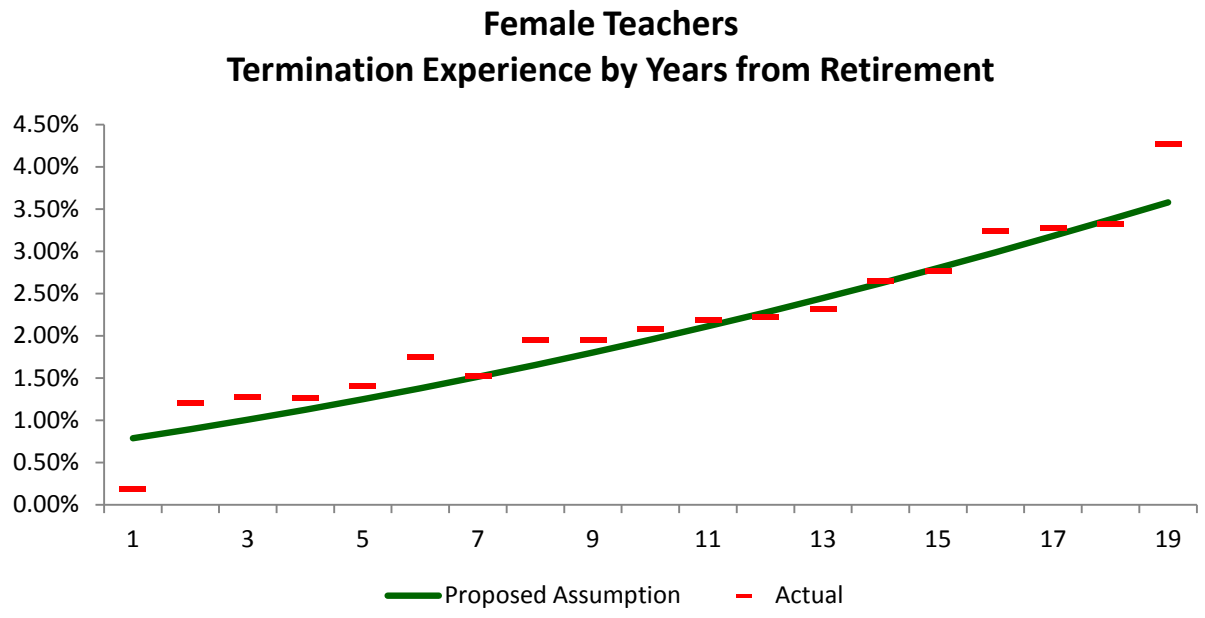
There are two interesting trends in this exhibit: (1) actual experience is significantly lower than the current assumption across the entire age spectrum, and (2) the unintuitive rise in the actual incidence of termination after age 50. This is not only counterintuitive, but also against most actuarial standards of setting withdrawal assumptions. This occurs because members with high service begin to reach retirement eligibility (28 years of service), leave the termination exposure, thus leaving members who have more than ten years of service, but not yet retirement eligible. In fact, if you look at the average service of the members who are in the exposure of the above trend past age 50, the average service is decreasing as age increases.

Actuarially, the limitation of this type of methodology is the fact that all members of the same age are treated equally, regardless of service. This leads to overstating the termination probabilities for members with lots of service and are nearing retirement. To show this effect, we have shown the same data from above, but distributed by service:



The difference between the current assumption and the actual experience for members with 20 or more years of experience create actuarial losses.

We could react to this effect by moving to service-based rates during the ultimate period, but this would result in the biased as above if we charted the results be age. What we have determined through testing is that the termination structure used during the select period should be tied to the retirement eligibility patterns. If the retirement eligibility pattern is strictly age-based, then age-based select rates should be utilized, and likewise, if the retirement eligibility is service-based, then a service-based pattern should be utilized. However, SCRS has multiple retirement eligibilities, one based on age, one on service, and a subsidized early retirement eligibility condition based on both. Therefore, the best structure to utilize is based on years from retirement. The idea being that all members one year from retirement will be behave the same, and all members two years from retirement will be treated the same, and so on. The following exhibit portrays the same experience prior two analysis discussed above, but based on the number of years before the member is eligible for retirement:



Notice that the assumption consistently models the actual experience, the probability of termination decreases as the member nears retirement. This type of structure more closely mimics how liabilities are accrued throughout a career and are not biased to produce actuarial gains or losses. Details are shown in Section VII on pages 93-100.

PORS

Members of PORS have entry ages that are more closely grouped together at younger ages. Therefore, the majority of members attain the 25 years of service retirement eligibility condition before the age 55 eligibility requirement. Therefore, a termination structure based solely on service is sufficient without introducing unwanted bias in assumption set. The current assumption underestimated the termination rates for members with less than 15 years of service, and overestimated the rate of terminations for members with 15 or more years of service. Therefore, the rates have been adjusted to better fit the historical and expected experience. Details are shown in Section VII on page 101.

Retirement Rates

The retirement rates are currently only applied to members eligible for retirement. There are separate assumptions for males and females, and for General Employees, Public School District Employees, and PORS. The current assumption is based on the member's age, meaning the same rate of retirement is applied to all members of the same age, regardless of differences in service. There is an additional retirement probability applied for the first year a member becomes eligible for retirement. Under the current assumptions, members of PORS are assumed to retire by age 65. All members of SCRS are assumed to retire by age 70.

It is important to note that members in TERI are considered to be retirees for purposes of calculating the liability in the actuarial valuation and so any reference to retirement will include members entering TERI as well as members who retire directly from active status.

For this assumption, an A/E ratio between 90% and 100% is desirable for conservatism. Generally, the experience shows there is a fairly good match to the current assumptions. While we recommend slightly lowering the rates of retirement for some age groups where the expected number of retirements was just a little high, overall, the change in the expected number of retirements was minor.

However, we also recommend adding a new structure to the retirement assumptions to move away from the age-indexed rates for members who reach 28 years of service before age 65, since we believe their retirement patterns are driven more by a function of service, rather than age.

Therefore, we created new assumptions for members who first become eligible for unreduced retirement before age 65 for SCRS and 55 for PORS, which are a function of service. For this group, we assumed everyone would be retired by the time they reached 40 years of service. For other members who retire after age 65, we use the age-based retirement rates. Experience also shows a small group of members who continue to work into their mid-70s, and a few work even longer. Therefore, the recommended assumptions now assume everyone retires by age 75. The new rates are shown in Section VII pages 102-115.

Service Purchase

Members of SCRS and PORS can purchase service for benefits and retirement eligibility on a qualified and a non-qualified basis. Qualified service is purchase at a member cost of 16% of salary per year and non-qualified service costs the member 35% of salary per year. Members can purchase eligible service at any time while they are actively employed. Experience shows that the majority of members who purchase service, do so just before retirement. Because the purchase price is a fixed percentage of payroll, waiting until late in their career to purchase the service causes the price of the service purchase to be insufficient to cover the increased value in the benefit, resulting in the plan subsidizing the cost of the member's service purchase. Also, since the purchase can change the eligibility for retirement, an actuarial loss in the actuarial valuation will result due decrease in the member's retirement eligibility age.

As a result, the Staff provided us with data to enable us to develop an assumption to anticipate future service purchases by members before retirement. This assumption will be added to portions of the member population who begin purchasing needed service to retire under the service only eligibility conditions when they are within five years away from retirement. Detail on the new expected pattern is provided in the Sections V and VI.

Other Assumptions

There are other assumptions made in the course of a valuation, such as the percentage of members who are married, the age difference between members and spouses, the likelihood that a

terminating employee will take a refund, etc. We have thoroughly reviewed all of these ancillary assumptions, and believe they are generally realistic and/or conservative. Therefore, we recommend no changes to these other assumptions.

ACTUARIAL METHODS

The individual Entry Age Normal cost method (EAN) is the current funding method being used to allocate the actuarial costs of the System. The Entry Age Normal method will generally produce relatively level contribution amounts as a percentage of payroll from year to year, and allocates costs among various generations of taxpayers in a reasonable manner. It is by far the most commonly used actuarial cost method for large public retirement systems. We continue to believe this is the most appropriate funding method and recommend no change.

For members who have correlated service with another employer, the cost method will assume the member has no accrued liability at the date of hire and will accrue all benefits from the hire date with the current employer. Service from the other employers will be used in determining retirement eligibilities, but not in allocating the accruals over the career of the employee.

We also recommend modifying the method for determining actuarial value of assets. We recommend the use of a 5-year asset smoothing method that recognizes 20% of each of the investment gains or losses each year after they occur. Alternatively, if continued use of the 10-year smoothing method is desired, then we recommend adopting a 20% asset corridor around the market value of assets to ensure the actuarial value of assets does not significantly deviate from the actual market value.

Any change in method to determine the actuarial value of assets would be prospective only and would not impact the June 30, 2010 valuation results.

SECTION IV

ACTUARIAL IMPACT OF RECOMMENDATIONS

Estimated Actuarial Impact of Recommendations

For illustrative purposes, the following tables compare key statistics from the June 30, 2010 actuarial valuation report before and after taking into account the recommended new assumptions.

The valuation results shown in the proposed assumptions include a 2% automatic COLA. Even though the automatic COLA will decrease from 2% to 1% for SCRS when the investment return assumption is decreased to 7.50%, we believe it is important to compare the costs assuming there is no change in benefits to provide a direct and unbiased comparison of the impact of the proposed assumption changes.

SCRS ($ amounts in '000s)

	6/30/2010 Valuation	Proposed Assumptions	$ Difference	% Difference
	(1)	(2)	(3)	(4)
Liability Information				
1. Prior Year's Payroll provided by System	$ 7,392,244	$ 7,392,244	-	0.0%
2. Projected Payroll for Next Fiscal Year[1]	$ 7,769,820	$ 7,688,659	(81,161)	-1.0%
3. Actuarial Present Value of Benefits				
a. Active Members	$ 20,986,309	$ 23,835,913	$ 2,849,604	13.6%
b. Members in Payment Status	22,585,243	24,142,461	1,557,218	6.9%
c. Other Members	794,381	824,212	29,831	3.8%
d. Total Present Value of Future Benefits	$ 44,365,933	$ 48,802,587	$ 4,436,654	10.0%
4. Total Normal Cost	10.01%	11.76%	1.75%	17.5%
5. Actuarial Accured Liability				
a. Active Members	$ 15,394,405	$ 17,454,842	$ 2,060,437	13.4%
b. Members in Payment Status	22,585,243	24,142,461	1,557,218	6.9%
c. Other Members	794,381	824,212	29,831	3.8%
d. Total Actuarial Accrued Liability	$ 38,774,029	$ 42,421,515	$ 3,647,486	9.4%
6. Actuarial Value of Assets	$ 25,400,331	$ 25,400,331		
7. Unfunded Actuarial Accured Liability (5.d. - 6.)	$ 13,373,698	$ 17,021,184	$ 3,647,486	27.3%
8. Funding Ratio - Actuarial Value Assets Basis	65.5%	59.9%	-5.6%	-8.6%
9. Funding Ratio - Market Value of Assets Basis	50.8%	46.4%	-4.4%	-8.6%
Statutory Contribution Rate Information				
10. Employer Normal Cost	3.51%	5.26%	1.75%	49.9%
11. Amortization of Unfunded Liability	6.17%	4.42%	-1.75%	-28.4%
12. Total Employer Contribution Rate	9.68%	9.68%	0.00%	0.0%
13. Amortization Period - Current Contribution Rate	37.6	Never	N/A	N/A
14. 30-Year Funding Contribution Rate -AVA	10.60%	14.76%	4.16%	39.3%
15. 25-Year Funding Contribution Rate - AVA	11.34%	16.65%	5.31%	46.8%
16. 30-Year Funding Contribution Rate - MVA	13.84%	18.94%	5.09%	36.8%

[1] Projected payroll for fiscal year 2011 (excludes compensation attributable to members in TERI and return to work retirees).

We believe the Board's decision about whether or not to adopt our recommendations should be based not only on the appropriateness of each recommendation individually but also on the collective effect on the contribution rate or the actuarial liabilities. Therefore, we do not recommend individual changes be selectively picked based on their financial impact. However, for informational purposes, the table on the next page shows the changes in (i) the UAAL, (ii) the 30-year ARC expressed as a percent of payroll due to each of the recommended assumption changes.

	UAAL ($ 000s)	30-Year Contribution Rate
	(1)	(2)
Liability Information		
6/30/2010 Valuation	$ 13,373,698	10.60%
Increase/(Decrease) due to:		
Parallel Valuation	53,313	-0.04%
General Methodology Changes	264,818	0.31%
Withdrawal	123,685	0.09%
Service Purchase	158,810	0.17%
Longevity	1,062,459	0.93%
Inflation *	972,570	0.86%
Individual Salary Increases	(204,655)	0.14%
Overall Payroll Growth	0	0.66%
Investment Return	1,216,486	1.04%
All Changes Reflected	$ 17,021,184	14.76%

*The change to inflation includes a reduction of 0.25% in the nominal values across all economic assumptions, including the reduction in the nominal investment return assumption from 8.00% to 7.75%, decrease in the ultimate wage inflation from 4.00% to 3.75%, and decrease in the payroll growth assumption from 4.00% to 3.75%.

As can be seen, the changes in the inflation, life expectancy, and real rate of investment return above inflation were the most significant items, with the changes in the inflation and investment return assumption each increasing the UAAL by at least $1 billion.

We understand that lowering the investment return assumption below 8% may lower the automatic COLA by 1% for SCRS. If true, and the 1% reduction in future cost of living increases is reflected in the actuarial assumptions, the UAAL above would decrease by $3.7 B to $13.3B and the 30-year contribution rate would decrease from 14.76% of payroll to 11.56%. The following exhibit provides all of the financing detail assuming a 1% future automatic COLA.

	6/30/2010 Valuation	Proposed Assumptions, Including 1% COLA	$ Difference	% Difference
	(1)	(2)	(3)	(4)
Liability Information				
1. Prior Year's Payroll provided by System	$ 7,392,244	$ 7,392,244	-	0.0%
2. Projected Payroll for Next Fiscal Year[1]	$ 7,769,820	$ 7,688,659	(81,161)	-1.0%
3. Actuarial Present Value of Benefits				
a. Active Members	$ 20,986,309	$ 21,622,606	$ 636,297	3.0%
b. Members in Payment Status	22,585,243	22,134,963	(450,280)	-2.0%
c. Other Members	794,381	802,439	8,058	1.0%
d. Total Present Value of Future Benefits	$ 44,365,933	$ 44,560,007	$ 194,074	0.4%
4. Total Normal Cost	10.01%	10.77%	0.76%	7.5%
5. Actuarial Accured Liability				
a. Active Members	$ 15,394,405	$ 15,791,269	$ 396,864	2.6%
b. Members in Payment Status	22,585,243	22,134,963	(450,280)	-2.0%
c. Other Members	794,381	802,439	8,058	1.0%
d. Total Actuarial Accrued Liability	$ 38,774,029	$ 38,728,670	$ (45,359)	-0.1%
6. Actuarial Value of Assets	$ 25,400,331	$ 25,400,331		
7. Unfunded Actuarial Accured Liability (5.d. - 6.)	$ 13,373,698	$ 13,328,339	$ (45,359)	-0.3%
8. Funding Ratio - Actuarial Value Assets Basis	65.5%	65.6%	0.1%	0.1%
9. Funding Ratio - Market Value of Assets Basis	50.8%	50.8%	0.1%	0.1%
Statutory Contribution Rate Information				
10. Employer Normal Cost	3.51%	4.27%	0.76%	21.7%
11. Amortization of Unfunded Liability	6.17%	5.41%	-0.76%	-12.3%
12. Total Employer Contribution Rate	9.68%	9.68%	0.00%	0.0%
13. Amortization Period - Current Contribution Rate	37.6	64.7	N/A	N/A
14. 30-Year Funding Contribution Rate -AVA	10.60%	11.56%	0.96%	9.1%
15. 25-Year Funding Contribution Rate - AVA	11.34%	13.14%	1.80%	15.9%
16. 30-Year Funding Contribution Rate - MVA	13.84%	15.67%	1.83%	13.2%

[1] Projected payroll for fiscal year 2011 (excludes compensation attributable to members in TERI and return to work retirees).

PORS ($ amounts in 000s)

The valuation results shown in the proposed assumptions include a 2% automatic COLA. Even though the automatic COLA will be reduced to 0% for PORS when the investment return assumption is decreased below 8.0%, we believe, for the same reasons described above regarding the comparison for effects of the assumption changes for SCRS, it is important to compare the costs assuming there is no change in benefits, including the automatic COLA.

	June 30, 2010 Valaution	Proposed Assumptions	$ Difference	% Difference
	(1)	(2)	(3)	(4)
Liability Information				
1. Prior Year's Payroll provided by System	$ 1,023,391	$ 1,023,391	$ -	0.0%
2. Projected Payroll for Next Fiscal Year[1]	$ 1,076,467	$ 1,058,003	$ (18,464)	-1.7%
3. Actuarial Present Value of Benefits				
a. Active Members	$ 3,256,790	$ 3,763,947	$ 507,157	15.6%
b. Members in Payment Status	2,577,772	2,811,452	233,680	9.1%
c. Other Members	110,574	124,396	13,822	12.5%
d. Total Present Value of Future Benefits	$ 5,945,136	$ 6,699,796	$ 754,660	12.7%
4. Total Normal Cost	13.74%	16.10%	2.36%	17.2%
5. Actuarial Accured Liability				
a. Active Members	$ 2,162,111	$ 2,555,961	$ 393,850	18.2%
b. Members in Payment Status	2,577,772	2,811,452	233,680	9.1%
c. Other Members	110,574	124,396	13,822	12.5%
d. Total Actuarial Accrued Liability	$ 4,850,457	$ 5,491,810	$ 641,353	13.2%
6. Actuarial Value of Assets	$ 3,612,700	$ 3,612,700		
7. Unfunded Actuarial Accured Liability (5.d. - 6.)	$ 1,237,757	$ 1,879,110	$ 641,353	51.8%
8. Funding Ratio - Actuarial Value Assets Basis	74.5%	65.8%	-8.7%	-11.7%
9. Funding Ratio - Market Value of Assets Basis	58.8%	51.9%	-6.9%	-11.7%
Statutory Contribution Rate Information				
10. Employer Normal Cost	7.240%	9.600%	2.360%	32.6%
11. Amortization of Unfunded Liability	4.755%	2.395%	-2.360%	-49.6%
12. Total Employer Contribution Rate	11.995%	11.995%		0.0%
13. Amortization Period - Current Contribution Rate	32.8	Never	N/A	N/A
14. 30-Year Funding Contribution Rate -AVA	12.30%	18.06%	5.76%	46.8%
15. 25-Year Funding Contribution Rate - AVA	13.00%	20.94%	7.93%	61.0%
16. 30-Year Funding Contribution Rate - MVA	16.07%	23.60%	7.54%	46.9%

[1] Projected payroll for fiscal year 2011 (excludes compensation attributable to return to work retirees).

We believe the Board's decision about whether or not to adopt our recommendations should be based not only on the appropriateness of each recommendation individually but also on the collective effect on the contribution rate or the actuarial liabilities. Therefore, we do not recommend individual changes be selectively chosen based on their financial impact. However, for informational purposes, the table on the next page shows the changes in (i) the UAAL, (ii) the 30-year ARC expressed as a percent of payroll due to each of the recommended assumption changes.

	UAAL ($ 000s)	30-Year Contribution Rate
Liability Information		
6/30/2010 Valuation	$ 1,237,757	12.30%
Increase/(Decrease) due to:		
Parallel Valuation	5,218	0.14%
General Methodology Changes	54,012	0.23%
Service Purchase	32,212	0.35%
Longevity	281,685	2.33%
Inflation *	133,252	1.10%
Individual Salary Increases	41,653	-0.03%
Overall Payroll Growth	0	0.62%
Investment Return	93,321	1.02%
All Changes Reflected	$ 1,879,110	18.06%

* The change to inflation includes the reduction in the nominal investment return assumption from 8.00% to 7.75%, decrease in the ultimate wage inflation from 4.50% to 4.25%, and decrease in the payroll growth assumption from 4.00% to 3.75%.

We understand that lowering the investment return assumption below 8% may lower the automatic COLA by 2% for PORS. If true, and the 2% reduction in future cost of living increases is reflected in the actuarial assumptions, the UAAL above would decrease by $927 M to $952 M and the 30-year contribution rate would decrease from 18.06% of payroll to 10.87%.

	June 30, 2010 Valaution	Proposed Assumptions with 0% COLA	$ Difference	% Difference
	(1)	(2)	(3)	(4)
Liability Information				
1. Prior Year's Payroll provided by System	$ 1,023,391	$ 1,023,391	$ -	0.0%
2. Projected Payroll for Next Fiscal Year[1]	$ 1,076,467	$ 1,058,003	$ (18,464)	-1.7%
3. Actuarial Present Value of Benefits				
a. Active Members	$ 3,256,790	$ 3,098,273	$ (158,517)	-4.9%
b. Members in Payment Status	2,577,772	2,360,236	(217,536)	-8.4%
c. Other Members	110,574	107,494	(3,080)	-2.8%
d. Total Present Value of Future Benefits	$ 5,945,136	$ 5,566,003	$ (379,133)	-6.4%
4. Total Normal Cost	13.74%	13.37%	-0.37%	-2.7%
5. Actuarial Accured Liability				
a. Active Members	$ 2,162,111	$ 2,096,555	$ (65,556)	-3.0%
b. Members in Payment Status	2,577,772	2,360,236	(217,536)	-8.4%
c. Other Members	110,574	107,494	(3,080)	-2.8%
d. Total Actuarial Accrued Liability	$ 4,850,457	$ 4,564,286	$ (286,171)	-5.9%
6. Actuarial Value of Assets	$ 3,612,700	$ 3,612,700		
7. Unfunded Actuarial Accured Liability (5.d. - 6.)	$ 1,237,757	$ 951,586	$ (286,171)	-23.1%
8. Funding Ratio - Actuarial Value Assets Basis	74.5%	79.2%	4.7%	6.3%
9. Funding Ratio - Market Value of Assets Basis	58.8%	62.5%	3.7%	6.3%
Statutory Contribution Rate Information				
10. Employer Normal Cost	7.240%	6.870%	-0.370%	-5.1%
11. Amortization of Unfunded Liability	4.755%	5.125%	0.370%	7.8%
12. Total Employer Contribution Rate	11.995%	11.995%		0.0%
13. Amortization Period - Current Contribution Rate	32.8	19.9	(12.9)	-39.3%
14. 30-Year Funding Contribution Rate -AVA	12.30%	10.87%	-1.43%	-11.6%
15. 25-Year Funding Contribution Rate - AVA	13.00%	12.93%	-0.08%	-0.6%
16. 30-Year Funding Contribution Rate - MVA	16.07%	16.11%	0.05%	0.3%

[1] Projected payroll for fiscal year 2011 (excludes compensation attributable to return to work retirees).

SECTION V

SUMMARY OF NEW ASSUMPTIONS – SCRS

Summary Of Actuarial Methods And Assumptions

The following presents a summary of the actuarial assumptions and methods used in the valuation of the South Carolina Retirement System.

Investment Rate of Return

Assumed annual rate of 7.50% net of investment and administrative expenses composed of a 2.75% inflation component and a 4.75% real rate of return, net of investment and administration expenses.

Rates of Annual Salary Increase

Rates of annual salary increase are assumed to vary for the first 19 years of service due to expected merit and promotional increases which differs by employee group. Beginning with the 20th year of service, the assumed annual rate of increase is 3.50% for both groups and for all future years of service.

The 3.50% rate of increase is composed of a 2.75% inflation component and a 0.75% real rate of wage increase (productivity) component.

Active Male & Female Salary Increase Rate				
Years of Service	General Employees		Teachers	
	Annual Promotional/Longevity Rates of Increase	Total Annual Rate of Increase Including 3.50% Wage Inflation	Annual Promotional/Longevity Rates of Increase	Total Annual Rate of Increase Including 3.50% Wage Inflation
0	2.50%	6.00%	4.00%	7.50%
1	2.50%	6.00%	9.00%	12.50%
2	2.00%	5.50%	3.00%	6.50%
3	1.50%	5.00%	2.75%	6.25%
4	1.25%	4.75%	2.50%	6.00%
5	1.00%	4.50%	2.25%	5.75%
6	0.75%	4.25%	2.00%	5.50%
7	0.50%	4.00%	1.75%	5.25%
8	0.50%	4.00%	1.75%	5.25%
9	0.25%	3.75%	1.50%	5.00%
10	0.25%	3.75%	1.50%	5.00%
11	0.25%	3.75%	1.50%	5.00%
12	0.25%	3.75%	1.25%	4.75%
13	0.25%	3.75%	1.00%	4.50%
14	0.25%	3.75%	1.00%	4.50%
15	0.00%	3.50%	1.00%	4.50%
16	0.00%	3.50%	0.75%	4.25%
17	0.00%	3.50%	0.50%	4.00%
18	0.00%	3.50%	0.25%	3.75%
19	0.00%	3.50%	0.25%	3.75%
20+	0.00%	3.50%	0.00%	3.50%

Active Member Decrement Rates

a. Assumed rate of Service Retirement or TERI entry are shown in the following tables. The first table is for members who attain age 65 before attaining 28 years of service. The second table is based on service and is for members who attain 28 years of service before age 65.

Annual Age Based Retirement Rates								
Age	General Employees				Teachers			
	Reduced		Normal		Reduced		Normal	
	Male	Female	Male	Female	Male	Female	Male	Female
55	10%	9%	0%	0%	10%	9%	0%	0%
56	9%	10%	0%	0%	11%	9%	0%	0%
57	9%	10%	0%	0%	11%	10%	0%	0%
58	9%	11%	0%	0%	11%	10%	0%	0%
59	9%	11%	0%	0%	11%	10%	0%	0%
60	9%	11%	0%	0%	11%	10%	0%	0%
61	9%	11%	0%	0%	11%	13%	0%	0%
62	22%	20%	0%	0%	22%	20%	0%	0%
63	16%	18%	0%	0%	22%	20%	0%	0%
64	16%	18%	0%	0%	22%	20%	0%	0%
65	0%	0%	30%	30%	0%	0%	25%	30%
66	0%	0%	25%	25%	0%	0%	25%	30%
67	0%	0%	20%	20%	0%	0%	25%	30%
68	0%	0%	20%	20%	0%	0%	25%	25%
69	0%	0%	20%	20%	0%	0%	25%	25%
70	0%	0%	20%	20%	0%	0%	25%	25%
71	0%	0%	20%	20%	0%	0%	25%	25%
72	0%	0%	20%	20%	0%	0%	25%	25%
73	0%	0%	20%	20%	0%	0%	25%	25%
74	0%	0%	20%	20%	0%	0%	25%	25%
75	0%	0%	100%	100%	0%	0%	100%	100%

Annual Service Based Retirement Rates				
Years of Service	General Employees		Teachers	
	Male	Female	Male	Female
28	45%	50%	50%	55%
29	30%	30%	30%	30%
30	20%	20%	30%	30%
31	18%	18%	30%	30%
32	18%	16%	30%	30%
33	18%	16%	30%	30%
34	18%	16%	30%	30%
35	18%	16%	30%	40%
36	20%	16%	30%	40%
37	20%	16%	30%	40%
38	20%	16%	30%	40%
39	20%	16%	30%	40%
40	100%	100%	100%	100%
41	100%	100%	100%	100%
42	100%	100%	100%	100%
43	100%	100%	100%	100%
44	100%	100%	100%	100%
45	100%	100%	100%	100%
46	100%	100%	100%	100%
47	100%	100%	100%	100%
48	100%	100%	100%	100%

b. Members are assumed to purchase service and retire as they become within 5 years of a service related eligibility condition (23 years of service, Age 55 with more than 20 years of service). 80% of purchased service is expected to be at 16% of payroll and 20% at 35% of payroll. Members are assumed to purchase service based on the following probabilities:

	Less than Age 55	Over Age 55, but less than Age 65	
Years of Service	Assumed Probability of Purchasing Unreduced Eligibility Service	Assumed Probability of Purchasing Unreduced Eligibility Service	Assumed Probability of Purchasing Reduced Eligibility Service
20		0.50%	0.50%
21		0.75%	0.75%
22		1.00%	1.00%
23	1.00%	1.00%	2.50%
24	1.00%	1.00%	3.50%
25	2.00%	2.00%	
26	3.00%	3.00%	
27	7.00%	7.00%	

c. Assumed rates of disability are shown in the following table.

Disability Rates				
Age	General Employees		Teachers	
	Males	Females	Males	Females
25	0.0630%	0.0580%	0.0524%	0.0572%
30	0.1260%	0.0812%	0.0786%	0.0770%
35	0.1890%	0.1624%	0.1048%	0.0770%
40	0.3150%	0.2088%	0.1965%	0.1342%
45	0.4410%	0.3016%	0.3275%	0.2750%
50	0.6300%	0.5104%	0.5240%	0.4400%
55	1.0080%	0.8120%	0.8515%	0.7150%
60	1.2600%	1.2412%	1.3100%	1.1000%
64	1.5750%	1.7284%	1.6375%	1.3750%

d. Active Member Mortality

Rates of active member mortality are based upon a client specific table with applicable multipliers to match the experience.

Active Mortality Rates (Multiplier Applied)				
Age	General Employees		Teachers	
	Males	Females	Males	Females
25	0.0414%	0.0166%	0.0432%	0.0145%
30	0.0488%	0.0211%	0.0511%	0.0185%
35	0.0850%	0.0380%	0.0889%	0.0333%
40	0.1187%	0.0565%	0.1241%	0.0494%
45	0.1659%	0.0899%	0.1734%	0.0787%
50	0.2352%	0.1341%	0.2459%	0.1173%
55	0.3332%	0.2021%	0.3483%	0.1768%
60	0.5366%	0.3145%	0.5610%	0.2752%
64	0.7731%	0.4343%	0.8082%	0.3800%
Multiplier	110%	80%	115%	70%

e. Rates of Withdrawal

Rate of withdrawal for active members prior to eligibility for retirement are based upon actual experience from 2002 through 2010. Rates are developed for each employee group and differ by gender and service. Sample rates are shown in the tables below.

Withdrawal Rates - Male General Employees															
Age	Years of Service														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
25	0.329	0.247	0.190	0.155	0.134	0.117	0.096	0.078	0.065	0.059	0.066	0.000	0.000	0.000	0.000
30	0.294	0.221	0.173	0.142	0.124	0.109	0.095	0.082	0.070	0.060	0.053	0.047	0.044	0.042	0.039
35	0.268	0.200	0.155	0.129	0.112	0.101	0.092	0.082	0.072	0.059	0.042	0.047	0.044	0.042	0.039
40	0.246	0.180	0.138	0.114	0.100	0.092	0.086	0.079	0.069	0.055	0.033	0.042	0.042	0.042	0.039
45	0.226	0.164	0.123	0.100	0.088	0.082	0.078	0.073	0.064	0.049	0.027	0.039	0.036	0.034	0.032
50	0.208	0.150	0.111	0.089	0.077	0.072	0.068	0.063	0.055	0.042	0.022	0.029	0.029	0.029	0.029
55	0.194	0.141	0.104	0.081	0.069	0.060	0.054	0.049	0.042	0.033	0.021	0.020	0.020	0.020	0.020
60	0.183	0.135	0.100	0.077	0.063	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Age	Years of Service (Continued)													
	15	16	17	18	19	20	21	22	23	24	25	26	27	28+
25	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
35	0.036	0.034	0.032	0.029	0.027	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.036	0.034	0.032	0.029	0.027	0.025	0.023	0.022	0.020	0.018	0.017	0.000	0.000	0.000
45	0.029	0.029	0.029	0.029	0.027	0.025	0.023	0.022	0.020	0.018	0.017	0.016	0.014	0.000
50	0.029	0.027	0.025	0.023	0.022	0.020	0.020	0.020	0.020	0.018	0.017	0.016	0.014	0.000
55	0.020	0.020	0.020	0.020	0.020	0.020	0.018	0.017	0.016	0.014	0.000	0.000	0.000	0.000
60	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Withdrawal Rates - Female General Employees															
Age	Years of Service														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
25	0.298	0.246	0.206	0.177	0.156	0.138	0.125	0.116	0.109	0.103	0.094	0.000	0.000	0.000	0.000
30	0.271	0.224	0.186	0.159	0.140	0.125	0.115	0.106	0.097	0.085	0.069	0.052	0.049	0.045	0.042
35	0.251	0.202	0.166	0.141	0.124	0.113	0.104	0.096	0.086	0.071	0.051	0.052	0.049	0.045	0.042
40	0.233	0.180	0.145	0.123	0.110	0.101	0.093	0.085	0.075	0.059	0.037	0.045	0.045	0.045	0.042
45	0.217	0.162	0.127	0.108	0.097	0.089	0.082	0.075	0.064	0.049	0.028	0.042	0.039	0.036	0.033
50	0.204	0.149	0.115	0.097	0.086	0.079	0.071	0.064	0.054	0.041	0.023	0.030	0.030	0.030	0.030
55	0.195	0.143	0.109	0.089	0.078	0.069	0.061	0.053	0.044	0.035	0.024	0.020	0.020	0.020	0.020
60	0.187	0.141	0.108	0.085	0.070	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Age	Years of Service (Continued)													
	15	16	17	18	19	20	21	22	23	24	25	26	27	28+
25	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.039	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
35	0.039	0.036	0.033	0.030	0.028	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.039	0.036	0.033	0.030	0.028	0.025	0.023	0.022	0.020	0.018	0.017	0.000	0.000	0.000
45	0.030	0.030	0.030	0.030	0.028	0.025	0.023	0.022	0.020	0.018	0.017	0.016	0.015	0.000
50	0.030	0.028	0.025	0.023	0.022	0.020	0.020	0.020	0.020	0.018	0.017	0.016	0.015	0.000
55	0.020	0.020	0.020	0.020	0.020	0.020	0.018	0.017	0.016	0.015	0.000	0.000	0.000	0.000
60	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Withdrawal Rates - Male Teachers															
Age	Years of Service														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
25	0.296	0.203	0.138	0.097	0.072	0.058	0.051	0.051	0.052	0.054	0.056	0.000	0.000	0.000	0.000
30	0.272	0.192	0.136	0.099	0.078	0.066	0.061	0.058	0.054	0.048	0.039	0.027	0.026	0.025	0.025
35	0.253	0.182	0.132	0.099	0.081	0.071	0.066	0.061	0.054	0.043	0.027	0.027	0.026	0.025	0.025
40	0.237	0.173	0.127	0.098	0.082	0.073	0.068	0.062	0.053	0.039	0.020	0.025	0.025	0.025	0.025
45	0.224	0.165	0.123	0.096	0.081	0.073	0.067	0.060	0.050	0.036	0.017	0.025	0.024	0.023	0.023
50	0.214	0.159	0.119	0.094	0.079	0.070	0.063	0.055	0.046	0.034	0.017	0.022	0.022	0.022	0.022
55	0.206	0.155	0.117	0.091	0.074	0.065	0.056	0.048	0.040	0.032	0.022	0.017	0.017	0.017	0.017
60	0.200	0.152	0.114	0.087	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Age	Years of Service (Continued)													
	15	16	17	18	19	20	21	22	23	24	25	26	27	28+
25	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
35	0.024	0.023	0.023	0.022	0.021	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.024	0.023	0.023	0.022	0.021	0.020	0.019	0.018	0.017	0.015	0.014	0.000	0.000	0.000
45	0.022	0.022	0.022	0.022	0.021	0.020	0.019	0.018	0.017	0.015	0.014	0.012	0.009	0.000
50	0.022	0.021	0.020	0.019	0.018	0.017	0.017	0.017	0.017	0.015	0.014	0.012	0.009	0.000
55	0.017	0.017	0.017	0.017	0.017	0.017	0.015	0.014	0.012	0.009	0.000	0.000	0.000	0.000
60	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Withdrawal Rates - Female Teachers															
Age	Years of Service														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
25	0.230	0.161	0.121	0.101	0.089	0.084	0.083	0.080	0.073	0.066	0.060	0.000	0.000	0.000	0.000
30	0.227	0.166	0.126	0.101	0.088	0.080	0.075	0.070	0.062	0.053	0.043	0.032	0.030	0.028	0.026
35	0.217	0.160	0.121	0.097	0.083	0.075	0.068	0.062	0.054	0.043	0.030	0.032	0.030	0.028	0.026
40	0.204	0.148	0.111	0.088	0.076	0.068	0.062	0.055	0.048	0.037	0.021	0.028	0.028	0.028	0.026
45	0.193	0.136	0.100	0.080	0.068	0.062	0.056	0.050	0.044	0.033	0.016	0.026	0.024	0.023	0.021
50	0.187	0.130	0.094	0.074	0.063	0.057	0.052	0.048	0.042	0.032	0.015	0.020	0.020	0.020	0.020
55	0.188	0.131	0.094	0.073	0.063	0.054	0.051	0.047	0.042	0.033	0.019	0.013	0.013	0.013	0.013
60	0.195	0.138	0.099	0.076	0.066	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Age	Years of Service (Continued)													
	15	16	17	18	19	20	21	22	23	24	25	26	27	28+
25	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
35	0.024	0.023	0.021	0.020	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.024	0.023	0.021	0.020	0.018	0.017	0.015	0.014	0.013	0.011	0.010	0.000	0.000	0.000
45	0.020	0.020	0.020	0.020	0.018	0.017	0.015	0.014	0.013	0.011	0.010	0.009	0.008	0.000
50	0.020	0.018	0.017	0.015	0.014	0.013	0.013	0.013	0.013	0.011	0.010	0.009	0.008	0.000
55	0.013	0.013	0.013	0.013	0.013	0.013	0.011	0.010	0.009	0.008	0.000	0.000	0.000	0.000
60	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Post Retirement Mortality

a. Healthy retirees and beneficiaries – The RP-2000 Mortality Table (Public School District Employees utilize the White Collar adjustment) projected using the AA projection table with multipliers based on plan experience. The following are sample rates:

Nondisabled Annuitant Mortality Rates Before Projection (Multiplier Applied)				
Age	General Employees		Teachers	
	Males	Females	Males	Females
50	0.2138%	0.1508%	0.2176%	0.1510%
55	0.3624%	0.2445%	0.3632%	0.2457%
60	0.6747%	0.4550%	0.6141%	0.4443%
65	1.2737%	0.8735%	1.2167%	0.8218%
70	2.2206%	1.5068%	2.1203%	1.4426%
75	3.7834%	2.5295%	3.6997%	2.4431%
80	6.4368%	4.1291%	6.5353%	4.0926%
85	11.0757%	6.9701%	11.5132%	7.0483%
90	18.3408%	11.8514%	19.6100%	11.9843%
Multiplier	100%	90%	110%	95%

b. A separate table of mortality rates is used for disabled retirees based on the RP-2000 Disabled Retiree Mortality Table. The following are sample rates:

Disabled Annuitant Mortality Rates (Multiplier Applied)				
Age	General Employees		Teachers	
	Males	Females	Males	Females
50	2.4629%	1.2689%	2.1731%	1.2689%
55	3.0126%	1.8198%	2.6581%	1.8198%
60	3.5736%	2.4023%	3.1531%	2.4023%
65	4.2648%	3.0829%	3.7631%	3.0829%
70	5.3196%	4.1398%	4.6937%	4.1398%
75	6.9757%	5.7453%	6.1550%	5.7453%
80	9.2966%	7.9543%	8.2029%	7.9543%
85	12.0363%	11.0223%	10.6202%	11.0223%
90	15.5897%	15.4054%	13.7556%	15.4054%
Multiplier	85%	110%	75%	110%

Asset Valuation Method

The actuarial value of assets is based on the market value of assets with five-year smoothing applied. This is accomplished by recognizing each year 20% of the difference between the market value of assets and the expected actuarial value of assets, based upon the assumed valuation rate of return.

Actuarial Cost Method

The contribution rate is set by statute for both employees and employers. The funding period is determined, as described below, using the Entry Age Normal actuarial cost method. The Entry Age Normal actuarial cost method allocates the plan's actuarial present value of future benefits to various periods based upon service. The portion of the present value of future benefits allocated to years of service prior to the valuation date is the actuarial accrued liability, and the portion allocated to years following the valuation date is the present value of future normal costs. The normal cost is determined for each active member as the level percent of payroll necessary to fully fund the expected benefites to be earned over the career of each individual active member. The normal cost is partially funded with active member contributions with the remainder funded by employer contributions.

An unfunded accrued liability exists in the amount equal to the excess of accrued liability over valuation assets. The amortization period of the System is the number of years required to fully amortize the unfunded accrued liability with the expected amount of employer contributions in excess of the employers' portion of the normal cost.

The calculation of the amortization period takes into account scheduled increases to contribution rates applicable to future years and payroll growth. Also, the calculation of the amortization period reflects additional contributions the System receives with respect to post July 1, 2005 TERI participants, ORP participants and return to work retirees. These contributions are assumed to grow at the same payroll growth rate as for active SCRS employees. It is assumed that amortization payments are made monthly at the end of the month.

Unused Annual Leave

To account for the effect of unused annual leave on Annual Final Compensation, liabilities for active members are increased 2.14%.

Unused Sick Leave

To account for the effect of unused sick leave on members' final credited service, the service of active members who retire is increased 3 months.

Future Cost-of-living Increases

Benefits are assumed to increase 2% annually beginning on the July 1st following the receipt of 12 monthly benefit payments.

Payroll Growth Rate

The total annual payroll of active members (also applies to TERI, ORP and rehired retiree participants) is assumed to increase at an annual rate of 3.50%. This rate represents the underlying expected annual rate of wage inflation and does not anticipate increases in the number of members. The number of members in TERI or rehired positions is expected to decrease over the next 10-15 years as the baby boomer generation exits the workforce and so for the amortization credit applied due to the missing normal costs for these individuals, we have assumed the overall payroll for this group will remain constant for the next 10 years and then will begin to grow at the payroll growth rate above.

Other Assumptions

1. Valuation payroll (used for determining the amortization contribution rate): Prior fiscal year payroll projected forward one year using the overall payroll growth rate. This was determined seperately for active employees, TERI, and return to work employees by dividing the actual member contributions received during the prior fiscal year by the member contribution rate of 6.50%, and then projecting forward at 3.50%.

2. Individual salaries used to project benefits: Actual salaries from the past fiscal year are used to determine the final average salary as of the valuation date. For future salaries, a the salary from the last fiscal year is projected forward with one year's salary scale.

3. Pay increase timing: Beginning of (fiscal) year. This is equivalent to assuming that reported salaries represent amounts paid to members during the year ended on the valuation date.

4. Percent married: 100% of male and 100% of female employees are assumed to be married.

5. Age difference: Male members are assumed to be three years older than their spouses, and female members are assumed to be three years younger than their spouses.

6. Percent electing annuity on death (when eligible): All of the spouses of vested, married participants are assumed to elect an immediate life annuity.

7. Inactive Population: All non-vested members are assumed to take an immediate refund. Vested members are assumed to take a deferred retirement benefit.

9. There will be no recoveries once disabled.

10. No surviving spouse will remarry and there will be no children's benefit.

11. Decrement timing: Decrements of all types are assumed to occur mid-year.

12. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

13. Decrement relativity: Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

14. Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.

15. Benefit Service: All members are assumed to accrue 1 year of eligibility service each year.

Participant Data

Participant data was supplied in electronic text files. There were separate files for (i) active and inactive members, and (ii) members and beneficiaries receiving benefits.

The data for active members included birthdate, gender, service with the current city and total vesting service, salary, and employee contribution account balances. For retired members and beneficiaries, the data included date of birth, gender, spouse's date of birth (where applicable), amount of monthly benefit, date of retirement, and form of payment code.

Salary supplied for the current year was based on the annualized earnings for the year preceding the valuation date.

Assumptions were made to correct for missing, bad, or inconsistent data. These had no material impact on the results presented.

Changes from Prior Valuation

Changes in the assumptions were made based on the 2011 Experience Study.

SECTION VI

SUMMARY OF NEW ASSUMPTIONS – PORS

Summary Of Actuarial Methods And Assumptions

The following presents a summary of the actuarial assumptions and methods used in the valuation of the South Carolina Police Officers Retirement System.

Investment Rate of Return

Assumed annual rate of 7.50% net of investment and administrative expenses composed of a 2.75% inflation component and a 4.75% real rate of return, net of administrative and investment expenses.

Rates of Annual Salary Increase

Rates of annual salary increase are assumed to vary for the first 11 years of service to include anticipated merit and promotional increases. The assumed annual rate of increase is 4.00% for all members with 12 or more years of service.

The 4.00% rate of increase is composed of a 2.75% inflation component and a 1.25% real rate of wage increase (productivity) component.

Active Male & Female Salary Increase Rate		
Years of Service	PORS	
	Annual Promotional/Longevity Rates of Increase	Total Annual Rate of Increase Including 3.50% Wage Inflation
0	6.00%	10.00%
1	5.00%	9.00%
2	2.00%	6.00%
3	1.00%	5.00%
4	0.75%	4.75%
5	0.50%	4.50%
6	0.25%	4.25%
7	0.25%	4.25%
8	0.25%	4.25%
9	0.25%	4.25%
10	0.25%	4.25%
11	0.25%	4.25%
12	0.00%	4.00%
13	0.00%	4.00%
14	0.00%	4.00%
15	0.00%	4.00%
16	0.00%	4.00%
17	0.00%	4.00%
18	0.00%	4.00%
19	0.00%	4.00%
20+	0.00%	4.00%

Active Member Decrement Rates

f. Assumed rates of Service Retirement are shown in the following tables. The first table is for members who attain age 55 before attaining 25 years of service. The second table is based on service and is for members who attain 25 years of service before age 55.

Annual Age Based Retirement Rates		
Age	PORS	
	Male	Female
55	20%	20%
56	14%	14%
57	12%	12%
58	12%	12%
59	12%	12%
60	12%	12%
61	12%	12%
62	35%	35%
63	25%	25%
64	25%	25%
65	30%	30%
66	30%	30%
67	30%	30%
68	30%	30%
69	30%	30%
70	100%	100%
71	100%	100%
72	100%	100%
73	100%	100%
74	100%	100%
75	100%	100%

Annual Service Based Retirement Rates		
Years of Service	PORS	
	Male	Female
25	35%	22%
26	22%	22%
27	22%	22%
28	22%	22%
29	22%	22%
30	35%	35%
31	35%	35%
32	35%	35%
33	35%	35%
34	35%	35%
35	100%	100%

g. Members are assumed to purchase service and retire as they become within 5 years of the service related eligibility condition (20 years of service). 80% of purchased service is expected to be at 16% of payroll and 20% at 35% of payroll. Members are assumed to purchase service based on the following probabilities:

Years of Service	Assumed Probability of Purchasing Unreduced Eligibility Service
20	4.00%
21	2.00%
22	3.25%
23	4.50%
24	6.50%

h. Assumed rates of disability are shown in the following table. 25% of disabilities are assumed to be duty-related.

Disability Rates		
Age	PORS	
	Males	Females
25	0.1376%	0.1376%
30	0.1835%	0.1835%
35	0.3441%	0.3441%
40	0.4588%	0.4588%
45	0.6882%	0.6882%
50	0.8602%	0.8602%
55	0.0000%	0.0000%
60	0.0000%	0.0000%
64	0.0000%	0.0000%

i. Active Member Mortality

Rates of active member mortality are based upon a client specific table with applicable multipliers to match the experience.

Active Mortality Rates (Multiplier Applied)		
Age	PORS	
	Males	Females
25	0.0338%	0.0186%
30	0.0653%	0.0264%
35	0.0978%	0.0467%
40	0.1234%	0.0790%
45	0.1614%	0.1248%
50	0.2171%	0.1767%
55	0.3776%	0.2516%
60	0.7443%	0.4454%
64	1.2430%	0.8222%
Multiplier	90%	90%

j. Rates of Withdrawal

Rate of withdrawal for active members prior to eligibility for retirement are based upon actual experience from 2002 through 2010. Rates are developed for each employee group and differ by gender and service. Sample rates are shown in the tables below.

Annual Withdrawal Rate		
Years of Service	PORS	
	Male	Female
0	0.2500	0.2500
1	0.1800	0.1800
2	0.1400	0.1400
3	0.1200	0.1200
4	0.1070	0.1070
5	0.0954	0.0954
6	0.0850	0.0850
7	0.0758	0.0758
8	0.0675	0.0675
9	0.0602	0.0602
10	0.0537	0.0537
11	0.0478	0.0478
12	0.0426	0.0426
13	0.0380	0.0380
14	0.0339	0.0339
15	0.0302	0.0302
16	0.0269	0.0269
17	0.0240	0.0240
18	0.0214	0.0214
19	0.0191	0.0191
20	0.0170	0.0170
21	0.0151	0.0151
22	0.0135	0.0135
23	0.0120	0.0120

Post Retirement Mortality

c. Healthy retirees and beneficiaries – The RP-2000 Mortality Table with Blue Collar Adjustment projected using the AA projection table. The following are sample rates:

Nondisabled Annuitant Mortality Rates Before Projection (Multiplier Applied)		
Age	PORS	
	Males	Females
50	0.2774%	0.2257%
55	0.4825%	0.3214%
60	0.9511%	0.5691%
65	1.7870%	1.1958%
70	3.0772%	2.1429%
75	4.9601%	3.5521%
80	8.1129%	5.6296%
85	13.2339%	9.5565%
90	20.9021%	15.7189%
Multiplier	115%	115%

d. A separate table of mortality rates is used for disabled retirees based on the RP-2000 Disabled Retiree Mortality Table. The following are sample rates:

Disabled Annuitant Mortality Rates (Multiplier Applied)		
Age	PORS	
	Males	Females
50	1.7385%	0.6921%
55	2.1265%	0.9926%
60	2.5225%	1.3103%
65	3.0104%	1.6816%
70	3.7550%	2.2581%
75	4.9240%	3.1338%
80	6.5623%	4.3387%
85	8.4962%	6.0122%
90	11.0045%	8.4029%
Multiplier	60%	60%

Asset Valuation Method

The actuarial value of assets is based on the market value of assets with five-year smoothing applied. This is accomplished by recognizing each year 20% of the difference between the market value of assets and the expected actuarial value of assets, based upon the assumed valuation rate of return.

Actuarial Cost Method

The contribution rate is set by statute for both employees and employers. The funding period is determined, as described below, using the Entry Age Normal actuarial cost method. The Entry Age Normal actuarial cost method allocates the plan's actuarial present value of future benefits to various periods based upon service. The portion of the present value of future benefits allocated to years of service prior to the valuation date is the actuarial accrued liability, and the portion allocated to years following the valuation date is the present value of future normal costs. The normal cost is determined for each active member as the level percent of payroll necessary to fully fund the expected benefites to be earned over the career of each individual active member. The normal cost is partially funded with active member contributions with the remainder funded by employer contributions.

An unfunded accrued liability exists in the amount equal to the excess of accrued liability over valuation assets. The amortization period of the System is the number of years required to fully amortize the unfunded accrued liability with the expected amount of employer contributions in excess of the employers' portion of the normal cost.

The calculation of the amortization period takes into account scheduled increases to contribution rates applicable to future years and payroll growth. Also, the calculation of the amortization period reflects additional contributions the System receives with respect to return to work retirees. These contributions are assumed to grow at the same payroll growth rate as for active employees. It is assumed that amortization payments are made monthly at the end of the month.

Unused Annual Leave

To account for the effect of unused annual leave on Annual Final Compensation, liabilities for active members are increased 3.75%.

Unused Sick Leave

To account for the effect of unused sick leave on members' final credited service, the service of active members who retire is increased 3 months.

Future Cost-of-living Increases

Benefits are assumed to increase 2% annually beginning on the July 1st following the receipt of 12 monthly benefit payments.

Payroll Growth Rate

The total annual payroll of active members (also applies to rehired retiree participants) is assumed to increase at an annual rate of 4.00%. This rate represents the underlying expected annual rate of wage inflation and does not anticipate increases in the number of members. The number of members in rehired positions is expected to decrease over the next 10-15 years as the baby boomer generation exits the workforce and so for the amortization credit applied due to the missing normal costs for these individuals, we have assumed the overall payroll for this group will remain constant for the next 10 years and then will begin to grow at the payroll growth rate above.

Other Assumptions

1. Valuation payroll (used for determining the amortization contribution rate): Prior fiscal year payroll projected forward one year using the overall payroll growth rate. This was determined seperately for active employees and return to work employees by dividing the actual member contributions received during the prior fiscal year by the member contribution rate of 6.50%, and then projecting forward at 3.50%.

2. Individual salaries used to project benefits: Actual salaries from the past fiscal year are used to determine the final average salary as of the valuation date. For future salaries, a the salary from the last fiscal year is projected forward with one year's salary scale.

3. Pay increase timing: Beginning of (fiscal) year. This is equivalent to assuming that reported salaries represent amounts paid to members during the year ended on the valuation date.

4. Percent married: 100% of male and 100% of female employees are assumed to be married.

5. Age difference: Male members are assumed to be four years older than their spouses, and female members are assumed to be four years younger than their spouses.

6. Percent electing annuity on death (when eligible): All of the spouses of vested, married participants are assumed to elect an immediate life annuity.

7. Inactive Population: All non-vested members are assumed to take an immediate refund. Vested members are assumed to take a deferred retirement benefit.

9. There will be no recoveries once disabled.

10. No surviving spouse will remarry and there will be no children's benefit.

11. Decrement timing: Decrements of all types are assumed to occur mid-year.

12. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

13. Decrement relativity: Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

14. Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.

15. Benefit Service: All members are assumed to accrue 1 year of eligibility service each year.

Participant Data

Participant data was supplied in electronic text files. There were separate files for (i) active and inactive members, and (ii) members and beneficiaries receiving benefits.

The data for active members included birthdate, gender, service with the current city and total vesting service, salary, and employee contribution account balances. For retired members and beneficiaries, the data included date of birth, gender, spouse's date of birth (where applicable), amount of monthly benefit, date of retirement, and form of payment code.

Salary supplied for the current year was based on the annualized earnings for the year preceding the valuation date.

Assumptions were made to correct for missing, bad, or inconsistent data. These had no material impact on the results presented.

Changes from Prior Valuation

Changes in the assumptions were made based on the 2011 Experience Study.

SECTION VII

SUMMARY OF DATA AND EXPERIENCE

List of Tables

SALARY EXPERIENCE

a. GENERAL EMPLOYEES 68
b. PUBLIC SCHOOL DISTRICT EMPLOYEES 69
c. POLICE 70

POST-RETIREMENT MORTALITY EXPERIENCE

a. GENERAL EMPLOYEES (MALE) 71
b. GENERAL EMPLOYEES (FEMALE) 72
c. PUBLIC SCHOOL DISTRICT EMPLOYEES (MALE) 73
d. PUBLIC SCHOOL DISTRICT EMPLOYEES (FEMALE) 74
e. POLICE (MALE) 75
f. POLICE (FEMALE) 76
g. DISABLED GENERAL EMPLOYEES (MALE) 77
h. DISABLED GENERAL EMPLOYEES (FEMALE) 78
i. DISABLED PUBLIC SCHOOL DISTRICT EMPLOYEES (MALE) 79
j. DISABLED PUBLIC SCHOOL DISTRICT EMPLOYEES (FEMALE) 80
k. DISABLED POLICES (MALE) 81
l. DISABLED POLICE (MALE) 82

PRE-RETIREMENT MORTALITY EXPERIENCE

a. GENERAL EMPLOYEES (MALE) 83
b. GENERAL EMPLOYEES (FEMALE) 84
c. PUBLIC SCHOOL DISTRICT EMPLOYEES (MALE) 85
d. PUBLIC SCHOOL DISTRICT EMPLOYEES (FEMALE) 86
e. POLICE (MALE) 87
f. POLICE (FEMALE) 88

DISABILITY EXPERIENCE

a. GENERAL EMPLOYEES (MALE) 89
b. GENERAL EMPLOYEES (FEMALE) 90
c. PUBLIC SCHOOL DISTRICT EMPLOYEES (MALE) 91
d. PUBLIC SCHOOL DISTRICT EMPLOYEES (FEMALE) 92
e. POLICE (UNISEX) 93

List of Tables (Continued)

TERMINATION EXPERIENCE

a. GENERAL EMPLOYEES, SERVICE-BASED (MALE) 94
b. GENERAL EMPLOYEES, SERVICE-BASED (FEMALE) 95
c. GENERAL EMPLOYEES, YEARS FROM RETIREMENT (MALE) 96
d. GENERAL EMPLOYEES, YEARS FROM RETIREMENT (FEMALE) 97
e. PUBLIC SCHOOL DISTRICT EMPLOYEES, SERVICE-BASED (MALE) 98
f. PUBLIC SCHOOL DISTRICT EMPLOYEES, SERVICE-BASED (FEMALE) 99
g. PUBLIC SCHOOL DISTRICT EMPLOYEES, YEARS FROM RETIREMENT (MALE) 100
h. PUBLIC SCHOOL DISTRICT EMPLOYEES, YEARS FROM RETIREMENT(FEMALE) 101
i. POLICE (UNISEX) 102

NORMAL RETIREMENT EXPERIENCE

a. GENERAL EMPLOYEES, AGE-BASED (MALE) 103
b. GENERAL EMPLOYEES, AGE-BASED (FEMALE) 104
c. GENERAL EMPLOYEES, SERVICE-BASED (MALE) 105
d. GENERAL EMPLOYEES, SERVICE-BASED (FEMALE) 106
e. PUBLIC SCHOOL DISTRICT EMPLOYEES, AGE-BASED (MALE) 107
f. PUBLIC SCHOOL DISTRICT EMPLOYEES, AGE-BASED (FEMALE) 108
g. PUBLIC SCHOOL DISTRICT EMPLOYEES, SERVICE-BASED (MALE) 109
h. PUBLIC SCHOOL DISTRICT EMPLOYEES, SERVICE-BASED (FEMALE) 110
i. POLICE, AGE-BASED (UNISEX) 111
j. POLICE, SERVICE-BASED (UNISEX) 112

EARLY RETIREMENT EXPERIENCE

a. GENERAL EMPLOYEES, AGE-BASED (MALE) 113
b. GENERAL EMPLOYEES, AGE-BASED (FEMALE) 114
c. PUBLIC SCHOOL DISTRICT EMPLOYEES, AGE-BASED (MALE) 115
d. PUBLIC SCHOOL DISTRICT EMPLOYEES, AGE-BASED (FEMALE) 116

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
SALARY INCREASE EXPERIENCE

	Current Salary Scale		2002/2010 Actual Experience			Proposed Salary Scale	
Years of Service	Total	Step Rate/ Promotional	Total	Above Inflation	Step Rate/ Promotional	Total	Step Rate/ Promotional
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	5.75%	1.75%	7.33%	4.91%	3.62%	6.00%	2.50%
2	5.00%	1.00%	7.79%	5.36%	4.07%	6.00%	2.50%
3	4.75%	0.75%	5.50%	3.08%	1.79%	5.50%	2.00%
4	4.50%	0.50%	5.06%	2.64%	1.35%	5.00%	1.50%
5	4.50%	0.50%	4.83%	2.40%	1.12%	4.75%	1.25%
6	4.50%	0.50%	4.40%	1.97%	0.68%	4.50%	1.00%
7	4.50%	0.50%	4.35%	1.92%	0.63%	4.25%	0.75%
8	4.50%	0.50%	4.07%	1.64%	0.36%	4.00%	0.50%
9	4.50%	0.50%	4.13%	1.70%	0.42%	4.00%	0.50%
10	4.25%	0.25%	4.07%	1.64%	0.35%	3.75%	0.25%
11	4.25%	0.25%	3.84%	1.41%	0.12%	3.75%	0.25%
12	4.25%	0.25%	3.86%	1.43%	0.14%	3.75%	0.25%
13	4.25%	0.25%	3.80%	1.37%	0.09%	3.75%	0.25%
14	4.25%	0.25%	3.85%	1.42%	0.13%	3.75%	0.25%
15	4.00%	0.00%	3.72%	1.29%	0.00%	3.50%	0.00%

Current Inflation Assumption	3.00%	Proposed Inflation Assumption	2.75%
Current Productivity Component	1.00%	Proposed Productivity Component	0.75%
Actual CPI-U Inflation for Jun/00 - Jun/10	2.43%		
Apparent Productivity Component	1.29%		

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
SALARY INCREASE EXPERIENCE

	Current Salary Scale		2002/2010 Actual Experience			Proposed Salary Scale	
Years of Service	Total	Step Rate/ Promotional	Total	Above Inflation	Step Rate/ Promotional	Total	Step Rate/ Promotional
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	8.00%	4.00%	9.31%	6.88%	5.79%	7.50%	4.00%
2	5.50%	1.50%	13.28%	10.85%	9.76%	12.50%	9.00%
3	5.25%	1.25%	6.59%	4.16%	3.07%	6.50%	3.00%
4	5.00%	1.00%	5.83%	3.40%	2.31%	6.25%	2.75%
5	5.00%	1.00%	6.10%	3.67%	2.58%	6.00%	2.50%
6	5.00%	1.00%	5.67%	3.24%	2.15%	5.75%	2.25%
7	4.75%	0.75%	5.74%	3.31%	2.22%	5.50%	2.00%
8	4.75%	0.75%	5.41%	2.99%	1.89%	5.25%	1.75%
9	4.75%	0.75%	5.18%	2.75%	1.66%	5.25%	1.75%
10	4.75%	0.75%	5.10%	2.67%	1.58%	5.00%	1.50%
11	4.50%	0.50%	5.08%	2.65%	1.56%	5.00%	1.50%
12	4.40%	0.40%	4.96%	2.54%	1.44%	5.00%	1.50%
13	4.40%	0.40%	4.86%	2.43%	1.34%	4.75%	1.25%
14	4.40%	0.40%	4.61%	2.18%	1.09%	4.50%	1.00%
15	4.00%	0.00%	4.45%	2.02%	0.93%	4.50%	1.00%
16	4.00%	0.00%	4.57%	2.14%	1.05%	4.50%	1.00%
17	4.00%	0.00%	4.24%	1.82%	0.73%	4.25%	0.75%
18	4.00%	0.00%	4.07%	1.64%	0.55%	4.00%	0.50%
19	4.00%	0.00%	3.89%	1.46%	0.37%	3.75%	0.25%
20	4.00%	0.00%	3.83%	1.40%	0.31%	3.75%	0.25%
21	4.00%	0.00%	3.52%	1.09%	0.00%	3.50%	0.00%

Current Inflation Assumption	3.00%	Proposed Inflation Assumption	2.75%
Current Productivity Component	1.00%	Proposed Productivity Component	0.75%
Actual CPI-U Inflation for Jun/00 - Jun/10	2.43%		
Apparent Productivity Component	1.09%		

SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM (PORS)
SALARY INCREASE EXPERIENCE

	Current Salary Scale		2002/2010 Actual Experience			Proposed Salary Scale	
Years of Service	Total	Step Rate/ Promotional	Total	Above Inflation	Step Rate/ Promotional	Total	Step Rate/ Promotional
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	10.50%	6.00%	5.89%	3.47%	1.99%	10.00%	6.00%
2	6.75%	2.25%	9.99%	7.56%	6.08%	9.00%	5.00%
3	5.75%	1.25%	6.22%	3.79%	2.31%	6.00%	2.00%
4	5.50%	1.00%	4.96%	2.53%	1.05%	5.00%	1.00%
5	5.25%	0.75%	4.62%	2.19%	0.71%	4.75%	0.75%
6	5.00%	0.50%	4.55%	2.12%	0.64%	4.50%	0.50%
7	4.75%	0.25%	4.44%	2.01%	0.53%	4.25%	0.25%
8	4.75%	0.25%	4.35%	1.92%	0.44%	4.25%	0.25%
9	4.75%	0.25%	3.94%	1.51%	0.03%	4.25%	0.25%
10	4.75%	0.25%	3.95%	1.52%	0.04%	4.25%	0.25%
11	4.75%	0.25%	4.20%	1.77%	0.29%	4.25%	0.25%
12	4.75%	0.25%	4.22%	1.79%	0.31%	4.25%	0.25%
13	4.50%	0.00%	3.91%	1.48%	0.00%	4.00%	0.00%

Current Inflation Assumption	3.00%	Proposed Inflation Assumption	2.75%
Current Productivity Component	1.50%	Proposed Productivity Component	1.25%
Actual CPI-U Inflation for Jun/00 - Jun/10	2.43%		
Apparent Productivity Component	1.48%		

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
POST-RETIREMENT MORTALITY EXPERIENCE - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	23	4,984	0.0046	0.35%	0.23%	18	12	128%	192%
55-59	76	11,593	0.0066	0.60%	0.41%	73	49	104%	155%
60-64	149	17,175	0.0087	1.09%	0.78%	193	138	77%	108%
65-69	276	18,945	0.0146	1.94%	1.45%	367	274	75%	101%
70-74	433	16,225	0.0267	3.06%	2.42%	498	395	87%	110%
75-79	560	12,502	0.0448	4.86%	4.22%	607	526	92%	106%
80-84	612	7,857	0.0779	8.12%	7.55%	626	585	98%	105%
85-89	502	3,995	0.1257	12.44%	12.96%	484	502	104%	100%
90-94	224	1,151	0.1946	19.60%	21.15%	215	232	104%	97%
95-99	55	196	0.2806	28.90%	29.51%	54	55	102%	100%
100-104	5	17	0.2941	37.67%	37.17%	6	6	83%	83%
105-109	0	0	N/A	47.52%	40.00%	0	0	0%	0%
Total	2,915	94,640				3,141	2,774	93%	105%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
POST-RETIREMENT MORTALITY EXPERIENCE - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	18	8,668	0.0021	0.17%	0.16%	15	15	120%	120%
55-59	42	14,580	0.0029	0.28%	0.30%	42	45	100%	93%
60-64	102	20,147	0.0051	0.55%	0.58%	115	120	89%	85%
65-69	163	22,091	0.0074	1.04%	1.05%	228	232	71%	70%
70-74	271	16,811	0.0161	1.61%	1.77%	273	297	99%	91%
75-79	354	12,253	0.0289	2.72%	2.90%	334	354	106%	100%
80-84	472	9,013	0.0524	4.73%	4.79%	424	430	111%	110%
85-89	463	5,016	0.0923	8.10%	8.40%	397	410	117%	113%
90-94	261	1,844	0.1415	13.84%	13.85%	245	247	107%	106%
95-99	110	454	0.2423	21.78%	19.22%	93	83	118%	133%
100-104	10	44	0.2273	31.90%	22.90%	13	10	77%	100%
105-109	4	6	0.6667	43.81%	29.05%	2	2	200%	200%
Total	2,270	110,927				2,181	2,245	104%	101%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
POST-RETIREMENT MORTALITY EXPERIENCE - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	3	2,081	0.0014	0.31%	0.23%	7	5	43%	60%
55-59	37	6,415	0.0058	0.53%	0.39%	36	26	103%	142%
60-64	63	8,356	0.0075	0.97%	0.71%	82	61	77%	103%
65-69	95	7,342	0.0129	1.75%	1.39%	128	101	74%	94%
70-74	139	5,787	0.0240	2.79%	2.33%	162	136	86%	102%
75-79	207	4,412	0.0469	4.39%	4.20%	194	184	107%	113%
80-84	199	2,715	0.0733	7.38%	7.73%	197	206	101%	97%
85-89	168	1,473	0.1141	11.38%	13.65%	165	196	102%	86%
90-94	84	464	0.1810	17.98%	22.77%	80	101	105%	83%
95-99	24	102	0.2353	27.04%	32.46%	26	32	92%	75%
100-104	7	20	0.3500	35.86%	40.89%	7	8	100%	88%
105-109	0	0	N/A	46.00%	44.00%	0	0	0%	0%
Total	1,026	39,167				1,084	1,056	95%	97%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
POST-RETIREMENT MORTALITY EXPERIENCE - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	21	11,269	0.0019	0.17%	0.16%	21	20	100%	105%
55-59	64	26,100	0.0025	0.28%	0.30%	75	81	85%	79%
60-64	122	30,729	0.0040	0.55%	0.55%	172	171	71%	71%
65-69	181	27,459	0.0066	1.04%	1.00%	282	273	64%	66%
70-74	297	21,232	0.0140	1.61%	1.70%	346	361	86%	82%
75-79	453	18,104	0.0250	2.72%	2.83%	497	514	91%	88%
80-84	693	13,962	0.0496	4.73%	4.79%	659	668	105%	104%
85-89	774	9,078	0.0853	8.10%	8.51%	726	757	107%	102%
90-94	634	4,085	0.1552	13.84%	14.00%	548	557	116%	114%
95-99	303	1,386	0.2186	21.78%	20.28%	289	269	105%	113%
100-104	71	213	0.3333	31.90%	24.18%	64	50	111%	142%
105-109	7	19	0.3684	43.81%	30.66%	8	6	88%	117%
Total	3,620	163,636				3,687	3,727	98%	97%

SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM (PORS)
POST-RETIREMENT MORTALITY EXPERIENCE - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	15	3,306	0.0045	0.48%	0.30%	16	10	94%	150%
55-59	55	6,416	0.0086	0.86%	0.59%	57	38	96%	145%
60-64	95	7,183	0.0132	1.56%	1.11%	113	80	84%	119%
65-69	97	5,772	0.0168	2.55%	1.99%	147	115	66%	84%
70-74	143	4,250	0.0336	4.00%	3.27%	170	139	84%	103%
75-79	153	2,760	0.0554	6.67%	5.40%	181	149	85%	103%
80-84	118	1,264	0.0934	10.46%	9.02%	130	114	91%	104%
85-89	81	483	0.1677	16.44%	14.70%	76	71	107%	114%
90-94	25	118	0.2119	25.12%	22.88%	29	27	86%	93%
95-99	6	15	0.4000	34.11%	33.33%	5	5	120%	120%
100-104	0	0	N/A	44.06%	0.00%	0	0	0%	0%
105-109	0	0	N/A	49.72%	0.00%	0	0	0%	0%
Total	788	31,567				924	748	85%	105%

SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM (PORS)
POST-RETIREMENT MORTALITY EXPERIENCE - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	3	681	0.0044	0.17%	0.17%	1	1	300%	300%
55-59	10	1,439	0.0069	0.28%	0.34%	4	5	250%	200%
60-64	6	1,555	0.0039	0.55%	0.68%	9	11	67%	55%
65-69	22	1,304	0.0169	1.04%	1.32%	13	17	169%	129%
70-74	18	777	0.0232	1.61%	2.24%	12	17	150%	106%
75-79	4	269	0.0149	2.72%	3.49%	7	9	57%	44%
80-84	10	145	0.0690	4.73%	5.69%	7	8	143%	125%
85-89	5	93	0.0538	8.10%	10.53%	7	9	71%	56%
90-94	3	18	0.1667	13.84%	16.96%	2	3	150%	100%
95-99	0	4	0.0000	21.78%	24.07%	1	1	0%	0%
100-104	1	2	0.5000	31.90%	29.27%	1	1	100%	100%
105-109	0	0	N/A	43.81%	37.11%	0	0	0%	0%
Total	82	6,287				64	82	128%	100%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
POST-RETIREMENT MORTALITY EXPERIENCE - DISABLED MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
40-44	10	591	0.0169	1.92%	1.92%	11	11	88%	91%
45-49	33	1,175	0.0281	2.15%	2.14%	25	25	130%	132%
50-54	53	1,980	0.0268	2.71%	2.68%	54	54	99%	98%
55-59	105	2,833	0.0371	3.24%	3.23%	92	92	114%	114%
60-64	119	2,890	0.0412	3.83%	3.82%	111	111	108%	107%
65-69	118	2,282	0.0517	4.61%	4.63%	105	105	112%	112%
70-74	92	1,329	0.0692	5.85%	5.90%	78	78	118%	118%
75-79	71	703	0.1010	7.73%	7.83%	54	54	131%	131%
80-84	47	407	0.1155	10.28%	10.36%	42	42	112%	112%
85-89	35	186	0.1882	13.00%	13.19%	24	24	145%	146%
90-94	10	29	0.3448	16.76%	18.41%	5	5	206%	200%
95-99	0	0	N/A	N/A	25.49%	0	0	0%	0%
100-104	0	0	N/A	N/A	31.59%	0	0	0%	0%
105-109	0	0	N/A	34.00%	34.00%	0	0	0%	0%
Other	8	409	0.0196	0.00%	0.00%	8	10	102%	80%
Total	701	14,814				609	611	115%	115%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
POST-RETIREMENT MORTALITY EXPERIENCE - DISABLED FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
40-44	19	582	0.0326	0.82%	0.82%	5	5	398%	380%
45-49	26	1,418	0.0183	1.01%	0.99%	14	14	181%	186%
50-54	60	2,504	0.0240	1.50%	1.48%	38	38	159%	158%
55-59	71	3,577	0.0198	2.06%	2.05%	74	74	96%	96%
60-64	115	3,874	0.0297	2.65%	2.65%	103	103	112%	112%
65-69	79	2,570	0.0307	3.42%	3.45%	88	88	90%	90%
70-74	60	1,461	0.0411	4.67%	4.71%	68	68	88%	88%
75-79	45	829	0.0543	6.49%	6.55%	54	54	84%	83%
80-84	38	471	0.0807	8.94%	9.05%	42	42	90%	90%
85-89	38	242	0.1570	12.29%	12.60%	30	30	128%	127%
90-94	15	75	0.2000	16.99%	17.59%	13	13	118%	115%
95-99	0	0	N/A	N/A	23.68%	0	0	0%	0%
100-104	0	0	N/A	N/A	27.99%	0	0	0%	0%
105-109	0	0	N/A	N/A	35.50%	0	0	0%	0%
Other	6	391	0.0153	0.00%	0.00%	3	8	188%	75%
Total	572	17,994				531	537	108%	107%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
POST-RETIREMENT MORTALITY EXPERIENCE - DISABLED MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
40-44	8	108	0.0741	1.69%	1.69%	2	2	437%	400%
45-49	5	254	0.0197	1.90%	1.88%	5	5	104%	100%
50-54	17	489	0.0348	2.40%	2.37%	12	12	145%	142%
55-59	27	879	0.0307	2.87%	2.85%	25	25	107%	108%
60-64	35	901	0.0388	3.38%	3.37%	30	30	115%	117%
65-69	32	739	0.0433	4.06%	4.08%	30	30	107%	107%
70-74	24	399	0.0602	5.18%	5.21%	21	21	116%	114%
75-79	17	215	0.0791	6.87%	6.91%	15	15	115%	113%
80-84	14	147	0.0952	9.03%	9.14%	13	13	106%	108%
85-89	8	68	0.1176	11.51%	11.64%	8	8	102%	100%
90-94	6	31	0.1935	15.29%	16.25%	5	5	127%	120%
95-99	2	2	1.0000	19.50%	22.49%	0	0	513%	0%
100-104	0	0	N/A	N/A	27.88%	0	0	0%	0%
105-109	0	0	N/A	N/A	30.00%	0	0	0%	0%
Other	1	54	0.0185	0.00%	0.00%	1	1	110%	100%
Total	196	4,286				167	167	118%	117%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
POST-RETIREMENT MORTALITY EXPERIENCE - DISABLED FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
40-44	11	374	0.0294	0.82%	0.82%	3	3	359%	367%
45-49	41	1,017	0.0403	1.02%	0.99%	10	10	397%	410%
50-54	42	2,048	0.0205	1.52%	1.48%	31	31	135%	135%
55-59	88	3,563	0.0247	2.07%	2.05%	74	74	119%	119%
60-64	95	4,023	0.0236	2.64%	2.65%	106	106	89%	90%
65-69	88	2,544	0.0346	3.41%	3.45%	87	87	101%	101%
70-74	52	1,539	0.0338	4.69%	4.71%	72	72	72%	72%
75-79	50	955	0.0524	6.49%	6.55%	62	62	81%	81%
80-84	54	624	0.0865	8.98%	9.05%	56	56	96%	96%
85-89	41	355	0.1155	12.43%	12.60%	44	44	93%	93%
90-94	22	147	0.1497	17.12%	17.59%	25	25	87%	88%
95-99	3	19	0.1579	22.37%	23.68%	4	4	71%	75%
100-104	1	2	0.5000	30.50%	27.99%	1	1	164%	100%
105-109	0	0	N/A	N/A	35.50%	0	0	0%	0%
Other	6	271	0.0221	0.00%	0.00%	2	10	270%	60%
Total	594	17,481				578	585	103%	102%

SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM (PORS)
POST-RETIREMENT MORTALITY EXPERIENCE - DISABLED MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
40-44	5	675	0.0074	1.81%	1.69%	12	9	41%	56%
45-49	12	929	0.0129	2.06%	1.88%	19	14	63%	86%
50-54	15	1,167	0.0129	2.53%	2.37%	30	22	51%	68%
55-59	25	1,194	0.0209	3.17%	2.85%	38	27	66%	93%
60-64	24	756	0.0317	3.81%	3.37%	29	20	83%	120%
65-69	18	377	0.0477	4.17%	4.08%	16	12	114%	150%
70-74	14	199	0.0704	4.64%	5.21%	9	8	152%	175%
75-79	7	87	0.0805	5.43%	6.91%	5	5	148%	140%
80-84	9	54	0.1667	7.81%	9.14%	4	4	213%	225%
85-89	2	4	0.5000	10.50%	11.64%	0	0	476%	0%
90-94	0	0	N/A	N/A	16.25%	0	0	0%	0%
95-99	0	0	N/A	N/A	22.49%	0	0	0%	0%
100-104	0	0	N/A	N/A	27.88%	0	0	0%	0%
105-109	0	0	N/A	60.00%	30.00%	0	0	0%	0%
Other	18	696	0.0259	0.00%	0.00%	12	11	152%	164%
Total	149	6,138				174	132	86%	113%

SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM (PORS)
POST-RETIREMENT MORTALITY EXPERIENCE - DISABLED FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
40-44	7	204	0.0343	1.81%	0.45%	4	1	190%	700%
45-49	5	339	0.0147	2.06%	0.54%	7	2	72%	250%
50-54	5	417	0.0120	2.53%	0.81%	11	3	47%	167%
55-59	9	343	0.0262	3.16%	1.12%	11	4	83%	225%
60-64	5	195	0.0256	3.79%	1.44%	7	3	68%	167%
65-69	1	45	0.0222	4.13%	1.88%	2	1	54%	100%
70-74	0	11	0.0000	4.64%	2.57%	1	0	0%	0%
75-79	1	7	0.1429	5.43%	3.57%	0	0	263%	0%
80-84	0	1	0.0000	7.00%	4.94%	0	0	0%	0%
85-89	0	0	N/A	N/A	6.87%	0	0	0%	0%
90-94	0	0	N/A	N/A	9.60%	0	0	0%	0%
95-99	0	0	N/A	N/A	12.91%	0	0	0%	0%
100-104	0	0	N/A	N/A	15.27%	0	0	0%	0%
105-109	0	0	N/A	N/A	19.36%	0	0	0%	0%
Other	6	271	0.0221	0.00%	0.00%	5	6	129%	100%
Total	39	1,833				47	20	83%	195%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
ACTIVE MORTALITY EXPERIENCE - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	1	345	0.0029	0.03%	0.03%	0	0	0%	0%
20-24	8	7,663	0.0010	0.03%	0.04%	3	3	267%	267%
25-29	8	14,833	0.0005	0.04%	0.04%	6	6	133%	133%
30-34	21	18,335	0.0011	0.05%	0.06%	11	12	191%	175%
35-39	24	24,122	0.0010	0.09%	0.10%	22	24	109%	100%
40-44	39	26,903	0.0014	0.12%	0.13%	33	36	118%	108%
45-49	58	31,586	0.0018	0.16%	0.19%	55	61	105%	95%
50-54	99	31,156	0.0032	0.23%	0.27%	76	84	130%	118%
55-59	100	27,012	0.0037	0.34%	0.40%	99	109	101%	92%
60-64	107	17,327	0.0062	0.56%	0.65%	99	109	108%	98%
65-69	46	5,553	0.0083	0.82%	0.95%	46	51	100%	90%
Total	511	204,835				450	495	114%	103%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
ACTIVE MORTALITY EXPERIENCE - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	0	337	0.0000	0.01%	0.01%	0	0	0%	0%
20-24	0	8,702	0.0000	0.01%	0.02%	1	1	0%	0%
25-29	10	26,469	0.0004	0.01%	0.02%	4	5	250%	200%
30-34	11	31,207	0.0004	0.02%	0.03%	7	9	157%	122%
35-39	23	36,948	0.0006	0.03%	0.04%	14	17	164%	135%
40-44	40	43,034	0.0009	0.05%	0.07%	24	30	167%	133%
45-49	63	49,577	0.0013	0.08%	0.11%	43	53	147%	119%
50-54	75	49,605	0.0015	0.12%	0.16%	64	78	117%	96%
55-59	91	39,395	0.0023	0.19%	0.24%	77	95	118%	96%
60-64	61	21,902	0.0028	0.29%	0.37%	64	79	95%	77%
65-69	22	5,099	0.0043	0.41%	0.53%	21	26	105%	85%
Total	396	312,275				319	393	124%	101%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
ACTIVE MORTALITY EXPERIENCE - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	0	47	0.0000	0.02%	0.03%	0	0	0%	0%
20-24	1	1,457	0.0007	0.03%	0.04%	0	1	0%	100%
25-29	3	6,603	0.0005	0.03%	0.04%	2	3	150%	100%
30-34	8	8,371	0.0010	0.05%	0.06%	4	5	200%	160%
35-39	9	9,515	0.0009	0.09%	0.10%	6	10	150%	90%
40-44	12	9,632	0.0012	0.12%	0.13%	9	14	133%	86%
45-49	23	11,271	0.0020	0.16%	0.19%	15	23	153%	100%
50-54	29	11,409	0.0025	0.23%	0.27%	21	32	138%	91%
55-59	32	9,588	0.0033	0.34%	0.40%	26	40	123%	80%
60-64	40	6,204	0.0064	0.56%	0.65%	27	41	148%	98%
65-69	15	2,061	0.0073	0.82%	0.95%	13	20	115%	75%
Total	172	76,158				123	189	140%	91%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
ACTIVE MORTALITY EXPERIENCE - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	1	76	0.0132	0.01%	0.01%	0	0	0%	0%
20-24	0	5,267	0.0000	0.01%	0.01%	1	1	0%	0%
25-29	7	27,297	0.0003	0.01%	0.02%	3	4	233%	175%
30-34	6	33,875	0.0002	0.02%	0.02%	7	8	86%	75%
35-39	15	43,258	0.0003	0.03%	0.04%	13	17	115%	88%
40-44	20	46,123	0.0004	0.05%	0.06%	22	28	91%	71%
45-49	52	56,519	0.0009	0.07%	0.09%	42	53	124%	98%
50-54	79	55,576	0.0014	0.11%	0.14%	60	77	132%	103%
55-59	69	42,361	0.0016	0.17%	0.21%	70	89	99%	78%
60-64	64	21,677	0.0030	0.26%	0.33%	53	68	121%	94%
65-69	13	4,676	0.0028	0.36%	0.46%	16	21	81%	62%
Total	326	336,705				287	366	114%	89%

SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM (PORS)
ACTIVE MORTALITY EXPERIENCE - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
							0		
Under 20	0	74	0.0000	0.03%	0.03%	0	0	0%	0%
20-24	3	10,132	0.0003	0.03%	0.03%	2	3	150%	100%
25-29	14	26,816	0.0005	0.03%	0.03%	5	9	280%	156%
30-34	13	29,602	0.0004	0.05%	0.05%	8	15	163%	87%
35-39	17	33,642	0.0005	0.08%	0.08%	14	26	121%	65%
40-44	21	29,742	0.0007	0.10%	0.10%	16	31	131%	68%
45-49	17	23,690	0.0007	0.15%	0.15%	19	35	89%	49%
50-54	21	16,846	0.0012	0.21%	0.21%	19	35	111%	60%
55-59	19	11,314	0.0017	0.31%	0.31%	18	35	106%	54%
60-64	19	5,614	0.0034	0.51%	0.51%	14	27	136%	70%
65-69	4	174	0.0230	0.74%	0.74%	1	1	400%	400%
70-74	2	48	0.0417	2.35%	2.35%	1	1	200%	200%
Total	150	187,694				117	218	128%	69%

SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM (PORS)
ACTIVE MORTALITY EXPERIENCE - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	0	6	0.0000	0.03%	0.03%	0	0	0%	0%
20-24	1	2,634	0.0004	0.01%	0.01%	0	1	0%	100%
25-29	1	8,902	0.0001	0.01%	0.02%	2	3	50%	33%
30-34	4	9,010	0.0004	0.02%	0.02%	2	4	200%	100%
35-39	3	10,214	0.0003	0.03%	0.04%	4	8	75%	38%
40-44	2	9,970	0.0002	0.05%	0.06%	6	11	33%	18%
45-49	6	9,622	0.0006	0.07%	0.09%	8	14	75%	43%
50-54	3	7,830	0.0004	0.11%	0.14%	9	16	33%	19%
55-59	9	4,644	0.0019	0.17%	0.21%	8	14	113%	64%
60-64	4	2,174	0.0018	0.26%	0.33%	6	11	67%	36%
65-69	0	24	0.0000	0.36%	0.46%	0	0	0%	0%
70-74	0	12	0.0000	1.14%	1.45%	0	0	0%	0%
Total	33	65,042				45	82	73%	40%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
DISABILITY EXPERIENCE - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Disabilities	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	0	0	N/A	0.06%	0.06%	0	0	0%	0%
20-24	0	317	0.0000	0.06%	0.06%	0	0	0%	0%
25-29	9	4,259	0.0021	0.09%	0.09%	4	4	225%	225%
30-34	11	9,819	0.0011	0.15%	0.15%	15	15	73%	73%
35-39	50	15,931	0.0031	0.24%	0.24%	39	39	128%	128%
40-44	71	19,464	0.0036	0.37%	0.37%	72	72	99%	99%
45-49	137	23,983	0.0057	0.52%	0.52%	124	124	110%	110%
50-54	192	24,497	0.0078	0.78%	0.78%	191	191	101%	101%
55-59	244	21,365	0.0114	1.11%	1.11%	236	236	103%	103%
60-64	196	13,747	0.0143	1.42%	1.42%	191	191	103%	103%
65-69	4	4,012	0.0010	1.58%	1.58%	63	63	6%	6%
Total	914	137,394				935	935	98%	98%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
DISABILITY EXPERIENCE - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Disabilities	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	0	0	N/A	0.06%	0.06%	0	0	0%	0%
20-24	0	214	0.0000	0.06%	0.06%	0	0	0%	0%
25-29	6	5,537	0.0011	0.07%	0.07%	4	4	150%	150%
30-34	16	15,592	0.0010	0.11%	0.11%	18	18	89%	89%
35-39	53	23,451	0.0023	0.18%	0.18%	43	43	123%	123%
40-44	96	30,649	0.0031	0.25%	0.25%	76	76	126%	126%
45-49	182	38,105	0.0048	0.39%	0.39%	147	147	124%	124%
50-54	274	39,117	0.0070	0.63%	0.63%	246	246	111%	111%
55-59	306	31,849	0.0096	0.98%	0.98%	310	310	99%	99%
60-64	231	18,220	0.0127	1.48%	1.48%	261	261	89%	89%
65-69	7	4,148	0.0017	1.73%	1.73%	72	72	10%	10%
Total	1,171	206,882				1,177	1,177	99%	99%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
DISABILITY EXPERIENCE - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Disabilities	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	0	0	N/A	0.05%	0.05%	0	0	0%	0%
20-24	0	40	0.0000	0.05%	0.05%	0	0	0%	0%
25-29	0	1,649	0.0000	0.06%	0.06%	1	1	0%	0%
30-34	2	5,421	0.0004	0.09%	0.09%	5	5	40%	40%
35-39	6	7,203	0.0008	0.14%	0.14%	10	10	60%	60%
40-44	19	7,343	0.0026	0.25%	0.25%	18	18	106%	106%
45-49	25	8,812	0.0028	0.41%	0.41%	36	36	69%	69%
50-54	55	9,140	0.0060	0.65%	0.65%	59	59	93%	93%
55-59	88	7,274	0.0121	1.03%	1.03%	75	75	117%	117%
60-64	74	4,519	0.0164	1.47%	1.47%	65	65	114%	114%
65-69	3	1,399	0.0021	1.64%	1.64%	23	23	13%	13%
Total	272	52,800				292	292	93%	93%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
DISABILITY EXPERIENCE - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Disabilities	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	0	0	N/A	0.04%	0.04%	0	0	0%	0%
20-24	0	43	0.0000	0.04%	0.04%	0	0	0%	0%
25-29	2	8,330	0.0002	0.06%	0.06%	5	5	40%	40%
30-34	7	23,279	0.0003	0.08%	0.08%	18	18	39%	39%
35-39	38	31,642	0.0012	0.10%	0.10%	32	32	119%	119%
40-44	59	34,948	0.0017	0.19%	0.19%	68	68	87%	87%
45-49	146	46,724	0.0031	0.34%	0.34%	161	161	91%	91%
50-54	252	47,998	0.0053	0.55%	0.55%	262	262	96%	96%
55-59	291	36,524	0.0080	0.87%	0.87%	314	314	93%	93%
60-64	238	18,712	0.0127	1.24%	1.24%	225	225	106%	106%
65-69	4	3,697	0.0011	1.38%	1.38%	51	51	8%	8%
Total	1,037	251,897				1,136	1,136	91%	91%

SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM (PORS)
DISABILITY EXPERIENCE - MALE AND FEMALE COMBINED

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Disabilities	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	0	0	N/A	0.05%	0.05%	0	0	0%	0%
20-24	0	40	0.0000	0.05%	0.05%	0	0	0%	0%
25-29	0	1,649	0.0000	0.06%	0.06%	1	1	0%	0%
30-34	2	5,421	0.0004	0.09%	0.09%	5	5	40%	40%
35-39	6	7,203	0.0008	0.14%	0.14%	10	10	60%	60%
40-44	19	7,343	0.0026	0.25%	0.25%	18	18	106%	106%
45-49	25	8,812	0.0028	0.41%	0.41%	36	36	69%	69%
50-54	55	9,140	0.0060	0.65%	0.65%	59	59	93%	93%
55-59	88	7,274	0.0121	1.03%	1.03%	75	75	117%	117%
60-64	74	4,519	0.0164	1.47%	1.47%	65	65	114%	114%
65-69	3	1,399	0.0021	1.64%	1.64%	23	23	13%	13%
70-74	0	0	N/A	1.64%	1.64%	0	0	0%	0%
Total	272	52,800				292	292	93%	93%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
TERMINATION EXPERIENCE - SERVICE-BASED - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Service	Actual Terminations	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
0	4,531	17,009	0.2664	27.08%	27.08%	4,606	4,606	98%	98%
1	6,736	32,654	0.2063	19.92%	19.92%	6,503	6,503	104%	104%
2	3,970	26,563	0.1495	15.03%	15.03%	3,992	3,992	99%	99%
3	2,723	22,335	0.1219	12.06%	12.06%	2,693	2,693	101%	101%
4	1,975	18,661	0.1058	10.22%	10.22%	1,907	1,907	104%	104%
5	1,387	15,890	0.0873	8.92%	8.92%	1,418	1,418	98%	98%
6	1,110	14,401	0.0771	7.97%	7.97%	1,148	1,148	97%	97%
7	887	13,165	0.0674	7.09%	7.09%	933	933	95%	95%
8	761	12,114	0.0628	6.14%	6.14%	744	744	102%	102%
9	538	10,905	0.0493	4.88%	4.88%	532	532	101%	101%
10	451	9,800	0.0460	3.15%	3.15%	309	309	146%	146%
Total	25,069	193,497				24,784	24,785	101%	101%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
TERMINATION EXPERIENCE - SERVICE-BASED - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Service	Actual Terminations	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
0	6,578	25,305	0.2599	25.60%	25.60%	6,478	6,478	102%	102%
1	10,652	51,435	0.2071	20.16%	20.16%	10,370	10,370	103%	103%
2	6,599	41,900	0.1575	16.12%	16.12%	6,753	6,753	98%	98%
3	4,694	35,524	0.1321	13.36%	13.36%	4,748	4,748	99%	99%
4	3,406	30,052	0.1133	11.47%	11.47%	3,448	3,448	99%	99%
5	2,609	26,047	0.1002	10.09%	10.09%	2,628	2,628	99%	99%
6	1,975	23,361	0.0845	9.01%	9.01%	2,104	2,104	94%	94%
7	1,574	21,398	0.0736	8.04%	8.04%	1,719	1,719	92%	92%
8	1,281	19,652	0.0652	6.92%	6.92%	1,361	1,361	94%	94%
9	1,078	17,858	0.0604	5.46%	5.46%	975	975	111%	111%
10	804	15,975	0.0503	3.47%	3.47%	554	554	145%	145%
Total	41,250	308,507				41,136	41,138	100%	100%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
TERMINATION EXPERIENCE - YEAR(S) FROM RETIREMENT - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Year(s) From Retirement	Actual Terminations	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	8	655	0.0122	2.44%	1.44%	16	9	50%	89%
2	131	7,791	0.0168	2.26%	1.56%	176	122	74%	107%
3	155	8,079	0.0192	2.30%	1.70%	186	137	83%	113%
4	165	8,141	0.0203	2.33%	1.85%	190	150	87%	110%
5	164	8,203	0.0200	2.39%	2.00%	196	164	84%	100%
6	206	8,134	0.0253	2.45%	2.17%	199	177	104%	116%
7	193	8,055	0.0240	2.52%	2.35%	203	189	95%	102%
8	230	8,009	0.0287	2.61%	2.54%	209	203	110%	113%
9	231	7,906	0.0292	2.73%	2.74%	216	216	107%	107%
10	265	7,714	0.0344	2.86%	2.95%	221	227	120%	117%
11	239	7,338	0.0326	3.01%	3.17%	221	233	108%	103%
12	232	6,950	0.0334	3.14%	3.40%	218	236	106%	98%
13	230	6,544	0.0351	3.30%	3.64%	216	238	106%	97%
14	253	6,345	0.0399	3.50%	3.90%	222	247	114%	102%
15	279	6,066	0.0460	3.68%	4.16%	223	252	125%	111%
16	258	5,920	0.0436	4.19%	4.44%	248	263	104%	98%
17	277	5,774	0.0480	5.01%	4.72%	289	273	96%	101%
Total	3,516	117,624				3,449	3,336	102%	105%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
TERMINATION EXPERIENCE - YEAR(S) FROM RETIREMENT - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Year(s) From Retirement	Actual Terminations	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	5	1,008	0.0050	2.48%	1.49%	25	15	20%	33%
2	206	11,294	0.0182	2.61%	1.59%	295	179	70%	115%
3	252	11,730	0.0215	2.59%	1.70%	304	200	83%	126%
4	261	11,926	0.0219	2.59%	1.83%	309	219	84%	119%
5	294	12,099	0.0243	2.60%	1.98%	314	240	94%	123%
6	325	12,043	0.0270	2.62%	2.15%	315	259	103%	125%
7	351	11,952	0.0294	2.66%	2.34%	318	280	110%	125%
8	346	11,986	0.0289	2.72%	2.55%	326	306	106%	113%
9	320	11,969	0.0267	2.82%	2.78%	337	332	95%	96%
10	357	11,786	0.0303	2.94%	3.02%	347	356	103%	100%
11	388	11,352	0.0342	3.07%	3.28%	349	372	111%	104%
12	393	10,900	0.0361	3.25%	3.56%	354	388	111%	101%
13	375	10,321	0.0363	3.46%	3.86%	357	399	105%	94%
14	392	9,914	0.0395	3.68%	4.18%	365	414	107%	95%
15	431	9,551	0.0451	3.93%	4.52%	375	431	115%	100%
16	465	9,301	0.0500	4.60%	4.87%	428	453	109%	103%
17	485	9,008	0.0538	5.61%	5.24%	505	472	96%	103%
Total	5,646	178,140				5,623	5,315	100%	106%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
TERMINATION EXPERIENCE - SERVICE-BASED - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Service	Actual Terminations	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
0	2,466	9,536	0.2586	21.30%	21.30%	2,031	2,031	121%	121%
1	6,877	42,682	0.1611	15.33%	15.33%	6,542	6,542	105%	105%
2	4,636	37,229	0.1245	11.48%	11.48%	4,273	4,273	108%	108%
3	3,373	33,496	0.1007	9.26%	9.26%	3,102	3,102	109%	109%
4	2,593	29,911	0.0867	7.86%	7.86%	2,351	2,351	110%	110%
5	1,956	27,124	0.0721	6.96%	6.96%	1,887	1,887	104%	104%
6	1,630	25,685	0.0635	6.34%	6.34%	1,630	1,630	100%	100%
7	1,350	24,351	0.0554	5.71%	5.71%	1,391	1,391	97%	97%
8	1,064	23,077	0.0461	4.92%	4.92%	1,135	1,135	94%	94%
9	850	21,471	0.0396	3.85%	3.85%	827	827	103%	103%
10	717	19,747	0.0363	2.34%	2.34%	462	462	155%	155%
Total	27,512	294,309				25,631	25,631	107%	107%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
TERMINATION EXPERIENCE - SERVICE-BASED - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Service	Actual Terminations	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
0	968	9,536	0.1015	8.80%	8.80%	839	839	115%	115%
1	2,290	42,682	0.0537	5.12%	5.12%	2,187	2,187	105%	105%
2	1,365	37,229	0.0367	3.48%	3.48%	1,297	1,297	105%	105%
3	879	33,496	0.0262	2.51%	2.51%	841	841	104%	105%
4	622	29,911	0.0208	1.87%	1.87%	560	560	111%	111%
5	468	27,124	0.0173	1.51%	1.51%	410	410	114%	114%
6	356	25,685	0.0139	1.35%	1.35%	346	346	103%	103%
7	312	24,351	0.0128	1.23%	1.23%	301	301	104%	104%
8	211	23,077	0.0091	1.06%	1.06%	245	245	86%	86%
9	201	21,471	0.0094	0.83%	0.83%	178	178	113%	113%
10	132	19,747	0.0067	0.49%	0.49%	97	97	136%	136%
Total	7,804	294,309				7,299	7,301	107%	107%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
TERMINATION EXPERIENCE - YEAR(S) FROM RETIREMENT - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Year(s) From Retirement	Actual Terminations	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	1	195	0.0051	1.54%	0.89%	3	2	33%	50%
2	44	2,692	0.0163	2.23%	1.16%	60	31	73%	142%
3	48	2,767	0.0173	2.13%	1.36%	59	38	81%	126%
4	52	2,776	0.0187	2.02%	1.52%	56	42	93%	124%
5	73	2,788	0.0262	1.97%	1.66%	55	46	133%	159%
6	40	2,703	0.0148	1.89%	1.78%	51	48	78%	83%
7	55	2,625	0.0210	1.83%	1.89%	48	50	115%	110%
8	60	2,555	0.0235	1.80%	1.99%	46	51	130%	118%
9	54	2,396	0.0225	1.75%	2.08%	42	50	129%	108%
10	54	2,361	0.0229	1.78%	2.17%	42	51	129%	106%
11	60	2,276	0.0264	1.80%	2.25%	41	51	146%	118%
12	68	2,212	0.0307	1.81%	2.33%	40	51	170%	133%
13	49	2,129	0.0230	1.88%	2.40%	40	51	123%	96%
14	52	2,121	0.0245	1.98%	2.47%	42	52	124%	100%
15	59	2,189	0.0270	2.10%	2.54%	46	56	128%	105%
16	46	1,884	0.0244	2.34%	2.60%	44	49	105%	94%
17	33	1,642	0.0201	2.56%	2.67%	42	44	79%	75%
Total	848	38,311				757	763	112%	111%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
TERMINATION EXPERIENCE - YEAR(S) FROM RETIREMENT - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Year(s) From Retirement	Actual Terminations	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	2	1,080	0.0019	1.57%	0.79%	17	9	12%	22%
2	175	14,607	0.0120	1.95%	0.90%	285	131	61%	134%
3	191	14,932	0.0128	1.88%	1.01%	280	150	68%	127%
4	190	15,001	0.0127	1.81%	1.13%	271	169	70%	112%
5	209	14,932	0.0140	1.75%	1.25%	261	187	80%	112%
6	252	14,439	0.0175	1.70%	1.38%	246	199	102%	127%
7	213	14,034	0.0152	1.67%	1.52%	234	213	91%	100%
8	268	13,771	0.0195	1.66%	1.66%	228	228	118%	118%
9	258	13,196	0.0196	1.66%	1.80%	219	238	118%	108%
10	261	12,571	0.0208	1.69%	1.96%	213	246	123%	106%
11	258	11,772	0.0219	1.74%	2.11%	205	249	126%	104%
12	247	11,094	0.0223	1.82%	2.28%	202	253	122%	98%
13	247	10,640	0.0232	1.93%	2.45%	205	260	120%	95%
14	273	10,327	0.0264	2.07%	2.62%	214	271	128%	101%
15	283	10,236	0.0276	2.25%	2.80%	230	287	123%	99%
16	271	8,365	0.0324	2.56%	2.99%	214	250	127%	108%
17	232	7,086	0.0327	2.92%	3.18%	207	225	112%	103%
Total	2,811	123,092				2,371	2,720	119%	103%

SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM (PORS)
TERMINATION EXPERIENCE - SERVICE-BASED - MALE AND FEMALE COMBINED

				Assumed Rate		Expected Retirements		Actual/Expected	
Service	Actual Terminations	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
0	3,301	11,044	0.2989	24.47%	25.00%	2,702	2,761	122%	120%
1	4,452	20,599	0.2161	17.74%	18.00%	3,654	3,708	122%	120%
2	2,437	16,780	0.1452	13.14%	14.00%	2,205	2,349	111%	104%
3	1,726	14,454	0.1194	10.41%	12.00%	1,505	1,735	115%	99%
4	1,284	12,135	0.1058	9.07%	10.70%	1,101	1,298	117%	99%
5	984	10,102	0.0974	8.33%	9.54%	841	964	117%	102%
6	775	9,221	0.0840	7.80%	8.50%	719	784	108%	99%
7	632	8,571	0.0737	7.12%	7.58%	610	650	104%	97%
8	548	8,242	0.0665	6.20%	6.75%	511	557	107%	98%
9	438	7,747	0.0565	5.02%	6.02%	389	466	113%	94%
10	383	6,924	0.0553	3.44%	5.37%	238	372	161%	103%
11	275	6,063	0.0454	3.35%	4.78%	203	290	135%	95%
12	246	5,533	0.0445	3.24%	4.26%	179	236	137%	104%
13	197	5,194	0.0379	3.14%	3.80%	163	197	121%	100%
14	177	4,860	0.0364	3.05%	3.39%	148	165	120%	107%
15	160	4,569	0.0350	2.98%	3.02%	136	138	118%	116%
16	117	4,304	0.0272	2.90%	2.69%	125	116	94%	101%
17	113	3,956	0.0286	2.83%	2.40%	112	95	101%	119%
18	80	3,782	0.0212	2.78%	2.14%	105	81	76%	99%
19	86	3,467	0.0248	2.71%	1.91%	94	66	91%	130%
20	62	3,049	0.0203	2.62%	1.70%	80	52	78%	119%
21	49	2,709	0.0181	2.58%	1.51%	70	41	70%	120%
22	47	2,297	0.0205	2.53%	1.35%	58	31	81%	152%
23	24	1,923	0.0125	2.50%	1.20%	48	23	50%	104%
Total	18,593	177,525				15,996	17,175	116%	108%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
UNREDUCED RETIREMENT EXPERIENCE - AGE BASED - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Retirements	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
65	331	1,250	0.2648	40.00%	30.00%	500	375	66%	88%
66	246	908	0.2709	24.56%	25.00%	223	227	110%	108%
67	116	640	0.1813	24.53%	20.00%	157	128	74%	91%
68	88	516	0.1705	19.96%	20.00%	103	103	85%	85%
69	62	428	0.1449	20.09%	20.00%	86	86	72%	72%
70	89	551	0.1615	100.00%	20.00%	551	110	16%	81%
71	86	469	0.1834	100.00%	20.00%	469	94	18%	91%
72	80	419	0.1909	100.00%	20.00%	419	84	19%	95%
73	63	335	0.1881	100.00%	20.00%	335	67	19%	94%
74	38	281	0.1352	100.00%	20.00%	281	56	14%	68%
Subtotal	1,199	5,797				3,124	1,330	38%	90%
75 or more	232	1,486	0.1561	100.00%	100.00%	1,486	1,486	16%	16%
Total	1,431	7,283				4,610	2,816	31%	51%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
UNREDUCED RETIREMENT EXPERIENCE - AGE BASED - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Retirements	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
65	431	1,527	0.2823	44.99%	30.00%	687	458	63%	94%
66	288	997	0.2889	24.67%	25.00%	246	249	117%	116%
67	148	674	0.2196	24.63%	20.00%	166	135	89%	110%
68	95	466	0.2039	24.68%	20.00%	115	93	83%	102%
69	55	339	0.1622	24.78%	20.00%	84	68	65%	81%
70	70	376	0.1862	100.00%	20.00%	376	75	19%	93%
71	51	293	0.1741	100.00%	20.00%	293	59	17%	86%
72	38	222	0.1712	100.00%	20.00%	222	44	17%	86%
73	33	183	0.1803	100.00%	20.00%	183	37	18%	89%
74	23	138	0.1667	100.00%	20.00%	138	28	17%	82%
Subtotal	1,232	5,215				2,510	1,246	49%	99%
75 or more	113	602	0.1877	100.00%	100.00%	604	602	19%	19%
Totals	1,345	5,817				3,114	1,848	43%	73%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
UNREDUCED RETIREMENT EXPERIENCE - SERVICE BASED - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Service	Actual Retirements	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
28	793	1,736	0.4568	41.53%	45.00%	721	781	110%	102%
29	393	1,356	0.2898	16.96%	30.00%	230	407	171%	97%
30	176	858	0.2051	17.25%	20.00%	148	172	119%	102%
31	112	610	0.1836	17.54%	18.00%	107	110	105%	102%
32	69	418	0.1651	18.18%	18.00%	76	75	91%	92%
33	44	300	0.1467	18.67%	18.00%	56	54	79%	81%
34	35	228	0.1535	20.18%	18.00%	46	41	76%	85%
35	32	180	0.1778	20.56%	18.00%	37	32	86%	100%
36	27	126	0.2143	15.00%	20.00%	28	25	96%	108%
37	17	87	0.1954	15.00%	20.00%	22	17	77%	100%
38	6	57	0.1053	15.00%	20.00%	17	11	35%	55%
39	9	45	0.2000	15.00%	20.00%	14	9	64%	100%
40	5	20	0.2500	15.00%	100.00%	7	20	71%	25%
41	3	15	0.2000	15.00%	100.00%	6	15	50%	20%
42	0	11	0.0000	15.00%	100.00%	4	11	0%	0%
43	1	8	0.1250	20.00%	100.00%	2	8	50%	13%
44	0	5	0.0000	20.00%	100.00%	2	5	0%	0%
45	0	3	0.0000	20.00%	100.00%	1	3	0%	0%
46 & Over	2	15	0.1333	20.00%	100.00%	11	15	18%	13%
Total	1,724	6,078				1,535	1,811	112%	95%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
GENERAL EMPLOYEES
UNREDUCED RETIREMENT EXPERIENCE - SERVICE BASED - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Service	Actual Retirements	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
28	1,242	2,427	0.5117	50.64%	50.00%	1,229	1,214	101%	102%
29	533	1,693	0.3148	19.02%	30.00%	322	508	166%	105%
30	220	988	0.2227	19.23%	20.00%	190	198	116%	111%
31	106	619	0.1712	19.71%	18.00%	122	111	87%	95%
32	62	379	0.1636	20.58%	16.00%	78	61	79%	102%
33	40	235	0.1702	21.28%	16.00%	50	38	80%	105%
34	16	155	0.1032	23.23%	16.00%	36	25	44%	64%
35	13	112	0.1161	25.00%	16.00%	28	18	46%	72%
36	8	76	0.1053	26.32%	16.00%	20	12	40%	67%
37	4	50	0.0800	28.00%	16.00%	14	8	29%	50%
38	6	33	0.1818	27.27%	16.00%	9	5	67%	120%
39	3	20	0.1500	30.00%	16.00%	6	3	50%	100%
40	1	12	0.0833	33.33%	100.00%	4	12	25%	8%
41	3	12	0.2500	33.33%	100.00%	4	12	75%	25%
42	3	9	0.3333	33.33%	100.00%	3	9	100%	33%
43	1	5	0.2000	40.00%	100.00%	2	5	50%	20%
44	0	3	0.0000	66.67%	100.00%	2	3	0%	0%
45	2	3	0.6667	66.67%	100.00%	2	3	100%	67%
46 & Over	0	5	0.0000	0.00%	100.00%	1	5	0%	0%
Total	2,263	6,836				2,122	2,250	107%	101%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
UNREDUCED RETIREMENT EXPERIENCE - AGE BASED - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Retirements	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
65	113	450	0.2511	45.11%	25.00%	203	113	56%	100%
66	78	313	0.2492	28.75%	25.00%	90	78	87%	100%
67	55	244	0.2254	24.18%	25.00%	59	61	93%	90%
68	28	190	0.1474	24.21%	25.00%	46	48	61%	58%
69	44	156	0.2821	24.36%	25.00%	38	39	116%	113%
70	38	208	0.1827	100.00%	25.00%	208	52	18%	73%
71	27	185	0.1459	100.00%	25.00%	185	46	15%	59%
72	35	160	0.2188	100.00%	25.00%	160	40	22%	88%
73	30	128	0.2344	100.00%	25.00%	128	32	23%	94%
74	18	108	0.1667	100.00%	25.00%	108	27	17%	67%
Subtotal	466	2,142				1,225	536	38%	87%
75 or more	62	272	0.2279	100.00%	100.00%	272	272	23%	23%
Total	528	2,414				1,497	808	35%	65%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
UNREDUCED RETIREMENT EXPERIENCE - AGE BASED - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Retirements	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
65	364	1,285	0.2833	50.04%	30.00%	643	386	57%	94%
66	276	881	0.3133	29.28%	30.00%	258	264	107%	105%
67	134	564	0.2376	29.26%	30.00%	165	169	81%	79%
68	103	424	0.2429	24.53%	25.00%	104	106	99%	97%
69	57	322	0.1770	24.53%	25.00%	79	81	72%	70%
70	53	332	0.1596	100.00%	25.00%	332	83	16%	64%
71	56	284	0.1972	100.00%	25.00%	284	71	20%	79%
72	48	216	0.2222	100.00%	25.00%	216	54	22%	89%
73	41	179	0.2291	100.00%	25.00%	179	45	23%	91%
74	21	134	0.1567	100.00%	25.00%	134	34	16%	62%
Subtotal	1,153	4,621				2,394	1,293	48%	89%
75 or more	102	431	0.2367	100.00%	100.00%	436	431	23%	24%
Total	1,255	5,052				2,830	1,724	44%	73%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
UNREDUCED RETIREMENT EXPERIENCE - SERVICE BASED - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Service	Actual Retirements	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
28	251	821	0.3057	59.07%	50.00%	485	411	52%	61%
29	403	737	0.5468	24.15%	30.00%	178	221	226%	182%
30	79	270	0.2926	24.44%	30.00%	66	81	120%	98%
31	43	166	0.2590	25.90%	30.00%	43	50	100%	86%
32	31	110	0.2818	27.27%	30.00%	30	33	103%	94%
33	18	65	0.2769	29.23%	30.00%	19	20	95%	90%
34	9	36	0.2500	33.33%	30.00%	12	11	75%	82%
35	6	26	0.2308	34.62%	30.00%	9	8	67%	75%
36	4	17	0.2353	8.00%	30.00%	6	5	67%	80%
37	3	11	0.2727	8.00%	30.00%	4	3	75%	100%
38	2	7	0.2857	20.00%	30.00%	3	2	67%	100%
39	1	4	0.2500	20.00%	30.00%	2	1	50%	100%
40	0	3	0.0000	20.00%	100.00%	1	3	0%	0%
41	0	1	0.0000	20.00%	100.00%	1	1	0%	0%
42	0	1	0.0000	20.00%	100.00%	0	1	0%	0%
43	0	0	N/A	30.00%	100.00%	0	0	0%	0%
44	0	2	0.0000	30.00%	100.00%	1	2	0%	0%
45	1	2	0.5000	30.00%	100.00%	1	2	100%	50%
46 & Over	1	11	0.0909	30.00%	100.00%	10	11	10%	9%
Total	852	2,290				871	866	98%	98%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
UNREDUCED RETIREMENT EXPERIENCE - SERVICE BASED - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Service	Actual Retirements	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
28	1,461	4,290	0.3406	61.07%	55.00%	2,620	2,360	56%	62%
29	2,192	3,788	0.5787	27.53%	30.00%	1,043	1,136	210%	193%
30	400	1,374	0.2911	28.24%	30.00%	388	412	103%	97%
31	209	836	0.2500	28.71%	30.00%	240	251	87%	83%
32	132	500	0.2640	29.60%	30.00%	148	150	89%	88%
33	73	293	0.2491	31.06%	30.00%	91	88	80%	83%
34	51	187	0.2727	31.02%	30.00%	58	56	88%	91%
35	29	129	0.2248	33.33%	40.00%	43	52	67%	56%
36	20	87	0.2299	34.48%	40.00%	30	35	67%	57%
37	9	61	0.1475	36.07%	40.00%	22	24	41%	38%
38	12	46	0.2609	41.30%	40.00%	19	18	63%	67%
39	10	31	0.3226	45.16%	40.00%	14	12	71%	83%
40	5	18	0.2778	50.00%	100.00%	9	18	56%	28%
41	3	15	0.2000	40.00%	100.00%	6	15	50%	20%
42	1	6	0.1667	33.33%	100.00%	2	6	50%	17%
43	1	6	0.1667	50.00%	100.00%	3	6	33%	17%
44	0	3	0.0000	66.67%	100.00%	2	3	0%	0%
45	0	5	0.0000	60.00%	100.00%	3	5	0%	0%
46 & Over	2	8	0.2500	50.00%	100.00%	7	8	29%	25%
Total	4,610	11,683				4,748	4,655	97%	99%

SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM (PORS)
UNREDUCED RETIREMENT EXPERIENCE - AGE BASED - MALE AND FEMALE COMBINED

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Retirements	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
55	269	1,403	0.1917	14.00%	20.00%	196	281	137%	96%
56	169	1,193	0.1417	14.00%	14.00%	167	167	101%	101%
57	123	1,079	0.1140	14.00%	12.00%	151	129	81%	95%
58	108	996	0.1084	14.00%	12.00%	139	120	77%	90%
59	107	959	0.1116	14.00%	12.00%	134	115	80%	93%
60	113	848	0.1333	15.00%	12.00%	127	102	89%	111%
61	92	718	0.1281	27.00%	12.00%	194	86	47%	107%
62	196	634	0.3091	40.00%	35.00%	254	222	77%	88%
63	101	440	0.2295	30.00%	25.00%	132	110	77%	92%
64	61	309	0.1974	25.00%	25.00%	77	77	79%	79%
65	65	230	0.2826	100.00%	30.00%	230	69	28%	94%
66	39	156	0.2500	100.00%	30.00%	156	47	25%	83%
67	23	108	0.2130	100.00%	30.00%	108	32	21%	72%
68	23	75	0.3067	100.00%	30.00%	75	23	31%	100%
69	6	54	0.1111	100.00%	30.00%	54	16	11%	38%
70	8	47	0.1702	100.00%	100.00%	47	47	17%	17%
71	6	37	0.1622	100.00%	100.00%	37	37	16%	16%
72	3	27	0.1111	100.00%	100.00%	27	27	11%	11%
73	7	22	0.3182	100.00%	100.00%	22	22	32%	32%
74	4	14	0.2857	100.00%	100.00%	14	14	29%	29%
Subtotal	1,523	9,349				2,342	1,743	65%	87%
75 or more	10	47	0.2128	100.00%	100.00%	47	47	21%	21%
Total	1,533	9,396				2,389	1,790	64%	86%

SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM (PORS)
UNREDUCED RETIREMENT EXPERIENCE - SERVICE BASED - MALE AND FEMALE COMBINED

				Assumed Rate		Expected Retirements		Actual/Expected	
Service	Actual Retirements	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
25	582	9,395	0.0619	20.00%	35.00%	406	200	143%	291%
26	219	746	0.2936	20.00%	30.00%	156	149	140%	147%
27	106	543	0.1952	20.00%	22.00%	108	109	98%	97%
28	96	457	0.2101	20.00%	22.00%	87	91	110%	105%
29	77	377	0.2042	20.00%	22.00%	70	75	110%	103%
30	60	309	0.1942	14.00%	22.00%	56	43	107%	140%
31	51	249	0.2048	14.00%	22.00%	44	35	116%	146%
32	42	204	0.2059	14.00%	22.00%	36	29	117%	145%
33	34	169	0.2012	14.00%	22.00%	31	24	110%	142%
34	28	133	0.2105	14.00%	22.00%	25	19	112%	147%
35	32	100	0.3200	15.00%	35.00%	19	15	168%	213%
36	19	63	0.3016	27.00%	35.00%	14	17	136%	112%
37	9	37	0.2432	40.00%	35.00%	9	15	100%	60%
38	14	43	0.3256	30.00%	35.00%	12	13	117%	108%
39	7	18	0.3889	25.00%	35.00%	6	5	117%	140%
40	3	21	0.1429	100.00%	100.00%	6	21	50%	14%
41	4	13	0.3077	100.00%	100.00%	6	13	67%	31%
42	2	12	0.1667	100.00%	100.00%	6	12	33%	17%
43	1	4	0.2500	100.00%	100.00%	2	4	50%	25%
44	2	6	0.3333	100.00%	100.00%	3	6	67%	33%
45	2	6	0.3333	100.00%	100.00%	3	6	67%	33%
46 & Over	5	55	0.0909	100.00%	100.00%	15	55	33%	9%
Total	1,395	12,960				1,120	956	125%	146%

GENERAL EMPLOYEES
REDUCED RETIREMENT EXPERIENCE - AGE BASED - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Retirements	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
55	42	439	0.0957	8.00%	10.00%	35	44	120%	96%
56	33	392	0.0842	8.00%	9.00%	31	35	105%	94%
57	31	346	0.0896	8.00%	9.00%	28	31	112%	100%
58	29	367	0.0790	8.00%	9.00%	29	33	99%	88%
59	35	328	0.1067	8.00%	9.00%	26	30	133%	119%
60	269	3,419	0.0787	8.00%	9.00%	274	308	98%	87%
61	232	2,999	0.0774	12.00%	9.00%	360	270	64%	86%
62	536	2,589	0.2070	21.00%	22.00%	544	570	99%	94%
63	324	1,985	0.1632	14.00%	16.00%	278	318	117%	102%
64	227	1,511	0.1502	12.00%	16.00%	181	242	125%	94%
Total	1,758	14,375				1,786	1,879	98%	94%

GENERAL EMPLOYEES
REDUCED RETIREMENT EXPERIENCE - AGE BASED - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Retirements	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
55	50	579	0.0864	10.00%	9.00%	58	52	86%	96%
56	53	547	0.0969	10.00%	10.00%	55	55	97%	97%
57	38	476	0.0798	10.00%	10.00%	48	48	80%	80%
58	50	440	0.1136	10.00%	11.00%	44	48	114%	103%
59	49	445	0.1101	10.00%	11.00%	45	49	110%	100%
60	501	4,925	0.1017	13.00%	11.00%	640	542	78%	92%
61	416	4,246	0.0980	14.00%	11.00%	594	467	70%	89%
62	654	3,505	0.1866	21.00%	20.00%	736	701	89%	93%
63	463	2,634	0.1758	18.00%	18.00%	474	474	98%	98%
64	322	1,924	0.1674	15.00%	18.00%	289	346	112%	93%
Total	2,596	19,721				2,982	2,782	87%	93%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
REDUCED RETIREMENT EXPERIENCE - AGE BASED - MALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Retirements	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
55	13	152	0.0855	10.00%	10.00%	15	15	86%	87%
56	14	129	0.1085	10.00%	11.00%	13	14	109%	100%
57	10	109	0.0917	10.00%	11.00%	11	12	92%	83%
58	10	93	0.1075	10.00%	11.00%	9	10	108%	100%
59	17	93	0.1828	10.00%	11.00%	9	10	183%	170%
60	115	1,145	0.1004	11.00%	11.00%	126	126	91%	91%
61	108	1,032	0.1047	15.00%	11.00%	155	114	70%	95%
62	196	895	0.2190	25.00%	22.00%	224	197	88%	99%
63	164	726	0.2259	18.00%	22.00%	131	160	125%	103%
64	70	506	0.1383	22.00%	22.00%	111	111	63%	63%
Total	717	4,880				804	769	89%	93%

SOUTH CAROLINA RETIREMENT SYSTEM (SCRS)
PUBLIC SCHOOL DISTRICT EMPLOYEES
REDUCED RETIREMENT EXPERIENCE - AGE BASED - FEMALE

				Assumed Rate		Expected Retirements		Actual/Expected	
Age	Actual Retirements	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
55	68	787	0.0864	11.00%	9.00%	87	71	79%	96%
56	65	786	0.0827	11.00%	9.00%	86	71	75%	92%
57	84	778	0.1080	11.00%	10.00%	86	78	98%	108%
58	78	710	0.1099	11.00%	10.00%	78	71	100%	110%
59	64	708	0.0904	11.00%	10.00%	78	71	82%	90%
60	529	5,216	0.1014	14.00%	10.00%	730	522	72%	101%
61	553	4,308	0.1284	16.00%	13.00%	689	560	80%	99%
62	664	3,398	0.1954	21.00%	20.00%	714	680	93%	98%
63	473	2,505	0.1888	20.00%	20.00%	501	501	94%	94%
64	337	1,729	0.1949	15.00%	20.00%	259	346	130%	97%
Total	2,915	20,925				3,308	2,971	88%	98%