

JACKSONVILLE POLICE AND FIRE PENSION PLAN

Experience Study

October 1, 2011 Through September 30, 2015

**Prepared by:
Pension Board Consultants, Inc.
195 14th Street, Suite 2307
Atlanta, Georgia 30309-2677
(404) 702-7802**

PENSION BOARD CONSULTANTS, INC.
CONSULTING, ACTUARIAL & ADMINISTRATIVE SERVICES

JARMON WELCH, A.S.A.
PRESIDENT

KELLY SHELTON
ACTUARY
DIRECT: 678-445-3149

195 FOURTEENTH ST. NE
SUITE 2307
ATLANTA, GEORGIA 30309-2677
404-702-7802
EMAIL: PENBRD@AOL.COM

December 28, 2015

Board of Trustees
Jacksonville Police and Fire Pension Fund
One West Adams Street, Suite 100
Jacksonville, Florida 32202-3616

Dear Trustees:

We are enclosing our study of Plan experience from 10-1-11 thru 9-30-15. This was performed in order to update the economic and demographic actuarial assumptions. Related cost calculations have been based on the data, plan, and assumptions shown in our 10-1-15 actuarial report.

10-1-15 Assumption Changes

1. Mortality updated as required by Ordinance 2015-304-E
2. Salary increases reduced 0.5% consistent with requested prior calculations
3. Turnover increased 50%

The cost impact of these changes was slightly negative.

Future Assumption Changes

1. The FRS mortality table is required beginning October 1, 2016
2. The payroll increase assumption should be reduced from 3.25% annually to 2.5% (the inflation assumption)

I am a member of the American Academy of Actuaries and meet its Qualification Standards to render the actuarial opinions contained herein.

Cordially Yours,



Jarmon Welch, A.S.A.
President

JACKSONVILLE POLICE AND FIRE PENSION PLAN

TABLE OF CONTENTS

	<u>Page</u>
Reasons for Review.....	1
10-1-14 Actuarial Assumptions.....	2
Expected versus Actual Experience 10-1-11 thru 9-30-15.....	3
Changes In Actuarial Assumptions.....	4
Exhibits.....	6

JACKSONVILLE POLICE AND FIRE PENSION PLAN

Reasons for Review

In conjunction with the October 1, 2015, valuation, an experience review of the actuarial assumptions has been performed. Each of the ten assumptions was reviewed.

It has been four years since an experience review was performed for this Fund. Meanwhile, the actuarial profession and other parties have continued to raise numerous questions regarding the assumptions used in pension plan valuations and administration. Thus, we performed an experience review in order to update the assumptions and methods for valuing the Plan in the future.

An experience review compares the actual experience of the plan to the expected experience produced by the actuarial assumptions. In order to evaluate the actual experience of the Plan, a review of the valuation data for the years October 1, 2011, through September 30, 2015, was performed in order to find the number of actual retirements, deaths, disabilities, terminations, and actual pay increases. The expected experience is calculated by multiplying the number of members expected to be exposed to a decrement by the probability of the decrement occurring. The expected experience is calculated on five-year age brackets using the average age for each specific five-year age bracket.

JACKSONVILLE POLICE AND FIRE PENSION PLAN

10-1-14 Actuarial Assumptions

Economic

1. Investment Yield 7% annually
2. Salary increase 4% annually
3. Pensioner COLA 3% annually for pensioners and actives on 6-19-15 with 20 years of service, otherwise 2.5%
4. DROP Load 2% on active and DROP liabilities for interest greater than 7%
5. Payroll Increase 3.25% annually

Demographic

1. Mortality No improvements projected past 10-1-15, RP- 2000, AA, sex distinct, combined healthy or disabled

- 2&3. Turnover No vested refunds or disability recoveries

<u>Age</u>	<u>Withdrawal</u>	<u>Disability per 1,000</u>
25	.024	.36
35	.012	.48
45	.000	1.20

4. Married 75% actives, 50% retirees (tax status), spouses 3 years younger
5. Retirement 40% at 20 years, 30% thereafter to 30 years (or age 61)

JACKSONVILLE POLICE AND FIRE PENSION PLAN

Expected versus Actual Experience 10-1-11 thru 9-30-15

Economic

1. 7% investment yield: no change

See Exhibit A

2. Salary: 4% assumed annually, last 6 years average 2.8%

Recent DROP class had highest paid member, compounded annually 21 years, with pay increase of 5.95% and lowest paid member of 5.11%

See Exhibit B

3. Pensioner COLA: Added 2.5% <20 YOS on 6-19-15

See Exhibit C

4. DROP Load: No change

5. Payroll increased an average of 0.18% during the last 10 years
(State law limits to 10 year actual average unless permission to do otherwise granted).

See Exhibit D

Demographic

1. Mortality

	<u>Expected Deaths</u>	<u>Actual Deaths</u>
Retired and DROPs	140	148
Disabled Retirees	10	10
Surviving Spouses	70	75
Active Deaths	9	7

See Exhibit E

- 2 & 3. Turnover

	<u>Expected</u>	<u>Actual</u>
Withdrawal	64	176
Disabilities	10	7

4. Married: Being reviewed

5. Retirement %: No change

	<u>Expected</u>	<u>Actual</u>
4 years experience	353	481

JACKSONVILLE POLICE AND FIRE PENSION PLAN

Changes in Actuarial Assumptions

Economic

Some references are:

CPI-U history, 20-Year Treasury Rates versus TIPS and Social Security records provide data. Also the Society of Professional Forecasting and Public Funds provide information. See (on internet) the actuarial firm Horizon's 2015 Survey of Capital Market Assumptions.

1. Investment Yield

We assume 7.00% annually for your portfolio. This is composed of 2.5% inflation plus 4.5% real return. Many investment consultants assume a 4.5% real return in their portfolio capital market assumptions. Pension actuaries average only a little higher since they assume about 7.65% yields including 3.1% for inflation.

2. Salary Increases

Wages historically have increased over 1% annually more than inflation due to productivity. But this has not generally been true recently for many public pension plans. Due to the steep raises we previously assumed 4.0% annually.

We reduced this to 3.5% annually.

3. Pensioner COLA: Added 2.5% <20 YOS on 6-19-15 as previously discussed.

Recent nationwide studies have shown the following: investment consultants use 10-20 years cost of living assumptions averaging 2.3-2.6%. Pension actuaries assume about 0.5% higher for long term periods. Both parties have been reducing their assumptions in recent years.

We assume 2.5% annually.

4. DROP Load: No change. Members have been dropping somewhat sooner than expected. We do not suggest changing the rates but will keep them under review.

5. Payroll Growth Rate

We recommend this be reduced in the next valuation from 3.25% to the inflation assumption of 2.5%. This would increase FY17 unfunded amortization \$9 million. The State requires this be not more than the average 10 year actual non DROP payroll increase. But this has recently been only slightly above "0". Use of "0" would increase FY17 unfunded amortization \$42 million. While the State required this charge for Jacksonville's other two pension plans, they waived this increase in your 10-1-14 valuation. They referred me to that when I inquired recently about this.

JACKSONVILLE POLICE AND FIRE PENSION PLAN

Changes in Actuarial Assumptions

Demographic

1. Mortality

Active and pensioner deaths as shown on page 4 have been about as expected. Nevertheless, future mortality improvements are expected that have not been anticipated. The State requires us to use the FRS stronger table beginning 10-1-16. But the State also will probably strengthen, again, due to the SOA introduction of MP 2014 and RP 2014. City Ordinance 2015-304-E presumably requires us to immediately use the most recent table proposed.

We increased the tables modestly this year.

2&3. Turnover

Experience on page 4 shows more members have been terminating before DROP or retirement than expected. We increased the rates 50%. No disability change suggested.

4. Married %: Being reviewed

5. Retirement: Review continued

JACKSONVILLE POLICE AND FIRE PENSION PLAN

Exhibit A: Part 1

INVESTMENT YIELD

Current Assumption: 7% annually

Theoretical Earnings of a Pension Portfolio with Asset Mix Shown Below

Component	Expected Rate of Pay Increase	Expected Net Rate of Investment Return				
		Domestic Equity	International Equity	Fixed Income	Real Estate	MLPs/ Energy
		35.0%	20.0%	22.5%	15.0%	7.5%
Rate of Inflation as measured by CPI	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Productivity & Merit	1.0%					
Real Return		5.4%	5.5%	1.3%	4.5%	5.5%
Total Assumption	3.5%	7.9%	8.0%	3.8%	7.0%	8.0%

Asset Mix: It is assumed that a future investment policy would find the fund invested as shown in each of the five investment categories.

A combination of economic theory and analysis of past rates of return/inflation, and wage increases suggest that the premiums defined above, although not precisely determinable, are real and persistent.

Conclusions

Based on actual pension portfolio history and our best estimate of the portfolio's future earnings, an investment yield on the assets of 7.0% could be assumed with a salary increase assumption of 3.5%.

Exhibit A: Part 2

Calendar Year	S&P 500 (including dividends)	Barclay US Aggregate Bond	JPFPF (Plan Year net yields)
1987	5.25%	2.76%	15.00%
1988	16.61	7.89	5.50
1989	31.69	14.53	20.57
1990	-3.10	8.96	2.78
1991	30.47	16.00	19.46
1992	7.67	7.40	10.54
1993	10.08	9.75	10.64
1994	1.32	2.92	-0.62
1995	37.58	18.47	19.38
1996	22.96	3.63	12.86
1997	33.36	9.63	22.33
1998	28.58	8.69	1.67
1999	21.04	-0.82	13.08
2000	-9.10	11.63	11.09
2001	-11.88	8.44	-6.72
2002	-22.10	10.26	-6.68
2003	28.68	4.10	12.28
2004	10.88	4.34	9.33
2005	4.91	2.43	11.15
2006	15.79	4.33	8.07
2007	5.49	6.97	15.69
2008	-37.00	5.24	-16.12
2009	26.46	5.93	-4.22
2010	15.06	6.54	7.70
2011	2.11	7.84	-2.07
2012	16.00	4.21	22.33
2013	32.39	-2.07	16.81
2014	13.69	5.97	10.73
Geometric Average:	10.42%	6.90%	8.23%

JACKSONVILLE POLICE AND FIRE PENSION PLAN

Exhibit B: Graph 1

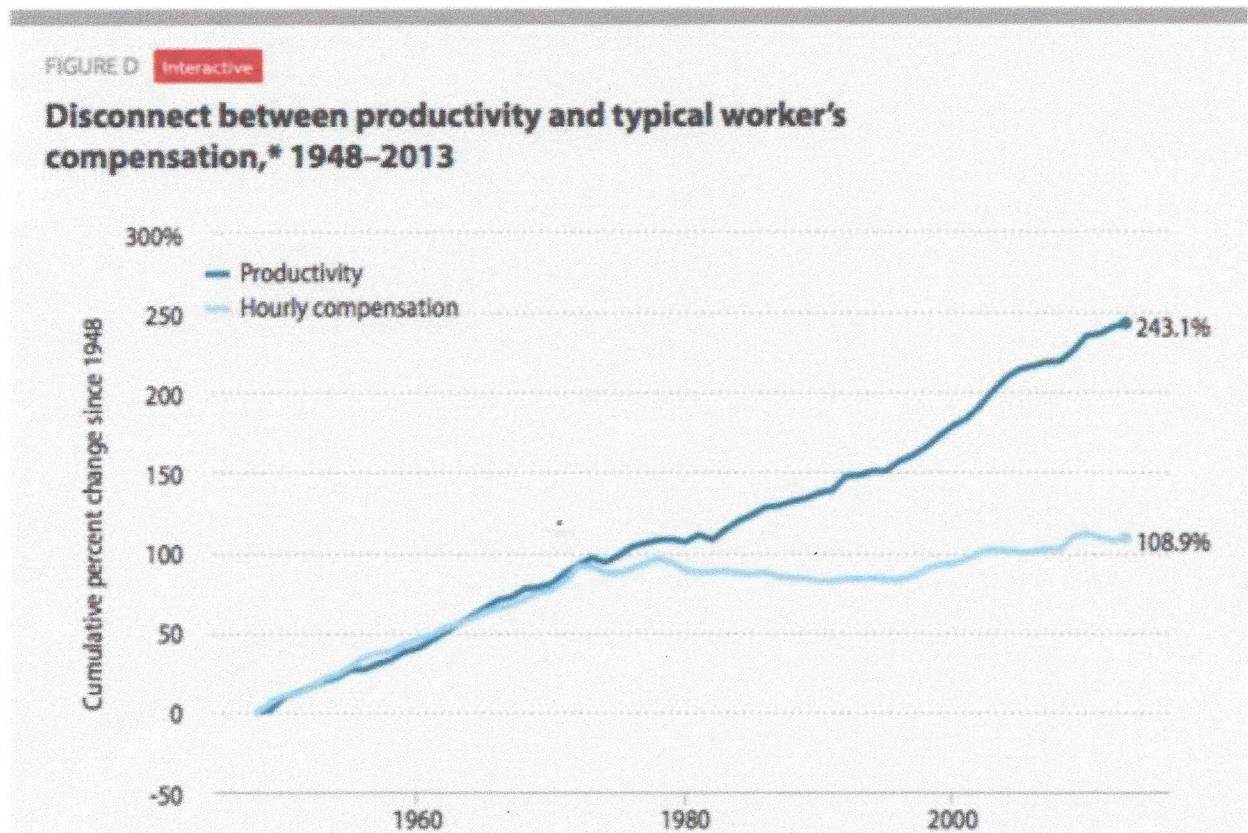


Exhibit B: Graph 2

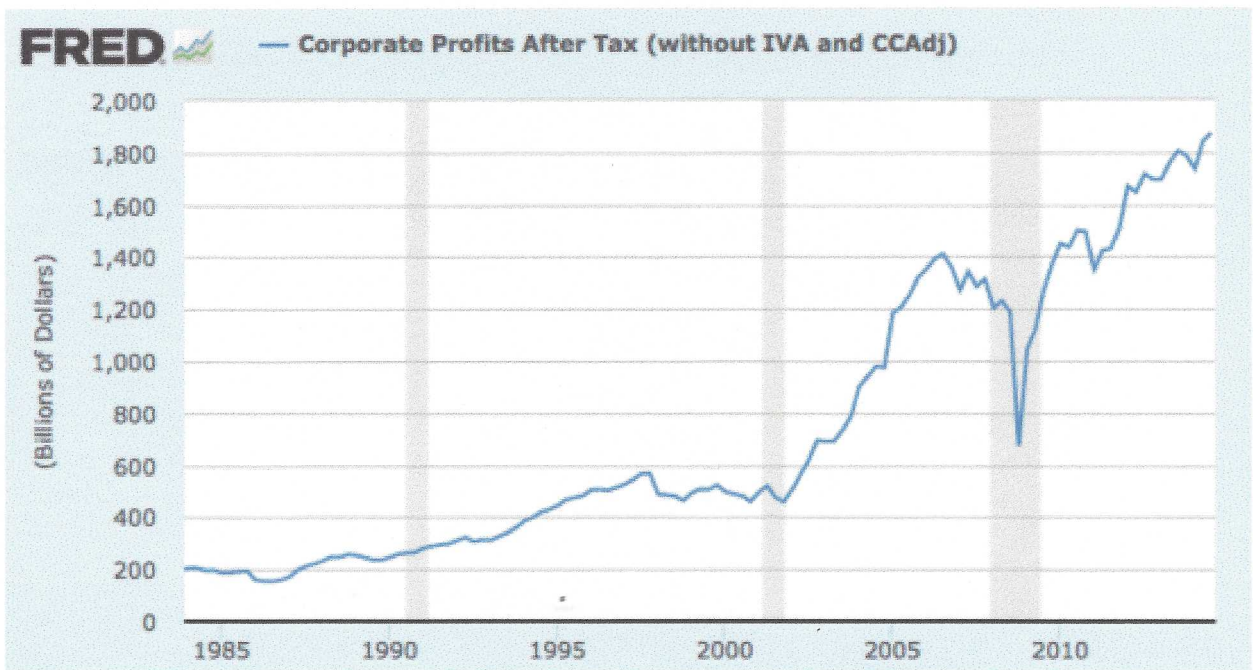
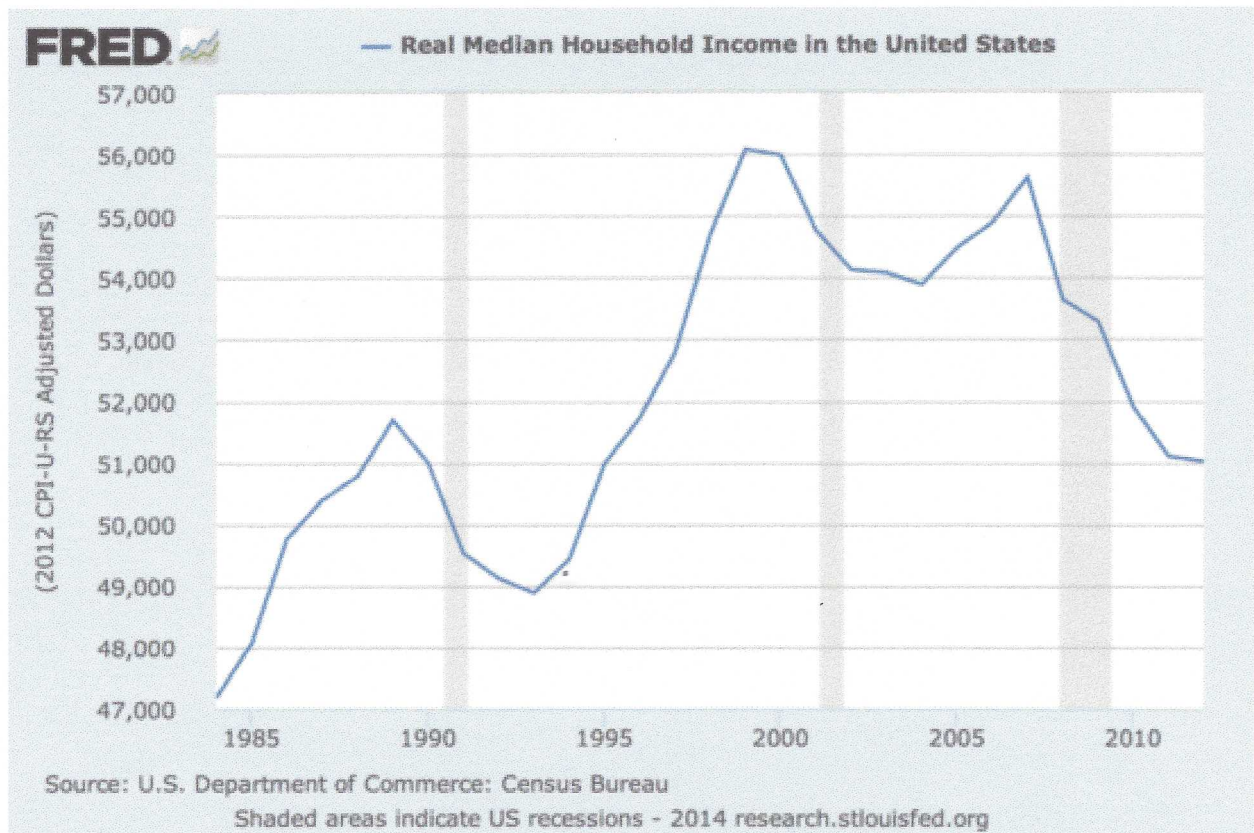


Exhibit B: Graph 3



JACKSONVILLE POLICE AND FIRE PENSION FUND

Exhibit C

Social Security COLA for the last 22 years

Date	SS COLA	SS COLA Compounded
Jan-95	2.80%	102.80
Jan-96	2.60%	105.47
Jan-97	2.90%	108.53
Jan-98	2.10%	110.81
Jan-99	1.30%	112.25
Jan-00	2.50%	115.06
Jan-01	3.50%	119.08
Jan-02	2.60%	122.18
Jan-03	1.40%	123.89
Jan-04	2.10%	126.49
Jan-05	2.70%	129.91
Jan-06	4.10%	135.23
Jan-07	3.30%	139.70
Jan-08	2.30%	142.91
Jan-09	5.80%	151.20
Jan-10	0.00%	151.20
Jan-11	0.00%	151.20
Jan-12	3.60%	156.64
Jan-13	1.70%	159.31
Jan-14	1.50%	161.69
Jan-15	1.70%	164.44
Jan-16	0.00%	164.44

Geometric Average: 2.29%

JACKSONVILLE POLICE AND FIRE PENSION FUND

State of Florida Information

Exhibit D: Part 1

Average Annual Growth in Payroll, last 10 Years

<u>Valuation Date</u>	<u>Covered Valuation Payroll</u>
10/01/2005	\$130,392,283
10/01/2006	\$134,694,392
10/01/2007	\$143,006,154
10/01/2008	\$148,276,743
10/01/2009	\$155,557,729
10/01/2010	\$158,046,680
10/01/2011	\$148,967,906
10/01/2012	\$133,611,459
10/01/2013	\$130,972,174
10/01/2014	\$134,521,216
10/01/2015	\$132,735,243

Total % Increase:

$$\frac{\$132,735,243 - \$130,392,283}{\$130,392,283} = 1.80\%$$

Annual % Increase (10 year average): 0.18%

Exhibit D: Part 2

10-1-15 UNFUNDED ACTUARIAL ACCRUED LIABILITY			
\$1,801,134,165			
Fiscal Year	Annual Payroll Increase:		Payments:
	3.25%	2.50%	0.00%
2016	124,070,687	133,042,854	166,217,623
2017	128,102,984	136,368,925	166,217,623
2018	132,266,331	139,778,148	166,217,623
2019	136,564,987	143,272,602	166,217,623
2020	141,003,349	146,854,417	166,217,623
2021	145,585,958	150,525,778	166,217,623
2022	150,317,502	154,288,922	166,217,623
2023	155,202,820	158,146,145	166,217,623
2024	160,246,912	162,099,799	166,217,623
2025	165,454,937	166,152,294	166,217,623
2026	170,832,222	170,306,101	166,217,623
2027	176,384,269	174,563,754	166,217,623
2028	182,116,758	178,927,847	166,217,623
2029	188,035,553	183,401,044	166,217,623
2030	194,146,708	187,986,070	166,217,623
2031	200,456,476	192,685,722	166,217,623
2032	206,971,312	197,502,865	166,217,623
2033	213,697,879	202,440,436	166,217,623
2034	220,643,061	207,501,447	166,217,623
2035	227,813,960	212,688,983	166,217,623
2036	235,217,914	218,006,208	166,217,623

* Interest only \$1,801,134,165 X .07 = \$126,079,392

JACKSONVILLE POLICE AND FIRE PENSION FUND

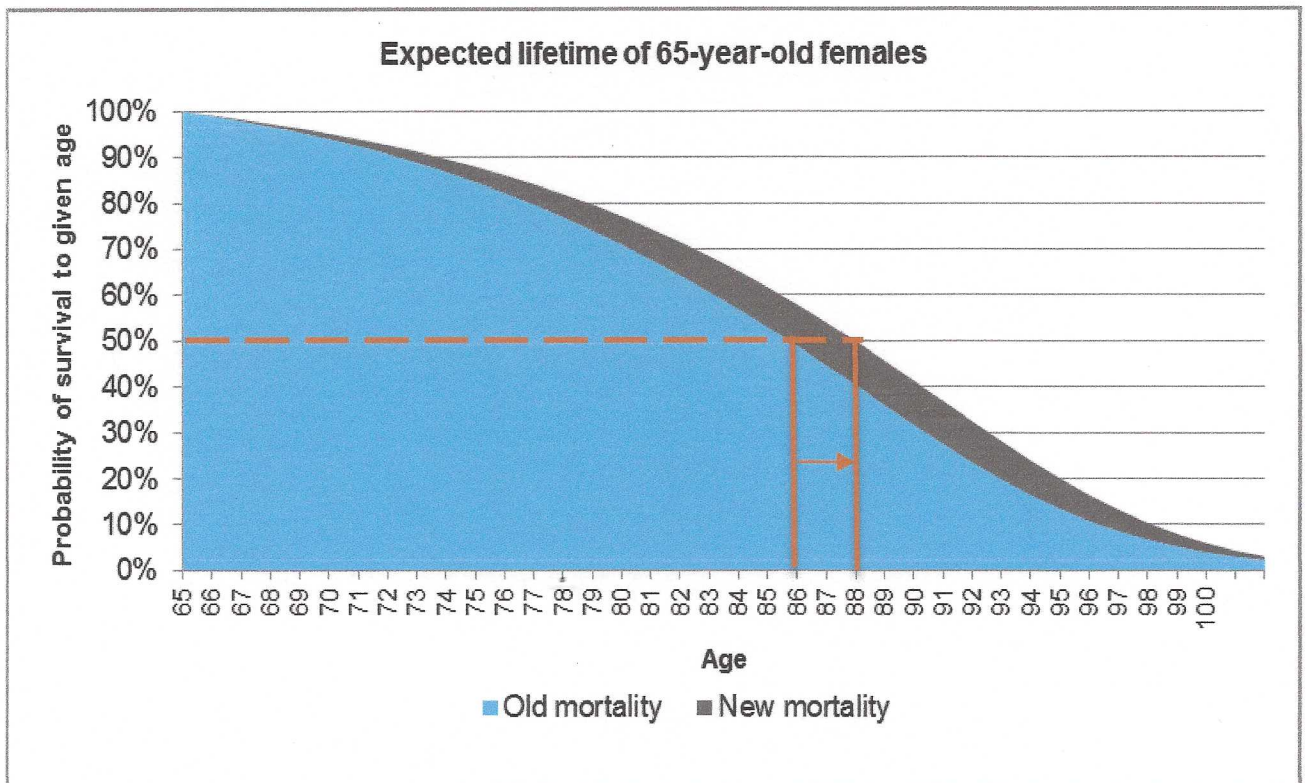
Exhibit E: Part 1

Annuity Value

**Percentage Change of Moving to RP-2014
(with MP-2014) from RP-2000 with Generational
Mortality Improvement Projection Scale AA (6% interest rate)**

	Age	
Males	25	2.5%
	35	2.7%
	45	2.8%
	55	3.0%
	65	4.4%
	75	10.5%
	85	17.4%
Females	25	8.1%
	35	7.7%
	45	7.1%
	55	6.3%
	65	5.5%
	75	8.1%
	85	10.5%

Exhibit E: Part 2



Notes:

1. Old mortality = RP-2000 with Generational Mortality Improvement Projection Scale AA
2. New mortality = RP-2014 (with MP-2014)

Exhibit E: Part 3

Increasing Life Expectancies Over Time

