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Commonwealth of Pennsylvania State Employees' Retirement System 18th Investigation of Actuarial Experience

January 1, 2011 to December 31, 2015



Prepared by:



12012 Sunset Hills Drive, Ste 920
Reston, VA 20190
P : 703.841.3100
F: 703.841.3108

**Eighteenth Investigation of Actuarial Experience of the State Employees’
Retirement System of the Commonwealth of Pennsylvania
Review of Experience from January 1, 2011 to December 31, 2015**

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I. Introduction & Executive Summary

Introduction

This is the eighteenth in a series of investigations of actuarial experience of the State Employees' Retirement System (SERS) for the Commonwealth of Pennsylvania. This report is based upon economic and demographic experience from January 1, 2011 through December 31, 2015. A periodic review of actuarial experience is essential if a retirement system is to be financed on a sound basis. The Commonwealth has formally recognized this need in Section 5902(j) of the State Employees' Retirement Code:

The board shall have the actuary make an annual valuation of the various accounts within six months of the close of each calendar year. In the year 1975 and in every fifth year thereafter the board shall have the actuary conduct an actuarial investigation and evaluation of the system based on data including the mortality, service, and compensation experience provided by the board annually during the preceding five years concerning the members and beneficiaries. The board shall by resolution adopt such tables as are necessary for the actuarial valuation of the fund and calculation of contributions, annuities and other benefits based on the reports and recommendations of the actuary.

A retirement system operates on a sound actuarial basis when the funds on hand, together with the expected future contributions, are sufficient to cover the value of future promised benefit payments. Each year the actuary projects the expected value of future benefits and the stream of contributions needed to meet the benefit payments. The projection serves as a basis for the determination of the needed employer contributions to the retirement fund. The projection is based on a wide variety of economic assumptions, such as assumed investment returns, and demographic assumptions, such as rates of mortality. Since both the economic and demographic experience change over time, it is essential to conduct a periodic review of the experience and to adjust the assumptions in the valuation to take into account the most recent experience as well as the actuary's expectations for the future.

Economic assumptions include the rates of investment return and salary growth. Both the nominal investment return and salary growth are affected by the general rate of inflation. In periods of low inflation, salary increases will typically be smaller, with a greater emphasis on promotions and longevity, whereas in times of rapid price increases, salary increases will be larger, to keep pace with salaries of other employers competing for talent, and to maintain purchasing power. The development of these rates therefore includes an investigation of the underlying inflation and expectations for future inflation. These relatively few rates, compared to the large number of demographic assumptions, have the most significant effect on the estimate of future contributions. General economic forces, instead of the specific experience of the retirement system, are often given more consideration when setting an investment return, or salary growth assumption.

Demographic assumptions include the set of rates that predict certain events occurring to a group of employees or annuitants. Events of significance to a retirement system are those that result in a

commencement or termination of a benefit payment. The events affecting active employees include reasons for leaving the system such as retirement, becoming disabled, terminating service, or death. The events affecting annuitants include death. If an annuitant would return to service, or if a disabled annuitant were to recover from disability, the benefit payments to the annuitant would stop. However, these events are not included in the analysis because the occurrences of these events are rare, and would not materially affect the calculation of the decrement rates.

It is general practice to introduce some degree of conservatism in setting actuarial assumptions. However, the degree of conservatism varies widely among pension plans. Some plans set assumptions so that the pension plan contributions will be at least as great as the contributions needed in the most adverse foreseeable circumstances. Other systems set assumptions that are close to the actual experience but conservative enough to protect against small deviations from past experience. The latter – a moderately conservative approach – has been used by the SERS Board and the recommended rates in this evaluation were developed on that basis.

The Actuarial Standards Board has issued standards (Actuarial Standards of Practice or ASOPs) on the selection of demographic and economic assumptions. These standards are revised from time to time to address emerging practice. The specific ASOPs that have guided Hay Group in performing this study and formulating recommended changes to the actuarial valuation assumptions for SERS are as follows:

- ASOP No. 27 – Selection of Economic Assumptions for Measuring Pension Obligations and
- ASOP No. 35 – Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations

Contents of this report:

- Section II of this report provides background information relating to this actuarial experience investigation.
- Section III presents the results of the review of the economic experience and discusses the basis for the recommended economic assumptions.
- Section IV presents the results of the analysis of the demographic experience, and the basis for the recommended demographic assumptions.
- Section V presents the results of other experience analyses we have performed (such as optional form election rates) and our conclusions regarding the related actuarial assumptions.
- Section VI provides an overview and final commentary on Hay Group's recommendations.
- Section VII sets out considerations in the selection of assumptions for employees subject to the provisions of Act 120.
- Section VIII provides the Actuarial Certification for the report.
- Section IX defines certain terms used in this report.
- A full set of our recommended assumptions is included in the tables in the Appendix.
- Following the Appendix are tables of the detailed results of the many separate studies undertaken by Hay Group that underlie this 2011-2015 Actuarial Experience Study.

The following Executive Summary provides an overview of Hay Group's findings and recommendations.

Executive Summary

The basic objective of this analysis is to develop economic and demographic assumptions in accordance with the expected future experience of the System. In general, it is good actuarial practice to select actuarial valuation assumptions taking into account the System’s actual experience over the recent past.

Economic Experience

The most important set of rates in the valuation is the set of economic assumptions that include the prediction of future rates of investment return and general salary increases. The assumed rates of investment return and general salary increases are both driven by the underlying rate of inflation. Based upon our analysis of SERS’ past economic experience and our expectations for the future (as discussed in detail in Section III of this report), we recommend that:

- The current investment return assumption of 7.50 percent per year (compounded annually) be continued,
- The current inflation assumption of 2.75 percent per year (compounded annually) be continued,
- The current general salary increase assumption of 3.05 percent per year (compounded annually) be continued and
- The current career salary increase assumptions (which vary by length of service) be reduced by varying amounts depending upon the employee’s length of service at all service levels.

Note that the actuarial valuation assumes that future salary growth will be the total of assumed increases in the general salary schedule (across-the-board increases) plus assumed career salary growth (via promotion and longevity increases).

Table I-1 below shows, for the first three recommendations listed above, (i) Hay Group’s recommended assumptions, (ii) the current assumptions, which have now been in use for the past four actuarial valuations (2011 – 2014), and (iii) the prior assumptions, which were utilized for the preceding sixteen years of actuarial valuations (from 1995 through 2010).

Table I-1 Recommended vs. Current vs. Prior Economic Assumptions					
	Annual Inflation	Investment Return		Salary Growth	
		Nominal	Real¹	Nominal	Real
Recommended	2.75%	7.50%	4.6%	3.05%	0.3%
Current 2011 – 2014	2.75%	7.50%	4.6%	3.05%	0.3%
Prior 2010	2.75%	8.00%	5.1%	3.05%	0.3%
Prior 2008 & 2009	3.00%	8.00%	4.9%	3.30%	0.3%
Prior 1995 – 2007	3.00%	8.50%	5.3%	3.30%	0.3%

¹ The real investment return and real salary growth rate are determined using the formula $(1+real) = (1+nominal)/(1+inflation)$. The rates shown are annual rates.

For the specific service-related reductions we are recommending to the salary increase assumptions, per the fourth recommendation listed above, see Table A-1 of the Appendix.

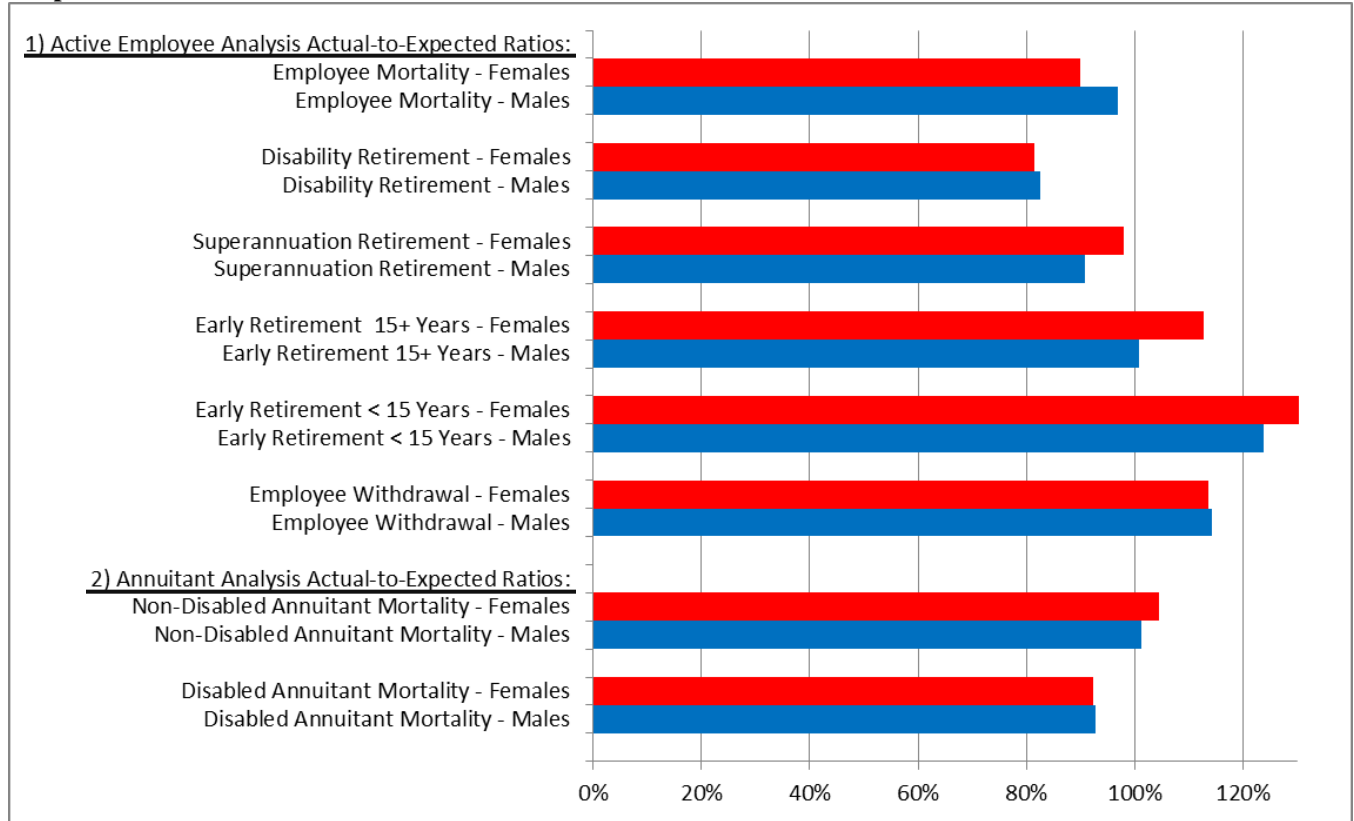
Demographic Experience

Development of demographic actuarial assumptions begins with the analysis of actual experience to expected experience, and the calculation of the actual-to-expected ratio. The actual-to-expected ratio gives a measure of how closely the assumption predicted what actually happened. If the actual-to-expected ratio is greater than 1.0, then the actuarial assumption under-predicted; if the actual-to-expected ratio is less than 1.0, then the assumption over-predicted the number of occurrences. The product of the analysis is a set of recommended actuarial assumptions that produce an actual-to-expected ratio close to 1.0, based on actual experience, unless circumstances warrant a deviation.

The analysis was performed separately for each category of membership expected to have unique patterns of termination experience. The general employees (i.e., those in Classes AA, A, A-3 and A-4) comprise close to 80 percent of the membership of SERS. The remaining 20 percent comprise the State Police, members of the General Assembly, members of the judiciary, and other members eligible to retire at age 50.

The actual-to-expected ratios for our general employee analyses (including members of Classes AA, A, A-3 and A-4) are shown graphically below in Graph I-1.

Graph I-1



Demographic Experience Observations and Assumption Recommendations

In general and as indicated in Graph I-1, the experience was close to expected for 5 of the 8 studies we undertook relating to the general employee and annuitant populations. That is, actual to expected ratios for both males and females were generally in the range of 90% to 110% for the following studies:

- Employee mortality (i.e., in-service deaths),
- Superannuation retirement,
- Early retirement after 15 or more years of service annuitant mortality,
- Non-disabled annuitant mortality, and
- Disabled annuitant mortality.

For the remaining 3 studies, the experience deviated more from our expectations, as follows:

- We observed only about 80% as many disability retirements than were expected,
- There were 20%-30% more early retirements among those with less than 15 years of service, and
- The numbers of employee withdrawals (turnover) ran about 14% more than expected.

Before summarizing Hay Group's demographic assumption change recommendations it is important that we provide some historical background regarding Class A-3 and Class A-4 employees:

On November 23, 2010, Governor Rendell signed HB 2497 into law as Act 2010-120 (Act 120). Although this legislation preserved all benefits then in place for current members, it mandated a number of benefit reductions for employees joining SERS on or after January 1, 2011 (who, in general, became members of newly established Classes A-3 or A-4); however, under Act 120, newly hired State Police retained eligibility for the special retirement benefits awarded to them under the collective bargaining arbitration agreement known as the DiLauro Award.

Since Act 120 has not been in place long enough for there to be sufficient data available to establish specific early and superannuation retirement rates for this population, we have not studied the retirement experience of Class A-3 and A-4 members; rather, we recommend the continued use of the retirement rates established during the last experience study, as included in Tables A-20 and A-21.

Hay Group is recommending the following demographic assumptions:

- With respect to the assumptions applicable to all Class A-3 and Class A-4 members;
 - Table A-20 sets out the recommended early retirement rates for Class A-3 and Class A-4 employees.
 - Table A-21 sets out the recommended superannuation retirement rates for Class A-3 and Class A-4 employees.
 - For all other rates (mortality, disability, withdrawal), we recommend using the same rates as used for General employees, as further described below.

- With respect to the assumptions applicable to all active employees:
 - Slight increases in the mortality rates for males at all ages, with no adjustment required to any of the mortality rates for females (See Table A-2)
 - Decreases in the disability retirement rates for both females and males at all ages (See Table A-3)
- With respect to the assumptions applicable to Class AA and Class A general employees:
 - Decreases in the superannuation rates for males at ages under 59 and increases in the superannuation rates for both females and males at ages over 65 (See Table A-4)
 - For both males and females with 15 or more years of service, increases in the early retirement rates at most ages over 50 and slight decreases in the rates at most ages under 50 (See Table A-5)
 - For both males and females with fewer than 15 years of service, significant increases in the early retirement rates at all ages (See Table A-6)
 - Net increases to the employee withdrawal rates for females and males, consisting of increases to rates applicable to most age and service durations, but decreases to rates applicable to some age and service durations (See Table A-7)
- With respect to the assumptions applicable to annuitants and survivors:
 - Decreases in the non-disabled annuitant and survivor mortality rates for both females and males at all ages under 101 (See Table A-8)
 - Decreases in the disabled annuitant mortality rates for females at all ages; decreases in the disabled annuitant mortality rates for males at all ages under 92 (See Table A-9)

Hay Group also studied the 2011-2015 demographic experience of employees in special benefit classes, leading to the following additional demographic assumption recommendations:

- With respect to the superannuation rates applicable to active State Police, both males and females, increases in most of the superannuation rates at service levels 24 years and beyond; decreases in rates at service levels under 24 years (See Table A-10)
- With respect to the superannuation rates applicable to active Hazardous Duty Employees other than State Police, both males and females, increases in the superannuation rates at almost all ages 49 and older (See Table A-11)
- With respect to the assumptions applicable to active State Police and other Hazardous Duty Employees:
 - Increases in the early retirement rates for both females and males (See Table A-12)
 - Increases in the employee withdrawal rates for females and males at almost all service levels except during the first two years of service, for which decreased rates are recommended (See Table A-13)
- With respect to the assumptions applicable to active Legislators:
 - Decreases in the superannuation rates for both females and males at all ages (See Table A-14)

- Slight decreases in the early retirement rates for both females and males at all ages (See Table A-15)
- Decreases in the employee withdrawal rates for females and males at all service levels under 7 years; increases in the rates at 7 or more years of service (See Table A-16)
- With respect to the assumptions applicable to active Judicial Officers:
 - Slight decrease in the superannuation rates for both females and males over age 58 and an increase in rates at all ages under 59 (See Table -17)
 - Decrease in the early retirement rates for both females and males under age 50 and increase in rates at all ages 50 to 59 (See Table A-18)
 - Decreases in the employee withdrawal rates for females and males at almost all service levels (See Table A-19)

For the specific age-related or service-related assumption changes we are recommending, as listed above, generally including a comparison versus the current assumptions, see the tables referenced above in the Appendix to this report. For a table of contents listing all the rate tables included in the Appendix, see the first page of the Appendix.

II. Background

The specific objective of this actuarial investigation is the development of the following assumptions as to the expected experience of the System:

- the investment return of the fund, including the underlying inflation rate;
- the rates of salary increase among active members;
- the rates of mortality among active members and annuitants;
- the rates of disability among active members;
- the rates of superannuation retirement among active members;
- the rates of separation for other reasons among active members.

The analysis was performed separately for each category of membership expected to have unique patterns of termination experience:

- Class AA and Class A general employees eligible for full benefits at age 60 or with 35 years of service;
- State Police;
- other hazardous duty employees eligible to retire at age 50;
- members of the General Assembly;
- members of the judiciary.

The Class AA and Class A general employees comprise close to 80 percent of the membership of SERS.

Age and Service Requirements for Superannuation (full formula benefits)

Class AA & Class A

General Conditions	Age 60 with three years of service; or 35 or more years of credited service, regardless of age.
Legislators and certain enforcement officers	Age 50 with three years of service.
Park Rangers & Capitol Police	Age 50 with 20 years of Park Ranger or Capitol Police service as a Park Ranger or a Capitol Police Officer.
State Police	Age 50. State Police are eligible for special unreduced benefits after 20 years of service, regardless of age; however, age 50 remains their superannuation age.
Other Hazardous Duty	Age 50 with three years of service.
<u>Class D-4 Legislators</u>	Age 50 with three years of service.
<u>Class E-1 & Class E-2 Judges</u>	Age 60 with three years of service; or 35 or more years of credited service, regardless of age.

III. Analysis of Economic Experience and Recommended Economic Assumptions

The most important set of rates in the valuation is the set of economic assumptions that include the prediction of future rates of investment return and general salary increases. The assumed rates of investment return and general salary increases are nominal rates and are therefore developed from an assessment of the underlying rate of inflation.

Both the investment return and salary growth effect the valuation results. For the 2011 valuation the investment return rate was reduced from 8.00 percent to 7.50 percent, while there was no change made at that time to the salary growth rate. Changes in the investment return assumption affect all liabilities, whereas changes in the salary scale only affect liabilities for current employees. If the salary increases are greater than expected, the benefits will grow in direct proportion because they are based on the final average salary. Conversely, a decrease in investment earnings will directly increase the employer contributions needed to pay the benefits. For SERS, an equal change in the two assumptions will change the normal cost and actuarial liabilities. For instance, decreasing both the investment return and salary growth assumptions by the same 0.5 percent will increase both the normal cost and the unfunded accrued liability.

The current assumptions and rates in effect from prior actuarial valuations are shown in Table III-1. The assumed general salary growth does not include individual career salary increases, due to promotions and longevity. These increases are covered in a later section. The real rate of investment return and the real rate of salary growth are derived by dividing the nominal rates by the rate of inflation. (For example, the current real investment return is $[1.075 / 1.0275] - 1.0$, which is approximately 4.6%).

Table III-1 Current Economic Assumptions					
	Annual Inflation	Investment Return		Salary Growth	
		Nominal	Real	Nominal	Real
Current 2011 – 2014	2.75%	7.50%	4.6%	3.05%	0.3%
Prior 2010	2.75%	8.00%	5.1%	3.05%	0.3%
Prior 2008 & 2009	3.00%	8.00%	4.9%	3.30%	0.3%
Prior 1995 – 2007	3.00%	8.50%	5.3%	3.30%	0.3%

Table III-2 below shows the rate of inflation, the nominal and real investment return based on the market value of assets and the nominal and real salary growth for the past twenty years. The rate of inflation is based upon the Consumer Price Index for all Urban Consumers (CPI-U), the U.S. City Average. The annual rate of inflation is calculated as the change in the index from December of the previous year to December of the current year. For example, the CPI-U for December of 2010 was 219.2 and the CPI-U for December of 2011 was 225.7, which resulted in an annual inflation for 2011 of 3.0 percent $[(225.7/219.2) - 1 = 3.0\%]$.

**Table III-2
Annual Rates of Growth**

Year	Inflation	Investment Return		Salary Growth	
		Nominal	Real	Nominal	Real
1996	3.3	15.9	12.2	2.0	(1.3)
1997	1.7	18.0	16.0	3.0	1.3
1998	1.6	16.3	14.5	3.0	1.4
1999	2.7	19.9	16.8	3.0	0.3
2000	3.4	2.2	(1.1)	3.0	(0.4)
2001	1.6	(7.9)	(9.3)	3.3	1.7
2002	2.4	(10.9)	(13.0)	3.5	1.1
2003	1.9	24.3	22.0	2.0	0.1
2004	3.3	15.1	11.4	1.9	(1.4)
2005	3.4	14.5	10.7	3.0	(0.4)
2006	2.5	16.4	13.6	3.5	1.0
2007	4.1	17.2	12.6	2.8	(1.2)
2008	0.1	(28.7)	(28.8)	3.0	2.9
2009	2.7	9.1	6.2	3.0	0.3
2010	1.5	11.9	10.2	3.0	1.5
2011	3.0	2.7	(0.3)	3.0	0.0
2012	1.7	12.0	10.1	1.0	(0.7)
2013	1.5	13.6	11.9	2.8	1.3
2014	0.8	6.4	5.6	3.5	2.7
2015	0.7	0.4	(0.3)	3.4	2.7
Averages					
2011-2015 (5 years)	1.5	6.9	5.3	2.7	1.2
2006-2015 (10 years)	1.9	5.2	3.2	2.9	1.0
2001-2015 (15 years)	2.1	5.5	3.3	2.8	0.8
1996-2015 (20 years)	2.2	7.6	5.3	2.8	0.6

Inflation

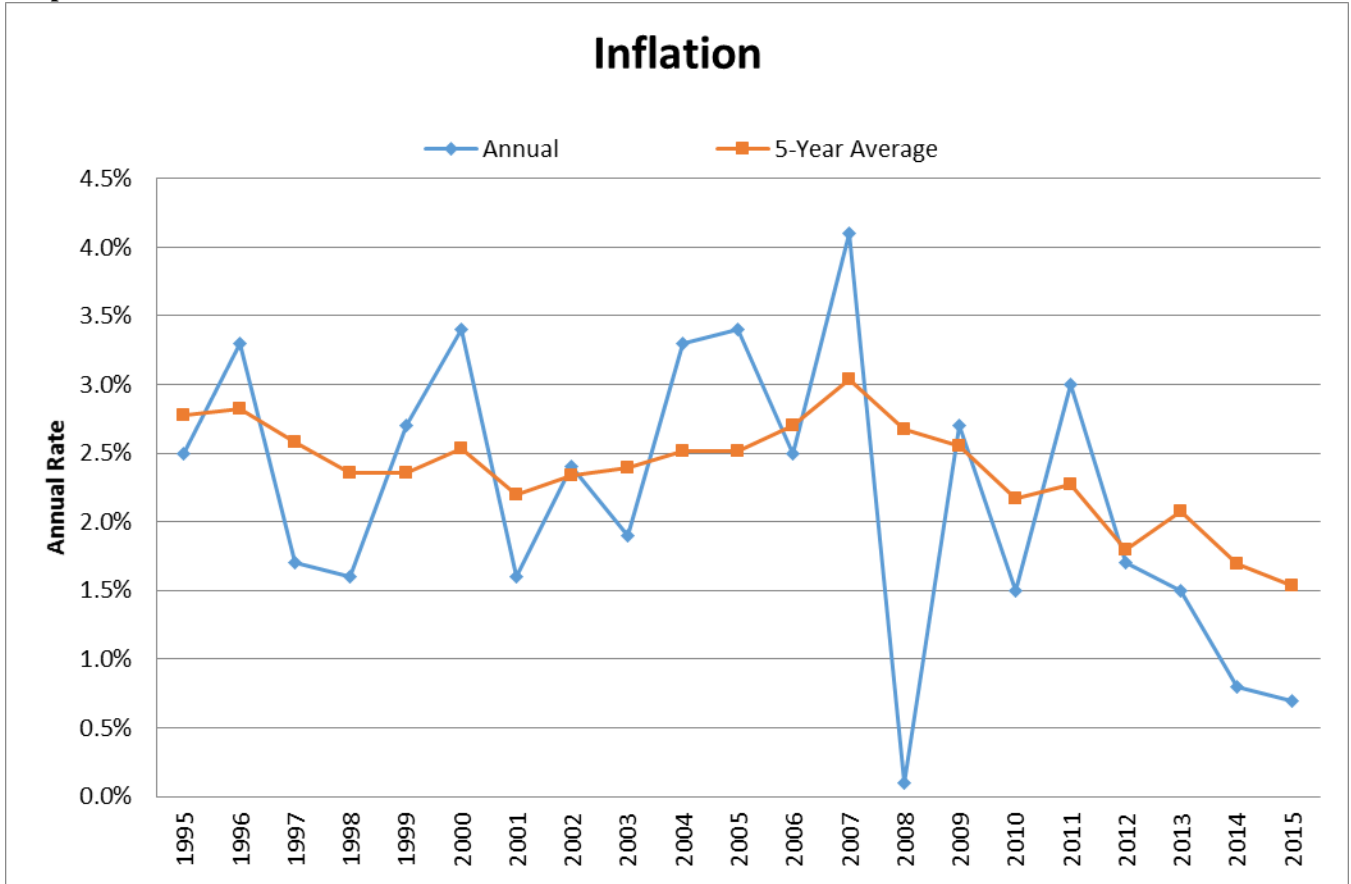
While inflation does not directly affect SERS liabilities or assets (as it would if automatic COLAs applied under SERS), it is an important consideration in our review of both the investment return and general salary increase assumptions. There has been a gradual decline in inflation in the United States, with the rolling five-year average staying below 3 percent for 19 of the past 20 years. The significant federal stimulus monies and expansionary monetary policies have prevented the US economy from entering a deflationary phase but are unlikely to lead to an increase in inflation in the long-term.

SERS investment consultant, RVK, include, among their 2016 Capital Market Assumptions, a U.S. annual inflation assumption of 2.50 percent. While we have given some consideration to this inflation forecast, we do not feel it projects far enough into the future for purposes of setting the inflation assumption for the actuarial valuation. The Social Security Administration, for purposes of cost projections included in their most recent annual Trustees' Reports (based upon their "intermediate assumptions"), projects that future annual inflation will be at a rate of 2.7 percent.

We believe, based upon historical inflation rates (as shown in Table III-2) and our current expectations for the future (giving appropriate consideration to the recent stimulus and subsequent easing of monetary policy, and supportive points covered in the prior paragraph) that it is reasonable and appropriate to recommend continuation of the current annual inflation assumption of 2.75 percent.

As illustrated in Graph III-1 on the following page, while the annual inflation rate has ranged from a low of 0.1 percent to a high of 4.1 percent over the past 20 years, the rolling 5-year average has ranged only between 1.5 percent and 3.0 percent.

Graph III-1

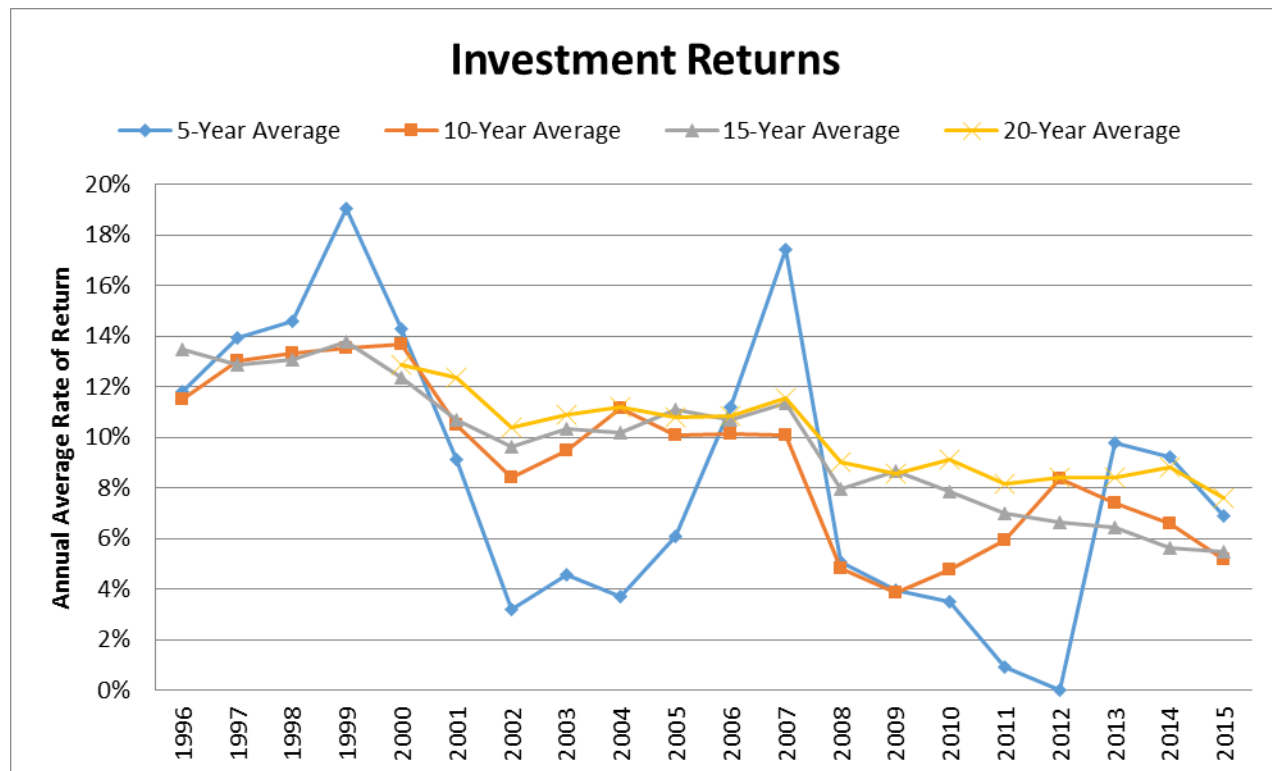


Investment Return

As shown in Table III-2, the 20-year, 15-year, 10-year and 5-year average annual rates of return were 7.6%, 5.5%, 5.2% and 6.9%, respectively. Of course, both the 15-year and 10-year averages were materially affected by the severe market decline of 2008.

The graph below shows that, while the annual investment return has ranged from a low in 2008 of minus 28.7 percent to a high in 2003 of 24.3 percent (as shown in Table III-2), the rolling 15-year average investment returns have ranged between 8.0 percent and 13.8 percent over the past twenty years.

Graph III-2



It is important (and a widely-recognized best practice in pension funding) for the system actuary and general investment consultant to work as a team on an ongoing basis in connection with the annual determination of an appropriate investment return assumption for the actuarial valuation. Hay Group's discussions and information exchange with RVK during early 2016 included RVK's preparation of the table below, which contains SERS' long-term target allocations alongside RVK's 2016 capital market assumptions for each asset class. These assumptions are in nominal terms. That is, they include inflation (at 2.5% per year, as listed at the bottom of the table).

2016 RVK Capital Market Assumptions

Asset Class	Long-Term Target Allocation	Arithmetic Return Assumption	Standard Deviation Assumption
Private Equity	16%	10.25%	25.50%
Global Equity	43%	7.90%	18.35%
Real Estate	12%	7.73%	13.60%
Hedge Funds	12%	7.25%	14.00%
Fixed Income	14%	4.28%	6.68%
Cash	3%	2.25%	3.00%
<i>RVK U.S. Inflation Assumption</i>	<i>N/A</i>	<i>2.50%</i>	<i>3.00%</i>

Largely due to the longer future time horizon underlying the actuary’s economic assumptions (30 to 40 or more years) versus the horizon underlying the investment consultant’s investment return assumptions (5 to 10 years), as noted earlier, Hay Group assumes future U.S. inflation will be at a rate of 2.75% per year, whereas RVK assumes (per above) a rate of 2.50% per year.

Using the above RVK information to calculate a weighted average expected return, Hay Group determined that:

- an annual return of 7.50% is expected; however,
- After adding the 0.25% inflation assumption difference to this return, we arrive at **7.75%**.

This 7.75% expected return level exceeds the current 7.50% investment return assumption.

Hay Group believes that the above analysis and investment projection support our recommended continuation of the current SERS investment return assumption of 7.50 percent. As shown above, this conclusion is also supported by RVK, SERS’ investment advisors. Furthermore, it is our view that continuation of the 7.50 percent investment return assumption still affords SERS and the Board a sufficient and appropriate margin of conservatism, especially considering the above RVK results.

Investment Return Assumptions Used by Other Large Public Plans

Another important factor to keep in mind as we consider the appropriateness of the SERS investment return assumption is the range of investment return assumptions being used in actuarial valuations of other large public pension systems in the U.S. The Public Fund Survey conducted by the National

Association of State Retirement Administrators (NASRA) releases such information each year regarding 126 large U.S. public pension plans, most of which are state-wide retirement systems like SERS. The systems in this survey reflect about 85% of the assets and participants in the entire state and local government pension community. There has been a significant trend among these plans since 2008 toward reduction in the level of the investment return assumption. As of February 2016, the average return assumption was 7.62 percent.

The table below shows the distribution of annual investment return assumptions in use by the 126 plans in the survey, including distributions as of December 2011, December 2013, October 2014 and February 2016. In each of the “Number of Plans” columns, the number that includes SERS is highlighted. Note that the number of plans with assumed returns of 7.50 percent or lower has increased from 26 of 126 plans (21 percent of the total) in late 2011 to 59 of 126 plans (47 percent of the total) as of February 2016. According to this survey of 126 plans, SERS is one of 36 plans that assumes a 7.50% investment return. Nationally, the return assumption of 23 plans is lower and 67 plans is higher than SERS.

Assumed Investment Return	Number of Plans	Number of Plans	Number of Plans	Number of Plans
<u>8.00% or Higher</u>	<u>December 2011</u>	<u>December 2013</u>	<u>October 2014</u>	<u>February 2016</u>
8.50%	10	2	2	1
8.40%	0	0	5	1
8.25%	12	1	1	1
8.10%	1	1	1	1
8.00%	47	45	36	31
<u>7.50% to 7.99%</u>				
7.95%	8	0	0	0
7.90%	1	11	10	4
7.85%	0	0	1	0
7.80%	0	0	0	6
7.75%	21	17	14	18
7.70%	0	2	0	0
7.65%	0	0	3	1
7.58%	0	1	1	0
7.55%	0	0	0	3
7.50%	17	30	34	36
	100 plans > 7.5%; 17 plans = 7.5%; 9 plans < 7.5%	80 plans > 7.5%; 30 plans = 7.5%; 16 plans < 7.5%	74 plans > 7.5%; 34 plans = 7.5%; 18 plans < 7.5%	67 plans > 7.5%; 36 plans = 7.5%; 23 plans < 7.5%
<u>7.00% to 7.49%</u>				
7.25%	2	7	7	7
7.20%	1	1	1	2
7.125%	0	0	2	2
7.00%	6	4	4	5
<u>6.50% to 6.99%</u>				
6.75%	0	2	2	5
6.50%	0	2	2	2
Total Plans in Survey	126	126	126	126

Salary Experience

As the retirement benefit that SERS members receive is a final average salary based annuity, the salary increase assumption is a key valuation assumption. There are two components to the salary increase assumption: a general salary increase assumption that applies to all employees at all ages and points in their career and a career salary increase assumption. The general salary increase would be the expected increase for a member remaining in the same job, whereas the career salary increase reflects pay increases due to promotions and longevity.

General Salary Increase Assumption

The general salary increase assumption is the rate by which salaries are expected to increase each year. The assumption consists of an assumed inflation rate and an assumed real salary growth rate. The current assumptions are an assumed inflation rate of 2.75 percent and a real salary growth rate of 0.3 percent for a total of 3.05 percent. Consistent with our recommendation to continue the 2.75 percent long-term inflation assumption, we recommend continuing use of the current general salary increase assumption of 3.05 percent.

Both the current and the recommended economic assumptions are shown in Table III-3

Table III-3 Current & Recommended Economic Assumptions				
Annual Inflation	Investment Return		Salary Growth	
	Nominal	Real	Nominal	Real
2.75%	7.50%	4.6%	3.05%	0.3%

Career Salary Increase Assumption

For the experience analysis, we reviewed individual pay for all members who were active in any consecutive pair of years from 2010 to 2014. As we always do when performing our actuarial investigation of the SERS salary increase experience, we considered any unusual events that may have occurred during the 2010-2014 study period that could have distorted salary increase levels for all or any significant portion of the population under study. Having identified no such unusual events, we concluded that the salary increase data could be used in aggregate without adjustment.

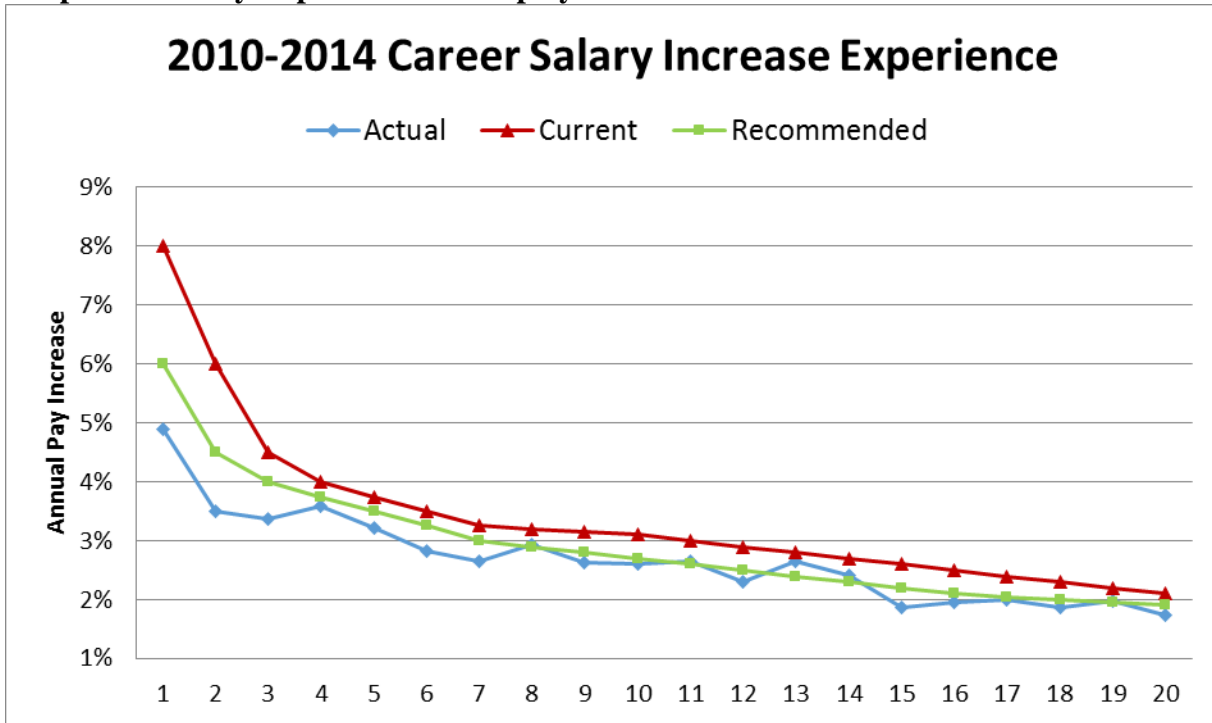
Since the actuarial valuation assumes that overall future salary growth will be the total of (i) assumed increases in the general salary schedule (across-the-board increases) plus (ii) assumed career salary growth (via promotion and longevity increases, and therefore varying by a member's length of service), our study of salary increase experience examined the pattern of actual 2010 to 2014 career salary increases, by length of service.

Graph III-3 shows the career salary increase experience for the experience period for the verified records for employees in their first 20 years of service and Graph III-4 shows the experience for employees with 20 to 40 years of service.

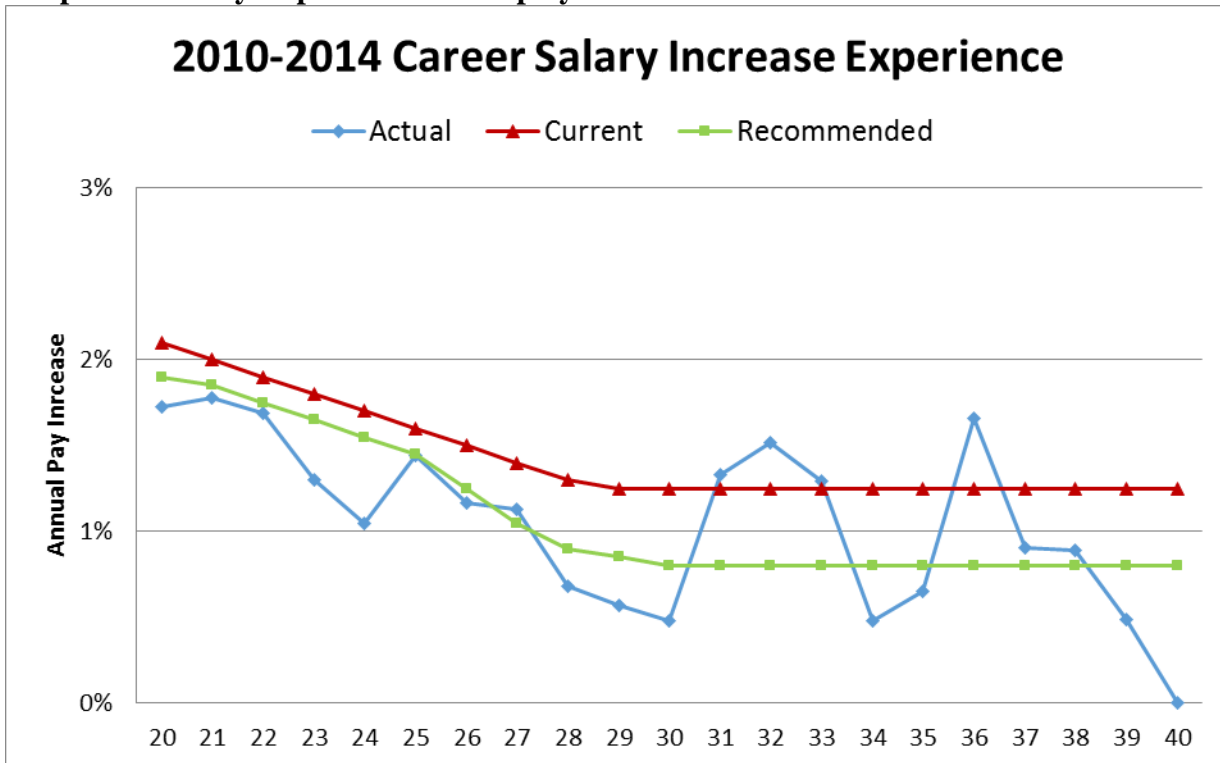
Graph III-3 shows that the pattern of higher increases in the first years of employment continues; however, the rate of increase was much lower than expected (ranging from 1 to 3 percent lower) for those in their first three years of employment. The pattern of the actual salary increases otherwise conforms well with the pattern of the current assumption, with actual increases generally running close to 0.5 percent lower than expected at all durations.

Graph III-4 shows that the pattern of increases for employees with more than 20 years of service also conforms well to the valuation assumption, again with actual increases generally running close to 0.5 percent lower than expected at all durations.

Graph III-3 – Pay Experience for Employees with less than 21 Years of Service



Graph III-4 – Pay Experience for Employees with 20 or more Years of Service



Based upon our career salary increase experience findings, as illustrated in Graphs III-3 and III-4, we recommend lowering the current career salary increase assumptions at all service levels. Our recommended career salary increase rates are shown in Table A-1 in the Appendix. The table shows the actual 2010-2014 career salary increase experience, the current total salary increase assumptions from general and career increases combined, the recommended total salary increase assumptions, the current career salary increase assumptions, and the recommended career salary increase assumptions.

IV. Analysis of Demographic Experience and Recommended Demographic Assumptions

The terminations from active employment for SERS participants are analyzed by four categories depending on the eligibility for SERS benefits:

- Deaths
- Disabilities
- Superannuation retirements
- Other separations from active employment

The terminations are split by the categories above to calculate the long-term rates to be used for the valuation.

The following sections describe the analysis of the demographic experience and show the results of the actual-to-expected experience analysis. The first section discusses the analysis and results for active Class AA and Class A general employees subject to age 60 superannuation, and the second section discusses the results for employees subject to different retirement provisions. The different eligibility rules for retirement do not affect the probability of death or disability, so these rates are the same for all classes. The final section describes the actual-to-expected analysis for retirees and survivors.

As a result of Act 120, new Classes A-3 and A-4 member generally have longer requirements for vesting and retirement. Vesting for these classes is 10 years and superannuation is age 65 for most employees (and age 55 for certain categories of service). In the experience study, these members were valued using the vesting and retirement conditions that apply to them. It should be noted that the largest impact they have has been in non-vested separations while they have had little impact on early retirement or superannuation. The discussion going forward will generally focus on Classes AA and A, but it should be understood that classes A-3 and A-4 are also having some impact.

Tables IV-1 through IV-6 below compare the actual terminations that have occurred in the 2011-2015 period to the expected results based on the current set of actuarial demographic assumptions used in the 2014 actuarial valuation. These actuarial demographic assumptions were based on the previous experience study. The actual-to-expected ratio is the actual terminations as a percent of the expected terminations. Total deaths among female employees, for instance, were 217, or approximately 90 percent of the 241 female employee deaths that would have been expected using the current valuation tables.

In general, we are recommending that the assumptions for the valuation for active employees be revised to more closely reflect the actual experience of the study period.

Analysis of Deaths

Members who die while on active duty are eligible for a death benefit. If the member had less than 5 years of credited service, the member’s accumulated contributions are returned. If the member was eligible to receive a retirement benefit, an eligible beneficiary or survivor will receive a benefit from SERS.

During the study period, there were 660 deaths. Based on the current assumptions, we would have expected 698 deaths during the 4 and a half year period. The resulting actual-to-expected ratio was 0.95. The long-term rates for death are calculated separately for males and females. Table IV-1 shows the actual deaths, expected deaths based on the current rates, and expected deaths based on the recommended rates. Mortality of the overall U.S. population continues to improve so it is not surprising that the actual deaths during this recent period are lower than expected.

We propose to adjust the current rates to produce an actual-to-expected ratio close to 0.90. Unlike post-retirement mortality, lower mortality (fewer deaths) among active participants reduces benefits and benefit costs. Therefore, the somewhat higher death rates we are recommending are intended to be somewhat conservative.

**TABLE IV-1
Employees Leaving Active Employment Because of Death**

	Actual Deaths	Expected Deaths	Ratio Actual-to- Expected	Ratio Actual-to- Recommended
	2011-2015	2011-2015	2011-2015	2011-2015
Female Deaths	217	241	0.90	0.90
Male Deaths	443	457	0.97	0.90
Total Deaths	660	698	0.95	0.90

Analysis of Disability Retirements

A member is eligible for disability retirement if the member is unable to perform his or her current job and has at least 5 years of service. A State Police or enforcement officer does not have a minimum service requirement.

The data on terminations included 1,485 disability retirements. However, 339 of those members were eligible for superannuation retirement based on their age and credited service at termination. Since there is no difference in benefit, we combined the disabled and non-disabled members who retire after superannuation into the superannuation rates. Therefore, the disability rates are based on the 1,146 members who became disabled before superannuation age.

The total number of disability retirement terminations included in this analysis was 1,146. We would have expected 1,398 disability retirements during the same period, based on the current assumptions. The actual disabilities were 18 percent fewer than expected. We recommend disability retirement rates that are closer to the actual experience of the disability retirements calculated separately for males and females. Table IV-2 shows the number of disability retirements, the expected disability retirements based on the current assumptions, the ratio of actual to expect based on the current assumptions, and the ratio based on the recommended rates.

Table IV-2

Employees Leaving Active Employment for Disability Retirement

	Actual Disability Retirements	Expected Disability Retirements	Ratio Actual-to- Expected	Ratio Actual-to- Recommended
	2011-2015	2011-2015	2011-2015	2011-2015
Female Disabilities	596	732	0.81	0.90
Male Disabilities	550	666	0.83	0.90
Total Disabilities	1,146	1,398	0.82	0.90

Analysis of Superannuation Retirements – Class AA & Class A General Employees

Class AA and Class A general employees can retire and receive full formula benefits after attaining superannuation age. Superannuation age is defined as age 60 with three years of service. Members of Class AA and Class A with 35 or more years of credited service are entitled to full formula benefits regardless of age. As mentioned under the disability retirement analysis, members who terminated on a disability retirement, but were eligible for unreduced benefits at the time of disability were treated as superannuation retirements and included in that part of the analysis.

Table IV-3 below shows the actual superannuation retirements compared to the expected superannuation retirements based on the current assumptions.

Table IV-3

Employees Leaving Active Employment for Superannuation Retirement

	Actual Superannuation Retirements	Expected Superannuation Retirements	Ratio Actual-to- Expected	Ratio Actual-to- Recommended
	2011-2015	2011-2015	2011-2015	2011-2015
Female Retirements	6,023	6,146	0.98	0.96
Male Retirements	6,621	7,288	0.91	0.90
Total Retirements	12,644	13,434	0.94	0.93

The overall experience was a lower number of retirements than expected, which implies employees are retiring later.

Table IV-4

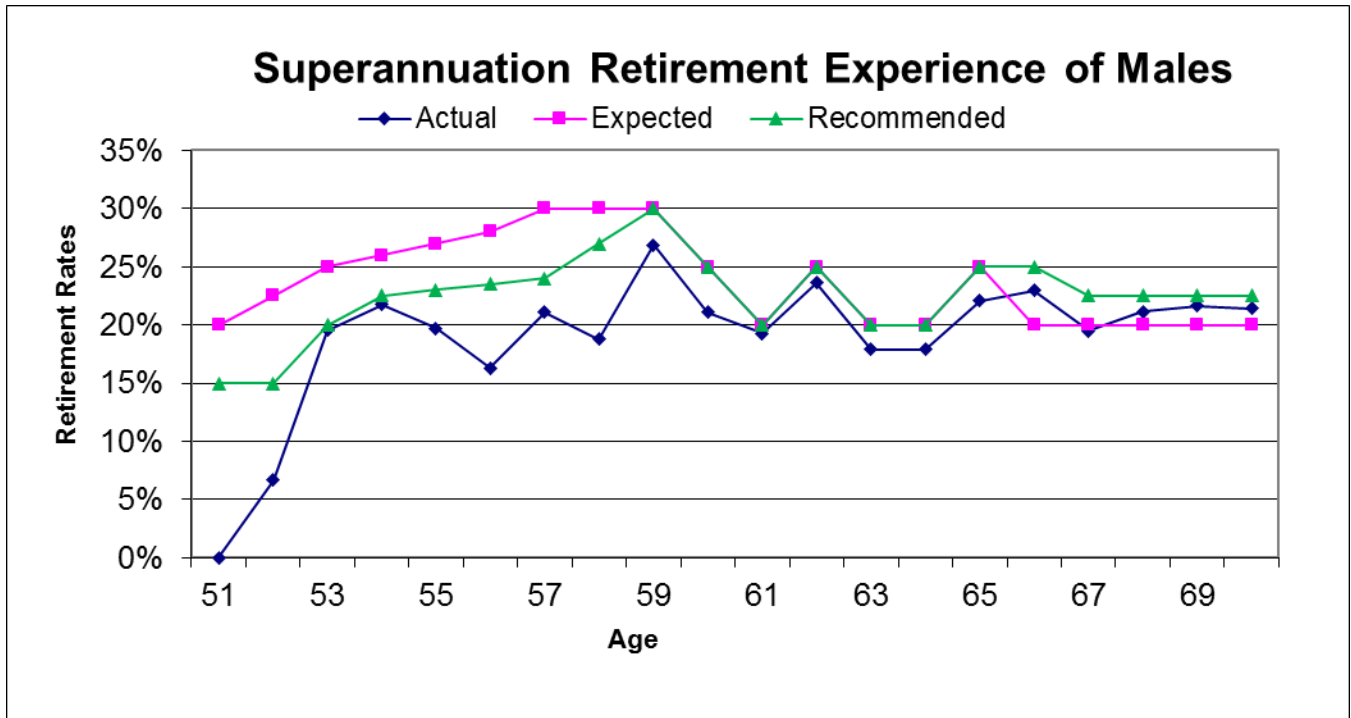
Ratio of Actual to Expected Superannuation Retirements by Year

Year	2011	2012	2013	2014	2015	Total
Ratio of Actual-to-Expected	1.21	0.72	0.90	0.86	1.00	0.94

The retirement rates were adjusted to reflect the overall trend observed, with the 2011 surge pulling up the retirements, against an overall trend of mostly lower rates of retirement in the later years. The experience of female employees' retirement under age 60 was similar to males but there are some noticeable differences and historical patterns that justify a separate set of rates.

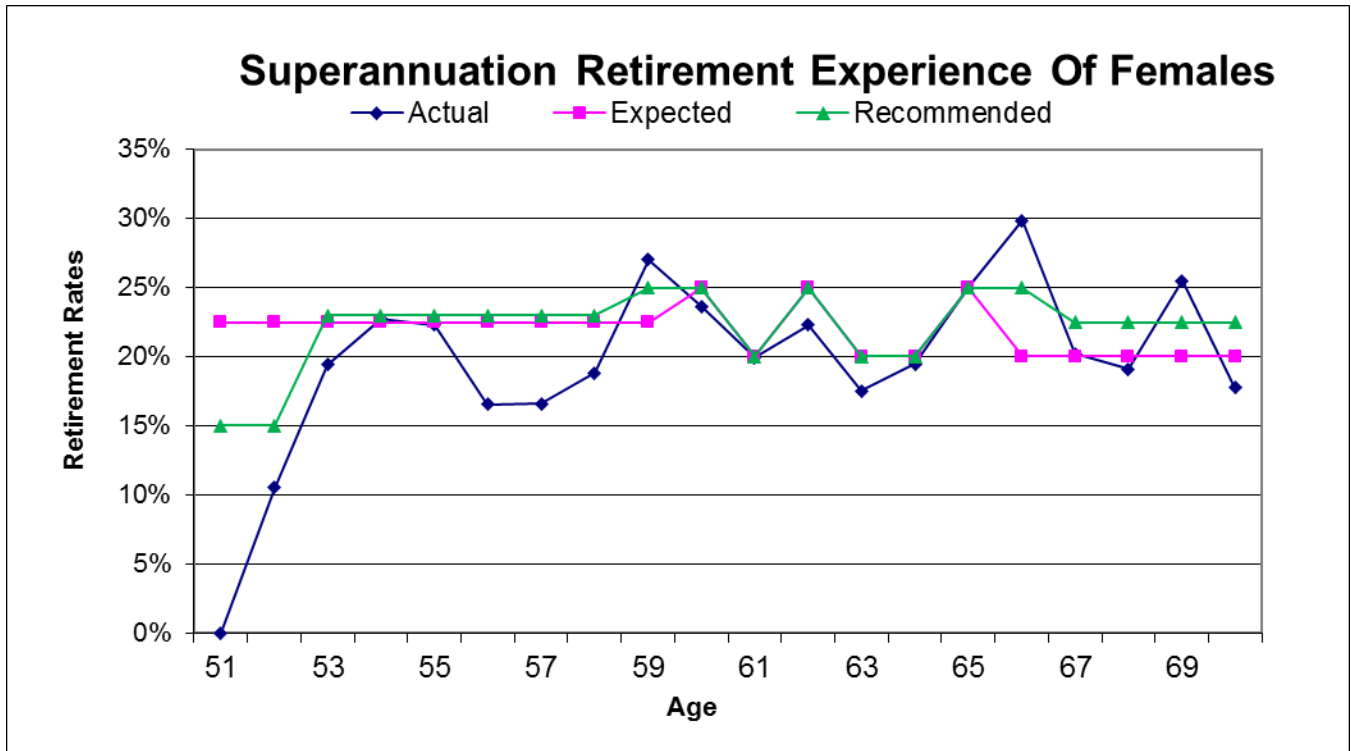
The following charts show the retirement experience by age at retirement. The current assumption generally has higher rates around ages 60, 62 and 65 (Superannuation, Social Security Early Retirement Eligibility and Medicare Eligibility respectively).

Graph IV-1 – Male Superannuation Retirement Experience



The observed retirement pattern for females is similar to that for males for retirement before age 60. The historical difference between the male retirement experience and the female retirement experience is sufficient enough to warrant separate rates for males and females. The recommended rates continue to anticipate a spike around ages 60, 62 and 65.

Graph IV-2 – Female Superannuation Retirement Experience



The recommended rates for Superannuation Retirement for general employees are shown in the Appendix in Table A-4.

Analysis of Other Separations from Active Employment – Class AA & Class A General Employees

Table IV-5 shows the ratio of actual to expected terminations for reasons other than death, disability or superannuation retirement. These rates would be expected to vary somewhat according to the economic cycle. Employees are more likely to continue with an employer in a tight job market.

Our valuation splits the other separations into three categories. These are (1) non-vested separations, (2) vested separations who take immediate early retirement benefits and (3) vested separations who defer their benefits until superannuation age. Non-vested separations are those who do not have five years of service upon separation. We examined those with more than five years of service and found around 50 percent of those with 5 to 14 years of service elected an immediate annuity and 86 percent of those with 15 or more years of service elected an immediate annuity. We recommend assuming that 50 percent of those with 5 to 14 years of service and all (100 percent) of those with 15 or more years of service will elect an immediate annuity. The current assumptions are 75 percent of those with 5 to 14 years of service, and 100 percent of those with 15 or more years of service.

**TABLE IV-5
Other Separations from Active Employment**

	Actual Separations	Expected Separations	Ratio Actual-to-Expected	Ratio Actual-to-Recommended
	2011-2015	2011-2015	2011-2015	2011-2015
Female Separations	11,122	9,408	1.18	1.01
Male Separations	10,142	9,146	1.11	0.99
Total Separations	21,264	18,554	1.15	1.00

The following charts show the withdrawal experience by age. The valuation assumptions include select and ultimate rates that are higher expected rates of withdrawal in the early years of an employee's career, reducing to an age-specific rate after seven to fifteen years, depending on age at hire. Both charts show withdrawal experience higher than expected at most ages. We recommend changes to the rates to bring all of the expected separations closer the actuals.

Chart IV-3 – Male Withdrawal Experience

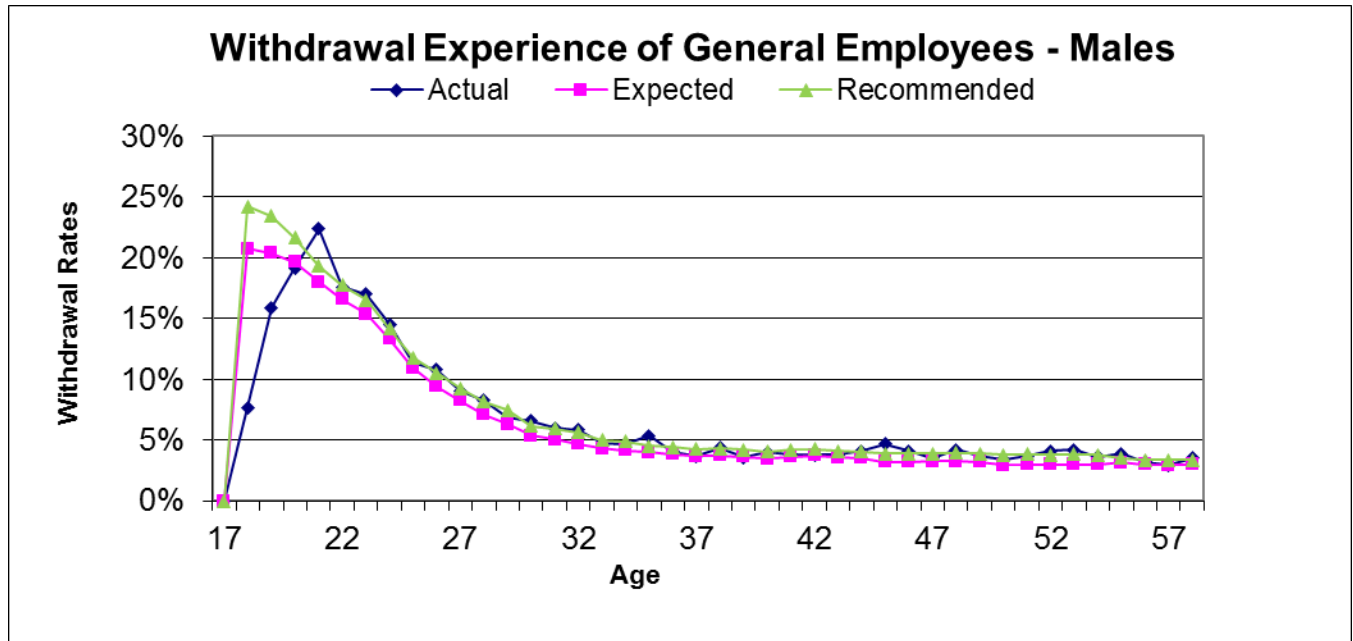


Chart IV-4 – Female Withdrawal Experience

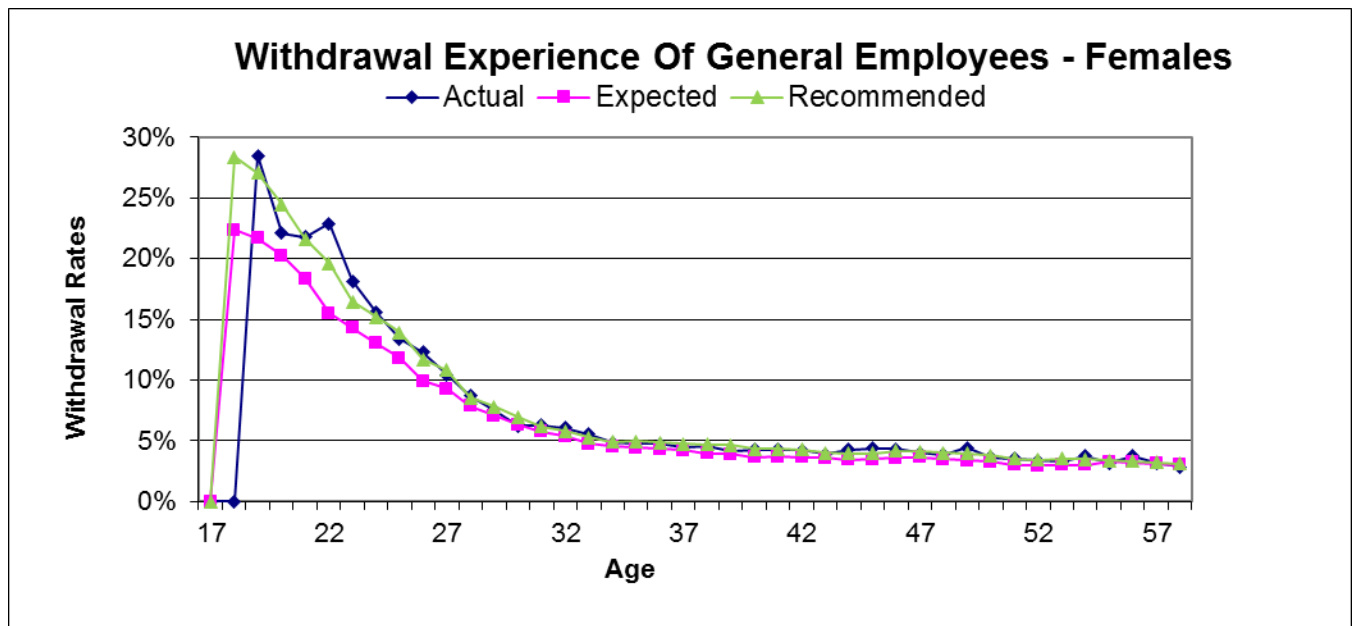


Table IV-6 summarizes the total actual terminations, expected terminations based on the current rates, the actual-to-expected ratio, and the actual-to-expected ratio based upon the recommended rates.

TABLE IV-6
Total Employees Leaving Active Employment

	Actual Terminations	Expected In Valuation	Ratio Actual-to- Expected	Ratio Actual-to- Recommended
	2011-2015	2011-2015	2011-2015	2011-2015
Deaths	660	698	0.95	0.90
Disabilities	1,146	1,398	0.82	0.90
Superannuation Retirements	12,644	13,434	0.94	0.93
Other Separations	21,264	18,554	1.15	1.00
TOTAL	35,714	34,084	1.05	0.97

Analysis of Experience for Special Benefit Classes

Members who are in the General Assembly, members of the Judiciary, State Police and other members of law enforcement (categorized as Hazardous Duty employees) have different patterns of termination than do Class AA and Class A members eligible to retire at age 60, or with 35 years of service. Some of the differences, such as retirement at ages before 60, are attributable to different retirement eligibility conditions; and other differences, such as terminations without eligibility for a benefit before five years, are attributable to the characteristics of the group. Table IV-7 compares the actual terminations, expected terminations based on the current rates, the actual-to-expected ratio, and the actual-to-expected ratio based upon the recommended rates for each of the employee groups.

The rates of decrement for special classes tend to fluctuate more than for general employees because there are fewer employees in special classes and, therefore, more of a statistical variation from one study to the next. Of particular note, is the distinct pattern of retirements among State Police officers eligible for DiLauro Award benefits. The DiLauro Award creates significant incentives to delay retirement until reaching superannuation eligibility at either 20 or 25 years of service. This has had a significant impact on State Police superannuation rates in the past and once again, in this study, the observed retirement behaviors among State Police during 2011 to 2015 have led us to recommend lower retirement rates prior to 20 years of service and higher retirement rates during service years 20 through 30.

In general for all the special classes, we have reviewed the superannuation and other separation rates, and believe that it would be reasonable to set rates that project the same proportion of future retirements as the actual experience in the five-year study period.

We recommend that the Board adopt termination assumptions for superannuation and other terminations that approximately reproduce the actual experience of the study period.

TABLE IV-7
Special Benefit Classes Leaving Active Employment

	Actual Terminations 2011-2015	Expected Terminations 2011-2015	Ratio Actual-to- Expected 2011-2015	Ratio Actual-to- Recommended 2011-2015
Superannuation				
State Police With More Than 20 Years of Service	981	704	1.39	0.99
Other Hazardous Duty	2,713	2,170	1.25	0.99
Legislators	54	98	0.55	0.96
Members of the Judiciary	184	223	0.83	0.97
Early Retirement				
Hazardous Duty and State Police	707	410	1.72	0.99
Legislators	6	7	0.86	0.98
Members of the Judiciary	30	22	1.36	1.00
Withdrawal				
Hazardous Duty and State Police	1,173	1,418	0.83	0.99
Legislators	19	23	0.83	0.97
Members of the Judiciary	13	22	0.59	0.99

Analysis of Annuitant Mortality

The actual and expected numbers of deaths among annuitants are shown below in Table IV-8 through Table IV-10. The annuitants are categorized as non-disabled retirees, disabled retirees, and survivors. The survivor category also includes alternate payees.

The current assumptions expected 9,272 deaths for male annuitants compared to the actual deaths of 9,321 or an actual-to-expected ratio of 1.01. For females, the expected deaths were 8,785 compared to actual deaths of 9,092 or an actual-to-expected ratio also of 1.03.

TABLE IV-8
Deaths of Male Annuitants

	Actual Deaths	Expected Deaths	Ratio Actual-to-Expected	Expected with Recommended Rates	Ratio Actual-to-Recommended
	2011-2015	2011-2015	2011-2015	2011-2015	2011-2015
Non-disabled Retirees and Survivors	8,550	8,441	1.01	7,796	1.10
Disabled Retirees	771	831	0.93	729	1.06
TOTAL	9,321	9,272	1.01	8,525	1.09

TABLE IV-9
Deaths of Female Annuitants

	Actual Deaths	Expected Deaths	Ratio Actual-to-Expected	Expected with Recommended Rates	Ratio Actual-to-Recommended
	2011-2015	2011-2015	2011-2015	2011-2015	2011-2015
Non-disabled Retirees and Survivors	8,496	8,139	1.04	7,740	1.10
Disabled Retirees	596	646	0.92	568	1.05
TOTAL	9,092	8,785	1.03	8,308	1.09

**TABLE IV-10
Total Deaths of Annuitants**

	Actual Deaths	Expected Deaths	Ratio Actual-to- Expected	Expected with Recommended Rates	Ratio Actual-to- Recommended
	2011-2015	2011-2015	2011-2015	2011-2015	2011-2015
Non-disabled Retirees and Survivors	17,046	16,580	1.03	15,536	1.10
Disabled Retirees	1,367	1,477	0.93	1,297	1.05
TOTAL	18,413	18,057	1.02	16,833	1.09

Mortality has generally improved throughout the last 100 years so we had set rates that allowed for that improvement in the future. The mortality assumption for annuitants is one of the most important factors in the valuation. As a result, we recommended mortality rates that would project an improvement in mortality.

The number of deaths among non-disabled annuitants (males and females) was 3 percent greater than expected and the number of deaths among disabled annuitants (males and females) was 7 percent less than expected. Overall, the total number of deaths was 2 percent greater than expected. In the context of a pension plan, adverse mortality experience occurs if retirees live longer and, therefore, draw more benefits than predicted by the table (i.e., adverse experience is when a smaller number of deaths occur than expected). Since life expectancies nationally and among SERS members have continually increased, and that in turn increases the cost of the pension plan, it would be prudent to set mortality rates that have a margin reflecting that improvement. In other words, the mortality rates should be set to project fewer deaths than shown by recent experience.

The current non-disabled annuitant mortality assumption was based on the RP-2000 Healthy Annuitant tables projected to 2008, and adjusted to include a margin for mortality improvement of about 8 percent. The actual deaths for non-disabled annuitants were 101 percent of expected for males and 104 percent of expected for females, indicating that some improvement in non-disabled mortality has occurred.

The current disabled annuitant mortality assumption was based on the RP-2000 Disabled Retiree tables projected to 2008. The actual deaths for non-disabled annuitants were 93 percent of expected for males and 92 percent of expected for females, indicating that some improvement in disabled mortality has occurred.

We therefore propose adjustments to the current four annuitant mortality tables (one for each gender for non-disabled annuitants and one for each gender for disabled annuitants) to provide additional margin for mortality improvement. In keeping with current best practice among U.S. pension actuaries, we tested the possibility of using RP-2014 mortality tables and/or applying a generational (“built-in”)

mortality improvement scale. However, we determined that none of our four annuitant populations have yet experienced mortality that was favorable enough to justify these more contemporary mortality measurement methods. Instead, we decided to continue the use of the RP-2000 tables and to apply future mortality improvement using Projection Scale AA for as many years as needed in order to establish sufficient margin for mortality improvement for our annual actuarial valuations until the next actuarial experience study. Below we describe how we proceeded with each annuitant population.

Note that Projection Scale AA is the mortality improvement projection scale that was developed for use with the RP-2000 mortality tables when they were originally published by the Society of Actuaries. Projection Scale AA has been used in annual SERS valuations since December 31, 2005, and we believe it should continue to be applied to the various RP-2000 mortality tables we have recommended below

Male Non-Disabled Annuitants

- Actual-to-expected ratio for 2011-2015: 1.01, meaning our valuations have been slightly under-predicting total deaths.
- It was observed that this population's most favorable mortality experience relative to the current assumptions occurred in the age range 83 to 92 (meaning in this age range, there was the least margin for mortality improvement).
- We determined that, by starting with the RP-2000 Male Combined Healthy Mortality Table and then projecting improvement for 16 years (to 2016) using Projection Scale AA, and then further reducing the resulting death rates in the age range of 83 to 92 by 7%, we arrived at a mortality basis that produced an overall margin for mortality improvement of 10%. Thus, we recommended this mortality basis for Male Non-Disabled Annuitants.

Female Non-Disabled Annuitants

- Actual-to-expected ratio for 2011-2015: 1.04, meaning our valuations have been under-predicting total deaths.
- It was observed that this population's most favorable mortality experience relative to the current assumptions occurred in the age range 64 to 80 (meaning in this age range, there was the least margin for mortality improvement).
- We determined that, by starting with the RP-2000 Female Combined Healthy Mortality Table and then projecting improvement for 20 years (to 2020) using Projection Scale AA, and then further reducing the resulting death rates in the age range of 64 to 80 by 10%, we arrived at a mortality basis that produced an overall margin for mortality improvement of 10%. Thus, we recommended this mortality basis for Female Non-Disabled Annuitants.

Male Disabled Annuitants

- Actual-to-expected ratio for 2011-2015: 0.93, meaning our valuations have been over-predicting total deaths.
- We determined that, by starting with the RP-2000 Male Disabled Retiree Mortality Table and then projecting improvement for 21 years (to 2021) using Projection Scale AA, we arrived at a mortality basis that produced an overall margin for mortality improvement of 6%, which we considered to be a sufficient margin for the relatively small male disabled annuitant population. Thus, we recommended this mortality basis for Male Disabled Annuitants.

Female Disabled Annuitants

- Actual-to-expected ratio for 2011-2015: 0.92, meaning our valuations have been over-predicting total deaths.
- We determined that, by starting with the RP-2000 Female Disabled Retiree Mortality Table and then projecting improvement for 17 years (to 2017) using Projection Scale AA, we arrived at a mortality basis that produced an overall margin for mortality improvement of 5%, which we considered to be a sufficient margin for the relatively small female disabled annuitant population. Thus, we recommended this mortality basis for Female Disabled Annuitants.

Mortality tables are also used to establish the early retirement and other actuarial equivalence factors used to determine benefits payable to retirees who make optional elections. The two sets of mortality assumptions, those used for the valuation and those used for the actuarial equivalence factors, should be kept in step over the long run to avoid any significant cumulative gains or losses that could result from the exercise of optional elections at retirement.

However, we continue to feel, as we have communicated in our past actuarial investigation reports, that it is not necessary to change the actuarial equivalence factors every time there is a change in the valuation mortality assumptions. The change in equivalence factors is a very costly and time-consuming process. SERS staff has determined that the State Employees' Retirement Code does not require that the actuarial equivalence factors be changed every time the actuarial assumptions are changed. Therefore, we recommend that SERS' current actuarial equivalence factors remain unchanged; however, we view this issue as one that should be reconsidered at the time of the next actuarial experience study.

V. Other Experience Analyses

Optional Retirement Elections

The valuation includes a prediction of the number of new retirees who will select each of the options. Prediction of the proportion that will elect Option 4 is particularly important because of the adverse effect on the fund of each such election. Table V-1 compares the current assumptions to the selection by new retirees during the experience period. Option 4, the return of the present value of all or part of the employee contributions, can be selected along with any other available option. The experience study shows a slight increase in the prevalence of election of an Option 1 form of benefit and a slight decrease in the prevalence of Option 2 and 3 elections.

TABLE V-1
Assumed Elections of Options at Retirement

Election	Current Assumption	Experience	Recommended Assumption
I. Single Life Annuity	33%	32.0%	32%
II. Option 1	41%	42.7%	43%
III. Option 2 or 3 or other percentage survivor	26%	25.3%	25%
IV. Option 1 combined with III	Included in II and III	Included in II and III	Included in II and III
V. Total	100%	100%	100%
VI. Percent of available funds withdrawn under Option 4	85%	77.8%	80%

Hay Group’s recommended assumptions are shown in the far right column above. These recommended assumptions are very similar to the current assumptions.

Purchases of Service

Employees can purchase certain past service by agreeing to pay the cost of that service. The most common purchases are for past SERS service and for military service. Before Act 9 in 2001, employees had to agree to pay the cost in a lump sum or in installment payments over no more than three years. Board policy permits payments over as long as six years. Act 9 permitted members to defer payment until retirement. The deferred payments, plus interest, are used to reduce the benefits at retirement.

We recommend the continued use of the current assumptions relating to years of service purchased by eligible members.

VI. Conclusion

We believe that Hay Group's recommended changes herein to SERS' actuarial valuation assumptions, in the aggregate, represent a continuation of the SERS Board's policy of establishing moderately conservative assumptions. The assumptions, as a set, we view as somewhat conservative in that they produce a somewhat higher employer cost than would be produced without including the conservatism. Use of the recommended set of assumptions would allow some margin for adverse experience without significantly overstating the current cost of the system.

Since many of the actuarial assumptions utilized for the annual SERS valuations are also used in the annual Benefits Completion Plan (BCP) actuarial valuations, all of the assumption recommendations included herein also extend to the annual BCP valuations, to the extent those assumptions have applicability to the BCP valuations.

Based upon actuarial valuations we have performed utilizing the full set of actuarial assumptions we have recommended as a result of this investigation of the SERS actuarial experience, we have determined that the cost impact of implementing all of our recommendations would be negligible. Some of the assumption changes (for example the annuitant mortality assumption changes) will increase the projected cost of the retirement system and some (for example the decrease in the salary increase assumptions) will decrease the cost. Overall, we anticipate that the recommended assumptions would (i) reduce the SERS normal cost by about 0.5 percent of payroll but also (ii) increase the SERS unfunded liability amortization by about 0.5 percent of payroll, thus the negligible bottom line impact indicated above.

VII. Actuarial Certification

This report presents an investigation of the actuarial experience of the State Employees' Retirement System of the Commonwealth of Pennsylvania, covering the period from January 1, 2011 to December 31, 2015.

To the best of our knowledge, this report is complete and accurate, and all recommended assumptions shown in this report are reasonable actuarial assumptions which represent our best estimate of anticipated experience under the plan, determined in conformance with generally accepted actuarial principles.

The actuaries certifying to this investigation are members of the Society of Actuaries or other professional actuarial organizations, and meet the General Qualification Standards of the American Academy of Actuaries for purposes of issuing Statements of Actuarial Opinion.

Respectfully submitted,
Korn Ferry Hay Group
March 9, 2016



By _____
Brent Mowery FSA, MAAA, EA
Fellow of the Society of Actuaries
Member American Academy of Actuaries
Enrolled Actuary No.14-3885



By _____
Craig Graby, MAAA, EA
Member American Academy of Actuaries
Enrolled Actuary No.14-7319



By _____
James J. McPhillips FSA, MAAA, EA
Fellow of the Society of Actuaries
Member American Academy of Actuaries
Enrolled Actuary No. 14-4992

VIII. Glossary

Actual-to-Expected Ratio – The actual number of members leaving for a specific cause (such as retirement) divided by the number the actuary expected to leave.

Actuarial Assumptions – Predicted probability of future events including economic and demographic assumptions.

ASOP – Actuarial Standard of Practice; ASOPs are promulgated by the Actuarial Standards Board.

Demographic Assumptions – Predictions about the rate at which employees will leave the retirement plan and the rate at which annuitants will die. These include rates of retirement and disability.

Economic Assumptions – Predictions about the future earnings of the retirement fund, salary growth and inflation.

Investment Rate – The expected return on plan assets. This rate is expressed as an annual rate and is a compound rate, meaning that a sum of \$10,000 invested for 10 years at 7.50 percent will yield \$20,610.

Salary Growth Rate – The expected increase in salary from the current year to the next year. Salary increase rates vary with service, with larger percentage increases expected in the beginning of an employee's career and smaller increases expected in the later years.

Appendix – Recommended Assumptions

The recommended assumptions are shown in detail in the following tables.

Recommended Economic Assumptions					
	Annual Inflation	Investment Return		Salary Growth	
		Nominal	Real	Nominal	Real
Recommended	2.75%	7.50%	4.6%	3.05%	0.3%
Current 2011 – 2014	2.75%	7.50%	4.6%	3.05%	0.3%
Prior 2010	2.75%	8.00%	5.1%	3.05%	0.3%
Prior 2008 & 2009	3.00%	8.00%	4.9%	3.30%	0.3%
Prior 1995 – 2007	3.00%	8.50%	5.3%	3.30%	0.3%

Table A – 1	Career Salary Increase Rates
Table A – 2	Mortality Rates for All Active Employees
Table A – 3	Disability Retirement Rates for All Active Employees
Table A – 4	Superannuation Retirement Rates for General Employees
Table A – 5	Early Retirement Rates for General Employees with 15 or More Years of Service
Table A – 6	Early Retirement Rates for General Employees with 4 – 14 Years of Service
Table A – 7	Recommended Withdrawal Rates for General Employees (Current Rates Not Shown)
Table A – 8	Mortality Rates for Non-Disabled Annuitants and Survivors
Table A – 9	Mortality Rates for Disabled Annuitants
Table A – 10	Superannuation Retirement Rates for State Police
Table A – 11	Superannuation Retirement Rates for Hazardous Duty Employees
Table A – 12	Early Retirement Rates for State Police and Hazardous Duty Employees
Table A – 13	Withdrawal Rates for State Police and Hazardous Duty Employees
Table A – 14	Superannuation Retirement Rates for Legislators
Table A – 15	Early Retirement Rates for Legislators
Table A – 16	Withdrawal Rates for Legislators
Table A – 17	Superannuation Rates for Judicial Officers
Table A – 18	Early Retirement Rates for Judicial Officers
Table A – 19	Withdrawal Rates for Judicial Officers
Table A – 20	Early Retirement Rates for Class A-3 and A-4 General Employees
Table A – 21	Superannuation Retirement Rates for Class A-3 and A-4 General Employees

Career Salary Increase Rates

Table A-1 shows the actual salary growth experience (A), current total salary increase assumptions from general and career increases combined (B), recommended total salary increase assumptions (C), the current career salary increase assumptions (D) and the recommended career salary increase assumptions (E).

Table A-1 Development of Recommended Career Salary Increase Assumptions					
Years of Credited Service	Actual Salary Increase	Current Assumed Total Salary Increase	Recommended Total Salary Increase	Current Career Salary Increase	Recommended Career Salary Increase
	(A)	(B)	(C)	(D)	(E)
1	4.88%	11.05%	9.05%	8.00%	6.00%
2	3.49%	9.05%	7.55%	6.00%	4.50%
3	3.36%	7.55%	7.05%	4.50%	4.00%
4	3.58%	7.05%	6.80%	4.00%	3.75%
5	3.22%	6.80%	6.55%	3.75%	3.50%
6	2.83%	6.55%	6.30%	3.50%	3.25%
7	2.65%	6.30%	6.05%	3.25%	3.00%
8	2.94%	6.25%	5.95%	3.20%	2.90%
9	2.62%	6.20%	5.85%	3.15%	2.80%
10	2.61%	6.15%	5.75%	3.10%	2.70%
11	2.66%	6.05%	5.65%	3.00%	2.60%
12	2.31%	5.95%	5.55%	2.90%	2.50%
13	2.66%	5.85%	5.45%	2.80%	2.40%
14	2.41%	5.75%	5.35%	2.70%	2.30%
15	1.88%	5.65%	5.25%	2.60%	2.20%
16	1.96%	5.55%	5.15%	2.50%	2.10%
17	1.99%	5.45%	5.10%	2.40%	2.05%
18	1.87%	5.35%	5.05%	2.30%	2.00%
19	1.98%	5.25%	5.00%	2.20%	1.95%
20	1.73%	5.15%	4.95%	2.10%	1.90%
21	1.78%	5.05%	4.90%	2.00%	1.85%
22	1.69%	4.95%	4.80%	1.90%	1.75%
23	1.30%	4.85%	4.70%	1.80%	1.65%

**Table A-1
Development of Recommended Career Salary Increase Assumptions**

Years of Credited Service	Actual Salary Increase	Current Assumed Total Salary Increase	Recommended Total Salary Increase	Current Career Salary Increase	Recommended Career Salary Increase
	(A)	(B)	(C)	(D)	(E)
24	1.04%	4.75%	4.60%	1.70%	1.55%
25	1.44%	4.65%	4.50%	1.60%	1.45%
26	1.16%	4.55%	4.30%	1.50%	1.25%
27	1.13%	4.45%	4.10%	1.40%	1.05%
28	0.68%	4.35%	3.95%	1.30%	0.90%
29	0.57%	4.30%	3.90%	1.25%	0.85%
30	0.48%	4.30%	3.85%	1.25%	0.80%
31	1.33%	4.30%	3.85%	1.25%	0.80%
32	1.52%	4.30%	3.85%	1.25%	0.80%
33	1.29%	4.30%	3.85%	1.25%	0.80%
34	0.48%	4.30%	3.85%	1.25%	0.80%
35	0.65%	4.30%	3.85%	1.25%	0.80%
36	1.66%	4.30%	3.85%	1.25%	0.80%
37	0.90%	4.30%	3.85%	1.25%	0.80%
38	0.89%	4.30%	3.85%	1.25%	0.80%
39	0.49%	4.30%	3.85%	1.25%	0.80%
40	0.00%	4.30%	3.85%	1.25%	0.80%

Table A-2				
Mortality Rates for All Active Employees				
Age	Males Current	Males Recommended	Females Current	Females Recommended
17	0.0004	0.0004	0.0001	0.0001
18	0.0004	0.0004	0.0001	0.0001
19	0.0004	0.0004	0.0002	0.0002
20	0.0004	0.0004	0.0002	0.0002
21	0.0004	0.0004	0.0002	0.0002
22	0.0004	0.0004	0.0002	0.0002
23	0.0004	0.0004	0.0002	0.0002
24	0.0004	0.0004	0.0002	0.0002
25	0.0004	0.0004	0.0002	0.0002
26	0.0004	0.0004	0.0002	0.0002
27	0.0004	0.0004	0.0002	0.0002
28	0.0004	0.0004	0.0002	0.0002
29	0.0004	0.0004	0.0002	0.0002
30	0.0005	0.0005	0.0002	0.0002
31	0.0005	0.0005	0.0002	0.0002
32	0.0005	0.0005	0.0002	0.0002
33	0.0005	0.0005	0.0003	0.0003
34	0.0005	0.0005	0.0003	0.0003
35	0.0006	0.0006	0.0003	0.0003
36	0.0006	0.0007	0.0003	0.0003
37	0.0007	0.0007	0.0004	0.0004
38	0.0007	0.0008	0.0004	0.0004
39	0.0008	0.0008	0.0004	0.0004
40	0.0008	0.0009	0.0004	0.0004
41	0.0009	0.0009	0.0004	0.0004
42	0.0009	0.0010	0.0005	0.0005
43	0.0010	0.0010	0.0005	0.0005
44	0.0010	0.0011	0.0006	0.0006
45	0.0012	0.0013	0.0006	0.0006
46	0.0014	0.0015	0.0007	0.0007
47	0.0016	0.0017	0.0007	0.0007
48	0.0018	0.0019	0.0008	0.0008
49	0.0020	0.0022	0.0008	0.0008
50	0.0022	0.0024	0.0009	0.0009
51	0.0023	0.0025	0.0009	0.0009
52	0.0024	0.0026	0.0010	0.0010
53	0.0025	0.0027	0.0010	0.0010

Table A-2				
Mortality Rates for All Active Employees				
Age	Males Current	Males Recommended	Females Current	Females Recommended
54	0.0026	0.0028	0.0012	0.0012
55	0.0027	0.0029	0.0014	0.0014
56	0.0028	0.0030	0.0016	0.0016
57	0.0029	0.0031	0.0018	0.0018
58	0.0030	0.0032	0.0020	0.0020
59	0.0031	0.0033	0.0022	0.0022
60	0.0032	0.0035	0.0024	0.0024
61	0.0034	0.0037	0.0026	0.0026
62	0.0036	0.0039	0.0028	0.0028
63	0.0038	0.0041	0.0030	0.0030
64	0.0040	0.0043	0.0035	0.0035
65	0.0045	0.0048	0.0040	0.0040
66	0.0050	0.0054	0.0045	0.0045
67	0.0055	0.0059	0.0050	0.0050
68	0.0062	0.0067	0.0060	0.0060
69	0.0070	0.0075	0.0070	0.0070
70	0.0080	0.0086	0.0080	0.0080
71	0.0090	0.0097	0.0090	0.0090
72	0.0100	0.0108	0.0100	0.0100
73	0.0120	0.0129	0.0110	0.0110
74	0.0145	0.0156	0.0120	0.0120
75	0.0170	0.0183	0.0130	0.0130
76	0.0200	0.0215	0.0140	0.0140
77	0.0240	0.0258	0.0150	0.0150
78	0.0260	0.0280	0.0160	0.0160
79	0.0280	0.0301	0.0170	0.0170
80	0.0300	0.0323	0.0180	0.0180
81	0.0300	0.0323	0.0190	0.0190
82+	0.0300	0.0323	0.0200	0.0200

Table A-3				
Disability Retirement Rates for All Active Employees				
Age	Males	Males	Females	Females
	Current	Recommended	Current	Recommended
23	0.00023	0.00021	0.00039	0.00035
24	0.00023	0.00021	0.00039	0.00035
25	0.00023	0.00021	0.00039	0.00035
26	0.00038	0.00034	0.00044	0.00040
27	0.00038	0.00034	0.00055	0.00050
28	0.00050	0.00050	0.00055	0.00050
29	0.00068	0.00062	0.00077	0.00070
30	0.00068	0.00062	0.00094	0.00085
31	0.00075	0.00069	0.00110	0.00100
32	0.00083	0.00076	0.00121	0.00109
33	0.00090	0.00083	0.00143	0.00129
34	0.00113	0.00103	0.00154	0.00139
35	0.00120	0.00110	0.00160	0.00144
36	0.00128	0.00117	0.00165	0.00149
37	0.00128	0.00117	0.00171	0.00154
38	0.00135	0.00124	0.00187	0.00169
39	0.00143	0.00131	0.00198	0.00179
40	0.00188	0.00172	0.00209	0.00189
41	0.00210	0.00193	0.00231	0.00209
42	0.00240	0.00220	0.00253	0.00229
43	0.00263	0.00241	0.00281	0.00254
44	0.00293	0.00268	0.00292	0.00264
45	0.00330	0.00303	0.00330	0.00298
46	0.00353	0.00323	0.00369	0.00333
47	0.00383	0.00351	0.00396	0.00358
48	0.00390	0.00358	0.00440	0.00398
49	0.00435	0.00399	0.00473	0.00428
50	0.00458	0.00420	0.00501	0.00453
51	0.00488	0.00447	0.00523	0.00472
52	0.00510	0.00468	0.00550	0.00497
53	0.00555	0.00509	0.00583	0.00527

Table A-3				
Disability Retirement Rates for All Active Employees				
	Males	Males	Females	Males
Age	Current	Recommended	Current	Recommended
54	0.00578	0.00530	0.00605	0.00547
55	0.00600	0.00551	0.00633	0.00572
56	0.00615	0.00564	0.00660	0.00597
57	0.00645	0.00592	0.00688	0.00622
58	0.00660	0.00606	0.00715	0.00646
59	0.00690	0.00633	0.00743	0.00671
60	0.00000	0.00000	0.00000	0.00000

**Table A-4
Comparison of Current and Recommended
Superannuation Retirement Rates for General Employees**

Age	Current Superannuation Retirement Rates	Recommended Superannuation Retirement Rates	Current Superannuation Retirement Rates	Recommended Superannuation Retirement Rates
	Males	Males	Females	Females
53	0.25	0.20	0.23	0.23
54	0.26	0.23	0.23	0.23
55	0.27	0.23	0.23	0.23
56	0.28	0.24	0.23	0.23
57	0.30	0.24	0.23	0.23
58	0.30	0.27	0.23	0.23
59	0.30	0.30	0.23	0.25
60	0.25	0.25	0.25	0.25
61	0.20	0.20	0.20	0.20
62	0.25	0.25	0.25	0.25
63	0.20	0.20	0.20	0.20
64	0.20	0.20	0.20	0.20
65	0.25	0.25	0.25	0.25
66	0.20	0.25	0.20	0.25
67	0.20	0.23	0.20	0.23
68	0.20	0.23	0.20	0.23
69	0.20	0.23	0.20	0.23
70	0.20	0.23	0.20	0.23
71 to 79	0.20	0.20	0.20	0.20
80	1.00	1.00	1.00	1.00

Table A-5
Early Retirement Rates for Active General Employees
with 15 or more Years of Service

Age	Males Current	Males Recommended	Females Current	Females Recommended
31	0.01500	0.01000	0.01500	0.01200
32	0.01500	0.01000	0.01500	0.01200
33	0.01500	0.01000	0.01500	0.01200
34	0.01500	0.01000	0.01500	0.01200
35	0.01500	0.01000	0.01500	0.01200
36	0.01500	0.01000	0.01500	0.01200
37	0.01500	0.01000	0.01500	0.01200
38	0.01500	0.01000	0.01500	0.01200
39	0.01500	0.01000	0.01500	0.01200
40	0.01500	0.01000	0.01500	0.01200
41	0.01500	0.01000	0.01500	0.01200
42	0.01500	0.01000	0.01500	0.01200
43	0.01500	0.01000	0.01500	0.01600
44	0.01500	0.01000	0.01500	0.01600
45	0.01500	0.01000	0.01500	0.01600
46	0.01500	0.01000	0.01500	0.01600
47	0.02000	0.02000	0.02000	0.01600
48	0.02000	0.02000	0.02000	0.01600
49	0.02000	0.02000	0.02000	0.01600
50	0.02000	0.02000	0.02000	0.02000
51	0.03000	0.02000	0.03000	0.03000
52	0.04000	0.03000	0.04000	0.05000
53	0.04500	0.04000	0.04500	0.06000
54	0.05000	0.05000	0.05000	0.06000
55	0.05500	0.06000	0.05500	0.06000
56	0.06000	0.07000	0.06000	0.07000
57	0.08000	0.08000	0.08000	0.08000
58	0.10000	0.10000	0.10000	0.10000
59	0.15000	0.20000	0.15000	0.20000
60	0.00000	0.00000	0.00000	0.00000

Table A-6
Early Retirement Rates for Active General Employees
with 5 - 14 Years of Service

Age	Males Current	Males Recommended	Females Current	Females Recommended
21	0.01000	0.02000	0.01000	0.03700
22	0.01000	0.02000	0.01000	0.03700
23	0.01000	0.02000	0.01000	0.03700
24	0.01000	0.02000	0.01000	0.03700
25	0.01000	0.02000	0.01000	0.03700
26	0.01000	0.02000	0.01000	0.03700
27	0.01000	0.02000	0.01000	0.03700
28	0.01000	0.02000	0.01000	0.03700
29	0.01500	0.03000	0.01500	0.03700
30	0.01500	0.01600	0.01500	0.01900
31	0.01500	0.01600	0.01500	0.01900
32	0.01500	0.01600	0.01500	0.01900
33	0.01500	0.01600	0.01500	0.01900
34	0.01500	0.01600	0.01500	0.01900
35	0.01500	0.01600	0.01500	0.01900
36	0.01500	0.01600	0.01500	0.01900
37	0.01500	0.01600	0.01500	0.01900
38	0.01500	0.01600	0.01500	0.01900
39	0.01000	0.01600	0.01000	0.01900
40	0.01000	0.01600	0.01000	0.01900
41	0.01000	0.01600	0.01000	0.01900
42	0.01000	0.01600	0.01000	0.01900
43	0.01000	0.01600	0.01000	0.01900
44	0.01000	0.01600	0.01000	0.01900
45	0.01000	0.01350	0.01000	0.01900
46	0.01000	0.01350	0.01000	0.01900
47	0.01000	0.01350	0.01000	0.01900
48	0.01000	0.01350	0.01000	0.01900

Table A-6 Early Retirement Rates for Active General Employees with 5 - 14 Years of Service				
Age	Males Current	Males Recommended	Females Current	Females Recommended
49	0.01000	0.01350	0.01000	0.01900
50	0.01000	0.01350	0.01000	0.01900
51	0.01000	0.01350	0.01000	0.01900
52	0.01000	0.01350	0.01000	0.01900
53	0.01000	0.01350	0.01000	0.01900
54	0.01000	0.01350	0.01000	0.01900
55	0.01000	0.01350	0.01000	0.01900
56	0.01000	0.01350	0.01000	0.01900
57	0.01000	0.01350	0.01000	0.01900
58	0.01000	0.01350	0.01000	0.01900
59	0.03000	0.01350	0.03000	0.01900
60	0.00000	0.00000	0.00000	0.00000

Table A-7 Recommended Withdrawal Rates for Males

Service	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Age															
17	0.24200	0.16140													
18	0.24200	0.16140	0.12500												
19	0.24200	0.16140	0.12500	0.08340											
20	0.24200	0.16140	0.12500	0.08340	0.04410										
21	0.24200	0.16140	0.11060	0.08340	0.04410	0.03040									
22	0.24200	0.16140	0.11060	0.08340	0.04410	0.03040	0.02820								
23	0.23170	0.16140	0.10960	0.07810	0.04410	0.03040	0.02820	0.02500							
24	0.19860	0.16140	0.10960	0.07810	0.04410	0.03040	0.02820	0.02500	0.01740						
25	0.18540	0.13880	0.10960	0.07810	0.04410	0.03040	0.02820	0.02500	0.01740	0.02080					
26	0.17890	0.13780	0.10960	0.07810	0.04410	0.03040	0.02820	0.02500	0.01740	0.02080	0.01270				
27	0.17240	0.13780	0.10960	0.07810	0.04410	0.03040	0.02820	0.02500	0.01740	0.02080	0.01270	0.02230			
28	0.17240	0.13780	0.10960	0.07810	0.04410	0.03040	0.02300	0.02150	0.01670	0.02080	0.01270	0.02230	0.00219		
29	0.17240	0.13780	0.10960	0.07810	0.04410	0.03040	0.02300	0.02150	0.01670	0.02080	0.01270	0.02230	0.00219	0.01830	
30	0.16410	0.10640	0.09520	0.07810	0.04410	0.03040	0.02300	0.02150	0.01670	0.02080	0.01270	0.02230	0.00219	0.01830	0.01000
31	0.16410	0.10640	0.09520	0.07810	0.04410	0.03040	0.02300	0.02150	0.01670	0.02080	0.01270	0.02230	0.00219	0.01830	0.01000
32	0.16410	0.10640	0.09520	0.07810	0.04410	0.03040	0.02300	0.02150	0.01670	0.02080	0.01270	0.02230	0.00219	0.01830	0.01000
33	0.16410	0.10640	0.09520	0.05790	0.03950	0.02410	0.02080	0.02800	0.01640	0.01280	0.01170	0.01560	0.00910	0.01830	0.01000
34	0.16410	0.10640	0.09520	0.05790	0.03950	0.02410	0.02080	0.02800	0.01640	0.01280	0.01170	0.01560	0.00910	0.01830	0.01000
35	0.15610	0.10540	0.07400	0.05790	0.03950	0.02410	0.02080	0.02800	0.01640	0.01280	0.01170	0.01560	0.00910	0.01830	0.01000
36	0.15490	0.10440	0.07330	0.05790	0.03950	0.02410	0.02080	0.02800	0.01640	0.01280	0.01170	0.01560	0.00910	0.01830	0.01000
37	0.15360	0.10340	0.07260	0.05790	0.03950	0.02410	0.02080	0.02800	0.01640	0.01280	0.01170	0.01560	0.00910	0.01830	0.01000
38	0.15240	0.10240	0.07180	0.05790	0.03950	0.02410	0.02080	0.02800	0.01640	0.01280	0.01170	0.01560	0.00910	0.01830	0.01000
39	0.15110	0.10150	0.07110	0.05790	0.03950	0.02410	0.02080	0.02800	0.01640	0.01280	0.01170	0.01560	0.00910	0.01830	0.01000
40	0.15040	0.10050	0.07040	0.05180	0.03570	0.02360	0.02160	0.01420	0.01790	0.01280	0.01080	0.01560	0.00910	0.01830	0.01000
41	0.14860	0.09950	0.07040	0.05180	0.03570	0.02360	0.02160	0.01420	0.01790	0.01280	0.01080	0.01560	0.00910	0.01830	0.01000

Table A-7 Recommended Withdrawal Rates for Males

Service	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Age															
42	0.14740	0.09850	0.07040	0.05180	0.03570	0.02360	0.02160	0.01420	0.01790	0.01280	0.01080	0.01560	0.00910	0.01830	0.01800
43	0.14620	0.09750	0.07040	0.05080	0.03570	0.02360	0.02160	0.01420	0.01790	0.01280	0.01080	0.01560	0.00910	0.01830	0.01800
44	0.14490	0.09650	0.07040	0.05080	0.03570	0.02360	0.02160	0.01420	0.01790	0.01280	0.01080	0.01560	0.00910	0.01830	0.01800
45	0.14390	0.09550	0.07040	0.05080	0.03570	0.02360	0.01940	0.01970	0.02080	0.00720	0.01400	0.00620	0.00790	0.00510	0.01140
46	0.14390	0.09450	0.07040	0.05080	0.03570	0.02360	0.01940	0.01970	0.02080	0.00720	0.01400	0.00620	0.00790	0.00510	0.01140
47	0.14390	0.09350	0.07040	0.05080	0.03570	0.02360	0.01940	0.01970	0.02080	0.00720	0.01400	0.00620	0.00790	0.00510	0.01140
48	0.14390	0.09250	0.07040	0.05080	0.03570	0.02360	0.01940	0.01970	0.02080	0.00720	0.01400	0.00620	0.00790	0.00510	0.01140
49	0.14390	0.09160	0.07040	0.05080	0.03570	0.02360	0.01940	0.01970	0.02080	0.00720	0.01400	0.00620	0.00790	0.00510	0.01140
50	0.14390	0.09160	0.06980	0.05080	0.02560	0.02580	0.02810	0.02080	0.00850	0.00720	0.00870	0.00800	0.00890	0.00470	0.01140
51	0.14390	0.09160	0.06980	0.05080	0.02560	0.02580	0.02810	0.02080	0.00850	0.00720	0.00870	0.00800	0.00890	0.00470	0.01140
52	0.14390	0.09160	0.06980	0.05080	0.02560	0.02580	0.02810	0.02080	0.00850	0.00720	0.00870	0.00800	0.00890	0.00470	0.01140
53	0.14390	0.09160	0.06980	0.05080	0.02560	0.02580	0.02810	0.02080	0.00850	0.00720	0.00870	0.00800	0.00890	0.00470	0.01140
54	0.14390	0.09160	0.06980	0.05080	0.02560	0.02580	0.02810	0.02080	0.00850	0.00720	0.00870	0.00800	0.00890	0.00470	0.01140
55	0.14390	0.09160	0.06980	0.05080	0.02560	0.01870	0.01070	0.01340	0.00820	0.00760	0.01060	0.00990	0.01130	0.01170	0.00750
56	0.14390	0.09160	0.06980	0.05080	0.02560	0.01870	0.01070	0.01340	0.00820	0.00760	0.01060	0.00990	0.01130	0.01170	0.00750
57	0.14390	0.09160	0.06980	0.05080	0.02560	0.01870	0.01070	0.01340	0.00820	0.00760	0.01060	0.00990	0.01130	0.01170	0.00750
58	0.14390	0.09160	0.06980	0.05080	0.02560	0.01870	0.01070	0.01340	0.00820	0.00760	0.01060	0.00990	0.01130	0.01170	0.00750
59	0.14390	0.09160	0.06980	0.05080	0.02560	0.01870	0.01070	0.01340	0.00820	0.00760	0.01060	0.00990	0.01130	0.01170	0.00750

Table A-7 Recommended Withdrawal Rates for Females

Service Age	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
17	0.28380	0.15910													
18	0.28380	0.15910	0.10980												
19	0.28380	0.15910	0.10980	0.10120											
20	0.28380	0.15910	0.10980	0.10120	0.08210										
21	0.28380	0.15910	0.10980	0.10120	0.08210	0.03680									
22	0.28380	0.15910	0.10980	0.10120	0.08210	0.03680	0.03480								
23	0.22370	0.14910	0.10980	0.10120	0.08210	0.03680	0.03480	0.03380							
24	0.22370	0.14910	0.10690	0.10120	0.08210	0.03680	0.03480	0.03380	0.02350						
25	0.22370	0.14910	0.10690	0.10120	0.08210	0.03680	0.03480	0.03380	0.02350	0.02340					
26	0.19200	0.14910	0.10690	0.10120	0.08210	0.03680	0.03480	0.03380	0.02350	0.02340	0.02660				
27	0.19200	0.14910	0.10690	0.10120	0.08210	0.03680	0.03480	0.02910	0.02350	0.02340	0.02660	0.01320			
28	0.19200	0.12170	0.09230	0.09110	0.04680	0.03310	0.03170	0.02910	0.02350	0.02340	0.02660	0.01320	0.02290		
29	0.19200	0.12170	0.09230	0.09110	0.04680	0.03310	0.03170	0.02910	0.02350	0.02340	0.02660	0.01320	0.02290	0.02210	
30	0.19200	0.12170	0.09230	0.09110	0.04680	0.03310	0.03170	0.02910	0.02350	0.02340	0.02660	0.01320	0.02290	0.02210	0.01720
31	0.15120	0.12170	0.09230	0.09110	0.04680	0.03310	0.03170	0.02910	0.02350	0.02340	0.02660	0.01320	0.02290	0.02210	0.01720
32	0.15120	0.12170	0.09230	0.09110	0.04680	0.03310	0.03170	0.02910	0.02350	0.02340	0.02660	0.01320	0.02290	0.02210	0.01720
33	0.15120	0.12170	0.09230	0.08130	0.04580	0.03310	0.02630	0.02910	0.01650	0.02310	0.01900	0.01320	0.01880	0.01710	0.01240
34	0.15120	0.12170	0.07830	0.06440	0.04300	0.03190	0.02630	0.02210	0.01550	0.02310	0.01900	0.01020	0.01770	0.01710	0.01240
35	0.15020	0.12170	0.07830	0.06440	0.04200	0.03190	0.02630	0.02210	0.01550	0.02310	0.01900	0.01020	0.01770	0.01710	0.01240
36	0.14920	0.12170	0.07830	0.06440	0.04100	0.03190	0.02630	0.02210	0.01550	0.02310	0.01900	0.01020	0.01770	0.01710	0.01240
37	0.14820	0.12170	0.07830	0.06440	0.04000	0.03190	0.02630	0.02210	0.01550	0.02310	0.01900	0.01020	0.01770	0.01710	0.01240
38	0.14720	0.12170	0.07830	0.06440	0.03900	0.03190	0.02390	0.02210	0.02030	0.01160	0.01760	0.00790	0.01380	0.01330	0.00860
39	0.14630	0.12170	0.07830	0.06440	0.03900	0.03190	0.02390	0.02210	0.02030	0.01160	0.01760	0.00790	0.01380	0.01330	0.00860

Table A-7 Recommended Withdrawal Rates for Females

Service	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Age															
40	0.13370	0.09520	0.07830	0.06440	0.03900	0.03190	0.02090	0.02210	0.02030	0.01160	0.01300	0.00780	0.01090	0.01480	0.00960
41	0.13270	0.09520	0.07830	0.06440	0.03900	0.03190	0.02090	0.02060	0.02030	0.01160	0.01300	0.00780	0.01090	0.01480	0.00960
42	0.13170	0.09520	0.07830	0.06440	0.03900	0.03190	0.02090	0.02060	0.02030	0.01160	0.01300	0.00780	0.01090	0.01480	0.00960
43	0.13070	0.08070	0.07180	0.06030	0.03900	0.02660	0.02090	0.02060	0.02030	0.01160	0.01300	0.00780	0.01090	0.01480	0.00960
44	0.13070	0.08070	0.07180	0.06030	0.03510	0.02660	0.02090	0.02060	0.02030	0.01160	0.01300	0.00780	0.01090	0.01480	0.00960
45	0.13070	0.08070	0.07180	0.06030	0.03510	0.02660	0.02090	0.02060	0.02030	0.01160	0.01300	0.00780	0.01090	0.01480	0.00960
46	0.13070	0.08070	0.07180	0.06030	0.03510	0.02660	0.01610	0.02060	0.02030	0.01160	0.01300	0.01480	0.00830	0.01120	0.00960
47	0.13070	0.08070	0.07180	0.06030	0.03510	0.02660	0.01610	0.02060	0.02030	0.01160	0.01300	0.01480	0.00830	0.01120	0.00960
48	0.13070	0.08070	0.07180	0.06030	0.03510	0.02660	0.01610	0.01820	0.01870	0.01450	0.01300	0.01480	0.00830	0.01120	0.00960
49	0.13070	0.08070	0.07180	0.06030	0.03510	0.02660	0.01610	0.01820	0.01870	0.01450	0.01300	0.01480	0.00830	0.01120	0.00960
50	0.13070	0.08070	0.07180	0.06030	0.03510	0.02660	0.01610	0.01820	0.01870	0.01450	0.01300	0.01480	0.00830	0.01120	0.00960
51	0.13070	0.08070	0.07180	0.05010	0.02890	0.01750	0.01610	0.01820	0.01870	0.01450	0.01300	0.01480	0.00830	0.01120	0.00960
52	0.13070	0.08070	0.07180	0.05010	0.02890	0.01750	0.01440	0.01820	0.01870	0.01450	0.01300	0.01480	0.00830	0.01120	0.00960
53	0.13070	0.08070	0.07180	0.05010	0.02890	0.01750	0.01440	0.01820	0.01870	0.01450	0.01210	0.01480	0.00830	0.01120	0.00960
54	0.13070	0.08070	0.07180	0.05010	0.02890	0.01750	0.01440	0.01820	0.01870	0.01450	0.01210	0.01480	0.00830	0.01120	0.00960
55	0.13070	0.08070	0.07180	0.05010	0.02890	0.01750	0.01910	0.01750	0.01170	0.01020	0.01020	0.01130	0.01370	0.00790	0.01600
56	0.13070	0.08070	0.07180	0.05010	0.02890	0.01750	0.01910	0.01750	0.01170	0.01020	0.01020	0.01130	0.01370	0.00790	0.01600
57	0.13070	0.08070	0.07180	0.05010	0.02890	0.01750	0.01910	0.01750	0.01170	0.01020	0.01020	0.01130	0.01370	0.00790	0.01600
58	0.13070	0.08070	0.07180	0.05010	0.02890	0.01750	0.01910	0.01750	0.01170	0.01020	0.01020	0.01130	0.01370	0.00790	0.01600
59	0.13070	0.08070	0.07180	0.05010	0.02890	0.01750	0.01910	0.01750	0.01170	0.01020	0.01020	0.01130	0.01370	0.00790	0.01600

Table A-8
Mortality Rates for Non-Disabled Annuitants and Survivors

Age	Males Current	Males Recommended	Females Current	Females Recommended
30	0.00107	0.00041	0.00034	0.00022
31	0.00120	0.00046	0.00040	0.00026
32	0.00135	0.00052	0.00046	0.00030
33	0.00152	0.00058	0.00051	0.00033
34	0.00169	0.00065	0.00056	0.00036
35	0.00186	0.00071	0.00061	0.00038
36	0.00202	0.00078	0.00065	0.00040
37	0.00217	0.00083	0.00070	0.00043
38	0.00230	0.00088	0.00075	0.00045
39	0.00241	0.00091	0.00080	0.00048
40	0.00253	0.00095	0.00088	0.00052
41	0.00266	0.00099	0.00096	0.00057
42	0.00280	0.00104	0.00106	0.00063
43	0.00297	0.00109	0.00116	0.00069
44	0.00317	0.00115	0.00128	0.00076
45	0.00340	0.00122	0.00138	0.00081
46	0.00361	0.00129	0.00149	0.00087
47	0.00384	0.00136	0.00160	0.00092
48	0.00409	0.00144	0.00173	0.00100
49	0.00435	0.00152	0.00188	0.00108
50	0.00462	0.00160	0.00204	0.00119
51	0.00474	0.00180	0.00216	0.00134
52	0.00480	0.00193	0.00237	0.00152
53	0.00487	0.00211	0.00263	0.00173
54	0.00493	0.00231	0.00294	0.00198
55	0.00507	0.00267	0.00328	0.00231
56	0.00530	0.00314	0.00363	0.00274
57	0.00562	0.00357	0.00400	0.00315
58	0.00606	0.00407	0.00440	0.00355
59	0.00658	0.00459	0.00484	0.00402
60	0.00720	0.00521	0.00530	0.00457
61	0.00798	0.00603	0.00585	0.00526

Table A-8
Mortality Rates for Non-Disabled Annuitants and Survivors

Age	Males Current	Males Recommended	Females Current	Females Recommended
62	0.00879	0.00688	0.00643	0.00602
63	0.00978	0.00799	0.00703	0.00692
64	0.01072	0.00900	0.00767	0.00702
65	0.01175	0.01017	0.00846	0.00790
66	0.01299	0.01169	0.00932	0.00892
67	0.01423	0.01304	0.01024	0.00990
68	0.01545	0.01426	0.01125	0.01095
69	0.01706	0.01580	0.01252	0.01210
70	0.01869	0.01744	0.01399	0.01363
71	0.02068	0.01929	0.01558	0.01483
72	0.02297	0.02142	0.01753	0.01649
73	0.02558	0.02386	0.01954	0.01796
74	0.02854	0.02662	0.02190	0.01991
75	0.03211	0.03019	0.02425	0.02154
76	0.03579	0.03365	0.02701	0.02373
77	0.04013	0.03805	0.03031	0.02667
78	0.04496	0.04297	0.03376	0.02940
79	0.05037	0.04853	0.03728	0.03246
80	0.05643	0.05481	0.04120	0.03588
81	0.06366	0.06234	0.04560	0.04412
82	0.07170	0.07078	0.05056	0.04892
83	0.07993	0.07338	0.05614	0.05431
84	0.08961	0.08293	0.06243	0.06041
85	0.09947	0.09205	0.07012	0.06866
86	0.11028	0.10206	0.07966	0.07814
87	0.12317	0.11491	0.09050	0.08892
88	0.13744	0.12926	0.10184	0.09904
89	0.15189	0.14284	0.11516	0.11221
90	0.16874	0.15997	0.12856	0.12400
91	0.18573	0.17425	0.14117	0.13617
92	0.20512	0.19199	0.15388	0.14843
93	0.22355	0.22270	0.16773	0.16374
94	0.24229	0.23893	0.17990	0.17562

Table A-8
Mortality Rates for Non-Disabled Annuitants and Survivors

Age	Males Current	Males Recommended	Females Current	Females Recommended
95	0.26324	0.25906	0.19142	0.18688
96	0.27939	0.27496	0.20212	0.19732
97	0.29509	0.29040	0.21352	0.21098
98	0.31278	0.31029	0.22216	0.21951
99	0.32758	0.32496	0.22954	0.22680
100	0.34181	0.33908	0.23557	0.23276
101	0.35863	0.35863	0.24483	0.24483
102	0.37169	0.37169	0.25450	0.25450
103	0.38304	0.38304	0.26604	0.26604
104	0.39200	0.39200	0.27906	0.27906
105	0.39789	0.39789	0.29312	0.29312
106	0.40000	0.40000	0.30781	0.30781
107	0.40000	0.40000	0.32273	0.32273
108	0.40000	0.40000	0.33744	0.33744
109	0.40000	0.40000	0.35154	0.35154
110	0.40000	0.40000	0.36462	0.36462
111	0.40000	0.40000	0.37625	0.36462
112	0.40000	0.40000	0.38602	0.37625
113	0.40000	0.40000	0.39351	0.38602
114	0.40000	0.40000	0.39831	0.39351
115	0.40000	0.40000	0.40000	0.39831
116	0.40000	0.40000	0.40000	0.40000
117	0.40000	0.40000	0.40000	0.40000
118	0.40000	0.40000	0.40000	0.40000
119	0.40000	0.40000	0.40000	0.40000
120	1.00000	1.00000	1.00000	1.00000

Table A-9				
Mortality Rates for Disabled Annuitants				
	Males	Males	Females	Females
	Current	Recommended	Current	Recommended
Age				
30	0.02060	0.02032	0.00739	0.00628
31	0.02060	0.02032	0.00751	0.00650
32	0.02060	0.02032	0.00751	0.00650
33	0.02060	0.02032	0.00745	0.00639
34	0.02060	0.02032	0.00739	0.00628
35	0.02060	0.02032	0.00733	0.00617
36	0.02060	0.02032	0.00727	0.00607
37	0.02060	0.02032	0.00721	0.00597
38	0.02043	0.01989	0.00715	0.00586
39	0.02027	0.01948	0.00710	0.00576
40	0.02011	0.01907	0.00710	0.00576
41	0.01995	0.01867	0.00710	0.00576
42	0.01979	0.01828	0.00710	0.00576
43	0.01963	0.01789	0.00710	0.00576
44	0.01947	0.01752	0.00710	0.00576
45	0.01931	0.01715	0.00704	0.00566
46	0.02024	0.01774	0.00767	0.00612
47	0.02115	0.01829	0.00833	0.00658
48	0.02205	0.01882	0.00909	0.00718
49	0.02293	0.01932	0.00989	0.00781
50	0.02380	0.01979	0.01081	0.00862
51	0.02466	0.02023	0.01179	0.00949
52	0.02551	0.02065	0.01292	0.01059
53	0.02656	0.02150	0.01412	0.01178
54	0.02760	0.02234	0.01537	0.01306
55	0.02888	0.02369	0.01668	0.01443
56	0.03018	0.02508	0.01803	0.01589
57	0.03149	0.02653	0.01927	0.01713
58	0.03284	0.02803	0.02036	0.01810
59	0.03396	0.02898	0.02145	0.01907

Table A-9
Mortality Rates for Disabled Annuitants

Age	Males Current	Males Recommended	Females Current	Females Recommended
60	0.03511	0.02996	0.02255	0.02006
61	0.03660	0.03165	0.02369	0.02106
62	0.03787	0.03275	0.02487	0.02211
63	0.03953	0.03465	0.02612	0.02323
64	0.04100	0.03593	0.02747	0.02443
65	0.04258	0.03732	0.02894	0.02574
66	0.04467	0.03967	0.03056	0.02718
67	0.04659	0.04137	0.03235	0.02877
68	0.04830	0.04233	0.03432	0.03052
69	0.05059	0.04434	0.03649	0.03245
70	0.05268	0.04556	0.03887	0.03456
71	0.05543	0.04794	0.04112	0.03624
72	0.05843	0.05053	0.04390	0.03868
73	0.06170	0.05336	0.04651	0.04062
74	0.06525	0.05643	0.04969	0.04339
75	0.06965	0.06104	0.05265	0.04556
76	0.07379	0.06467	0.05623	0.04866
77	0.07884	0.07001	0.06051	0.05284
78	0.08422	0.07578	0.06458	0.05639
79	0.08990	0.08196	0.06889	0.06016
80	0.09588	0.08856	0.07349	0.06417
81	0.10211	0.09556	0.07839	0.06845
82	0.10858	0.10296	0.08364	0.07304
83	0.11434	0.10842	0.08927	0.07795
84	0.12117	0.11642	0.09532	0.08324
85	0.12717	0.12218	0.10265	0.09046
86	0.13325	0.12802	0.11061	0.09835
87	0.14054	0.13681	0.11922	0.10697
88	0.14802	0.14598	0.12750	0.11440
89	0.15445	0.15233	0.13745	0.12445
90	0.16874	0.16860	0.14698	0.13308
91	0.18379	0.18364	0.15710	0.14224

Table A-9				
Mortality Rates for Disabled Annuitants				
	Males	Males	Females	Females
	Current	Recommended	Current	Recommended
Age				
92	0.20089	0.20336	0.16784	0.15196
93	0.21671	0.21938	0.18030	0.16473
94	0.23250	0.23536	0.19339	0.17668
95	0.25008	0.25648	0.20578	0.18800
96	0.26542	0.27222	0.21727	0.19851
97	0.28033	0.28751	0.22954	0.21161
98	0.29714	0.30874	0.23882	0.22017
99	0.31120	0.32334	0.24676	0.22748
100	0.32472	0.33739	0.25324	0.23346
101	0.34070	0.35863	0.26320	0.24483
102	0.35310	0.37169	0.27359	0.25450
103	0.36389	0.38304	0.28600	0.26604
104	0.37240	0.39200	0.29998	0.27906
105	0.37799	0.39789	0.31510	0.29312
106	0.40000	0.40000	0.33090	0.30781
107	0.40000	0.40000	0.34693	0.32273
108	0.40000	0.40000	0.36275	0.33744
109	0.40000	0.40000	0.37791	0.35154
110	0.40000	0.40000	0.39196	0.36462
111	0.40000	0.40000	0.37625	0.37625
112	0.40000	0.40000	0.38602	0.38602
113	0.40000	0.40000	0.39351	0.39351
114	0.40000	0.40000	0.39831	0.39831
115	0.40000	0.40000	0.40000	0.40000
116	0.40000	0.40000	0.40000	0.40000
117	0.40000	0.40000	0.40000	0.40000
118	0.40000	0.40000	0.40000	0.40000
119	0.40000	0.40000	0.40000	0.40000
120	1.00000	1.00000	1.00000	1.00000

Table A-10		
Superannuation Retirement Rates for State Police		
	Males & Females	Males & Females
Service	Current	Recommended
20	0.05000	0.01000
21	0.05000	0.01000
22	0.05000	0.01000
23	0.05000	0.01000
24	0.15000	0.50000
25	0.50000	0.70000
26	0.20000	0.40000
27	0.20000	0.40000
28	0.20000	0.40000
29	0.20000	0.40000
30	0.30000	0.50000
31	0.20000	0.40000
32	0.40000	0.40000
33	0.40000	0.50000
34	0.40000	0.50000
35	0.50000	0.50000
36	0.50000	0.50000
37	0.50000	0.50000
38	0.50000	0.50000
39	0.50000	0.50000
40	1.00000	1.00000

Table A-11 Superannuation Retirement Rates for Hazardous Duty Employees Males & Females		
Age	Current	Males & Females Recommended
49	0.07000	0.10000
50	0.07000	0.10000
51	0.07000	0.10000
52	0.07000	0.10000
53	0.07000	0.10000
54	0.07000	0.10000
55	0.07000	0.10000
56	0.07000	0.10000
57	0.07000	0.10000
58	0.07000	0.10000
59	0.10000	0.10000
60	0.12000	0.19000
61	0.16000	0.19000
62	0.30000	0.19000
63	0.15000	0.19000
64	0.15000	0.19000
65	0.25000	0.27000
66 to 75	0.25000	0.32000
76 to 79	0.35000	0.32000
80	1.00000	1.00000

Table A-12 Early Retirement Rates for State Police and Hazardous Duty Employees Males & Females		
	Current	Males & Females Recommended
Age		
17 to 49	0.0080	0.0140
50 to 59	0.0000	0.0000

Table A-13 Withdrawal Rates for State Police and Hazardous Duty Employees Males & Females		
	Current	Males & Females Recommended
Service		
0	0.1500	0.0900
1	0.0500	0.0400
2	0.0300	0.0300
3	0.0250	0.0300
4	0.0150	0.0200
5	0.0090	0.0100
6	0.0065	0.0100
7	0.0055	0.0050
8	0.0040	0.0050
9	0.0025	0.0050
10	0.0020	0.0020

Table A-14		
Superannuation Retirement Rates for Legislators		
Age	Males & Females	Males & Females
	Current	Recommended
49	0.05000	0.05000
50	0.05000	0.05000
51	0.05000	0.05000
52	0.05000	0.05000
53	0.05000	0.05000
54	0.07500	0.05000
55	0.07500	0.05000
56	0.07500	0.05000
57	0.07500	0.05000
58	0.07500	0.05000
59	0.12000	0.05000
60	0.12000	0.05000
61	0.12000	0.05000
62	0.12000	0.05000
63	0.12000	0.11000
64	0.25000	0.11000
65	0.25000	0.11000
66	0.25000	0.11000
67	0.25000	0.11000
68	0.25000	0.11000
69	0.25000	0.11000
70	0.25000	0.15000
71	0.25000	0.15000
72	0.25000	0.15000
73 +	0.25000	0.15000

Table A-15
Early Retirement Rates for Legislators

Age	Males & Females Current	Males & Females Recommended
17 to 49	0.0300	0.0270
50 to 59	0.0000	0.0000

Table A-16
Withdrawal Rates for Legislators

Service	Males & Females Current	Males & Females Recommended
0	0.05000	0.04000
1	0.05000	0.04000
2	0.05000	0.04000
3	0.10000	0.04000
4	0.05000	0.04000
5	0.10000	0.04000
6	0.05000	0.04000
7	0.05000	0.12000
8	0.05000	0.12000
9	0.05000	0.12000
10	0.01250	0.01600

Table A-17		
Superannuation Retirement Rates for Judicial Officers		
	Males & Females	Males & Females
Age	Current	Recommended
49 to 58	0.0227	0.0500
59	0.1000	0.0500
60	0.0500	0.0500
61	0.0500	0.0500
62	0.0500	0.0500
63	0.0500	0.0500
64	0.0500	0.0500
65	0.1000	0.1000
66	0.1000	0.1000
67	0.1000	0.1000
68	0.1000	0.1000
69	0.5000	0.1000
70	1.0000	1.0000

Table A-18		
Early Retirement Rates for Judicial Officers		
	Males & Females	Males & Females
Age	Current	Recommended
17 to 49	0.00500	0.00200
50 to 59	0.01200	0.01800

Table A-19		
Withdrawal Rates for Judicial Officers		
Service	Males & Females Current	Males & Females Recommended
0	0.0200	0.0100
1	0.0200	0.0100
2	0.0100	0.0030
3	0.0100	0.0030
4	0.0100	0.0030
5	0.0050	0.0030
6	0.0045	0.0030
7	0.0040	0.0030
8	0.0035	0.0030
9	0.0030	0.0030
10	0.0025	0.0030

Table A-20 Early Retirement Rates for Class A-3 and Class A-4 Active General Employees with 10 or more Years of Service		
Ages	Males & Females Current	Males & Females Recommended
31 to 46	0.01500	0.01500
47	0.02000	0.02000
48	0.02000	0.02000
49	0.02000	0.02000
50	0.02000	0.02000
51	0.03000	0.03000
52	0.04000	0.04000
53	0.04500	0.04500
54	0.05000	0.05000
55	0.05500	0.05500
56	0.05500	0.05500
57	0.05500	0.05500
58	0.05500	0.05500
59	0.05500	0.05500
60	0.05500	0.05500
61	0.06000	0.06000
62	0.20000	0.20000
63	0.10000	0.10000
64	0.15000	0.15000
65	0.00000	0.00000

It should be noted that the above rates in Table A-20 were not based upon the actual 2011-2015 experience of Class A-3 and Class A-4 members. Rather, these rates were developed by Hay Group at the time of the 2011 actuarial experience study, based upon our past experience and professional judgment.

**Table A-21
 Superannuation Retirement Rates
 for Class A-3 and Class A-4 General Employees**

Age	Current Superannuation Retirement Rates Males & Females	Recommended Superannuation Retirement Rates Males & Female
55	0.15	0.15
56	0.16	0.16
57	0.17	0.17
58	0.18	0.18
59	0.19	0.19
60	0.20	0.20
61	0.20	0.20
62	0.25	0.25
63	0.20	0.20
64	0.20	0.20
65	0.25	0.25
66 to 79	0.20	0.20
80	1.00	1.00

It should be noted that the above rates in Table A-21 were not based upon the actual 2011-2015 experience of Class A-3 and Class A-4 members. Rather, these rates were developed by Hay Group at the time of the 2011 actuarial experience study, based upon our past experience and professional judgment.

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

EXPERIENCE STUDY RESULTS SUMMARY				
Table Number		Fiscal Years 2011 - 2015		
		Ratio of Actual to		Average Number of Decrements Per Year
		Expected	Recommended*	
1	Active Member Pre Retirement Mortality			
	Males	0.97	0.90	88.6
	Females	0.90	0.90	43.4
2	Non Disabled Annuitant and Survivor Mortality			
	Males	1.01	1.10	1,710.0
	Females	1.04	1.10	1,699.2
3	Disabled Annuitant Mortality			
	Males	0.93	1.06	154.2
	Females	0.92	1.05	119.2
4	Active Member Ordinary Disability			
	Males	0.83	0.90	110.0
	Females	0.81	0.90	119.2
	Rate of Early Retirements			
5	5-14 Years of Service			
	Males	1.24	0.98	197.6
	Females	1.69	1.02	279.8
6	15 or More Years of Service			
	Males	1.01	0.99	585.2
	Females	1.13	1.01	582.0
7	Rate of Superannuation Retirement			
	Males	0.91	0.90	1,324.2
	Females	0.98	0.96	1,204.6
8	Withdrawal Rates for Active Members			
	Males	1.14	0.99	1,245.6
	Females	1.14	1.00	1,362.6

* If blank, no assumption change is being recommended

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 1A

Fiscal Years 2011 - 2015

Mortality Experience of Active General Employees

Males

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
17	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0400%	0.0431%
18	13	0	0.0	0.0	0.00	0.00	0.0000%	0.0400%	0.0431%
19	107	0	0.0	0.0	0.00	0.00	0.0000%	0.0400%	0.0431%
20	282	1	0.1	0.1	8.87	8.23	0.3546%	0.0400%	0.0431%
21	505	0	0.2	0.2	0.00	0.00	0.0000%	0.0400%	0.0431%
22	819	1	0.3	0.4	3.05	2.84	0.1221%	0.0400%	0.0431%
23	1,283	1	0.5	0.6	1.95	1.81	0.0779%	0.0400%	0.0431%
24	1,791	1	0.7	0.8	1.40	1.30	0.0558%	0.0400%	0.0431%
25	2,175	2	0.9	0.9	2.30	2.14	0.0920%	0.0400%	0.0431%
26	2,539	1	1.0	1.1	0.98	0.91	0.0394%	0.0400%	0.0431%
27	2,723	0	1.1	1.2	0.00	0.00	0.0000%	0.0400%	0.0431%
28	2,999	4	1.2	1.3	3.33	3.10	0.1334%	0.0400%	0.0431%
29	3,205	1	1.3	1.4	0.78	0.72	0.0312%	0.0400%	0.0431%
30	3,335	1	1.7	1.8	0.60	0.56	0.0300%	0.0500%	0.0538%
31	3,426	1	1.7	1.8	0.58	0.54	0.0292%	0.0500%	0.0538%
32	3,524	1	1.8	1.9	0.57	0.53	0.0284%	0.0500%	0.0538%
33	3,556	3	1.8	1.9	1.69	1.57	0.0844%	0.0500%	0.0538%
34	3,602	1	1.8	1.9	0.56	0.52	0.0278%	0.0500%	0.0538%
35	3,590	3	2.0	2.1	1.52	1.41	0.0836%	0.0550%	0.0592%
36	3,637	6	2.2	2.3	2.75	2.55	0.1650%	0.0600%	0.0646%
37	3,663	3	2.4	2.6	1.26	1.17	0.0819%	0.0650%	0.0700%
38	3,832	0	2.7	2.9	0.00	0.00	0.0000%	0.0700%	0.0754%
39	4,099	4	3.1	3.3	1.30	1.21	0.0976%	0.0750%	0.0807%
40	4,439	9	3.6	3.8	2.53	2.35	0.2027%	0.0800%	0.0861%
41	4,780	5	4.1	4.4	1.23	1.14	0.1046%	0.0850%	0.0915%
42	5,122	7	4.6	5.0	1.52	1.41	0.1367%	0.0900%	0.0969%
43	5,273	2	5.0	5.4	0.40	0.37	0.0379%	0.0950%	0.1023%
44	5,432	11	5.4	5.8	2.03	1.88	0.2025%	0.1000%	0.1077%
45	5,473	9	6.6	7.1	1.37	1.27	0.1644%	0.1200%	0.1292%
46	5,690	10	8.0	8.6	1.26	1.17	0.1757%	0.1400%	0.1507%
47	5,930	7	9.5	10.2	0.74	0.69	0.1180%	0.1600%	0.1723%
48	6,275	7	11.3	12.2	0.62	0.58	0.1116%	0.1800%	0.1938%
49	6,677	8	13.4	14.4	0.60	0.56	0.1198%	0.2000%	0.2153%
50	7,029	11	15.5	16.6	0.71	0.66	0.1565%	0.2200%	0.2368%
51	7,384	17	17.0	18.3	1.00	0.93	0.2302%	0.2300%	0.2476%
52	7,695	17	18.5	19.9	0.92	0.86	0.2209%	0.2400%	0.2584%
53	7,824	13	19.6	21.1	0.66	0.62	0.1662%	0.2500%	0.2691%
54	7,958	27	20.7	22.3	1.30	1.21	0.3393%	0.2600%	0.2799%
55	7,922	13	21.4	23.0	0.61	0.56	0.1641%	0.2700%	0.2907%
56	7,849	22	22.0	23.7	1.00	0.93	0.2803%	0.2800%	0.3014%
57	7,802	23	22.6	24.4	1.02	0.94	0.2948%	0.2900%	0.3122%
58	7,744	27	23.2	25.0	1.16	1.08	0.3487%	0.3000%	0.3230%
59	7,372	19	22.9	24.6	0.83	0.77	0.2577%	0.3100%	0.3337%
60	6,431	17	20.6	22.2	0.83	0.77	0.2643%	0.3200%	0.3445%
61	5,295	21	18.0	19.4	1.17	1.08	0.3966%	0.3400%	0.3660%
62	4,400	11	15.8	17.1	0.69	0.65	0.2500%	0.3600%	0.3876%
63	3,437	16	13.1	14.1	1.23	1.14	0.4655%	0.3800%	0.4091%
64	2,832	9	11.3	12.2	0.79	0.74	0.3178%	0.4000%	0.4306%
65	2,236	14	10.1	10.8	1.39	1.29	0.6261%	0.4500%	0.4845%
66	1,653	7	8.3	8.9	0.85	0.79	0.4235%	0.5000%	0.5383%
67	1,249	6	6.9	7.4	0.87	0.81	0.4804%	0.5500%	0.5921%
68	942	6	5.8	6.3	1.03	0.95	0.6369%	0.6200%	0.6675%
69	694	6	4.9	5.2	1.24	1.15	0.8646%	0.7000%	0.7536%
70	525	4	4.2	4.5	0.95	0.88	0.7619%	0.8000%	0.8613%
71	439	3	4.0	4.3	0.76	0.71	0.6834%	0.9000%	0.9689%
72	349	6	3.5	3.8	1.72	1.60	1.7192%	1.0000%	1.0766%
73	300	4	3.6	3.9	1.11	1.03	1.3333%	1.2000%	1.2919%
74	275	3	4.0	4.3	0.75	0.70	1.0909%	1.4500%	1.5611%
75	221	1	3.8	4.0	0.27	0.25	0.4525%	1.7000%	1.8302%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 1A

Fiscal Years 2011 - 2015

Mortality Experience of Active General Employees

Males

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
76	157	2	3.1	3.4	0.64	0.59	1.2739%	2.0000%	2.1532%
77	115	1	2.8	3.0	0.36	0.34	0.8696%	2.4000%	2.5838%
78	81	0	2.1	2.3	0.00	0.00	0.0000%	2.6000%	2.7991%
79	60	1	1.7	1.8	0.60	0.55	1.6667%	2.8000%	3.0144%
80	53	2	1.6	1.7	1.26	1.17	3.7736%	3.0000%	3.2298%
81	35	1	1.1	1.1	0.95	0.88	2.8571%	3.0000%	3.2298%
82	31	0	0.9	1.0	0.00	0.00	0.0000%	3.0000%	3.2298%
83	23	1	0.7	0.7	1.45	1.35	4.3478%	3.0000%	3.2298%
84	17	0	0.5	0.5	0.00	0.00	0.0000%	3.0000%	3.2298%
85	19	1	0.6	0.6	1.75	1.63	5.2632%	3.0000%	3.2298%
86	12	1	0.4	0.4	2.78	2.58	8.3333%	3.0000%	3.2298%
87	10	0	0.3	0.3	0.00	0.00	0.0000%	3.0000%	3.2298%
88	9	0	0.3	0.3	0.00	0.00	0.0000%	3.0000%	3.2298%
89	7	0	0.2	0.2	0.00	0.00	0.0000%	3.0000%	3.2298%
90	3	0	0.1	0.1	0.00	0.00	0.0000%	3.0000%	3.2298%
91	1	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
92	1	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
93	1	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
94	1	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
95	0	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
96	0	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
97	0	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
98	0	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
99	0	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
100	0	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
101	0	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
102	0	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
103	0	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
104	0	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
105	0	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
106	0	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
107	0	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
108	0	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
109	0	0	0.0	0.0	0.00	0.00	0.0000%	3.0000%	3.2298%
110	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
Total	218,289	443	457.0	492.0	0.97	0.90	0.2029%	0.2094%	0.2254%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 1A

Fiscal Years 2011 - 2015

Mortality Experience of Active General Employees

Females

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
17	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0100%	0.0100%
18	10	0	0.0	0.0	0.00	0.00	0.0000%	0.0100%	0.0100%
19	130	0	0.0	0.0	0.00	0.00	0.0000%	0.0200%	0.0200%
20	339	0	0.1	0.1	0.00	0.00	0.0000%	0.0200%	0.0200%
21	579	1	0.1	0.1	8.64	8.64	0.1727%	0.0200%	0.0200%
22	848	0	0.2	0.2	0.00	0.00	0.0000%	0.0200%	0.0200%
23	1,294	0	0.3	0.3	0.00	0.00	0.0000%	0.0200%	0.0200%
24	1,730	0	0.3	0.3	0.00	0.00	0.0000%	0.0200%	0.0200%
25	2,161	0	0.4	0.4	0.00	0.00	0.0000%	0.0200%	0.0200%
26	2,463	1	0.5	0.5	2.03	2.03	0.0406%	0.0200%	0.0200%
27	2,712	0	0.5	0.5	0.00	0.00	0.0000%	0.0200%	0.0200%
28	3,029	1	0.6	0.6	1.65	1.65	0.0330%	0.0200%	0.0200%
29	3,185	4	0.6	0.6	6.28	6.28	0.1256%	0.0200%	0.0200%
30	3,422	3	0.7	0.7	4.38	4.38	0.0877%	0.0200%	0.0200%
31	3,607	1	0.7	0.7	1.39	1.39	0.0277%	0.0200%	0.0200%
32	3,719	1	0.7	0.7	1.34	1.34	0.0269%	0.0200%	0.0200%
33	3,749	1	1.1	1.1	0.89	0.89	0.0267%	0.0300%	0.0300%
34	3,788	0	1.1	1.1	0.00	0.00	0.0000%	0.0300%	0.0300%
35	3,800	0	1.1	1.1	0.00	0.00	0.0000%	0.0300%	0.0300%
36	3,789	2	1.1	1.1	1.76	1.76	0.0528%	0.0300%	0.0300%
37	3,882	1	1.6	1.6	0.64	0.64	0.0258%	0.0400%	0.0400%
38	3,979	1	1.6	1.6	0.63	0.63	0.0251%	0.0400%	0.0400%
39	4,189	2	1.7	1.7	1.19	1.19	0.0477%	0.0400%	0.0400%
40	4,536	7	1.8	1.8	3.86	3.86	0.1543%	0.0400%	0.0400%
41	4,853	4	1.9	1.9	2.06	2.06	0.0824%	0.0400%	0.0400%
42	5,184	2	2.3	2.3	0.86	0.86	0.0386%	0.0450%	0.0450%
43	5,480	6	2.7	2.7	2.19	2.19	0.1095%	0.0500%	0.0500%
44	5,542	1	3.0	3.0	0.33	0.33	0.0180%	0.0550%	0.0550%
45	5,614	6	3.4	3.4	1.78	1.78	0.1069%	0.0600%	0.0600%
46	5,985	5	3.9	3.9	1.29	1.29	0.0835%	0.0650%	0.0650%
47	6,198	9	4.3	4.3	2.07	2.07	0.1452%	0.0700%	0.0700%
48	6,600	10	5.0	5.0	2.02	2.02	0.1515%	0.0750%	0.0750%
49	7,016	7	5.6	5.6	1.25	1.25	0.0998%	0.0800%	0.0800%
50	7,352	5	6.2	6.2	0.80	0.80	0.0680%	0.0850%	0.0850%
51	7,571	10	6.8	6.8	1.47	1.47	0.1321%	0.0900%	0.0900%
52	7,880	5	7.5	7.5	0.67	0.67	0.0635%	0.0950%	0.0950%
53	7,997	8	8.0	8.0	1.00	1.00	0.1000%	0.1000%	0.1000%
54	8,044	11	9.7	9.7	1.14	1.14	0.1367%	0.1200%	0.1200%
55	8,002	9	11.2	11.2	0.80	0.80	0.1125%	0.1400%	0.1400%
56	7,890	14	12.6	12.6	1.11	1.11	0.1774%	0.1600%	0.1600%
57	7,634	13	13.7	13.7	0.95	0.95	0.1703%	0.1800%	0.1800%
58	7,322	14	14.6	14.6	0.96	0.96	0.1912%	0.2000%	0.2000%
59	6,836	9	15.0	15.0	0.60	0.60	0.1317%	0.2200%	0.2200%
60	5,736	5	13.8	13.8	0.36	0.36	0.0872%	0.2400%	0.2400%
61	4,421	8	11.5	11.5	0.70	0.70	0.1810%	0.2600%	0.2600%
62	3,470	4	9.7	9.7	0.41	0.41	0.1153%	0.2800%	0.2800%
63	2,635	6	7.9	7.9	0.76	0.76	0.2277%	0.3000%	0.3000%
64	2,061	4	7.2	7.2	0.55	0.55	0.1941%	0.3500%	0.3500%
65	1,542	5	6.2	6.2	0.81	0.81	0.3243%	0.4000%	0.4000%
66	1,069	2	4.8	4.8	0.42	0.42	0.1871%	0.4500%	0.4500%
67	721	0	3.6	3.6	0.00	0.00	0.0000%	0.5000%	0.5000%
68	534	2	3.2	3.2	0.62	0.62	0.3745%	0.6000%	0.6000%
69	391	1	2.7	2.7	0.37	0.37	0.2558%	0.7000%	0.7000%
70	290	0	2.3	2.3	0.00	0.00	0.0000%	0.8000%	0.8000%
71	253	1	2.3	2.3	0.44	0.44	0.3953%	0.9000%	0.9000%
72	201	1	2.0	2.0	0.50	0.50	0.4975%	1.0000%	1.0000%
73	153	1	1.7	1.7	0.59	0.59	0.6536%	1.1000%	1.1000%
74	127	0	1.5	1.5	0.00	0.00	0.0000%	1.2000%	1.2000%
75	91	0	1.2	1.2	0.00	0.00	0.0000%	1.3000%	1.3000%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 1A

Fiscal Years 2011 - 2015

Mortality Experience of Active General Employees

Females

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
76	71	1	1.0	1.0	1.01	1.01	1.4085%	1.4000%	1.4000%
77	48	0	0.7	0.7	0.00	0.00	0.0000%	1.5000%	1.5000%
78	38	0	0.6	0.6	0.00	0.00	0.0000%	1.6000%	1.6000%
79	34	0	0.6	0.6	0.00	0.00	0.0000%	1.7000%	1.7000%
80	22	0	0.4	0.4	0.00	0.00	0.0000%	1.8000%	1.8000%
81	13	0	0.2	0.2	0.00	0.00	0.0000%	1.9000%	1.9000%
82	15	1	0.3	0.3	3.33	3.33	6.6667%	2.0000%	2.0000%
83	10	1	0.2	0.2	5.00	5.00	10.0000%	2.0000%	2.0000%
84	11	0	0.2	0.2	0.00	0.00	0.0000%	2.0000%	2.0000%
85	8	0	0.2	0.2	0.00	0.00	0.0000%	2.0000%	2.0000%
86	5	0	0.1	0.1	0.00	0.00	0.0000%	2.0000%	2.0000%
87	5	0	0.1	0.1	0.00	0.00	0.0000%	2.0000%	2.0000%
88	2	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
89	3	0	0.1	0.1	0.00	0.00	0.0000%	2.0000%	2.0000%
90	2	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
91	2	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
92	1	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
93	1	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
94	0	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
95	0	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
96	0	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
97	0	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
98	0	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
99	0	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
100	0	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
101	0	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
102	0	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
103	0	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
104	0	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
105	0	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
106	0	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
107	0	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
108	0	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
109	0	0	0.0	0.0	0.00	0.00	0.0000%	2.0000%	2.0000%
110	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
<i>Total</i>	<i>213,926</i>	<i>217</i>	<i>241.1</i>	<i>241.1</i>	<i>0.90</i>	<i>0.90</i>	<i>0.1014%</i>	<i>0.1127%</i>	<i>0.1127%</i>

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 1A **Fiscal Years 2011 - 2015**
Mortality Experience of Active General Employees **Males**

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
<25	4,800	4	1.9	2.1	2.08	1.94	0.0833%	0.0400%	0.0431%
25-29	13,641	8	5.5	5.9	1.47	1.36	0.0586%	0.0400%	0.0431%
30-34	17,443	7	8.7	9.4	0.80	0.75	0.0401%	0.0500%	0.0538%
35-39	18,821	16	12.3	13.2	1.30	1.21	0.0850%	0.0653%	0.0703%
40-44	25,046	34	22.7	24.4	1.50	1.39	0.1358%	0.0905%	0.0974%
45-49	30,045	41	48.7	52.4	0.84	0.78	0.1365%	0.1620%	0.1744%
50-54	37,890	85	91.2	98.1	0.93	0.87	0.2243%	0.2406%	0.2590%
55-59	38,689	104	112.1	120.7	0.93	0.86	0.2688%	0.2897%	0.3119%
60-64	22,395	74	78.8	84.8	0.94	0.87	0.3304%	0.3519%	0.3789%
65-69	6,774	39	35.9	38.6	1.09	1.01	0.5757%	0.5299%	0.5705%
70-74	1,888	20	19.2	20.7	1.04	0.97	1.0593%	1.0185%	1.0965%
75-79	634	5	13.4	14.5	0.37	0.35	0.7886%	2.1203%	2.2827%
80-84	159	4	4.8	5.1	0.84	0.78	2.5157%	3.0000%	3.2298%
85-89	57	2	1.7	1.8	1.17	1.09	3.5088%	3.0000%	3.2298%
90-94	7	0	0.2	0.2	0.00	0.00	0.0000%	3.0000%	3.2298%
95-99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100 and over	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	218,289	443	457.0	492.0	0.97	0.90	0.2029%	0.2094%	0.2254%

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 1A **Fiscal Years 2011 - 2015**
Mortality Experience of Active General Employees **Females**

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
<25	4,930	1	1.0	1.0	1.02	1.02	0.0203%	0.0200%	0.0200%
25-29	13,550	6	2.7	2.7	2.21	2.21	0.0443%	0.0200%	0.0200%
30-34	18,285	6	4.4	4.4	1.36	1.36	0.0328%	0.0241%	0.0241%
35-39	19,639	6	7.1	7.1	0.85	0.85	0.0306%	0.0361%	0.0361%
40-44	25,595	20	11.9	11.9	1.68	1.68	0.0781%	0.0464%	0.0464%
45-49	31,413	37	22.2	22.2	1.67	1.67	0.1178%	0.0705%	0.0705%
50-54	38,844	39	38.2	38.2	1.02	1.02	0.1004%	0.0983%	0.0983%
55-59	37,684	59	67.3	67.3	0.88	0.88	0.1566%	0.1785%	0.1785%
60-64	18,323	27	50.1	50.1	0.54	0.54	0.1474%	0.2734%	0.2734%
65-69	4,257	10	20.5	20.5	0.49	0.49	0.2349%	0.4821%	0.4821%
70-74	1,024	3	9.8	9.8	0.31	0.31	0.2930%	0.9584%	0.9584%
75-79	282	1	4.1	4.1	0.24	0.24	0.3546%	1.4479%	1.4479%
80-84	71	2	1.4	1.4	1.47	1.47	2.8169%	1.9197%	1.9197%
85-89	23	0	0.5	0.5	0.00	0.00	0.0000%	2.0000%	2.0000%
90-94	6	0	0.1	0.1	0.00	0.00	0.0000%	2.0000%	2.0000%
95-99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100 and over	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
<i>Total</i>	<i>213,926</i>	<i>217</i>	<i>241.1</i>	<i>241.1</i>	<i>0.90</i>	<i>0.90</i>	<i>0.1014%</i>	<i>0.1127%</i>	<i>0.1127%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 1B

Mortality Experience of Active General Employees

Males

Year	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	45,169	99	93.9	93.9	1.05	1.05	0.2192%	0.2080%	0.2080%
2012	43,683	75	90.5	90.5	0.83	0.83	0.1717%	0.2071%	0.2071%
2013	44,013	78	92.2	92.2	0.85	0.85	0.1772%	0.2094%	0.2094%
2014	43,146	91	90.8	90.8	1.00	1.00	0.2109%	0.2105%	0.2105%
2015	42,278	100	89.6	89.6	1.12	1.12	0.2365%	0.2120%	0.2120%
<i>Total</i>	<i>218,289</i>	<i>443</i>	<i>457.0</i>	<i>457.0</i>	<i>0.97</i>	<i>0.97</i>	<i>0.2029%</i>	<i>0.2094%</i>	<i>0.2094%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 1B

Mortality Experience of Active General Employees

Females

Year	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	44,536	44	48.6	48.6	0.91	0.91	0.0988%	0.1090%	0.1090%
2012	43,161	36	47.3	47.3	0.76	0.76	0.0834%	0.1097%	0.1097%
2013	42,965	48	48.7	48.7	0.99	0.99	0.1117%	0.1132%	0.1132%
2014	41,917	55	48.3	48.3	1.14	1.14	0.1312%	0.1152%	0.1152%
2015	41,347	34	48.3	48.3	0.70	0.70	0.0822%	0.1169%	0.1169%
<i>Total</i>	<i>213,926</i>	<i>217</i>	<i>241.1</i>	<i>241.1</i>	<i>0.90</i>	<i>0.90</i>	<i>0.1014%</i>	<i>0.1127%</i>	<i>0.1127%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 2A

Fiscal Years 2011 - 2015

Mortality Experience of Non Disabled Annuitants and Survivors

Males

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
30	96	0	0.1	0.0	0.00	0.00	0.0000%	0.1067%	0.0410%
31	148	0	0.2	0.1	0.00	0.00	0.0000%	0.1199%	0.0461%
32	197	0	0.3	0.1	0.00	0.00	0.0000%	0.1350%	0.0519%
33	237	2	0.4	0.1	5.57	14.49	0.8439%	0.1516%	0.0582%
34	279	1	0.5	0.2	2.12	5.53	0.3584%	0.1687%	0.0648%
35	316	0	0.6	0.2	0.00	0.00	0.0000%	0.1857%	0.0713%
36	324	1	0.7	0.3	1.53	3.98	0.3086%	0.2021%	0.0776%
37	340	0	0.7	0.3	0.00	0.00	0.0000%	0.2172%	0.0834%
38	378	0	0.9	0.3	0.00	0.00	0.0000%	0.2298%	0.0876%
39	449	1	1.1	0.4	0.92	2.44	0.2227%	0.2414%	0.0912%
40	535	0	1.4	0.5	0.00	0.00	0.0000%	0.2531%	0.0949%
41	628	2	1.7	0.6	1.20	3.22	0.3185%	0.2657%	0.0988%
42	688	1	1.9	0.7	0.52	1.40	0.1453%	0.2804%	0.1035%
43	776	0	2.3	0.8	0.00	0.00	0.0000%	0.2974%	0.1088%
44	794	4	2.5	0.9	1.59	4.37	0.5038%	0.3172%	0.1152%
45	894	4	3.0	1.1	1.32	3.66	0.4474%	0.3397%	0.1223%
46	992	3	3.6	1.3	0.84	2.34	0.3024%	0.3610%	0.1290%
47	1,081	8	4.2	1.5	1.93	5.44	0.7401%	0.3843%	0.1362%
48	1,248	8	5.1	1.8	1.57	4.46	0.6410%	0.4089%	0.1437%
49	1,430	3	6.2	2.2	0.48	1.38	0.2098%	0.4350%	0.1516%
50	1,655	13	7.7	2.6	1.70	4.91	0.7855%	0.4624%	0.1599%
51	1,948	9	9.2	3.5	0.97	2.56	0.4620%	0.4742%	0.1802%
52	2,199	14	10.6	4.2	1.33	3.30	0.6367%	0.4802%	0.1930%
53	2,401	20	11.7	5.1	1.71	3.95	0.8330%	0.4868%	0.2111%
54	2,697	17	13.3	6.2	1.28	2.72	0.6303%	0.4932%	0.2313%
55	3,144	23	15.9	8.4	1.44	2.74	0.7316%	0.5065%	0.2666%
56	3,631	27	19.2	11.4	1.40	2.37	0.7436%	0.5296%	0.3141%
57	4,218	31	23.7	15.0	1.31	2.06	0.7349%	0.5618%	0.3567%
58	5,028	37	30.5	20.5	1.21	1.81	0.7359%	0.6060%	0.4074%
59	5,842	60	38.4	26.8	1.56	2.24	1.0270%	0.6579%	0.4593%
60	7,413	65	53.4	38.6	1.22	1.68	0.8768%	0.7204%	0.5212%
61	9,331	87	74.4	56.2	1.17	1.55	0.9324%	0.7976%	0.6027%
62	10,903	113	95.8	75.0	1.18	1.51	1.0364%	0.8786%	0.6876%
63	12,837	121	125.6	102.6	0.96	1.18	0.9426%	0.9783%	0.7990%
64	13,823	147	148.1	124.4	0.99	1.18	1.0634%	1.0717%	0.9002%
65	13,890	159	163.2	141.2	0.97	1.13	1.1447%	1.1748%	1.0165%
66	13,543	183	175.9	158.3	1.04	1.16	1.3513%	1.2988%	1.1687%
67	12,985	164	184.8	169.3	0.89	0.97	1.2630%	1.4231%	1.3038%
68	11,655	191	180.0	166.2	1.06	1.15	1.6388%	1.5446%	1.4262%
69	10,407	164	177.6	164.5	0.92	1.00	1.5759%	1.7063%	1.5803%
70	9,894	177	185.0	172.5	0.96	1.03	1.7890%	1.8693%	1.7436%
71	9,404	193	194.5	181.4	0.99	1.06	2.0523%	2.0683%	1.9292%
72	8,627	201	198.1	184.8	1.01	1.09	2.3299%	2.2965%	2.1421%
73	7,835	207	200.4	186.9	1.03	1.11	2.6420%	2.5580%	2.3860%
74	7,328	209	209.1	195.1	1.00	1.07	2.8521%	2.8537%	2.6618%
75	6,823	223	219.1	206.0	1.02	1.08	3.2684%	3.2109%	3.0193%
76	6,429	237	230.1	216.4	1.03	1.10	3.6864%	3.5787%	3.3653%
77	5,957	238	239.1	226.6	1.00	1.05	3.9953%	4.0132%	3.8045%
78	5,719	258	257.1	245.7	1.00	1.05	4.5113%	4.4958%	4.2968%
79	5,475	279	275.8	265.7	1.01	1.05	5.0959%	5.0370%	4.8531%
80	5,216	300	294.3	285.9	1.02	1.05	5.7515%	5.6425%	5.4807%
81	4,850	323	308.8	302.3	1.05	1.07	6.6598%	6.3664%	6.2339%
82	4,591	343	329.2	324.9	1.04	1.06	7.4711%	7.1703%	7.0779%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 2A

Fiscal Years 2011 - 2015

Mortality Experience of Non Disabled Annuitants and Survivors

Males

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
83	4,280	338	342.1	314.0	0.99	1.08	7.8972%	7.9927%	7.3375%
84	3,853	316	345.3	319.5	0.92	0.99	8.2014%	8.9610%	8.2930%
85	3,506	321	348.7	322.7	0.92	0.99	9.1557%	9.9469%	9.2054%
86	3,243	372	357.6	331.0	1.04	1.12	11.4709%	11.0283%	10.2061%
87	2,794	335	344.1	321.0	0.97	1.04	11.9900%	12.3166%	11.4906%
88	2,384	297	327.7	308.1	0.91	0.96	12.4581%	13.7437%	12.9255%
89	2,022	308	307.1	288.8	1.00	1.07	15.2324%	15.1885%	14.2843%
90	1,651	276	278.6	264.1	0.99	1.04	16.7171%	16.8739%	15.9974%
91	1,258	226	233.6	219.2	0.97	1.03	17.9650%	18.5726%	17.4245%
92	998	213	204.7	191.6	1.04	1.11	21.3427%	20.5117%	19.1988%
93	775	191	173.3	172.6	1.10	1.11	24.6452%	22.3551%	22.2695%
94	538	136	130.4	128.5	1.04	1.06	25.2788%	24.2292%	23.8927%
95	383	109	100.8	99.2	1.08	1.10	28.4595%	26.3241%	25.9058%
96	269	94	75.2	74.0	1.25	1.27	34.9442%	27.9394%	27.4955%
97	164	52	48.4	47.6	1.07	1.09	31.7073%	29.5088%	29.0399%
98	108	35	33.8	33.5	1.04	1.04	32.4074%	31.2782%	31.0289%
99	74	29	24.2	24.0	1.20	1.21	39.1892%	32.7575%	32.4963%
100	40	14	13.7	13.6	1.02	1.03	35.0000%	34.1809%	33.9084%
101	22	10	7.9	7.9	1.27	1.27	45.4545%	35.8628%	35.8628%
102	8	1	3.0	3.0	0.34	0.34	12.5000%	37.1685%	37.1685%
103	6	2	2.3	2.3	0.87	0.87	33.3333%	38.3040%	38.3040%
104	4	3	1.6	1.6	1.91	1.91	75.0000%	39.2003%	39.2003%
105	1	1	0.4	0.4	2.51	2.51	100.0000%	39.7886%	39.7886%
106	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
107	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
108	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
109	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
110	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
111	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
112	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
113	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
114	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
115	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
116	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
117	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
118	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
119	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
120	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
Total	278,162	8,550	8,441.1	7,796.4	1.01	1.10	3.0737%	3.0346%	2.8028%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 2A

Fiscal Years 2011 - 2015

Mortality Experience of Non Disabled Annuitants and Survivors

Females

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
30	146	0	0.0	0.0	0.00	0.00	0.0000%	0.0341%	0.0216%
31	188	1	0.1	0.0	13.20	20.35	0.5319%	0.0403%	0.0261%
32	234	0	0.1	0.1	0.00	0.00	0.0000%	0.0459%	0.0298%
33	268	0	0.1	0.1	0.00	0.00	0.0000%	0.0513%	0.0329%
34	309	0	0.2	0.1	0.00	0.00	0.0000%	0.0561%	0.0356%
35	345	0	0.2	0.1	0.00	0.00	0.0000%	0.0608%	0.0381%
36	382	1	0.2	0.2	4.01	6.48	0.2618%	0.0653%	0.0404%
37	399	0	0.3	0.2	0.00	0.00	0.0000%	0.0698%	0.0426%
38	454	0	0.3	0.2	0.00	0.00	0.0000%	0.0747%	0.0451%
39	491	0	0.4	0.2	0.00	0.00	0.0000%	0.0803%	0.0479%
40	563	0	0.5	0.3	0.00	0.00	0.0000%	0.0875%	0.0522%
41	609	2	0.6	0.3	3.42	5.74	0.3284%	0.0959%	0.0572%
42	648	2	0.7	0.4	2.92	4.90	0.3086%	0.1056%	0.0630%
43	681	4	0.8	0.5	5.06	8.48	0.5874%	0.1161%	0.0693%
44	736	1	0.9	0.6	1.07	1.79	0.1359%	0.1275%	0.0761%
45	787	2	1.1	0.6	1.84	3.12	0.2541%	0.1382%	0.0814%
46	831	0	1.2	0.7	0.00	0.00	0.0000%	0.1491%	0.0868%
47	928	0	1.5	0.9	0.00	0.00	0.0000%	0.1604%	0.0922%
48	1,041	1	1.8	1.0	0.55	0.96	0.0961%	0.1734%	0.0997%
49	1,218	8	2.3	1.3	3.50	6.09	0.6568%	0.1875%	0.1078%
50	1,388	3	2.8	1.7	1.06	1.82	0.2161%	0.2044%	0.1189%
51	1,689	1	3.6	2.3	0.27	0.44	0.0592%	0.2161%	0.1341%
52	1,951	7	4.6	3.0	1.52	2.36	0.3588%	0.2365%	0.1522%
53	2,257	8	5.9	3.9	1.35	2.04	0.3545%	0.2628%	0.1734%
54	2,748	12	8.1	5.4	1.48	2.20	0.4367%	0.2944%	0.1983%
55	3,459	13	11.3	8.0	1.15	1.62	0.3758%	0.3278%	0.2314%
56	4,268	6	15.5	11.7	0.39	0.51	0.1406%	0.3629%	0.2740%
57	5,241	16	21.0	16.5	0.76	0.97	0.3053%	0.4002%	0.3146%
58	6,195	31	27.2	22.0	1.14	1.41	0.5004%	0.4397%	0.3549%
59	7,007	45	33.9	28.1	1.33	1.60	0.6422%	0.4836%	0.4017%
60	8,234	44	43.6	37.7	1.01	1.17	0.5344%	0.5301%	0.4573%
61	9,445	66	55.2	49.7	1.19	1.33	0.6988%	0.5849%	0.5259%
62	10,036	70	64.5	60.4	1.09	1.16	0.6975%	0.6427%	0.6022%
63	10,435	88	73.4	72.2	1.20	1.22	0.8433%	0.7031%	0.6918%
64	10,377	80	79.6	72.8	1.00	1.10	0.7709%	0.7672%	0.7017%
65	9,950	80	84.2	78.6	0.95	1.02	0.8040%	0.8463%	0.7902%
66	9,493	76	88.5	84.7	0.86	0.90	0.8006%	0.9319%	0.8918%
67	8,982	85	92.0	88.9	0.92	0.96	0.9463%	1.0240%	0.9902%
68	8,249	104	92.8	90.3	1.12	1.15	1.2608%	1.1246%	1.0946%
69	7,588	83	95.0	91.8	0.87	0.90	1.0938%	1.2519%	1.2098%
70	7,416	86	103.8	101.1	0.83	0.85	1.1597%	1.3993%	1.3630%
71	7,218	121	112.5	107.0	1.08	1.13	1.6764%	1.5581%	1.4825%
72	6,882	136	120.6	113.5	1.13	1.20	1.9762%	1.7528%	1.6489%
73	6,485	117	126.7	116.5	0.92	1.00	1.8042%	1.9544%	1.7963%
74	6,329	135	138.6	126.0	0.97	1.07	2.1330%	2.1901%	1.9909%
75	6,119	150	148.4	131.8	1.01	1.14	2.4514%	2.4248%	2.1541%
76	5,951	154	160.7	141.2	0.96	1.09	2.5878%	2.7006%	2.3733%
77	5,686	158	172.3	151.7	0.92	1.04	2.7788%	3.0307%	2.6671%
78	5,594	181	188.9	164.5	0.96	1.10	3.2356%	3.3764%	2.9401%
79	5,460	196	203.5	177.2	0.96	1.11	3.5897%	3.7276%	3.2459%
80	5,452	213	224.6	195.6	0.95	1.09	3.9068%	4.1203%	3.5879%
81	5,339	255	243.5	235.6	1.05	1.08	4.7762%	4.5605%	4.4124%
82	5,265	277	266.2	257.5	1.04	1.08	5.2612%	5.0557%	4.8916%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 2A

Fiscal Years 2011 - 2015

Mortality Experience of Non Disabled Annuitants and Survivors

Females

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
83	5,226	301	293.4	283.8	1.03	1.06	5.7597%	5.6136%	5.4313%
84	5,024	308	313.7	303.5	0.98	1.01	6.1306%	6.2432%	6.0405%
85	4,905	360	343.9	336.8	1.05	1.07	7.3394%	7.0116%	6.8664%
86	4,704	378	374.7	367.6	1.01	1.03	8.0357%	7.9662%	7.8137%
87	4,425	401	400.5	393.5	1.00	1.02	9.0621%	9.0498%	8.8916%
88	3,942	413	401.4	390.4	1.03	1.06	10.4769%	10.1839%	9.9037%
89	3,604	447	415.0	404.4	1.08	1.11	12.4029%	11.5161%	11.2205%
90	3,130	393	402.4	388.1	0.98	1.01	12.5559%	12.8555%	12.4002%
91	2,674	404	377.5	364.1	1.07	1.11	15.1085%	14.1170%	13.6171%
92	2,253	383	346.7	334.4	1.10	1.15	16.9996%	15.3875%	14.8426%
93	1,850	327	310.3	302.9	1.05	1.08	17.6757%	16.7725%	16.3744%
94	1,432	287	257.6	251.5	1.11	1.14	20.0419%	17.9895%	17.5624%
95	1,100	250	210.6	205.6	1.19	1.22	22.7273%	19.1419%	18.6875%
96	811	209	163.9	160.0	1.28	1.31	25.7707%	20.2116%	19.7318%
97	609	147	130.0	128.5	1.13	1.14	24.1379%	21.3524%	21.0976%
98	448	130	99.5	98.3	1.31	1.32	29.0179%	22.2162%	21.9510%
99	288	91	66.1	65.3	1.38	1.39	31.5972%	22.9542%	22.6803%
100	171	58	40.3	39.8	1.44	1.46	33.9181%	23.5574%	23.2763%
101	100	34	24.5	24.5	1.39	1.39	34.0000%	24.4834%	24.4834%
102	56	20	14.3	14.3	1.40	1.40	35.7143%	25.4498%	25.4498%
103	36	11	9.6	9.6	1.15	1.15	30.5556%	26.6044%	26.6044%
104	24	11	6.7	6.7	1.64	1.64	45.8333%	27.9055%	27.9055%
105	13	7	3.8	3.8	1.84	1.84	53.8462%	29.3116%	29.3116%
106	7	2	2.2	2.2	0.93	0.93	28.5714%	30.7811%	30.7811%
107	5	1	1.6	1.6	0.62	0.62	20.0000%	32.2725%	32.2725%
108	3	3	1.0	1.0	2.96	2.96	100.0000%	33.7441%	33.7441%
109	1	0	0.4	0.4	0.00	0.00	0.0000%	35.1544%	35.1544%
110	1	0	0.4	0.4	0.00	0.00	0.0000%	36.4617%	36.4617%
111	1	1	0.4	0.4	2.66	2.74	100.0000%	37.6246%	36.4617%
112	0	0	0.0	0.0	0.00	0.00	0.0000%	38.6015%	37.6246%
113	0	0	0.0	0.0	0.00	0.00	0.0000%	39.3507%	38.6015%
114	0	0	0.0	0.0	0.00	0.00	0.0000%	39.8308%	39.3507%
115	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	39.8308%
116	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
117	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
118	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
119	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
120	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
Total	266,725	8,496	8,138.8	7,740.0	1.04	1.10	3.1853%	3.0514%	2.9019%

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 2A

Fiscal Years 2011 - 2015

Mortality Experience of Non Disabled Annuitants and Survivors

Males

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
<25	93	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0255%
25-29	160	0	0.0	0.1	0.00	0.00	0.0000%	0.0000%	0.0364%
30-34	957	3	1.4	0.5	2.18	5.68	0.3135%	0.1438%	0.0552%
35-39	1,807	2	3.9	1.5	0.51	1.33	0.1107%	0.2176%	0.0831%
40-44	3,421	7	9.8	3.6	0.72	1.95	0.2046%	0.2858%	0.1052%
45-49	5,645	26	22.1	7.8	1.18	3.33	0.4606%	0.3914%	0.1383%
50-54	10,900	73	52.4	21.7	1.39	3.36	0.6697%	0.4811%	0.1991%
55-59	21,863	178	127.8	82.1	1.39	2.17	0.8142%	0.5843%	0.3757%
60-64	54,307	533	497.3	396.9	1.07	1.34	0.9815%	0.9158%	0.7308%
65-69	62,480	861	881.5	799.5	0.98	1.08	1.3780%	1.4108%	1.2795%
70-74	43,088	987	987.1	920.7	1.00	1.07	2.2907%	2.2909%	2.1369%
75-79	30,403	1,235	1,221.1	1,160.4	1.01	1.06	4.0621%	4.0164%	3.8169%
80-84	22,790	1,620	1,619.6	1,546.7	1.00	1.05	7.1084%	7.1068%	6.7869%
85-89	13,949	1,633	1,685.3	1,571.7	0.97	1.04	11.7069%	12.0817%	11.2678%
90-94	5,220	1,042	1,020.5	976.1	1.02	1.07	19.9617%	19.5506%	18.6983%
95-99	998	319	282.4	278.4	1.13	1.15	31.9639%	28.2960%	27.8924%
100 and over	81	31	28.8	28.7	1.08	1.08	38.2716%	35.5553%	35.4207%
<i>Total</i>	<i>278,162</i>	<i>8,550</i>	<i>8,441.1</i>	<i>7,796.4</i>	<i>1.01</i>	<i>1.10</i>	<i>3.0737%</i>	<i>3.0346%</i>	<i>2.8028%</i>

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 2A

Fiscal Years 2011 - 2015

Mortality Experience of Non Disabled Annuitants and Survivors

Females

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
<25	88	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0139%
25-29	348	0	0.0	0.1	0.00	0.00	0.0000%	0.0000%	0.0184%
30-34	1,145	1	0.5	0.3	1.84	2.87	0.0873%	0.0475%	0.0304%
35-39	2,071	1	1.5	0.9	0.68	1.12	0.0483%	0.0710%	0.0432%
40-44	3,237	9	3.5	2.1	2.58	4.32	0.2780%	0.1078%	0.0643%
45-49	4,805	11	7.9	4.6	1.39	2.41	0.2289%	0.1645%	0.0951%
50-54	10,033	31	25.1	16.2	1.23	1.91	0.3090%	0.2504%	0.1619%
55-59	26,170	111	108.9	86.3	1.02	1.29	0.4241%	0.4162%	0.3298%
60-64	48,527	348	316.4	292.8	1.10	1.19	0.7171%	0.6519%	0.6033%
65-69	44,262	428	452.4	434.3	0.95	0.99	0.9670%	1.0221%	0.9813%
70-74	34,330	595	602.2	564.1	0.99	1.05	1.7332%	1.7542%	1.6431%
75-79	28,810	839	873.8	766.4	0.96	1.09	2.9122%	3.0330%	2.6602%
80-84	26,306	1,354	1,341.3	1,276.1	1.01	1.06	5.1471%	5.0990%	4.8508%
85-89	21,580	1,999	1,935.6	1,892.6	1.03	1.06	9.2632%	8.9694%	8.7701%
90-94	11,339	1,794	1,694.4	1,641.1	1.06	1.09	15.8215%	14.9435%	14.4728%
95-99	3,256	827	670.1	657.7	1.23	1.26	25.3993%	20.5820%	20.2006%
100 and over	418	148	105.0	104.5	1.41	1.42	35.4067%	25.1141%	24.9963%
<i>Total</i>	<i>266,725</i>	<i>8,496</i>	<i>8,138.8</i>	<i>7,740.0</i>	<i>1.04</i>	<i>1.10</i>	<i>3.1853%</i>	<i>3.0514%</i>	<i>2.9019%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 2B

Mortality Experience of Non Disabled Annuitants and Survivors

Males

Year	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	52,666	1,646	1,583.7	1,460.8	1.04	1.13	3.1254%	3.0070%	2.7737%
2012	54,845	1,589	1,638.1	1,510.7	0.97	1.05	2.8973%	2.9867%	2.7545%
2013	55,665	1,762	1,690.7	1,561.5	1.04	1.13	3.1654%	3.0373%	2.8051%
2014	56,910	1,695	1,734.1	1,602.7	0.98	1.06	2.9784%	3.0471%	2.8162%
2015	58,076	1,858	1,794.5	1,660.7	1.04	1.12	3.1993%	3.0900%	2.8596%
<i>Total</i>	<i>278,162</i>	<i>8,550</i>	<i>8,441.1</i>	<i>7,796.4</i>	<i>1.01</i>	<i>1.10</i>	<i>3.0737%</i>	<i>3.0346%</i>	<i>2.8028%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 2B

Mortality Experience of Non Disabled Annuitants and Survivors

Females

Year	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	50,741	1,657	1,566.9	1,489.2	1.06	1.11	3.2656%	3.0881%	2.9350%
2012	52,621	1,692	1,599.8	1,520.6	1.06	1.11	3.2154%	3.0402%	2.8898%
2013	53,289	1,696	1,628.6	1,549.0	1.04	1.09	3.1826%	3.0562%	2.9069%
2014	54,453	1,665	1,652.1	1,571.7	1.01	1.06	3.0577%	3.0340%	2.8863%
2015	55,621	1,786	1,691.3	1,609.4	1.06	1.11	3.2110%	3.0408%	2.8936%
<i>Total</i>	<i>266,725</i>	<i>8,496</i>	<i>8,138.7</i>	<i>7,740.0</i>	<i>1.04</i>	<i>1.10</i>	<i>3.1853%</i>	<i>3.0514%</i>	<i>2.9019%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 3A

Fiscal Years 2011 - 2015

Mortality Experience of Disabled Annuitants

Males

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
30	4	0	0.1	0.1	0.00	0.00	0.0000%	2.0600%	2.0316%
31	12	0	0.2	0.2	0.00	0.00	0.0000%	2.0600%	2.0316%
32	13	0	0.3	0.3	0.00	0.00	0.0000%	2.0600%	2.0316%
33	19	0	0.4	0.4	0.00	0.00	0.0000%	2.0600%	2.0316%
34	18	0	0.4	0.4	0.00	0.00	0.0000%	2.0600%	2.0316%
35	23	0	0.5	0.5	0.00	0.00	0.0000%	2.0600%	2.0316%
36	28	1	0.6	0.6	1.73	1.76	3.5714%	2.0600%	2.0316%
37	41	2	0.8	0.8	2.37	2.40	4.8780%	2.0600%	2.0316%
38	54	1	1.1	1.1	0.91	0.93	1.8519%	2.0435%	1.9891%
39	67	1	1.4	1.3	0.74	0.77	1.4925%	2.0271%	1.9476%
40	84	1	1.7	1.6	0.59	0.62	1.1905%	2.0108%	1.9067%
41	111	2	2.2	2.1	0.90	0.97	1.8018%	1.9946%	1.8668%
42	128	0	2.5	2.3	0.00	0.00	0.0000%	1.9786%	1.8276%
43	128	1	2.5	2.3	0.40	0.44	0.7813%	1.9627%	1.7893%
44	163	2	3.2	2.9	0.63	0.70	1.2270%	1.9468%	1.7516%
45	197	1	3.8	3.4	0.26	0.30	0.5076%	1.9312%	1.7148%
46	238	2	4.8	4.2	0.42	0.47	0.8403%	2.0238%	1.7735%
47	283	5	6.0	5.2	0.84	0.97	1.7668%	2.1150%	1.8292%
48	325	5	7.2	6.1	0.70	0.82	1.5385%	2.2048%	1.8818%
49	366	5	8.4	7.1	0.60	0.71	1.3661%	2.2931%	1.9315%
50	386	4	9.2	7.6	0.44	0.52	1.0363%	2.3803%	1.9786%
51	415	6	10.2	8.4	0.59	0.71	1.4458%	2.4664%	2.0232%
52	444	11	11.3	9.2	0.97	1.20	2.4775%	2.5510%	2.0651%
53	462	9	12.3	9.9	0.73	0.91	1.9481%	2.6557%	2.1498%
54	519	12	14.3	11.6	0.84	1.03	2.3121%	2.7602%	2.2344%
55	614	12	17.7	14.5	0.68	0.82	1.9544%	2.8880%	2.3690%
56	683	17	20.6	17.1	0.82	0.99	2.4890%	3.0176%	2.5083%
57	752	24	23.7	19.9	1.01	1.20	3.1915%	3.1494%	2.6528%
58	804	23	26.4	22.5	0.87	1.02	2.8607%	3.2843%	2.8032%
59	847	30	28.8	24.5	1.04	1.22	3.5419%	3.3958%	2.8984%
60	858	26	30.1	25.7	0.86	1.01	3.0303%	3.5105%	2.9963%
61	880	28	32.2	27.9	0.87	1.01	3.1818%	3.6597%	3.1651%
62	871	21	33.0	28.5	0.64	0.74	2.4110%	3.7865%	3.2748%
63	899	35	35.5	31.1	0.98	1.12	3.8932%	3.9534%	3.4646%
64	858	20	35.2	30.8	0.57	0.65	2.3310%	4.0996%	3.5927%
65	790	27	33.6	29.5	0.80	0.92	3.4177%	4.2581%	3.7316%
66	707	37	31.6	28.0	1.17	1.32	5.2334%	4.4673%	3.9668%
67	643	32	30.0	26.6	1.07	1.20	4.9767%	4.6586%	4.1367%
68	576	28	27.8	24.4	1.01	1.15	4.8611%	4.8297%	4.2325%
69	528	27	26.7	23.4	1.01	1.15	5.1136%	5.0591%	4.4336%
70	476	30	25.1	21.7	1.20	1.38	6.3025%	5.2683%	4.5564%
71	432	32	23.9	20.7	1.34	1.55	7.4074%	5.5426%	4.7936%
72	355	18	20.7	17.9	0.87	1.00	5.0704%	5.8426%	5.0530%
73	314	18	19.4	16.8	0.93	1.07	5.7325%	6.1698%	5.3360%
74	266	21	17.4	15.0	1.21	1.40	7.8947%	6.5251%	5.6433%
75	234	10	16.3	14.3	0.61	0.70	4.2735%	6.9647%	6.1035%
76	222	21	16.4	14.4	1.28	1.46	9.4595%	7.3793%	6.4668%
77	199	16	15.7	13.9	1.02	1.15	8.0402%	7.8841%	7.0008%
78	180	12	15.2	13.6	0.79	0.88	6.6667%	8.4218%	7.5775%
79	154	15	13.8	12.6	1.08	1.19	9.7403%	8.9904%	8.1961%
80	135	13	12.9	12.0	1.00	1.09	9.6296%	9.5876%	8.8561%
81	121	13	12.4	11.6	1.05	1.12	10.7438%	10.2108%	9.5564%
82	109	11	11.8	11.2	0.93	0.98	10.0917%	10.8577%	10.2960%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 3A

Fiscal Years 2011 - 2015

Mortality Experience of Disabled Annuitants

Males

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
83	98	14	11.2	10.6	1.25	1.32	14.2857%	11.4337%	10.8422%
84	90	11	10.9	10.5	1.01	1.05	12.2222%	12.1173%	11.6418%
85	83	12	10.6	10.1	1.14	1.18	14.4578%	12.7172%	12.2182%
86	68	6	9.1	8.7	0.66	0.69	8.8235%	13.3253%	12.8024%
87	55	10	7.7	7.5	1.29	1.33	18.1818%	14.0541%	13.6805%
88	38	6	5.6	5.5	1.07	1.08	15.7895%	14.8020%	14.5982%
89	30	8	4.6	4.6	1.73	1.75	26.6667%	15.4452%	15.2325%
90	21	3	3.5	3.5	0.85	0.85	14.2857%	16.8739%	16.8602%
91	16	3	2.9	2.9	1.02	1.02	18.7500%	18.3792%	18.3643%
92	11	5	2.2	2.2	2.26	2.24	45.4545%	20.0888%	20.3361%
93	7	3	1.5	1.5	1.98	1.95	42.8571%	21.6707%	21.9375%
94	2	1	0.5	0.5	2.15	2.12	50.0000%	23.2502%	23.5364%
95	1	0	0.3	0.3	0.00	0.00	0.0000%	25.0079%	25.6478%
96	0	0	0.0	0.0	0.00	0.00	0.0000%	26.5424%	27.2216%
97	1	0	0.3	0.3	0.00	0.00	0.0000%	28.0334%	28.7507%
98	1	1	0.3	0.3	3.37	3.24	100.0000%	29.7143%	30.8740%
99	0	0	0.0	0.0	0.00	0.00	0.0000%	31.1196%	32.3342%
100	0	0	0.0	0.0	0.00	0.00	0.0000%	32.4719%	33.7392%
101	0	0	0.0	0.0	0.00	0.00	0.0000%	34.0697%	35.8628%
102	0	0	0.0	0.0	0.00	0.00	0.0000%	35.3101%	37.1685%
103	0	0	0.0	0.0	0.00	0.00	0.0000%	36.3888%	38.3040%
104	0	0	0.0	0.0	0.00	0.00	0.0000%	37.2403%	39.2003%
105	0	0	0.0	0.0	0.00	0.00	0.0000%	37.7992%	39.7886%
106	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
107	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
108	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
109	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
110	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
111	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
112	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
113	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
114	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
115	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
116	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
117	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
118	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
119	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
120	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
Total	19,562	771	830.5	729.0	0.93	1.06	3.9413%	4.2454%	3.7264%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 3A

Fiscal Years 2011 - 2015

Mortality Experience of Disabled Annuitants

Females

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
30	6	0	0.0	0.0	0.00	0.00	0.0000%	0.7390%	0.6280%
31	10	0	0.1	0.1	0.00	0.00	0.0000%	0.7510%	0.6499%
32	12	0	0.1	0.1	0.00	0.00	0.0000%	0.7510%	0.6499%
33	15	0	0.1	0.1	0.00	0.00	0.0000%	0.7450%	0.6388%
34	19	1	0.1	0.1	7.12	8.38	5.2632%	0.7390%	0.6280%
35	27	0	0.2	0.2	0.00	0.00	0.0000%	0.7330%	0.6173%
36	32	0	0.2	0.2	0.00	0.00	0.0000%	0.7271%	0.6068%
37	38	1	0.3	0.2	3.65	4.41	2.6316%	0.7213%	0.5965%
38	51	1	0.4	0.3	2.74	3.34	1.9608%	0.7154%	0.5862%
39	68	0	0.5	0.4	0.00	0.00	0.0000%	0.7097%	0.5762%
40	88	0	0.6	0.5	0.00	0.00	0.0000%	0.7097%	0.5762%
41	109	1	0.8	0.6	1.29	1.59	0.9174%	0.7097%	0.5762%
42	122	1	0.9	0.7	1.15	1.42	0.8197%	0.7097%	0.5762%
43	138	1	1.0	0.8	1.02	1.26	0.7246%	0.7097%	0.5762%
44	138	3	1.0	0.8	3.06	3.77	2.1739%	0.7097%	0.5762%
45	171	5	1.2	1.0	4.15	5.16	2.9240%	0.7039%	0.5663%
46	201	1	1.5	1.2	0.65	0.81	0.4975%	0.7670%	0.6115%
47	241	6	2.0	1.6	2.99	3.78	2.4896%	0.8328%	0.6579%
48	277	2	2.5	2.0	0.79	1.01	0.7220%	0.9087%	0.7178%
49	347	6	3.4	2.7	1.75	2.21	1.7291%	0.9886%	0.7809%
50	393	8	4.2	3.4	1.88	2.36	2.0356%	1.0810%	0.8618%
51	449	6	5.3	4.3	1.13	1.41	1.3363%	1.1790%	0.9485%
52	523	7	6.8	5.5	1.04	1.26	1.3384%	1.2923%	1.0588%
53	582	7	8.2	6.9	0.85	1.02	1.2027%	1.4118%	1.1781%
54	619	11	9.5	8.1	1.16	1.36	1.7771%	1.5373%	1.3063%
55	670	8	11.2	9.7	0.72	0.83	1.1940%	1.6678%	1.4432%
56	737	14	13.3	11.7	1.05	1.20	1.8996%	1.8029%	1.5887%
57	821	15	15.8	14.1	0.95	1.07	1.8270%	1.9265%	1.7130%
58	916	23	18.6	16.6	1.23	1.39	2.5109%	2.0355%	1.8100%
59	952	18	20.4	18.2	0.88	0.99	1.8908%	2.1448%	1.9072%
60	957	21	21.6	19.2	0.97	1.09	2.1944%	2.2555%	2.0056%
61	944	17	22.4	19.9	0.76	0.86	1.8008%	2.3687%	2.1062%
62	956	23	23.8	21.1	0.97	1.09	2.4059%	2.4868%	2.2113%
63	902	17	23.6	21.0	0.72	0.81	1.8847%	2.6121%	2.3227%
64	878	22	24.1	21.4	0.91	1.03	2.5057%	2.7471%	2.4427%
65	806	15	23.3	20.7	0.64	0.72	1.8610%	2.8943%	2.5736%
66	738	19	22.6	20.1	0.84	0.95	2.5745%	3.0563%	2.7177%
67	656	22	21.2	18.9	1.04	1.17	3.3537%	3.2351%	2.8767%
68	575	15	19.7	17.5	0.76	0.85	2.6087%	3.4323%	3.0520%
69	506	8	18.5	16.4	0.43	0.49	1.5810%	3.6492%	3.2449%
70	483	11	18.8	16.7	0.59	0.66	2.2774%	3.8868%	3.4561%
71	426	15	17.5	15.4	0.86	0.97	3.5211%	4.1122%	3.6236%
72	397	13	17.4	15.4	0.75	0.85	3.2746%	4.3900%	3.8684%
73	360	12	16.7	14.6	0.72	0.82	3.3333%	4.6513%	4.0617%
74	335	16	16.6	14.5	0.96	1.10	4.7761%	4.9690%	4.3391%
75	304	15	16.0	13.9	0.94	1.08	4.9342%	5.2652%	4.5563%
76	286	18	16.1	13.9	1.12	1.29	6.2937%	5.6229%	4.8658%
77	246	13	14.9	13.0	0.87	1.00	5.2846%	6.0513%	5.2842%
78	227	9	14.7	12.8	0.61	0.70	3.9648%	6.4577%	5.6392%
79	217	15	15.0	13.1	1.00	1.15	6.9124%	6.8895%	6.0162%
80	187	8	13.7	12.0	0.58	0.67	4.2781%	7.3487%	6.4172%
81	164	10	12.9	11.2	0.78	0.89	6.0976%	7.8389%	6.8453%
82	154	11	12.9	11.2	0.85	0.98	7.1429%	8.3636%	7.3035%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 3A

Fiscal Years 2011 - 2015

Mortality Experience of Disabled Annuitants

Females

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
83	136	7	12.1	10.6	0.58	0.66	5.1471%	8.9266%	7.7951%
84	115	9	11.0	9.6	0.82	0.94	7.8261%	9.5318%	8.3236%
85	105	16	10.8	9.5	1.48	1.68	15.2381%	10.2655%	9.0458%
86	77	14	8.5	7.6	1.64	1.85	18.1818%	11.0606%	9.8351%
87	64	10	7.6	6.8	1.31	1.46	15.6250%	11.9216%	10.6970%
88	57	8	7.3	6.5	1.10	1.23	14.0351%	12.7495%	11.4398%
89	55	8	7.6	6.8	1.06	1.17	14.5455%	13.7451%	12.4450%
90	43	12	6.3	5.7	1.90	2.10	27.9070%	14.6977%	13.3075%
91	34	3	5.3	4.8	0.56	0.62	8.8235%	15.7104%	14.2244%
92	30	3	5.0	4.6	0.60	0.66	10.0000%	16.7835%	15.1961%
93	19	5	3.4	3.1	1.46	1.60	26.3158%	18.0304%	16.4730%
94	15	4	2.9	2.7	1.38	1.51	26.6667%	19.3387%	17.6683%
95	10	3	2.1	1.9	1.46	1.60	30.0000%	20.5775%	18.8001%
96	5	3	1.1	1.0	2.76	3.02	60.0000%	21.7275%	19.8507%
97	2	0	0.5	0.4	0.00	0.00	0.0000%	22.9538%	21.1610%
98	2	0	0.5	0.4	0.00	0.00	0.0000%	23.8824%	22.0171%
99	0	0	0.0	0.0	0.00	0.00	0.0000%	24.6758%	22.7484%
100	0	0	0.0	0.0	0.00	0.00	0.0000%	25.3242%	23.3462%
101	0	0	0.0	0.0	0.00	0.00	0.0000%	26.3197%	24.4834%
102	0	0	0.0	0.0	0.00	0.00	0.0000%	27.3585%	25.4498%
103	0	0	0.0	0.0	0.00	0.00	0.0000%	28.5997%	26.6044%
104	0	0	0.0	0.0	0.00	0.00	0.0000%	29.9984%	27.9055%
105	0	0	0.0	0.0	0.00	0.00	0.0000%	31.5100%	29.3116%
106	0	0	0.0	0.0	0.00	0.00	0.0000%	33.0897%	30.7811%
107	0	0	0.0	0.0	0.00	0.00	0.0000%	34.6929%	32.2725%
108	0	0	0.0	0.0	0.00	0.00	0.0000%	36.2749%	33.7441%
109	0	0	0.0	0.0	0.00	0.00	0.0000%	37.7910%	35.1544%
110	0	0	0.0	0.0	0.00	0.00	0.0000%	39.1963%	36.4617%
111	0	0	0.0	0.0	0.00	0.00	0.0000%	37.6246%	37.6246%
112	0	0	0.0	0.0	0.00	0.00	0.0000%	38.6015%	38.6015%
113	0	0	0.0	0.0	0.00	0.00	0.0000%	39.3507%	39.3507%
114	0	0	0.0	0.0	0.00	0.00	0.0000%	39.8308%	39.8308%
115	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
116	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
117	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
118	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
119	0	0	0.0	0.0	0.00	0.00	0.0000%	40.0000%	40.0000%
120	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
Total	21,250	596	646.1	568.0	0.92	1.05	2.8047%	3.0407%	2.6728%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 3A
Mortality Experience of Disabled Annuitants **Fiscal Years 2011 - 2015**
Males

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
<25	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
25-29	5	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
30-34	66	0	1.4	1.3	0.00	0.00	0.0000%	2.0600%	2.0316%
35-39	213	5	4.4	4.2	1.15	1.18	2.3474%	2.0454%	1.9944%
40-44	614	6	12.1	11.2	0.49	0.54	0.9772%	1.9741%	1.8174%
45-49	1,409	18	30.2	26.0	0.60	0.69	1.2775%	2.1409%	1.8425%
50-54	2,226	42	57.3	46.7	0.73	0.90	1.8868%	2.5762%	2.0993%
55-59	3,700	106	117.2	98.7	0.90	1.07	2.8649%	3.1674%	2.6679%
60-64	4,366	130	166.0	144.1	0.78	0.90	2.9776%	3.8026%	3.2995%
65-69	3,244	151	149.7	131.9	1.01	1.14	4.6547%	4.6149%	4.0663%
70-74	1,843	119	106.5	92.1	1.12	1.29	6.4569%	5.7782%	4.9973%
75-79	989	74	77.4	68.8	0.96	1.08	7.4823%	7.8234%	6.9597%
80-84	553	62	59.2	55.8	1.05	1.11	11.2116%	10.7132%	10.0985%
85-89	274	42	37.6	36.5	1.12	1.15	15.3285%	13.7243%	13.3168%
90-94	57	15	10.7	10.7	1.41	1.40	26.3158%	18.7297%	18.8110%
95-99	3	1	0.8	0.9	1.21	1.17	33.3333%	27.5852%	28.4242%
100 and over	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	19,562	771	830.5	729.0	0.93	1.06	3.9413%	4.2454%	3.7264%

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 3A **Fiscal Years 2011 - 2015**
Mortality Experience of Disabled Annuitants **Females**

Age	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
<25	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
25-29	5	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
30-34	62	1	0.5	0.4	2.17	2.53	1.6129%	0.7447%	0.6384%
35-39	216	2	1.6	1.3	1.29	1.56	0.9259%	0.7186%	0.5918%
40-44	595	6	4.2	3.4	1.42	1.75	1.0084%	0.7097%	0.5762%
45-49	1,237	20	10.7	8.5	1.87	2.36	1.6168%	0.8650%	0.6856%
50-54	2,566	39	34.0	28.1	1.15	1.39	1.5199%	1.3263%	1.0961%
55-59	4,096	78	79.3	70.2	0.98	1.11	1.9043%	1.9371%	1.7133%
60-64	4,637	100	115.4	102.6	0.87	0.97	2.1566%	2.4887%	2.2129%
65-69	3,281	79	105.3	93.6	0.75	0.84	2.4078%	3.2096%	2.8540%
70-74	2,001	67	87.1	76.6	0.77	0.87	3.3483%	4.3533%	3.8304%
75-79	1,280	70	76.6	66.6	0.91	1.05	5.4688%	5.9831%	5.2049%
80-84	756	45	62.6	54.6	0.72	0.82	5.9524%	8.2777%	7.2285%
85-89	358	56	41.8	37.3	1.34	1.50	15.6425%	11.6626%	10.4141%
90-94	141	27	23.0	20.9	1.17	1.29	19.1489%	16.3285%	14.8209%
95-99	19	6	4.1	3.7	1.47	1.61	31.5789%	21.4782%	19.6637%
100 and over	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	21,250	596	646.1	568.0	0.92	1.05	2.8047%	3.0407%	2.6728%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 3B

Mortality Experience of Disabled Annuitants

Males

Year	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	3,772	148	157.1	137.8	0.94	1.07	3.9236%	4.1648%	3.6530%
2012	3,843	165	161.7	141.9	1.02	1.16	4.2935%	4.2069%	3.6914%
2013	3,882	146	164.7	144.6	0.89	1.01	3.7609%	4.2427%	3.7243%
2014	3,998	155	170.6	149.7	0.91	1.04	3.8769%	4.2676%	3.7451%
2015	4,067	157	176.4	155.0	0.89	1.01	3.8603%	4.3374%	3.8113%
<i>Total</i>	<i>19,562</i>	<i>771</i>	<i>830.5</i>	<i>729.0</i>	<i>0.93</i>	<i>1.06</i>	<i>3.9413%</i>	<i>4.2454%</i>	<i>3.7264%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 3B

Mortality Experience of Disabled Annuitants							Females		
Year	Life Years Exposed	Number of Deaths			Ratio of Actual to		Mortality Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	4,095	113	119.3	104.7	0.95	1.08	2.7595%	2.9125%	2.5569%
2012	4,157	111	124.3	109.2	0.89	1.02	2.6702%	2.9907%	2.6274%
2013	4,245	117	129.9	114.2	0.90	1.02	2.7562%	3.0596%	2.6900%
2014	4,337	133	134.1	117.9	0.99	1.13	3.0666%	3.0913%	2.7186%
2015	4,416	122	138.6	122.0	0.88	1.00	2.7627%	3.1388%	2.7616%
<i>Total</i>	<i>21,250</i>	<i>596</i>	<i>646.1</i>	<i>568.0</i>	<i>0.92</i>	<i>1.05</i>	<i>2.8047%</i>	<i>3.0407%</i>	<i>2.6728%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 4A

Fiscal Years 2011 - 2015

Disability Experience of Active General Employees

Males

Age	Life Years Exposed	Number of Disabilities			Ratio of Actual to		Disability Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
23	1,283	0	0.3	0.3	0.00	0.00	0.0000%	0.0225%	0.0206%
24	1,791	1	0.4	0.4	2.48	2.70	0.0558%	0.0225%	0.0206%
25	2,175	0	0.5	0.4	0.00	0.00	0.0000%	0.0225%	0.0206%
26	2,539	0	1.0	0.9	0.00	0.00	0.0000%	0.0375%	0.0344%
27	2,723	0	1.0	0.9	0.00	0.00	0.0000%	0.0375%	0.0344%
28	2,999	0	1.5	1.5	0.00	0.00	0.0000%	0.0500%	0.0500%
29	3,205	1	2.2	2.0	0.46	0.50	0.0312%	0.0675%	0.0619%
30	3,335	4	2.3	2.1	1.78	1.94	0.1199%	0.0675%	0.0619%
31	3,426	0	2.6	2.4	0.00	0.00	0.0000%	0.0750%	0.0688%
32	3,524	1	2.9	2.7	0.34	0.37	0.0284%	0.0825%	0.0757%
33	3,556	3	3.2	2.9	0.94	1.02	0.0844%	0.0900%	0.0826%
34	3,602	2	4.1	3.7	0.49	0.54	0.0555%	0.1125%	0.1032%
35	3,590	3	4.3	4.0	0.70	0.76	0.0836%	0.1200%	0.1101%
36	3,637	3	4.6	4.3	0.65	0.71	0.0825%	0.1275%	0.1170%
37	3,663	1	4.7	4.3	0.21	0.23	0.0273%	0.1275%	0.1170%
38	3,832	2	5.2	4.7	0.39	0.42	0.0522%	0.1350%	0.1239%
39	4,099	6	5.8	5.4	1.03	1.12	0.1464%	0.1425%	0.1307%
40	4,439	7	8.3	7.6	0.84	0.92	0.1577%	0.1875%	0.1720%
41	4,780	7	10.0	9.2	0.70	0.76	0.1464%	0.2100%	0.1927%
42	5,122	2	12.3	11.3	0.16	0.18	0.0390%	0.2400%	0.2202%
43	5,273	10	13.8	12.7	0.72	0.79	0.1896%	0.2625%	0.2408%
44	5,432	8	15.9	14.6	0.50	0.55	0.1473%	0.2925%	0.2683%
45	5,473	14	18.1	16.6	0.78	0.84	0.2558%	0.3300%	0.3027%
46	5,690	16	20.1	18.4	0.80	0.87	0.2812%	0.3525%	0.3234%
47	5,930	14	22.7	20.8	0.62	0.67	0.2361%	0.3825%	0.3509%
48	6,275	18	24.5	22.5	0.74	0.80	0.2869%	0.3900%	0.3578%
49	6,677	23	29.0	26.6	0.79	0.86	0.3445%	0.4350%	0.3991%
50	7,029	20	32.2	29.5	0.62	0.68	0.2845%	0.4575%	0.4197%
51	7,384	31	36.0	33.0	0.86	0.94	0.4198%	0.4875%	0.4472%
52	7,695	27	39.2	36.0	0.69	0.75	0.3509%	0.5100%	0.4679%
53	7,824	41	43.4	39.8	0.94	1.03	0.5240%	0.5550%	0.5092%
54	7,958	45	46.0	42.2	0.98	1.07	0.5655%	0.5775%	0.5298%
55	7,922	49	47.5	43.6	1.03	1.12	0.6185%	0.6000%	0.5505%
56	7,849	55	48.3	44.3	1.14	1.24	0.7007%	0.6150%	0.5642%
57	7,802	46	50.3	46.2	0.91	1.00	0.5896%	0.6450%	0.5917%
58	7,744	53	51.1	46.9	1.04	1.13	0.6844%	0.6600%	0.6055%
59	7,372	37	50.9	46.7	0.73	0.79	0.5019%	0.6900%	0.6330%
60	6,431	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
61	5,295	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
62	4,400	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
63	3,437	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
64	2,832	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
65	2,236	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
66	1,653	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
67	1,249	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
68	942	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
69	694	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
70	525	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
71	439	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
72	349	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
73	300	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
74	275	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
75	221	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
76	157	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
77	115	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
78	81	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
79	60	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
80	53	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
81	35	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
82	31	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 4A

Fiscal Years 2011 - 2015

Disability Experience of Active General Employees

Males

Age	Life Years Exposed	Number of Disabilities			Ratio of Actual to		Disability Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
83	23	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
84	17	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
85	19	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
86	12	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
87	10	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
88	9	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
89	7	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
90	3	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
91	1	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
92	1	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
93	1	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
94	1	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
95	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
96	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
97	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
98	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
101	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
102	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
103	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
104	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
105	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
106	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
107	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
108	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
109	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
110	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
<i>Total</i>	<i>218,289</i>	<i>550</i>	<i>666.0</i>	<i>611.1</i>	<i>0.83</i>	<i>0.90</i>	<i>0.2520%</i>	<i>0.3051%</i>	<i>0.2800%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 4A

Fiscal Years 2011 - 2015

Disability Experience of Active General Employees

Females

Age	Life Years Exposed	Number of Disabilities			Ratio of Actual to		Disability Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
23	1,294	0	0.5	0.5	0.00	0.00	0.0000%	0.0385%	0.0348%
24	1,730	0	0.7	0.6	0.00	0.00	0.0000%	0.0385%	0.0348%
25	2,161	0	0.8	0.8	0.00	0.00	0.0000%	0.0385%	0.0348%
26	2,463	0	1.1	1.0	0.00	0.00	0.0000%	0.0440%	0.0398%
27	2,712	0	1.5	1.3	0.00	0.00	0.0000%	0.0550%	0.0497%
28	3,029	1	1.7	1.5	0.60	0.66	0.0330%	0.0550%	0.0497%
29	3,185	2	2.5	2.2	0.82	0.90	0.0628%	0.0770%	0.0696%
30	3,422	2	3.2	2.9	0.63	0.69	0.0584%	0.0935%	0.0845%
31	3,607	0	4.0	3.6	0.00	0.00	0.0000%	0.1100%	0.0995%
32	3,719	3	4.5	4.1	0.67	0.74	0.0807%	0.1210%	0.1094%
33	3,749	4	5.4	4.8	0.75	0.83	0.1067%	0.1430%	0.1293%
34	3,788	7	5.8	5.3	1.20	1.33	0.1848%	0.1540%	0.1392%
35	3,800	2	6.1	5.5	0.33	0.36	0.0526%	0.1595%	0.1442%
36	3,789	4	6.3	5.7	0.64	0.71	0.1056%	0.1650%	0.1492%
37	3,882	7	6.6	6.0	1.06	1.17	0.1803%	0.1705%	0.1542%
38	3,979	3	7.4	6.7	0.40	0.45	0.0754%	0.1870%	0.1691%
39	4,189	12	8.3	7.5	1.45	1.60	0.2865%	0.1980%	0.1790%
40	4,536	7	9.5	8.6	0.74	0.82	0.1543%	0.2090%	0.1890%
41	4,853	9	11.2	10.1	0.80	0.89	0.1855%	0.2310%	0.2089%
42	5,184	10	13.1	11.9	0.76	0.84	0.1929%	0.2530%	0.2287%
43	5,480	9	15.4	13.9	0.59	0.65	0.1642%	0.2805%	0.2536%
44	5,542	13	16.2	14.6	0.80	0.89	0.2346%	0.2915%	0.2636%
45	5,614	15	18.5	16.7	0.81	0.90	0.2672%	0.3300%	0.2984%
46	5,985	24	22.1	19.9	1.09	1.20	0.4010%	0.3685%	0.3332%
47	6,198	18	24.5	22.2	0.73	0.81	0.2904%	0.3960%	0.3580%
48	6,600	26	29.0	26.3	0.90	0.99	0.3939%	0.4400%	0.3978%
49	7,016	29	33.2	30.0	0.87	0.97	0.4133%	0.4730%	0.4277%
50	7,352	36	36.8	33.3	0.98	1.08	0.4897%	0.5005%	0.4525%
51	7,571	40	39.6	35.8	1.01	1.12	0.5283%	0.5225%	0.4724%
52	7,880	36	43.3	39.2	0.83	0.92	0.4569%	0.5500%	0.4973%
53	7,997	29	46.6	42.2	0.62	0.69	0.3626%	0.5830%	0.5271%
54	8,044	32	48.7	44.0	0.66	0.73	0.3978%	0.6050%	0.5470%
55	8,002	45	50.6	45.8	0.89	0.98	0.5624%	0.6325%	0.5719%
56	7,890	56	52.1	47.1	1.08	1.19	0.7098%	0.6600%	0.5967%
57	7,634	45	52.5	47.5	0.86	0.95	0.5895%	0.6875%	0.6216%
58	7,322	39	52.4	47.3	0.74	0.82	0.5326%	0.7150%	0.6464%
59	6,836	31	50.8	45.9	0.61	0.68	0.4535%	0.7425%	0.6713%
60	5,736	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
61	4,421	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
62	3,470	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
63	2,635	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
64	2,061	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
65	1,542	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
66	1,069	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
67	721	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
68	534	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
69	391	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
70	290	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
71	253	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
72	201	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
73	153	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
74	127	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
75	91	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
76	71	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
77	48	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
78	38	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
79	34	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
80	22	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
81	13	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
82	15	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 4A

Fiscal Years 2011 - 2015

Disability Experience of Active General Employees

Females

Age	Life Years Exposed	Number of Disabilities			Ratio of Actual to		Disability Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
83	10	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
84	11	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
85	8	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
86	5	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
87	5	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
88	2	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
89	3	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
90	2	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
91	2	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
92	1	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
93	1	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
94	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
95	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
96	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
97	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
98	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
101	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
102	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
103	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
104	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
105	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
106	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
107	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
108	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
109	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
110	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	213,926	596	732.2	662.0	0.81	0.90	0.2786%	0.3423%	0.3094%

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 4A **Fiscal Years 2011 - 2015**
Disability Experience of Active General Employees **Males**

Age	Life Years Exposed	Number of Disabilities			Ratio of Actual to		Disability Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
<25	4,800	1	0.7	0.6	1.45	1.58	0.0208%	0.0144%	0.0132%
25-29	13,641	1	6.1	5.7	0.16	0.17	0.0073%	0.0449%	0.0421%
30-34	17,443	10	15.0	13.7	0.67	0.73	0.0573%	0.0859%	0.0788%
35-39	18,821	15	24.6	22.6	0.61	0.66	0.0797%	0.1309%	0.1201%
40-44	25,046	34	60.4	55.4	0.56	0.61	0.1358%	0.2411%	0.2212%
45-49	30,045	85	114.3	104.9	0.74	0.81	0.2829%	0.3805%	0.3491%
50-54	37,890	164	196.8	180.5	0.83	0.91	0.4328%	0.5193%	0.4765%
55-59	38,689	240	248.1	227.6	0.97	1.05	0.6203%	0.6413%	0.5883%
60-64	22,395	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
65-69	6,774	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
70-74	1,888	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
75-79	634	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
80-84	159	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
85-89	57	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
90-94	7	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
95-99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100 and over	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
<i>Total</i>	<i>218,289</i>	<i>550</i>	<i>666.0</i>	<i>611.1</i>	<i>0.83</i>	<i>0.90</i>	<i>0.2520%</i>	<i>0.3051%</i>	<i>0.2800%</i>

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 4A **Fiscal Years 2011 - 2015**
Disability Experience of Active General Employees **Females**

Age	Life Years Exposed	Number of Disabilities			Ratio of Actual to		Disability Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
<25	4,930	0	1.2	1.1	0.00	0.00	0.0000%	0.0236%	0.0214%
25-29	13,550	3	7.5	6.8	0.40	0.44	0.0221%	0.0555%	0.0502%
30-34	18,285	16	22.9	20.7	0.70	0.77	0.0875%	0.1250%	0.1130%
35-39	19,639	28	34.7	31.3	0.81	0.89	0.1426%	0.1765%	0.1596%
40-44	25,595	48	65.3	59.1	0.73	0.81	0.1875%	0.2553%	0.2308%
45-49	31,413	112	127.4	115.1	0.88	0.97	0.3565%	0.4054%	0.3665%
50-54	38,844	173	215.0	194.4	0.80	0.89	0.4454%	0.5535%	0.5004%
55-59	37,684	216	258.3	233.5	0.84	0.92	0.5732%	0.6854%	0.6197%
60-64	18,323	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
65-69	4,257	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
70-74	1,024	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
75-79	282	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
80-84	71	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
85-89	23	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
90-94	6	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
95-99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100 and over	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	213,926	596	732.2	662.0	0.81	0.90	0.2786%	0.3423%	0.3094%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 4B

Disability Experience of Active General Employees

Males

Year	Life Years Exposed	Number of Disabilities			Ratio of Actual to		Disability Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	45,169	123	141.1	141.1	0.87	0.87	0.2723%	0.3125%	0.3125%
2012	43,683	104	135.4	135.4	0.77	0.77	0.2381%	0.3099%	0.3099%
2013	44,013	132	134.0	134.0	0.98	0.98	0.2999%	0.3045%	0.3045%
2014	43,146	106	129.9	129.9	0.82	0.82	0.2457%	0.3011%	0.3011%
2015	42,278	85	125.5	125.5	0.68	0.68	0.2011%	0.2969%	0.2969%
<i>Total</i>	<i>218,289</i>	<i>550</i>	<i>666.0</i>	<i>666.0</i>	<i>0.83</i>	<i>0.83</i>	<i>0.2520%</i>	<i>0.3051%</i>	<i>0.3051%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 4B

Disability Experience of Active General Employees

Females

Year	Life Years Exposed	Number of Disabilities			Ratio of Actual to		Disability Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	44,536	115	155.0	155.0	0.74	0.74	0.2582%	0.3481%	0.3481%
2012	43,161	115	149.4	149.4	0.77	0.77	0.2664%	0.3461%	0.3461%
2013	42,965	131	147.4	147.4	0.89	0.89	0.3049%	0.3430%	0.3430%
2014	41,917	121	142.4	142.4	0.85	0.85	0.2887%	0.3398%	0.3398%
2015	41,347	114	138.0	138.0	0.83	0.83	0.2757%	0.3336%	0.3336%
<i>Total</i>	<i>213,926</i>	<i>596</i>	<i>732.2</i>	<i>732.2</i>	<i>0.81</i>	<i>0.81</i>	<i>0.2786%</i>	<i>0.3423%</i>	<i>0.3423%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 5A

Fiscal Years 2011 - 2015

Early Retirement Experience of Active General Employees with 5 - 14 Years of Service

Males

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
21	0	0	0.0	0.0	0.00	0.00	0.0000%	1.0000%	2.0000%
22	1	0	0.0	0.0	0.00	0.00	0.0000%	1.0000%	2.0000%
23	9	0	0.1	0.2	0.00	0.00	0.0000%	1.0000%	2.0000%
24	82	2	0.8	1.6	2.44	1.22	2.4390%	1.0000%	2.0000%
25	250	5	2.5	5.0	2.00	1.00	2.0000%	1.0000%	2.0000%
26	433	10	4.3	8.7	2.31	1.15	2.3095%	1.0000%	2.0000%
27	601	7	6.0	12.0	1.16	0.58	1.1647%	1.0000%	2.0000%
28	918	18	9.2	18.4	1.96	0.98	1.9608%	1.0000%	2.0000%
29	1,286	28	19.3	38.6	1.45	0.73	2.1773%	1.5000%	3.0000%
30	1,615	35	24.2	25.8	1.44	1.35	2.1672%	1.5000%	1.6000%
31	1,787	41	26.8	28.6	1.53	1.43	2.2943%	1.5000%	1.6000%
32	1,964	26	29.5	31.4	0.88	0.83	1.3238%	1.5000%	1.6000%
33	2,065	41	31.0	33.0	1.32	1.24	1.9855%	1.5000%	1.6000%
34	2,104	45	31.6	33.7	1.43	1.34	2.1388%	1.5000%	1.6000%
35	2,085	26	31.3	33.4	0.83	0.78	1.2470%	1.5000%	1.6000%
36	2,110	34	31.7	33.8	1.07	1.01	1.6114%	1.5000%	1.6000%
37	2,108	39	31.6	33.7	1.23	1.16	1.8501%	1.5000%	1.6000%
38	2,093	29	31.4	33.5	0.92	0.87	1.3856%	1.5000%	1.6000%
39	2,138	35	21.4	34.2	1.64	1.02	1.6370%	1.0000%	1.6000%
40	2,179	36	21.8	34.9	1.65	1.03	1.6521%	1.0000%	1.6000%
41	2,151	27	21.5	34.4	1.26	0.78	1.2552%	1.0000%	1.6000%
42	2,150	26	21.5	34.4	1.21	0.76	1.2093%	1.0000%	1.6000%
43	2,121	18	21.2	33.9	0.85	0.53	0.8487%	1.0000%	1.6000%
44	2,095	33	21.0	33.5	1.58	0.98	1.5752%	1.0000%	1.6000%
45	2,080	20	20.8	28.1	0.96	0.71	0.9615%	1.0000%	1.3500%
46	2,050	24	20.5	27.7	1.17	0.87	1.1707%	1.0000%	1.3500%
47	2,017	24	20.2	27.2	1.19	0.88	1.1899%	1.0000%	1.3500%
48	2,023	19	20.2	27.3	0.94	0.70	0.9392%	1.0000%	1.3500%
49	2,070	20	20.7	27.9	0.97	0.72	0.9662%	1.0000%	1.3500%
50	2,117	24	21.2	28.6	1.13	0.84	1.1337%	1.0000%	1.3500%
51	2,157	23	21.6	29.1	1.07	0.79	1.0663%	1.0000%	1.3500%
52	2,205	23	22.1	29.8	1.04	0.77	1.0431%	1.0000%	1.3500%
53	2,129	27	21.3	28.7	1.27	0.94	1.2682%	1.0000%	1.3500%
54	2,116	24	21.2	28.6	1.13	0.84	1.1342%	1.0000%	1.3500%
55	2,165	20	21.7	29.2	0.92	0.68	0.9238%	1.0000%	1.3500%
56	2,171	28	21.7	29.3	1.29	0.96	1.2897%	1.0000%	1.3500%
57	2,189	29	21.9	29.6	1.32	0.98	1.3248%	1.0000%	1.3500%
58	2,165	32	21.7	29.2	1.48	1.09	1.4781%	1.0000%	1.3500%
59	2,054	90	61.6	27.7	1.46	3.25	4.3817%	3.0000%	1.3500%
60	1	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
61	1	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
62	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
63	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
64	1	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
65	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
66	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
67	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
68	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
69	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
70	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
71	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
72	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
73	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
74	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
75	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
76	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
77	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
78	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
79	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
80	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
81	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
82	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 5A

Fiscal Years 2011 - 2015

Early Retirement Experience of Active General Employees with 5 - 14 Years of Service

Males

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
83	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
84	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
85	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
86	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
87	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
88	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
89	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
90	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
91	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
92	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
93	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
94	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
95	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
96	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
97	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
98	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
101	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
102	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
103	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
104	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
105	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
106	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
107	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
108	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
109	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
110	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
<i>Total</i>	<i>66,056</i>	<i>988</i>	<i>797.7</i>	<i>1,004.8</i>	<i>1.24</i>	<i>0.98</i>	<i>1.4957%</i>	<i>1.2076%</i>	<i>1.5211%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 5A

Fiscal Years 2011 - 2015

Early Retirement Experience of Active General Employees with 5 - 14 Years of Service

Females

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
21	0	0	0.0	0.0	0.00	0.00	0.0000%	1.0000%	3.7000%
22	3	0	0.0	0.1	0.00	0.00	0.0000%	1.0000%	3.7000%
23	14	0	0.1	0.5	0.00	0.00	0.0000%	1.0000%	3.7000%
24	106	5	1.1	3.9	4.72	1.27	4.7170%	1.0000%	3.7000%
25	249	13	2.5	9.2	5.22	1.41	5.2209%	1.0000%	3.7000%
26	433	27	4.3	16.0	6.24	1.69	6.2356%	1.0000%	3.7000%
27	612	19	6.1	22.6	3.10	0.84	3.1046%	1.0000%	3.7000%
28	922	37	9.2	34.1	4.01	1.08	4.0130%	1.0000%	3.7000%
29	1,318	34	19.8	48.8	1.72	0.70	2.5797%	1.5000%	3.7000%
30	1,659	50	24.9	31.5	2.01	1.59	3.0139%	1.5000%	1.9000%
31	1,919	38	28.8	36.5	1.32	1.04	1.9802%	1.5000%	1.9000%
32	2,148	50	32.2	40.8	1.55	1.23	2.3277%	1.5000%	1.9000%
33	2,254	40	33.8	42.8	1.18	0.93	1.7746%	1.5000%	1.9000%
34	2,265	61	34.0	43.0	1.80	1.42	2.6932%	1.5000%	1.9000%
35	2,152	50	32.3	40.9	1.55	1.22	2.3234%	1.5000%	1.9000%
36	2,116	38	31.7	40.2	1.20	0.95	1.7958%	1.5000%	1.9000%
37	2,115	58	31.7	40.2	1.83	1.44	2.7423%	1.5000%	1.9000%
38	2,054	43	30.8	39.0	1.40	1.10	2.0935%	1.5000%	1.9000%
39	2,068	37	20.7	39.3	1.79	0.94	1.7892%	1.0000%	1.9000%
40	2,117	42	21.2	40.2	1.98	1.04	1.9839%	1.0000%	1.9000%
41	2,108	44	21.1	40.1	2.09	1.10	2.0873%	1.0000%	1.9000%
42	2,148	29	21.5	40.8	1.35	0.71	1.3501%	1.0000%	1.9000%
43	2,159	36	21.6	41.0	1.67	0.88	1.6674%	1.0000%	1.9000%
44	2,173	44	21.7	41.3	2.02	1.07	2.0249%	1.0000%	1.9000%
45	2,084	39	20.8	39.6	1.87	0.98	1.8714%	1.0000%	1.9000%
46	2,113	36	21.1	40.1	1.70	0.90	1.7037%	1.0000%	1.9000%
47	2,114	28	21.1	40.2	1.32	0.70	1.3245%	1.0000%	1.9000%
48	2,161	21	21.6	41.1	0.97	0.51	0.9718%	1.0000%	1.9000%
49	2,282	37	22.8	43.4	1.62	0.85	1.6214%	1.0000%	1.9000%
50	2,364	41	23.6	44.9	1.73	0.91	1.7343%	1.0000%	1.9000%
51	2,439	30	24.4	46.3	1.23	0.65	1.2300%	1.0000%	1.9000%
52	2,476	41	24.8	47.0	1.66	0.87	1.6559%	1.0000%	1.9000%
53	2,424	26	24.2	46.1	1.07	0.56	1.0726%	1.0000%	1.9000%
54	2,396	44	24.0	45.5	1.84	0.97	1.8364%	1.0000%	1.9000%
55	2,334	44	23.3	44.3	1.89	0.99	1.8852%	1.0000%	1.9000%
56	2,296	32	23.0	43.6	1.39	0.73	1.3937%	1.0000%	1.9000%
57	2,230	30	22.3	42.4	1.35	0.71	1.3453%	1.0000%	1.9000%
58	2,133	56	21.3	40.5	2.63	1.38	2.6254%	1.0000%	1.9000%
59	1,972	99	59.2	37.5	1.67	2.64	5.0203%	3.0000%	1.9000%
60	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
61	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
62	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
63	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
64	1	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
65	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
66	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
67	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
68	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
69	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
70	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
71	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
72	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
73	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
74	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
75	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
76	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
77	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
78	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
79	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
80	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
81	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
82	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 5A

Fiscal Years 2011 - 2015

Early Retirement Experience of Active General Employees with 5 - 14 Years of Service

Females

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
83	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
84	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
85	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
86	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
87	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
88	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
89	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
90	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
91	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
92	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
93	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
94	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
95	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
96	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
97	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
98	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
101	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
102	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
103	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
104	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
105	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
106	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
107	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
108	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
109	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
110	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
<i>Total</i>	<i>68,931</i>	<i>1,399</i>	<i>828.7</i>	<i>1,375.5</i>	<i>1.69</i>	<i>1.02</i>	<i>2.0296%</i>	<i>1.2023%</i>	<i>1.9955%</i>

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 5A

Fiscal Years 2011 - 2015

Early Retirement Experience of Active General Employees with 5 - 14 Years of Service

Males

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
<25	92	2	0.9	1.8	2.17	1.09	2.1739%	1.0000%	2.0000%
25-29	3,488	68	41.3	82.6	1.65	0.82	1.9495%	1.1843%	2.3687%
30-34	9,535	188	143.0	152.6	1.31	1.23	1.9717%	1.5000%	1.6000%
35-39	10,534	163	147.3	168.5	1.11	0.97	1.5474%	1.3985%	1.6000%
40-44	10,696	140	107.0	171.1	1.31	0.82	1.3089%	1.0000%	1.6000%
45-49	10,240	107	102.4	138.2	1.04	0.77	1.0449%	1.0000%	1.3500%
50-54	10,724	121	107.2	144.8	1.13	0.84	1.1283%	1.0000%	1.3500%
55-59	10,744	199	148.5	145.0	1.34	1.37	1.8522%	1.3824%	1.3500%
60-64	3	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
65-69	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
70-74	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
75-79	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
80-84	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
85-89	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
90-94	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
95-99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100 and over	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	66,056	988	797.7	1,004.8	1.24	0.98	1.4957%	1.2076%	1.5211%

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 5A

Fiscal Years 2011 - 2015

Early Retirement Experience of Active General Employees with 5 - 14 Years of Service

Females

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
<25	123	5	1.2	4.6	4.07	1.10	4.0650%	1.0000%	3.7000%
25-29	3,534	130	41.9	130.8	3.10	0.99	3.6786%	1.1865%	3.7000%
30-34	10,245	239	153.7	194.7	1.56	1.23	2.3328%	1.5000%	1.9000%
35-39	10,505	226	147.2	199.6	1.53	1.13	2.1514%	1.4016%	1.9000%
40-44	10,705	195	107.1	203.4	1.82	0.96	1.8216%	1.0000%	1.9000%
45-49	10,754	161	107.5	204.3	1.50	0.79	1.4971%	1.0000%	1.9000%
50-54	12,099	182	121.0	229.9	1.50	0.79	1.5043%	1.0000%	1.9000%
55-59	10,965	261	149.1	208.3	1.75	1.25	2.3803%	1.3597%	1.9000%
60-64	1	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
65-69	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
70-74	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
75-79	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
80-84	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
85-89	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
90-94	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
95-99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100 and over	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	68,931	1,399	828.7	1,375.5	1.69	1.02	2.0296%	1.2023%	1.9955%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 5B

Early Retirement Experience of Active General Employees with 5 - 14 Years of Service

Males

Year	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	12,617	173	151.1	151.1	1.15	1.15	1.3712%	1.1973%	1.1973%
2012	13,106	181	157.3	157.3	1.15	1.15	1.3810%	1.2004%	1.2004%
2013	13,366	218	161.5	161.5	1.35	1.35	1.6310%	1.2083%	1.2083%
2014	13,558	203	164.4	164.4	1.24	1.24	1.4973%	1.2123%	1.2123%
2015	13,409	213	163.4	163.4	1.30	1.30	1.5885%	1.2188%	1.2188%
<i>Total</i>	<i>66,056</i>	<i>988</i>	<i>797.7</i>	<i>797.7</i>	<i>1.24</i>	<i>1.24</i>	<i>1.4957%</i>	<i>1.2076%</i>	<i>1.2076%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 5B

Early Retirement Experience of Active General Employees with 5 - 14 Years of Service

Females

Year	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	12,913	206	153.9	153.9	1.34	1.34	1.5953%	1.1917%	1.1917%
2012	13,524	249	161.5	161.5	1.54	1.54	1.8412%	1.1939%	1.1939%
2013	13,960	309	168.4	168.4	1.84	1.84	2.2135%	1.2062%	1.2062%
2014	14,400	314	174.0	174.0	1.80	1.80	2.1806%	1.2085%	1.2085%
2015	14,134	321	171.0	171.0	1.88	1.88	2.2711%	1.2097%	1.2097%
<i>Total</i>	<i>68,931</i>	<i>1,399</i>	<i>828.7</i>	<i>828.7</i>	<i>1.69</i>	<i>1.69</i>	<i>2.0296%</i>	<i>1.2023%</i>	<i>1.2023%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 6A

Fiscal Years 2011 - 2015

Early Retirement Experience of Active General Employees with 15 or more Years of Service

Males

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
31	1	0	0.0	0.0	0.00	0.00	0.0000%	1.5000%	1.0000%
32	5	0	0.1	0.1	0.00	0.00	0.0000%	1.5000%	1.0000%
33	22	0	0.3	0.2	0.00	0.00	0.0000%	1.5000%	1.0000%
34	85	1	1.3	0.9	0.78	1.18	1.1765%	1.5000%	1.0000%
35	171	0	2.6	1.7	0.00	0.00	0.0000%	1.5000%	1.0000%
36	265	2	4.0	2.7	0.50	0.75	0.7547%	1.5000%	1.0000%
37	371	1	5.6	3.7	0.18	0.27	0.2695%	1.5000%	1.0000%
38	511	7	7.7	5.1	0.91	1.37	1.3699%	1.5000%	1.0000%
39	730	9	11.0	7.3	0.82	1.23	1.2329%	1.5000%	1.0000%
40	1,001	8	15.0	10.0	0.53	0.80	0.7992%	1.5000%	1.0000%
41	1,331	11	20.0	13.3	0.55	0.83	0.8264%	1.5000%	1.0000%
42	1,619	13	24.3	16.2	0.54	0.80	0.8030%	1.5000%	1.0000%
43	1,867	11	28.0	18.7	0.39	0.59	0.5892%	1.5000%	1.0000%
44	2,057	19	30.9	20.6	0.62	0.92	0.9237%	1.5000%	1.0000%
45	2,198	20	33.0	22.0	0.61	0.91	0.9099%	1.5000%	1.0000%
46	2,452	25	36.8	24.5	0.68	1.02	1.0196%	1.5000%	1.0000%
47	2,702	32	54.0	54.0	0.59	0.59	1.1843%	2.0000%	2.0000%
48	3,003	33	60.1	60.1	0.55	0.55	1.0989%	2.0000%	2.0000%
49	3,341	46	66.8	66.8	0.69	0.69	1.3768%	2.0000%	2.0000%
50	3,701	60	74.0	74.0	0.81	0.81	1.6212%	2.0000%	2.0000%
51	3,976	69	119.3	79.5	0.58	0.87	1.7354%	3.0000%	2.0000%
52	4,229	103	169.2	126.9	0.61	0.81	2.4356%	4.0000%	3.0000%
53	4,387	176	197.4	175.5	0.89	1.00	4.0119%	4.5000%	4.0000%
54	4,375	264	218.8	218.8	1.21	1.21	6.0343%	5.0000%	5.0000%
55	4,219	285	232.0	253.1	1.23	1.13	6.7552%	5.5000%	6.0000%
56	4,153	299	249.2	290.7	1.20	1.03	7.1996%	6.0000%	7.0000%
57	3,988	323	319.0	319.0	1.01	1.01	8.0993%	8.0000%	8.0000%
58	3,837	320	383.7	383.7	0.83	0.83	8.3398%	10.0000%	10.0000%
59	3,581	789	537.2	716.2	1.47	1.10	22.0330%	15.0000%	20.0000%
60	4	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
61	5	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
62	5	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
63	3	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
64	1	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
65	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
66	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
67	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
68	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
69	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
70	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
71	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
72	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
73	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
74	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
75	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
76	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
77	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
78	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
79	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
80	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
81	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
82	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 6A

Fiscal Years 2011 - 2015

Early Retirement Experience of Active General Employees with 15 or more Years of Service

Males

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
83	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
84	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
85	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
86	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
87	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
88	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
89	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
90	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
91	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
92	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
93	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
94	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
95	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
96	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
97	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
98	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
101	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
102	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
103	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
104	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
105	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
106	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
107	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
108	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
109	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
110	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
<i>Total</i>	<i>64,196</i>	<i>2,926</i>	<i>2,901.0</i>	<i>2,965.2</i>	<i>1.01</i>	<i>0.99</i>	<i>4.5579%</i>	<i>4.5189%</i>	<i>4.6190%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 6A

Fiscal Years 2011 - 2015

Early Retirement Experience of Active General Employees with 15 or more Years of Service

Females

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
31	1	0	0.0	0.0	0.00	0.00	0.0000%	1.5000%	1.2000%
32	8	0	0.1	0.1	0.00	0.00	0.0000%	1.5000%	1.2000%
33	42	0	0.6	0.5	0.00	0.00	0.0000%	1.5000%	1.2000%
34	136	2	2.0	1.6	0.98	1.23	1.4706%	1.5000%	1.2000%
35	228	6	3.4	2.7	1.75	2.19	2.6316%	1.5000%	1.2000%
36	339	8	5.1	4.1	1.57	1.97	2.3599%	1.5000%	1.2000%
37	455	8	6.8	5.5	1.17	1.47	1.7582%	1.5000%	1.2000%
38	617	5	9.3	7.4	0.54	0.68	0.8104%	1.5000%	1.2000%
39	832	5	12.5	10.0	0.40	0.50	0.6010%	1.5000%	1.2000%
40	1,098	20	16.5	13.2	1.21	1.52	1.8215%	1.5000%	1.2000%
41	1,373	15	20.6	16.5	0.73	0.91	1.0925%	1.5000%	1.2000%
42	1,663	15	24.9	20.0	0.60	0.75	0.9020%	1.5000%	1.2000%
43	1,914	33	28.7	30.6	1.15	1.08	1.7241%	1.5000%	1.6000%
44	2,026	29	30.4	32.4	0.95	0.89	1.4314%	1.5000%	1.6000%
45	2,185	31	32.8	35.0	0.95	0.89	1.4188%	1.5000%	1.6000%
46	2,425	33	36.4	38.8	0.91	0.85	1.3608%	1.5000%	1.6000%
47	2,587	40	51.7	41.4	0.77	0.97	1.5462%	2.0000%	1.6000%
48	2,908	50	58.2	46.5	0.86	1.07	1.7194%	2.0000%	1.6000%
49	3,235	55	64.7	51.8	0.85	1.06	1.7002%	2.0000%	1.6000%
50	3,545	88	70.9	70.9	1.24	1.24	2.4824%	2.0000%	2.0000%
51	3,770	105	113.1	113.1	0.93	0.93	2.7851%	3.0000%	3.0000%
52	4,022	177	160.9	201.1	1.10	0.88	4.4008%	4.0000%	5.0000%
53	4,099	253	184.5	245.9	1.37	1.03	6.1722%	4.5000%	6.0000%
54	3,879	249	194.0	232.7	1.28	1.07	6.4192%	5.0000%	6.0000%
55	3,786	238	208.2	227.2	1.14	1.05	6.2863%	5.5000%	6.0000%
56	3,577	249	214.6	250.4	1.16	0.99	6.9611%	6.0000%	7.0000%
57	3,417	273	273.4	273.4	1.00	1.00	7.9895%	8.0000%	8.0000%
58	3,179	266	317.9	317.9	0.84	0.84	8.3674%	10.0000%	10.0000%
59	2,920	657	438.0	584.0	1.50	1.13	22.5000%	15.0000%	20.0000%
60	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
61	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
62	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
63	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
64	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
65	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
66	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
67	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
68	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
69	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
70	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
71	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
72	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
73	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
74	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
75	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
76	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
77	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
78	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
79	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
80	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
81	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
82	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 6A

Fiscal Years 2011 - 2015

Early Retirement Experience of Active General Employees with 15 or more Years of Service

Females

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
83	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
84	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
85	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
86	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
87	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
88	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
89	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
90	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
91	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
92	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
93	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
94	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
95	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
96	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
97	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
98	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
101	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
102	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
103	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
104	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
105	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
106	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
107	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
108	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
109	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
110	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
<i>Total</i>	<i>60,266</i>	<i>2,910</i>	<i>2,580.1</i>	<i>2,874.6</i>	<i>1.13</i>	<i>1.01</i>	<i>4.8286%</i>	<i>4.2812%</i>	<i>4.7698%</i>

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 6A

Fiscal Years 2011 - 2015

Early Retirement Experience of Active General Employees with 15 or more Years of Service

Males

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
<25	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
25-29	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
30-34	113	1	1.7	1.1	0.59	0.88	0.8850%	1.5000%	1.0000%
35-39	2,048	19	30.7	20.5	0.62	0.93	0.9277%	1.5000%	1.0000%
40-44	7,875	62	118.1	78.8	0.52	0.79	0.7873%	1.5000%	1.0000%
45-49	13,696	156	250.7	227.4	0.62	0.69	1.1390%	1.8302%	1.6605%
50-54	20,668	672	778.6	674.6	0.86	1.00	3.2514%	3.7673%	3.2642%
55-59	19,778	2,016	1,721.1	1,962.8	1.17	1.03	10.1931%	8.7022%	9.9241%
60-64	18	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
65-69	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
70-74	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
75-79	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
80-84	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
85-89	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
90-94	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
95-99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100 and over	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	64,196	2,926	2,901.0	2,965.2	1.01	0.99	4.5579%	4.5189%	4.6190%

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 6A

Fiscal Years 2011 - 2015

Early Retirement Experience of Active General Employees with 15 or more Years of Service

Females

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
<25	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
25-29	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
30-34	187	2	2.8	2.2	0.71	0.89	1.0695%	1.5000%	1.2000%
35-39	2,471	32	37.1	29.7	0.86	1.08	1.2950%	1.5000%	1.2000%
40-44	8,074	112	121.1	112.6	0.92	0.99	1.3872%	1.5000%	1.3952%
45-49	13,340	209	243.8	213.4	0.86	0.98	1.5667%	1.8272%	1.6000%
50-54	19,315	872	723.3	863.8	1.21	1.01	4.5146%	3.7447%	4.4721%
55-59	16,879	1,683	1,452.1	1,652.8	1.16	1.02	9.9710%	8.6031%	9.7921%
60-64	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
65-69	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
70-74	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
75-79	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
80-84	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
85-89	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
90-94	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
95-99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100 and over	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	60,266	2,910	2,580.1	2,874.6	1.13	1.01	4.8286%	4.2812%	4.7698%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 6B

Early Retirement Experience of Active General Employees with 15 or more Years of Service

Males

Year	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	14,347	895	637.1	637.1	1.40	1.40	6.2382%	4.4405%	4.4405%
2012	13,331	403	593.7	593.7	0.68	0.68	3.0230%	4.4538%	4.4538%
2013	12,739	515	576.1	576.1	0.89	0.89	4.0427%	4.5226%	4.5226%
2014	12,163	495	557.2	557.2	0.89	0.89	4.0697%	4.5813%	4.5813%
2015	11,616	618	536.8	536.8	1.15	1.15	5.3202%	4.6209%	4.6209%
<i>Total</i>	<i>64,196</i>	<i>2,926</i>	<i>2,901.0</i>	<i>2,901.0</i>	<i>1.01</i>	<i>1.01</i>	<i>4.5579%</i>	<i>4.5189%</i>	<i>4.5189%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 6B

Early Retirement Experience of Active General Employees with 15 or more Years of Service

Females

Year	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	13,545	829	562.0	562.0	1.48	1.48	6.1203%	4.1490%	4.1490%
2012	12,546	412	524.0	524.0	0.79	0.79	3.2839%	4.1769%	4.1769%
2013	11,964	565	510.4	510.4	1.11	1.11	4.7225%	4.2660%	4.2660%
2014	11,371	491	499.6	499.6	0.98	0.98	4.3180%	4.3934%	4.3934%
2015	10,840	613	484.2	484.2	1.27	1.27	5.6550%	4.4663%	4.4663%
<i>Total</i>	<i>60,266</i>	<i>2,910</i>	<i>2,580.1</i>	<i>2,580.1</i>	<i>1.13</i>	<i>1.13</i>	<i>4.8286%</i>	<i>4.2812%</i>	<i>4.2812%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 7A

Fiscal Years 2011 - 2015

Superannuation Retirement Experience of Active General Employees

Males

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
45	0	0	0.0	0.0	0.00	0.00	0.0000%	20.0000%	0.0000%
46	0	0	0.0	0.0	0.00	0.00	0.0000%	20.0000%	0.0000%
47	0	0	0.0	0.0	0.00	0.00	0.0000%	20.0000%	0.0000%
48	0	0	0.0	0.0	0.00	0.00	0.0000%	20.0000%	0.0000%
49	0	0	0.0	0.0	0.00	0.00	0.0000%	20.0000%	0.0000%
50	0	0	0.0	0.0	0.00	0.00	0.0000%	20.0000%	0.0000%
51	3	0	0.6	0.5	0.00	0.00	0.0000%	20.0000%	15.0000%
52	15	1	3.4	2.2	0.30	0.44	6.6667%	22.5000%	15.0000%
53	87	17	21.8	17.4	0.78	0.98	19.5402%	25.0000%	20.0000%
54	207	45	53.8	46.6	0.84	0.97	21.7391%	26.0000%	22.5000%
55	304	60	82.1	69.9	0.73	0.86	19.7368%	27.0000%	23.0000%
56	381	62	106.7	89.5	0.58	0.69	16.2730%	28.0000%	23.5000%
57	502	106	150.6	120.5	0.70	0.88	21.1155%	30.0000%	24.0000%
58	618	116	185.4	166.9	0.63	0.70	18.7702%	30.0000%	27.0000%
59	704	189	211.2	211.2	0.89	0.89	26.8466%	30.0000%	30.0000%
60	5,795	1,252	1,448.8	1,448.8	0.86	0.86	21.0871%	25.0000%	25.0000%
61	4,690	937	938.0	938.0	1.00	1.00	19.2537%	20.0000%	20.0000%
62	3,910	958	977.5	977.5	0.98	0.98	23.6317%	25.0000%	25.0000%
63	3,052	578	610.4	610.4	0.95	0.95	17.9227%	20.0000%	20.0000%
64	2,529	466	505.8	505.8	0.92	0.92	17.8727%	20.0000%	20.0000%
65	2,025	462	506.3	506.3	0.91	0.91	22.0741%	25.0000%	25.0000%
66	1,500	350	300.0	375.0	1.17	0.93	22.9333%	20.0000%	25.0000%
67	1,129	226	225.8	254.0	1.00	0.89	19.4863%	20.0000%	22.5000%
68	838	183	167.6	188.6	1.09	0.97	21.1217%	20.0000%	22.5000%
69	624	140	124.8	140.4	1.12	1.00	21.6346%	20.0000%	22.5000%
70	472	102	94.4	106.2	1.08	0.96	21.3983%	20.0000%	22.5000%
71	387	84	77.4	77.4	1.09	1.09	20.9302%	20.0000%	20.0000%
72	304	46	60.8	60.8	0.76	0.76	14.8026%	20.0000%	20.0000%
73	269	31	53.8	53.8	0.58	0.58	11.1524%	20.0000%	20.0000%
74	249	42	49.8	49.8	0.84	0.84	16.8675%	20.0000%	20.0000%
75	200	44	40.0	40.0	1.10	1.10	21.0000%	20.0000%	20.0000%
76	144	25	28.8	28.8	0.87	0.87	16.6667%	20.0000%	20.0000%
77	107	22	21.4	21.4	1.03	1.03	20.5607%	20.0000%	20.0000%
78	79	13	15.8	15.8	0.82	0.82	16.4557%	20.0000%	20.0000%
79	56	11	11.2	11.2	0.98	0.98	19.6429%	20.0000%	20.0000%
80	52	12	52.0	52.0	0.23	0.23	21.1538%	100.0000%	100.0000%
81	33	5	33.0	33.0	0.15	0.15	15.1515%	100.0000%	100.0000%
82	31	8	31.0	31.0	0.26	0.26	25.8065%	100.0000%	100.0000%
83	23	7	23.0	23.0	0.30	0.30	30.4348%	100.0000%	100.0000%
84	16	3	16.0	16.0	0.19	0.19	18.7500%	100.0000%	100.0000%
85	18	2	18.0	18.0	0.11	0.11	11.1111%	100.0000%	100.0000%
86	11	3	11.0	11.0	0.27	0.27	27.2727%	100.0000%	100.0000%
87	9	2	9.0	9.0	0.22	0.22	22.2222%	100.0000%	100.0000%
88	8	4	8.0	8.0	0.50	0.50	50.0000%	100.0000%	100.0000%
89	6	4	6.0	6.0	0.67	0.67	66.6667%	100.0000%	100.0000%
90	3	1	3.0	3.0	0.33	0.33	33.3333%	100.0000%	100.0000%
91	1	0	1.0	1.0	0.00	0.00	0.0000%	100.0000%	100.0000%
92	1	0	1.0	1.0	0.00	0.00	0.0000%	100.0000%	100.0000%
93	1	1	1.0	1.0	1.00	1.00	100.0000%	100.0000%	100.0000%
94	1	1	1.0	1.0	1.00	1.00	100.0000%	100.0000%	100.0000%
95	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 7A

Fiscal Years 2011 - 2015

Superannuation Retirement Experience of Active General Employees

Males

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
96	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
97	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
98	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
99	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
100	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
101	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
102	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
103	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
104	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
105	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
106	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
107	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
108	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
109	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
110	0	0	0.0	0.0	0.0	0.0	0.0000%	100.0000%	100.0000%
<i>Total</i>	<i>31,394</i>	<i>6,621</i>	<i>7,287.8</i>	<i>7,348.5</i>	<i>0.91</i>	<i>0.90</i>	<i>21.0900%</i>	<i>23.2140%</i>	<i>23.4075%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 7A

Fiscal Years 2011 - 2015

Superannuation Retirement Experience of Active General Employees

Females

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
45	0	0	0.0	0.0	0.00	0.00	0.0000%	20.0000%	0.0000%
46	0	0	0.0	0.0	0.00	0.00	0.0000%	20.0000%	0.0000%
47	0	0	0.0	0.0	0.00	0.00	0.0000%	20.0000%	0.0000%
48	0	0	0.0	0.0	0.00	0.00	0.0000%	20.0000%	0.0000%
49	1	0	0.2	0.0	0.00	0.00	0.0000%	20.0000%	0.0000%
50	3	0	0.6	0.0	0.00	0.00	0.0000%	20.0000%	0.0000%
51	6	0	1.4	0.9	0.00	0.00	0.0000%	22.5000%	15.0000%
52	19	2	4.3	2.8	0.47	0.70	10.5263%	22.5000%	15.0000%
53	139	27	31.3	32.0	0.86	0.84	19.4245%	22.5000%	23.0000%
54	466	106	104.9	107.2	1.01	0.99	22.7468%	22.5000%	23.0000%
55	632	141	142.2	145.4	0.99	0.97	22.3101%	22.5000%	23.0000%
56	798	132	179.6	183.5	0.74	0.72	16.5414%	22.5000%	23.0000%
57	891	148	200.5	204.9	0.74	0.72	16.6105%	22.5000%	23.0000%
58	1,053	198	236.9	242.2	0.84	0.82	18.8034%	22.5000%	23.0000%
59	1,106	299	248.9	276.5	1.20	1.08	27.0344%	22.5000%	25.0000%
60	5,305	1,279	1,326.3	1,326.3	0.96	0.96	23.6381%	25.0000%	25.0000%
61	4,063	845	812.6	812.6	1.04	1.04	19.9114%	20.0000%	20.0000%
62	3,204	742	801.0	801.0	0.93	0.93	22.2846%	25.0000%	25.0000%
63	2,441	447	488.2	488.2	0.92	0.92	17.5338%	20.0000%	20.0000%
64	1,906	388	381.2	381.2	1.02	1.02	19.4648%	20.0000%	20.0000%
65	1,434	366	358.5	358.5	1.02	1.02	25.0349%	25.0000%	25.0000%
66	992	301	198.4	248.0	1.52	1.21	29.8387%	20.0000%	25.0000%
67	668	138	133.6	150.3	1.03	0.92	20.2096%	20.0000%	22.5000%
68	492	97	98.4	110.7	0.99	0.88	19.1057%	20.0000%	22.5000%
69	357	91	71.4	80.3	1.27	1.13	25.4902%	20.0000%	22.5000%
70	265	49	53.0	59.6	0.92	0.82	17.7358%	20.0000%	22.5000%
71	235	44	47.0	47.0	0.94	0.94	18.2979%	20.0000%	20.0000%
72	182	43	36.4	36.4	1.18	1.18	23.0769%	20.0000%	20.0000%
73	138	32	27.6	27.6	1.16	1.16	23.1884%	20.0000%	20.0000%
74	114	27	22.8	22.8	1.18	1.18	23.6842%	20.0000%	20.0000%
75	82	15	16.4	16.4	0.91	0.91	18.2927%	20.0000%	20.0000%
76	66	14	13.2	13.2	1.06	1.06	21.2121%	20.0000%	20.0000%
77	47	13	9.4	9.4	1.38	1.38	27.6596%	20.0000%	20.0000%
78	38	5	7.6	7.6	0.66	0.66	13.1579%	20.0000%	20.0000%
79	34	10	6.8	6.8	1.47	1.47	29.4118%	20.0000%	20.0000%
80	22	7	22.0	22.0	0.32	0.32	31.8182%	100.0000%	100.0000%
81	12	2	12.0	12.0	0.17	0.17	16.6667%	100.0000%	100.0000%
82	12	4	12.0	12.0	0.33	0.33	33.3333%	100.0000%	100.0000%
83	6	2	6.0	6.0	0.33	0.33	33.3333%	100.0000%	100.0000%
84	9	2	9.0	9.0	0.22	0.22	11.1111%	100.0000%	100.0000%
85	8	1	8.0	8.0	0.13	0.13	12.5000%	100.0000%	100.0000%
86	5	3	5.0	5.0	0.60	0.60	60.0000%	100.0000%	100.0000%
87	3	2	3.0	3.0	0.67	0.67	66.6667%	100.0000%	100.0000%
88	1	0	1.0	1.0	0.00	0.00	0.0000%	100.0000%	100.0000%
89	2	0	2.0	2.0	0.00	0.00	0.0000%	100.0000%	100.0000%
90	2	0	2.0	2.0	0.00	0.00	0.0000%	100.0000%	100.0000%
91	2	1	2.0	2.0	0.50	0.50	50.0000%	100.0000%	100.0000%
92	1	0	1.0	1.0	0.00	0.00	0.0000%	100.0000%	100.0000%
93	1	0	1.0	1.0	0.00	0.00	0.0000%	100.0000%	100.0000%
94	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
95	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 7A

Fiscal Years 2011 - 2015

Superannuation Retirement Experience of Active General Employees

Females

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
96	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
97	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
98	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
99	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
100	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
101	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
102	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
103	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
104	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
105	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
106	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
107	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
108	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
109	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
110	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
<i>Total</i>	27,263	6,023	6,146.3	6,285.3	0.98	0.96	22.0922%	22.5445%	23.0544%

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 7A

Fiscal Years 2011 - 2015

Superannuation Retirement Experience of Active General Employees

Males

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
<25	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
25-29	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
30-34	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
35-39	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
40-44	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
45-49	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
50-54	312	63	79.5	66.7	0.79	0.94	20.1923%	25.4952%	21.3702%
55-59	2,509	533	736.0	658.0	0.72	0.81	21.2435%	29.3328%	26.2254%
60-64	19,976	4,191	4,480.5	4,480.5	0.94	0.94	20.9802%	22.4292%	22.4292%
65-69	6,116	1,361	1,324.5	1,464.2	1.03	0.93	22.2531%	21.6555%	23.9409%
70-74	1,681	305	336.2	348.0	0.91	0.88	18.1440%	20.0000%	20.7020%
75-79	586	115	117.2	117.2	0.98	0.98	19.6246%	20.0000%	20.0000%
80-84	155	35	155.0	155.0	0.23	0.23	22.5806%	100.0000%	100.0000%
85-89	52	15	52.0	52.0	0.29	0.29	28.8462%	100.0000%	100.0000%
90-94	7	3	7.0	7.0	0.43	0.43	42.8571%	100.0000%	100.0000%
95-99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100 and over	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	31,394	6,621	7,287.8	7,348.5	0.91	0.90	21.0900%	23.2140%	23.4075%

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 7A

Fiscal Years 2011 - 2015

Superannuation Retirement Experience of Active General Employees

Females

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
<25	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
25-29	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
30-34	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
35-39	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
40-44	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
45-49	1	0	0.2	0.0	0.00	0.00	0.0000%	20.0000%	0.0000%
50-54	633	135	142.4	142.9	0.95	0.94	21.3270%	22.4882%	22.5750%
55-59	4,480	918	1,008.0	1,052.5	0.91	0.87	20.4911%	22.5000%	23.4938%
60-64	16,919	3,701	3,809.3	3,809.3	0.97	0.97	21.8748%	22.5146%	22.5146%
65-69	3,943	993	860.3	947.8	1.15	1.05	25.1839%	21.8184%	24.0382%
70-74	934	195	186.8	193.4	1.04	1.01	20.8779%	20.0000%	20.7093%
75-79	267	57	53.4	53.4	1.07	1.07	21.3483%	20.0000%	20.0000%
80-84	61	17	61.0	61.0	0.28	0.28	27.8689%	100.0000%	100.0000%
85-89	19	6	19.0	19.0	0.32	0.32	31.5789%	100.0000%	100.0000%
90-94	6	1	6.0	6.0	0.17	0.17	16.6667%	100.0000%	100.0000%
95-99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100 and over	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	27,263	6,023	6,146.3	6,285.3	0.98	0.96	22.0922%	22.5445%	23.0544%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 7B

Superannuation Retirement Experience of Active General Employees

Males

Year	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	6,391	1,749	1,506.2	1,506.2	1.16	1.16	27.3666%	23.5679%	23.5679%
2012	5,911	982	1,379.0	1,379.0	0.71	0.71	16.6131%	23.3301%	23.3301%
2013	6,326	1,278	1,470.3	1,470.3	0.87	0.87	20.2023%	23.2417%	23.2417%
2014	6,361	1,188	1,462.7	1,462.7	0.81	0.81	18.6763%	22.9955%	22.9955%
2015	6,405	1,424	1,469.5	1,469.5	0.97	0.97	22.2326%	22.9433%	22.9433%
<i>Total</i>	<i>31,394</i>	<i>6,621</i>	<i>7,287.8</i>	<i>7,287.8</i>	<i>0.91</i>	<i>0.91</i>	<i>21.0900%</i>	<i>23.2140%</i>	<i>23.2140%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 7B

Superannuation Retirement Experience of Active General Employees

Females

Year	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	5,576	1,606	1,255.9	1,255.9	1.28	1.28	28.8020%	22.5233%	22.5233%
2012	5,099	836	1,151.7	1,151.7	0.73	0.73	16.3954%	22.5858%	22.5858%
2013	5,460	1,147	1,234.3	1,234.3	0.93	0.93	21.0073%	22.6058%	22.6058%
2014	5,534	1,137	1,246.1	1,246.1	0.91	0.91	20.5457%	22.5176%	22.5176%
2015	5,594	1,297	1,258.4	1,258.4	1.03	1.03	23.1856%	22.4946%	22.4946%
<i>Total</i>	<i>27,263</i>	<i>6,023</i>	<i>6,146.3</i>	<i>6,146.3</i>	<i>0.98</i>	<i>0.98</i>	<i>22.0922%</i>	<i>22.5445%</i>	<i>22.5445%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 7C

Superannuation Retirement Experience of Active General Employees

Males and Females

Year	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	11,967	3,355	2,762.0	2,762.1	1.21	1.21	28.0354%	23.0801%	23.0812%
2012	11,010	1,818	2,531.0	2,530.7	0.72	0.72	16.5123%	22.9882%	22.9854%
2013	11,786	2,425	2,705.0	2,704.5	0.90	0.90	20.5753%	22.9510%	22.9471%
2014	11,895	2,325	2,709.0	2,708.9	0.86	0.86	19.5460%	22.7743%	22.7732%
2015	11,999	2,721	2,728.0	2,727.9	1.00	1.00	22.6769%	22.7352%	22.7341%
<i>Total</i>	<i>58,657</i>	<i>12,644</i>	<i>13,435.0</i>	<i>13,434.1</i>	<i>0.94</i>	<i>0.94</i>	<i>21.5558%</i>	<i>22.9043%</i>	<i>22.9028%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 8A

Fiscal Years 2011 - 2015

Withdrawal Experience of Active General Employees

Males

Age	Life Years Exposed	Number of Withdrawals			Ratio of Actual to		Withdrawal Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
17	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
18	13	1	2.7	3.1	0.37	0.32	7.6923%	20.7380%	24.2000%
19	107	17	21.8	25.1	0.78	0.68	15.8879%	20.3860%	23.4492%
20	282	54	55.3	61.0	0.98	0.89	19.1489%	19.6240%	21.6285%
21	505	113	91.1	97.5	1.24	1.16	22.3762%	18.0303%	19.3094%
22	819	144	135.9	145.4	1.06	0.99	17.5824%	16.5960%	17.7473%
23	1,283	218	197.2	212.4	1.11	1.03	16.9914%	15.3681%	16.5520%
24	1,791	260	238.9	254.1	1.09	1.02	14.5170%	13.3385%	14.1851%
25	2,175	248	238.4	256.3	1.04	0.97	11.4023%	10.9596%	11.7830%
26	2,539	274	239.6	267.7	1.14	1.02	10.7917%	9.4365%	10.5439%
27	2,723	246	224.3	252.7	1.10	0.97	9.0342%	8.2364%	9.2799%
28	2,999	248	212.3	244.2	1.17	1.02	8.2694%	7.0797%	8.1427%
29	3,205	219	202.5	239.5	1.08	0.91	6.8331%	6.3168%	7.4727%
30	3,335	220	178.2	205.6	1.23	1.07	6.5967%	5.3437%	6.1651%
31	3,425	205	172.4	204.0	1.19	1.00	5.9854%	5.0347%	5.9571%
32	3,519	206	165.2	198.2	1.25	1.04	5.8539%	4.6934%	5.6314%
33	3,534	168	151.9	176.3	1.11	0.95	4.7538%	4.2976%	4.9892%
34	3,517	164	146.7	171.8	1.12	0.95	4.6631%	4.1713%	4.8839%
35	3,419	184	136.9	155.4	1.34	1.18	5.3817%	4.0053%	4.5449%
36	3,372	137	128.9	148.1	1.06	0.93	4.0629%	3.8235%	4.3910%
37	3,292	121	120.4	140.0	1.00	0.86	3.6756%	3.6582%	4.2519%
38	3,321	145	123.9	143.3	1.17	1.01	4.3662%	3.7298%	4.3163%
39	3,369	121	122.7	142.2	0.99	0.85	3.5916%	3.6407%	4.2197%
40	3,438	137	119.7	139.6	1.14	0.98	3.9849%	3.4826%	4.0618%
41	3,449	133	125.4	145.2	1.06	0.92	3.8562%	3.6347%	4.2095%
42	3,503	133	130.2	149.2	1.02	0.89	3.7967%	3.7159%	4.2598%
43	3,406	129	121.6	139.9	1.06	0.92	3.7874%	3.5688%	4.1087%
44	3,375	139	118.1	136.8	1.18	1.02	4.1185%	3.4997%	4.0525%
45	3,275	153	104.6	127.0	1.46	1.20	4.6718%	3.1940%	3.8771%
46	3,238	132	104.3	126.5	1.27	1.04	4.0766%	3.2197%	3.9062%
47	3,228	113	105.0	125.8	1.08	0.90	3.5006%	3.2527%	3.8980%
48	3,272	137	106.4	128.1	1.29	1.07	4.1870%	3.2519%	3.9148%
49	3,336	122	106.9	129.8	1.14	0.94	3.6571%	3.2050%	3.8910%
50	3,328	113	98.2	125.4	1.15	0.90	3.3954%	2.9504%	3.7685%
51	3,405	126	102.0	130.3	1.24	0.97	3.7004%	2.9953%	3.8262%
52	3,451	141	102.4	130.3	1.38	1.08	4.0858%	2.9675%	3.7753%
53	3,350	140	99.8	127.8	1.40	1.10	4.1791%	2.9805%	3.8138%
54	3,376	122	101.6	127.7	1.20	0.96	3.6137%	3.0087%	3.7819%
55	3,399	132	106.9	119.8	1.24	1.10	3.8835%	3.1437%	3.5231%
56	3,315	107	98.8	111.4	1.08	0.96	3.2278%	2.9795%	3.3603%
57	3,312	98	98.1	111.2	1.00	0.88	2.9589%	2.9616%	3.3576%
58	3,289	115	98.6	111.3	1.17	1.03	3.4965%	2.9976%	3.3829%
59	3,087	93	91.7	104.3	1.01	0.89	3.0126%	2.9712%	3.3778%
60	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	119,376	6,228	5,447.2	6,291.0	1.14	0.99	5.2171%	4.5631%	5.2699%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 8A

Fiscal Years 2011 - 2015

Withdrawal Experience of Active General Employees

Females

Age	Life Years Exposed	Number of Withdrawals			Ratio of Actual to		Withdrawal Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
17	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
18	10	0	2.2	2.8	0.00	0.00	0.0000%	22.3800%	28.3800%
19	130	37	28.2	35.1	1.31	1.05	28.4615%	21.6999%	27.0371%
20	339	75	68.8	83.0	1.09	0.90	22.1239%	20.2805%	24.4732%
21	579	126	106.3	125.1	1.19	1.01	21.7617%	18.3549%	21.6132%
22	848	194	131.5	166.4	1.48	1.17	22.8774%	15.5057%	19.6227%
23	1,294	235	185.2	212.7	1.27	1.10	18.1607%	14.3090%	16.4354%
24	1,730	269	225.7	263.0	1.19	1.02	15.5491%	13.0466%	15.2025%
25	2,161	290	256.0	300.5	1.13	0.96	13.4197%	11.8451%	13.9068%
26	2,463	303	244.7	288.1	1.24	1.05	12.3021%	9.9366%	11.6957%
27	2,712	283	251.7	293.0	1.12	0.97	10.4351%	9.2808%	10.8029%
28	3,029	263	238.5	259.1	1.10	1.02	8.6827%	7.8747%	8.5528%
29	3,185	241	225.3	248.3	1.07	0.97	7.5667%	7.0742%	7.7970%
30	3,422	213	216.7	238.4	0.98	0.89	6.2244%	6.3336%	6.9679%
31	3,606	226	207.0	223.1	1.09	1.01	6.2673%	5.7403%	6.1863%
32	3,711	226	199.3	215.7	1.13	1.05	6.0900%	5.3709%	5.8113%
33	3,707	206	176.0	196.4	1.17	1.05	5.5571%	4.7467%	5.2974%
34	3,652	177	166.0	178.9	1.07	0.99	4.8467%	4.5457%	4.8991%
35	3,572	170	157.7	176.3	1.08	0.96	4.7592%	4.4139%	4.9367%
36	3,450	164	148.5	167.3	1.10	0.98	4.7536%	4.3048%	4.8493%
37	3,427	153	144.6	163.4	1.06	0.94	4.4645%	4.2180%	4.7693%
38	3,362	153	133.5	157.3	1.15	0.97	4.5509%	3.9721%	4.6783%
39	3,357	139	130.6	155.1	1.06	0.90	4.1406%	3.8904%	4.6195%
40	3,438	147	125.3	148.8	1.17	0.99	4.2757%	3.6454%	4.3272%
41	3,480	148	128.5	151.2	1.15	0.98	4.2529%	3.6924%	4.3438%
42	3,521	148	128.3	150.1	1.15	0.99	4.2034%	3.6444%	4.2619%
43	3,566	139	127.2	143.7	1.09	0.97	3.8979%	3.5670%	4.0307%
44	3,516	151	121.1	138.4	1.25	1.09	4.2947%	3.4430%	3.9371%
45	3,429	151	120.4	136.6	1.25	1.11	4.4036%	3.5115%	3.9847%
46	3,560	154	128.2	148.3	1.20	1.04	4.3258%	3.6025%	4.1669%
47	3,611	144	131.0	149.0	1.10	0.97	3.9878%	3.6270%	4.1250%
48	3,692	142	129.1	147.9	1.10	0.96	3.8462%	3.4955%	4.0050%
49	3,780	168	128.6	149.5	1.31	1.12	4.4444%	3.4027%	3.9547%
50	3,804	138	124.4	144.5	1.11	0.96	3.6278%	3.2698%	3.7976%
51	3,795	135	114.8	134.2	1.18	1.01	3.5573%	3.0252%	3.5367%
52	3,839	130	113.6	131.7	1.14	0.99	3.3863%	2.9598%	3.4305%
53	3,759	123	112.7	133.0	1.09	0.92	3.2721%	2.9980%	3.5376%
54	3,699	139	111.1	128.9	1.25	1.08	3.7578%	3.0024%	3.4849%
55	3,584	114	117.3	121.3	0.97	0.94	3.1808%	3.2735%	3.3837%
56	3,515	131	113.6	117.6	1.15	1.11	3.7269%	3.2329%	3.3458%
57	3,326	106	103.6	106.5	1.02	0.99	3.1870%	3.1142%	3.2035%
58	3,090	88	93.5	96.8	0.94	0.91	2.8479%	3.0265%	3.1324%
59	2,810	74	82.4	85.0	0.90	0.87	2.6335%	2.9341%	3.0243%
60	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	124,560	6,813	5,998.7	6,811.9	1.14	1.00	5.4697%	4.8159%	5.4688%

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 8A **Fiscal Years 2011 - 2015**
Withdrawal Experience of Active General Employees **Males**

Age	Life Years Exposed	Number of Withdrawals			Ratio of Actual to		Withdrawal Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
<25	4,800	807	742.9	798.5	1.09	1.01	16.8125%	15.4768%	16.6356%
25-29	13,641	1,235	1,117.0	1,260.4	1.11	0.98	9.0536%	8.1886%	9.2396%
30-34	17,330	963	814.4	955.9	1.18	1.01	5.5568%	4.6993%	5.5158%
35-39	16,773	708	632.8	728.9	1.12	0.97	4.2211%	3.7728%	4.3458%
40-44	17,171	671	614.9	710.8	1.09	0.94	3.9078%	3.5812%	4.1393%
45-49	16,349	657	527.2	637.2	1.25	1.03	4.0186%	3.2245%	3.8974%
50-54	16,910	642	504.0	641.4	1.27	1.00	3.7966%	2.9805%	3.7932%
55-59	16,402	545	494.0	557.9	1.10	0.98	3.3228%	3.0120%	3.4013%
60-64	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
65-69	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
70-74	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
75-79	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
80-84	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
85-89	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
90-94	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
95-99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100 and over	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	119,376	6,228	5,447.2	6,291.0	1.14	0.99	5.2171%	4.5631%	5.2699%

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 8A **Fiscal Years 2011 - 2015**
Withdrawal Experience of Active General Employees **Females**

Age	Life Years Exposed	Number of Withdrawals			Ratio of Actual to		Withdrawal Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
<25	4,930	936	747.8	888.2	1.25	1.05	18.9858%	15.1689%	18.0156%
25-29	13,550	1,380	1,216.2	1,389.0	1.13	0.99	10.1845%	8.9760%	10.2506%
30-34	18,098	1,048	965.0	1,052.5	1.09	1.00	5.7907%	5.3322%	5.8154%
35-39	17,168	779	714.9	819.4	1.09	0.95	4.5375%	4.1640%	4.7731%
40-44	17,521	733	630.4	732.2	1.16	1.00	4.1836%	3.5979%	4.1788%
45-49	18,072	759	637.3	731.3	1.19	1.04	4.1999%	3.5265%	4.0465%
50-54	18,896	665	576.6	672.3	1.15	0.99	3.5193%	3.0513%	3.5577%
55-59	16,325	513	510.5	527.2	1.00	0.97	3.1424%	3.1271%	3.2294%
60-64	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
65-69	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
70-74	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
75-79	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
80-84	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
85-89	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
90-94	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
95-99	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
100 and over	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	124,560	6,813	5,998.7	6,811.9	1.14	1.00	5.4697%	4.8159%	5.4688%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 8B

Withdrawal Experience of Active General Employees

Males

Year	Life Years Exposed	Number of Withdrawals			Ratio of Actual to		Withdrawal Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	23,828	1,026	1,109.1	1,262.4	0.93	0.81	4.3059%	4.6546%	5.2981%
2012	23,806	1,032	1,066.5	1,235.3	0.97	0.84	4.3350%	4.4799%	5.1892%
2013	24,254	1,214	1,119.5	1,303.6	1.08	0.93	5.0054%	4.6157%	5.3747%
2014	23,938	1,342	1,088.3	1,257.1	1.23	1.07	5.6061%	4.5464%	5.2515%
2015	23,550	1,614	1,063.9	1,232.5	1.52	1.31	6.8535%	4.5175%	5.2336%
<i>Total</i>	<i>119,376</i>	<i>6,228</i>	<i>5,447.2</i>	<i>6,291.0</i>	<i>1.14</i>	<i>0.99</i>	<i>5.2171%</i>	<i>4.5631%</i>	<i>5.2699%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 8B

Withdrawal Experience of Active General Employees

Females

Year	Life Years Exposed	Number of Withdrawals			Ratio of Actual to		Withdrawal Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
2011	25,096	1,158	1,263.5	1,421.7	0.92	0.81	4.6143%	5.0348%	5.6652%
2012	25,167	1,172	1,221.1	1,378.7	0.96	0.85	4.6569%	4.8519%	5.4783%
2013	25,149	1,424	1,190.4	1,347.3	1.20	1.06	5.6623%	4.7335%	5.3572%
2014	24,635	1,357	1,141.8	1,307.4	1.19	1.04	5.5084%	4.6349%	5.3070%
2015	24,513	1,702	1,181.9	1,356.8	1.44	1.25	6.9433%	4.8214%	5.5350%
<i>Total</i>	<i>124,560</i>	<i>6,813</i>	<i>5,998.7</i>	<i>6,811.9</i>	<i>1.14</i>	<i>1.00</i>	<i>5.4697%</i>	<i>4.8159%</i>	<i>5.4688%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 9A

Fiscal Years 2011 - 2015

Withdrawal Experience of Judicial Officers

Males and Females

Service	Life Years Exposed	Number of Withdrawals			Ratio of Actual to		Withdrawal Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
0	254	3	5.1	2.5	0.59	1.18	1.1811%	2.0000%	1.0000%
1	214	2	4.3	2.1	0.47	0.93	0.9346%	2.0000%	1.0000%
2	261	0	2.6	0.8	0.00	0.00	0.0000%	1.0000%	0.3000%
3	138	0	1.4	0.4	0.00	0.00	0.0000%	1.0000%	0.3000%
4	204	0	2.0	0.6	0.00	0.00	0.0000%	1.0000%	0.3000%
5	135	1	0.7	0.4	1.48	2.47	0.7407%	0.5000%	0.3000%
6	166	0	0.7	0.5	0.00	0.00	0.0000%	0.4500%	0.3000%
7	135	1	0.5	0.4	1.85	2.47	0.7407%	0.4000%	0.3000%
8	146	0	0.5	0.4	0.00	0.00	0.0000%	0.3500%	0.3000%
9	94	1	0.3	0.3	3.55	3.55	1.0638%	0.3000%	0.3000%
10	1,544	5	3.9	4.6	1.30	1.08	0.3238%	0.2500%	0.3000%
<i>Total</i>	<i>3,291</i>	<i>13</i>	<i>22.0</i>	<i>13.1</i>	<i>0.59</i>	<i>0.99</i>	<i>0.3950%</i>	<i>0.6686%</i>	<i>0.3995%</i>

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 9B **Fiscal Years 2011 - 2015**
Super Annuation Retirement Experience of Judicial Officers **Males and Females**

Service	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
49	0	0	0.0	0.0	0.00	0.00	0.0000%	2.2700%	5.0000%
50	0	0	0.0	0.0	0.00	0.00	0.0000%	2.2700%	5.0000%
51	0	0	0.0	0.0	0.00	0.00	0.0000%	2.2700%	5.0000%
52	0	0	0.0	0.0	0.00	0.00	0.0000%	2.2700%	5.0000%
53	2	0	0.0	0.1	0.00	0.00	0.0000%	2.2700%	5.0000%
54	3	0	0.1	0.2	0.00	0.00	0.0000%	2.2700%	5.0000%
55	4	0	0.1	0.2	0.00	0.00	0.0000%	2.2700%	5.0000%
56	6	0	0.1	0.3	0.00	0.00	0.0000%	2.2700%	5.0000%
57	14	2	0.3	0.7	6.29	2.86	14.2857%	2.2700%	5.0000%
58	15	0	0.3	0.8	0.00	0.00	0.0000%	2.2700%	5.0000%
59	21	1	2.1	1.1	0.48	0.95	4.7619%	10.0000%	5.0000%
60	272	14	13.6	13.6	1.03	1.03	5.1471%	5.0000%	5.0000%
61	235	9	11.8	11.8	0.77	0.77	3.8298%	5.0000%	5.0000%
62	230	17	11.5	11.5	1.48	1.48	7.3913%	5.0000%	5.0000%
63	222	6	11.1	11.1	0.54	0.54	2.7027%	5.0000%	5.0000%
64	214	11	10.7	10.7	1.03	1.03	5.1402%	5.0000%	5.0000%
65	189	14	18.9	18.9	0.74	0.74	7.4074%	10.0000%	10.0000%
66	170	15	17.0	17.0	0.88	0.88	8.8235%	10.0000%	10.0000%
67	141	19	14.1	14.1	1.35	1.35	13.4752%	10.0000%	10.0000%
68	104	6	10.4	10.4	0.58	0.58	5.7692%	10.0000%	10.0000%
69	81	11	40.5	8.1	0.27	1.36	13.5802%	50.0000%	10.0000%
70	60	59	60.0	60.0	0.98	0.98	98.3333%	100.0000%	100.0000%
71	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
72	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
73	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
74	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
75	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
76	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
77	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
78	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
79	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
80	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
Total	1,983	184	222.6	190.4	0.83	0.97	9.2789%	11.2279%	9.6016%

Table 9B **Fiscal Years 2011 - 2015**
Early Retirement Experience of Judicial Officers **Males and Females**

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
17 to 49	531	1	2.7	1.1	0.38	0.94	0.1883%	0.5000%	0.2000%
50 to 59	1624	29	19.5	29.2	1.49	0.99	1.7857%	1.2000%	1.8000%
Total	2,155	30	22.1	30.3	1.35	0.99	1.3921%	1.0275%	1.4058%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 10A

Fiscal Years 2011 - 2015

Withdrawal Experience of Legislators

Males and Females

Service	Life Years Exposed	Number of Withdrawals			Ratio of Actual to		Withdrawal Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
0	44	0	2.2	1.8	0.00	0.00	0.0000%	5.0000%	4.0000%
1	62	6	3.1	2.5	1.94	2.42	9.6774%	5.0000%	4.0000%
2	40	0	2.0	1.6	0.00	0.00	0.0000%	5.0000%	4.0000%
3	54	2	5.4	2.2	0.37	0.93	3.7037%	10.0000%	4.0000%
4	35	1	1.8	1.4	0.57	0.71	2.8571%	5.0000%	4.0000%
5	37	1	3.7	1.5	0.27	0.68	2.7027%	10.0000%	4.0000%
6	18	1	0.9	0.7	1.11	1.39	5.5556%	5.0000%	4.0000%
7	22	4	1.1	2.6	3.64	1.52	18.1818%	5.0000%	12.0000%
8	12	0	0.6	1.4	0.00	0.00	0.0000%	5.0000%	12.0000%
9	16	2	0.8	1.9	2.50	1.04	12.5000%	5.0000%	12.0000%
10	123	2	1.5	2.0	1.30	1.02	1.6260%	1.2500%	1.6000%
<i>Total</i>	463	19	23.1	19.6	0.82	0.97	4.1037%	4.9865%	4.2263%

COMMONWEALTH OF PENNSYLVANIA
State Employees' Retirement System

Table 10B

Fiscal Years 2011 - 2015

Super Annuation Retirement Experience of Legislators

Males and Females

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
49	0	0	0.0	0.0	0.00	0.00	0.0000%	5.0000%	5.0000%
50	40	4	2.0	2.0	2.00	2.00	10.0000%	5.0000%	5.0000%
51	34	2	1.7	1.7	1.18	1.18	5.8824%	5.0000%	5.0000%
52	33	1	1.7	1.7	0.61	0.61	3.0303%	5.0000%	5.0000%
53	40	1	2.0	2.0	0.50	0.50	2.5000%	5.0000%	5.0000%
54	41	4	3.1	2.1	1.30	1.95	9.7561%	7.5000%	5.0000%
55	38	2	2.9	1.9	0.70	1.05	5.2632%	7.5000%	5.0000%
56	43	1	3.2	2.2	0.31	0.47	2.3256%	7.5000%	5.0000%
57	40	1	3.0	2.0	0.33	0.50	2.5000%	7.5000%	5.0000%
58	36	2	2.7	1.8	0.74	1.11	5.5556%	7.5000%	5.0000%
59	31	3	3.7	1.6	0.81	1.94	9.6774%	12.0000%	5.0000%
60	36	2	4.3	1.8	0.46	1.11	5.5556%	12.0000%	5.0000%
61	31	0	3.7	1.6	0.00	0.00	0.0000%	12.0000%	5.0000%
62	32	1	3.8	1.6	0.26	0.63	3.1250%	12.0000%	5.0000%
63	35	4	4.2	3.9	0.95	1.04	11.4286%	12.0000%	11.0000%
64	29	5	7.3	3.2	0.69	1.57	17.2414%	25.0000%	11.0000%
65	27	4	6.8	3.0	0.59	1.35	14.8148%	25.0000%	11.0000%
66	25	1	6.3	2.8	0.16	0.36	4.0000%	25.0000%	11.0000%
67	23	2	5.8	2.5	0.35	0.79	8.6957%	25.0000%	11.0000%
68	21	2	5.3	2.3	0.38	0.87	9.5238%	25.0000%	11.0000%
69	19	2	4.8	2.1	0.42	0.96	10.5263%	25.0000%	11.0000%
70	12	2	3.0	1.8	0.67	1.11	16.6667%	25.0000%	15.0000%
71	8	1	2.0	1.2	0.50	0.83	12.5000%	25.0000%	15.0000%
72	6	1	1.5	0.9	0.67	1.11	16.6667%	25.0000%	15.0000%
73	7	0	1.8	1.1	0.00	0.00	0.0000%	25.0000%	15.0000%
74	8	1	2.0	1.2	0.50	0.83	12.5000%	25.0000%	15.0000%
75	8	1	2.0	1.2	0.50	0.83	12.5000%	25.0000%	15.0000%
76	5	1	1.3	0.8	0.80	1.33	20.0000%	25.0000%	15.0000%
77	6	2	1.5	0.9	1.33	2.22	33.3333%	25.0000%	15.0000%
78	4	1	1.0	0.6	1.00	1.67	25.0000%	25.0000%	15.0000%
79	2	0	0.5	0.3	0.00	0.00	0.0000%	25.0000%	15.0000%
80	3	0	3.0	3.0	0.00	0.00	0.0000%	100.0000%	100.0000%
Total	723	54	97.5	56.3	0.55	0.96	7.4689%	13.4855%	7.7925%

Table 10B

Fiscal Years 2011 - 2015

Early Retirement Experience of Legislators

Males and Females

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
17 to 49	226	6	6.8	6.1	0.88	0.98	2.6549%	3.0000%	2.7000%
50 to 59	0	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	226	6	6.8	6.1	0.88	0.98	2.6549%	3.0000%	2.7000%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 11A

Fiscal Years 2011 - 2015

Withdrawal Experience of State Police and Hazardous Duty Employees

Males and Females

Service	Life Years Exposed	Number of Withdrawals			Ratio of Actual to		Withdrawal Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
0	4,589	397	688.4	413.0	0.58	0.96	8.6511%	15.0000%	9.0000%
1	4,484	194	224.2	179.4	0.87	1.08	4.3265%	5.0000%	4.0000%
2	4,903	170	147.1	147.1	1.16	1.16	3.4673%	3.0000%	3.0000%
3	4,430	126	110.8	132.9	1.14	0.95	2.8442%	2.5000%	3.0000%
4	4,654	78	69.8	93.1	1.12	0.84	1.6760%	1.5000%	2.0000%
5	4,861	60	43.7	48.6	1.37	1.23	1.2343%	0.9000%	1.0000%
6	4,347	34	28.3	43.5	1.20	0.78	0.7821%	0.6500%	1.0000%
7	3,704	23	20.4	18.5	1.13	1.24	0.6210%	0.5500%	0.5000%
8	3,494	12	14.0	17.5	0.86	0.69	0.3434%	0.4000%	0.5000%
9	3,225	20	8.1	16.1	2.48	1.24	0.6202%	0.2500%	0.5000%
10	31,581	59	63.2	63.2	0.93	0.93	0.1868%	0.2000%	0.2000%
<i>Total</i>	<i>74,272</i>	<i>1,173</i>	<i>1,417.8</i>	<i>1,172.8</i>	<i>0.83</i>	<i>1.00</i>	<i>1.5793%</i>	<i>1.9089%</i>	<i>1.5791%</i>

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 11B

Fiscal Years 2011 - 2015

Super Annuation Retirement Experience of Hazardous Duty Employees

Males and Females

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
49	0	0	0	0.0	0.00	0.00	0.0000%	7.1800%	10.0000%
50	2,494	334	175	249.4	1.91	1.34	13.3921%	7.0000%	10.0000%
51	2,151	173	151	215.1	1.15	0.80	8.0428%	7.0000%	10.0000%
52	1,946	147	136	194.6	1.08	0.76	7.5540%	7.0000%	10.0000%
53	1,843	163	129	184.3	1.26	0.88	8.8443%	7.0000%	10.0000%
54	1,735	173	121	173.5	1.42	1.00	9.9712%	7.0000%	10.0000%
55	1,564	172	109	156.4	1.57	1.10	10.9974%	7.0000%	10.0000%
56	1,454	119	102	145.4	1.17	0.82	8.1843%	7.0000%	10.0000%
57	1,346	142	94	134.6	1.51	1.05	10.5498%	7.0000%	10.0000%
58	1,259	127	88	125.9	1.44	1.01	10.0874%	7.0000%	10.0000%
59	1,157	131	116	115.7	1.13	1.13	11.3224%	10.0000%	10.0000%
60	1,078	152	129	204.8	1.18	0.74	14.1002%	12.0000%	19.0000%
61	954	187	153	181.3	1.23	1.03	19.6017%	16.0000%	19.0000%
62	810	203	243	153.9	0.84	1.32	25.0617%	30.0000%	19.0000%
63	614	116	92	116.7	1.26	0.99	18.8925%	15.0000%	19.0000%
64	489	95	73	92.9	1.30	1.02	19.4274%	15.0000%	19.0000%
65	367	93	92	99.1	1.01	0.94	25.3406%	25.0000%	27.0000%
66	235	82	59	63.5	1.40	1.29	34.8936%	25.0000%	27.0000%
67	144	37	36	38.9	1.03	0.95	25.6944%	25.0000%	27.0000%
68	88	18	22	23.8	0.82	0.76	20.4545%	25.0000%	27.0000%
69	61	14	15	16.5	0.92	0.85	22.9508%	25.0000%	27.0000%
70	40	7	10	10.8	0.70	0.65	17.5000%	25.0000%	27.0000%
71	32	10	8	10.2	1.25	0.98	31.2500%	25.0000%	32.0000%
72	19	7	5	6.1	1.47	1.15	36.8421%	25.0000%	32.0000%
73	11	2	3	3.5	0.73	0.57	18.1818%	25.0000%	32.0000%
74	10	3	3	3.2	1.20	0.94	30.0000%	25.0000%	32.0000%
75	7	2	2	2.2	1.14	0.89	28.5714%	25.0000%	32.0000%
76	4	2	1	1.3	1.43	1.56	50.0000%	35.0000%	32.0000%
77	2	1	1	0.6	1.43	1.56	50.0000%	35.0000%	32.0000%
78	1	1	0	0.3	2.86	3.13	100.0000%	35.0000%	32.0000%
79	2	0	0.7	0.6	0.00	0.00	0.0000%	35.0000%	32.0000%
80	2	0	2.0	2.0	0.00	0.00	0.0000%	100.0000%	100.0000%
Total	21,919	2,713	2,170.2	2,727.1	1.25	0.99	12.3774%	9.9012%	12.4415%

Table 11B

Fiscal Years 2011 - 2015

Early Retirement Experience of State Police and Hazardous Duty Employees

Males and Females

Age	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
17 to 49	51188	707	409.5	716.6	1.73	0.99	1.3812%	0.8000%	1.4000%
50 to 59	4	0	0.0	0.0	0.00	0.00	0.0000%	0.0000%	0.0000%
Total	51,192	707	409.5	716.6	1.73	0.99	1.3811%	0.7999%	1.3999%

COMMONWEALTH OF PENNSYLVANIA

State Employees' Retirement System

Table 12A

Fiscal Years 2011 - 2015

Super Annuation Retirement Experience of State Police

Males and Females

Service	Life Years Exposed	Number of Retirements			Ratio of Actual to		Retirement Rate		
		Actual	Expected	Recommended	Expected	Recommended	Actual	Expected	Recommended
19	1,210	48	60.5	48.4	0.79	0.99	3.9669%	5.0000%	4.0000%
20	1,210	17	60.5	12.1	0.28	1.40	1.4050%	5.0000%	1.0000%
21	1,192	3	59.6	11.9	0.05	0.25	0.2517%	5.0000%	1.0000%
22	1,155	5	57.8	11.6	0.09	0.43	0.4329%	5.0000%	1.0000%
23	988	1	49.4	9.9	0.02	0.10	0.1012%	5.0000%	1.0000%
24	897	579	134.6	448.5	4.30	1.29	64.5485%	15.0000%	50.0000%
25	326	181	163.0	228.2	1.11	0.79	55.5215%	50.0000%	70.0000%
26	163	49	32.6	65.2	1.50	0.75	30.0613%	20.0000%	40.0000%
27	117	30	23.4	46.8	1.28	0.64	25.6410%	20.0000%	40.0000%
28	93	20	18.6	37.2	1.08	0.54	21.5054%	20.0000%	40.0000%
29	72	15	14.4	28.8	1.04	0.52	20.8333%	20.0000%	40.0000%
30	48	16	14.4	24.0	1.11	0.67	33.3333%	30.0000%	50.0000%
31	21	6	4.2	8.4	1.43	0.71	28.5714%	20.0000%	40.0000%
32	15	4	6.0	6.0	0.67	0.67	26.6667%	40.0000%	40.0000%
33	8	5	3.2	4.0	1.56	1.25	62.5000%	40.0000%	50.0000%
34	1	1	0.4	0.5	2.50	2.00	100.0000%	40.0000%	50.0000%
35	1	0	0.5	0.5	0.00	0.00	0.0000%	50.0000%	50.0000%
36	1	1	0.5	0.5	2.00	2.00	100.0000%	50.0000%	50.0000%
37	0	0	0.0	0.0	0.00	0.00	0.0000%	50.0000%	50.0000%
38	0	0	0.0	0.0	0.00	0.00	0.0000%	50.0000%	50.0000%
39	0	0	0.0	0.0	0.00	0.00	0.0000%	50.0000%	50.0000%
40	0	0	0.0	0.0	0.00	0.00	0.0000%	100.0000%	100.0000%
<i>Total</i>	<i>7,518</i>	<i>981</i>	<i>703.5</i>	<i>992.5</i>	<i>1.39</i>	<i>0.99</i>	<i>13.0487%</i>	<i>9.3575%</i>	<i>13.2010%</i>