

Macomb County Employees Retirement System

Five-Year Experience Review:

December 31, 2012 through
December 31, 2017



Agenda

- Assumptions
 - Demographic
 - Economic
- Impact from assumption changes
 - Actuarial Accrued Liability and Normal Cost
 - Employer Contribution
- Summary of recommended tables and assumptions (separate handout)

Actuarial Assumptions

Demographic

- Service retirement
- Disability retirement
- Death in active service
- DROP election & length in DROP
- Withdrawal (termination)
- Death in pay status

Economic

- Rate of Return 7.25%
- Inflation 3.00%
- Salary Varies by location & years of service

Assumptions are generally split into two broad categories – demographic assumptions and economic assumptions. Demographic assumptions are assumptions related to people, while economic assumptions relate to money.

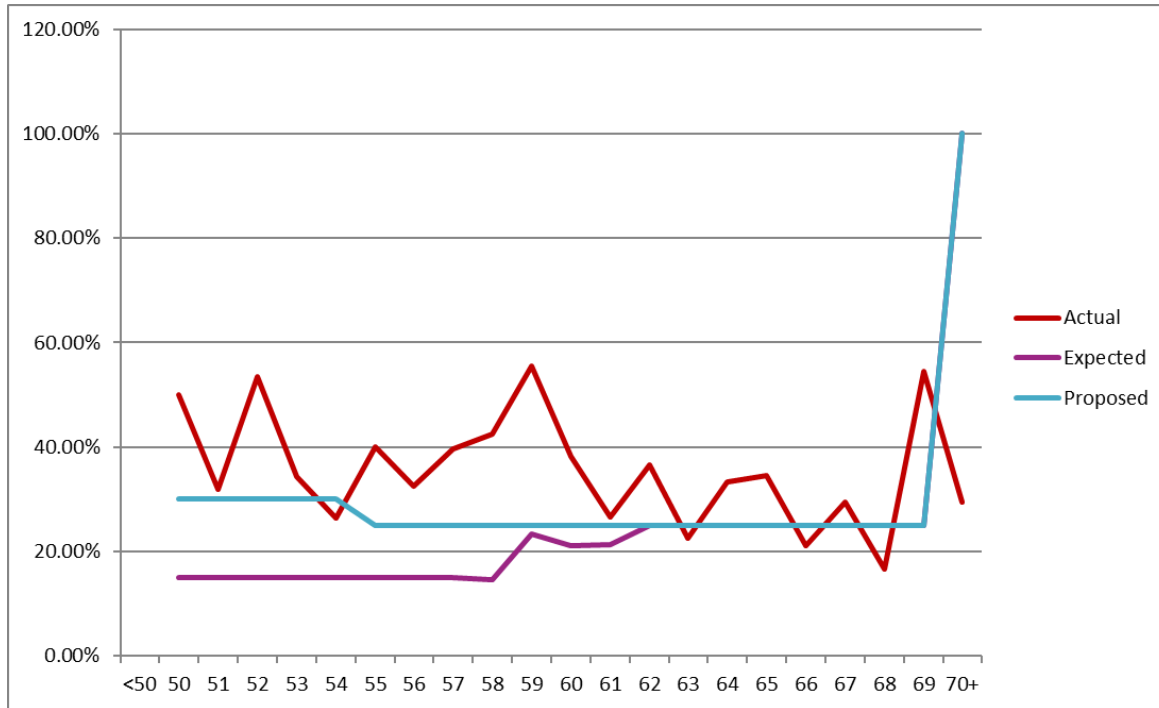
Assumption Setting

Setting Demographic & Economic Assumptions

- Based on 5-Year Experience Review
- Experience Review Completed for Period of December 31, 2012 – December 31, 2017
- Compare Past Experience (“Actual”) with Assumptions (“Expected”) and Determine Trend
- Make Judgment about Future
- Review General Practice
- Implement for December 31, 2018 Actuarial Valuation

Demographic Assumptions Results & Recommendations

Service Retirement – General County & Martha T. Berry



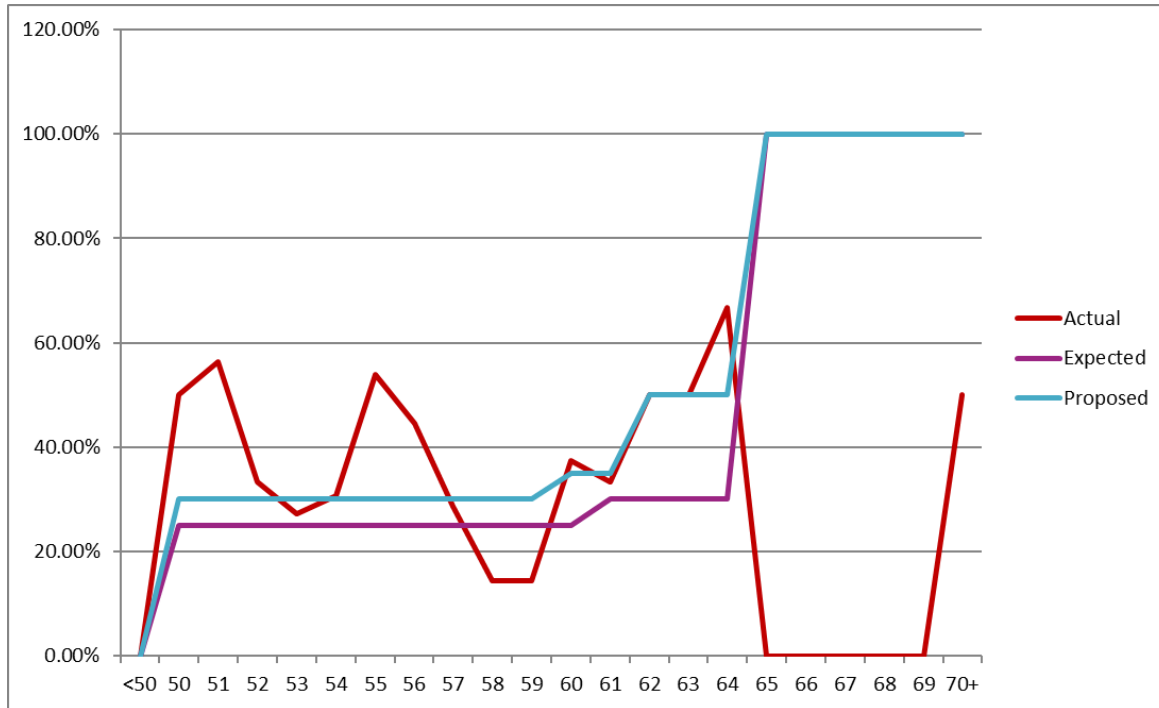
General County & Martha T. Berry

Actual Retirements: 299
 Expected Retirements: 182.00
 Ratio of Actual to Expected: 164%
 Expected under Proposed Rates: 239.80
 Ratio of Actual to Proposed: 124%

Overall experience shows higher than expected retirements.

Recommendation: Use same table for General County and Martha T. Berry. Remove split for those hired before and after 1/1/2002 and use same rates for all hire dates. Increase retirement rates for ages 50-61.

Service Retirement – Road Commission



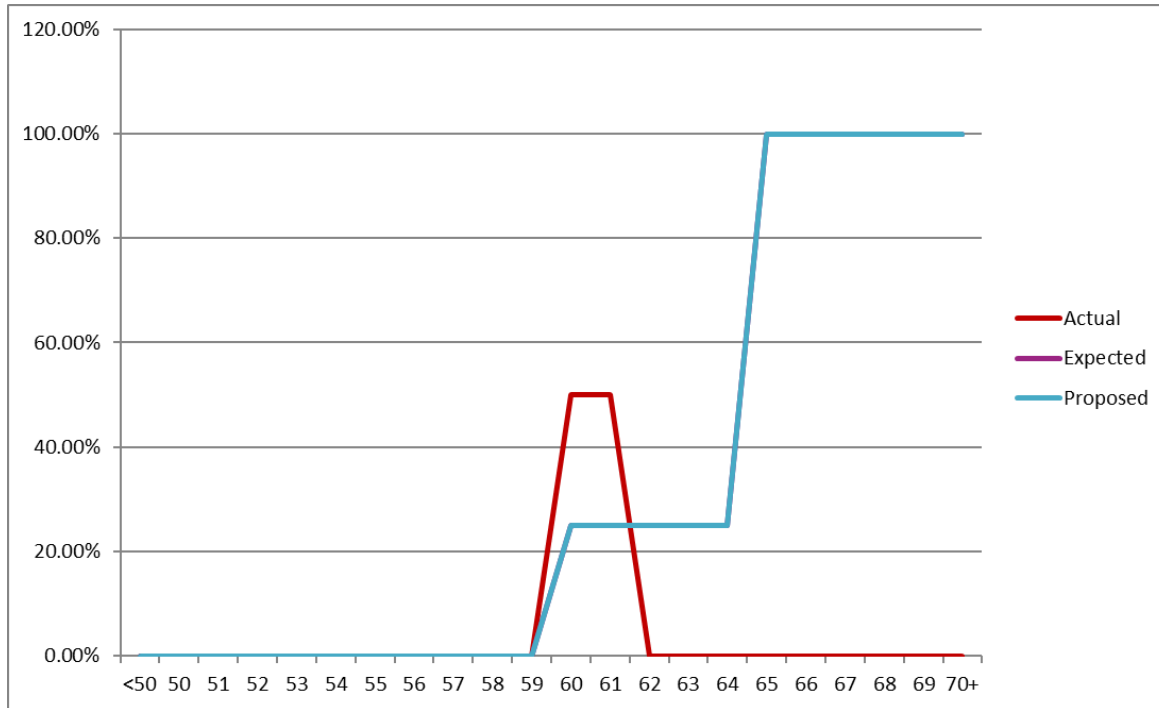
Road Commission

Actual Retirements: 60
 Expected Retirements: 39.25
 Ratio of Actual to Expected: 153%
 Expected under Proposed Rates: 48.30
 Ratio of Actual to Proposed: 124%

Overall experience shows higher than expected retirements.

Recommendation: Increase retirement rates at ages 50-64.

Service Retirement – Sheriff’s Department (<25 Years of Service)



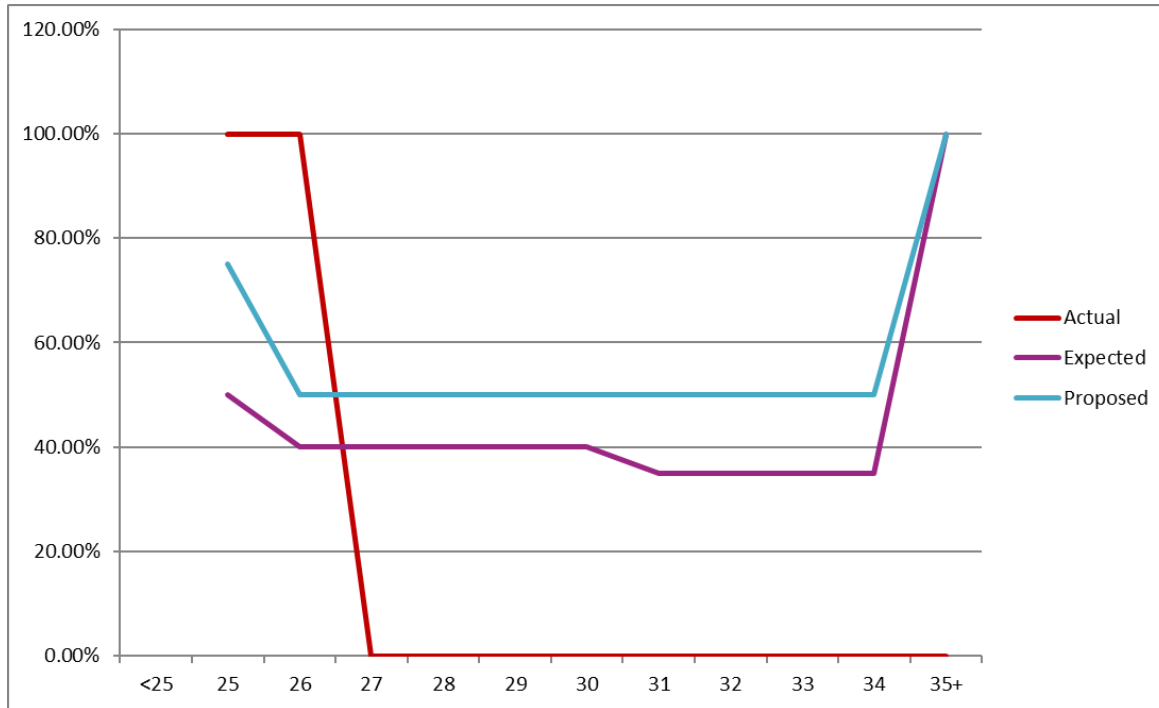
Sheriff’s Department (<25 YOS)

Actual Retirements: 3
 Expected Retirements: 1.50
 Ratio of Actual to Expected: 200%
 Expected under Proposed Rates: 1.50
 Ratio of Actual to Proposed: 200%

Overall experience shows slightly higher than expected retirements.

Recommendation: Leave retirement rates the same due to lack of experience for this group.

Service Retirement – Sheriff’s Department (25+ Years of Service)



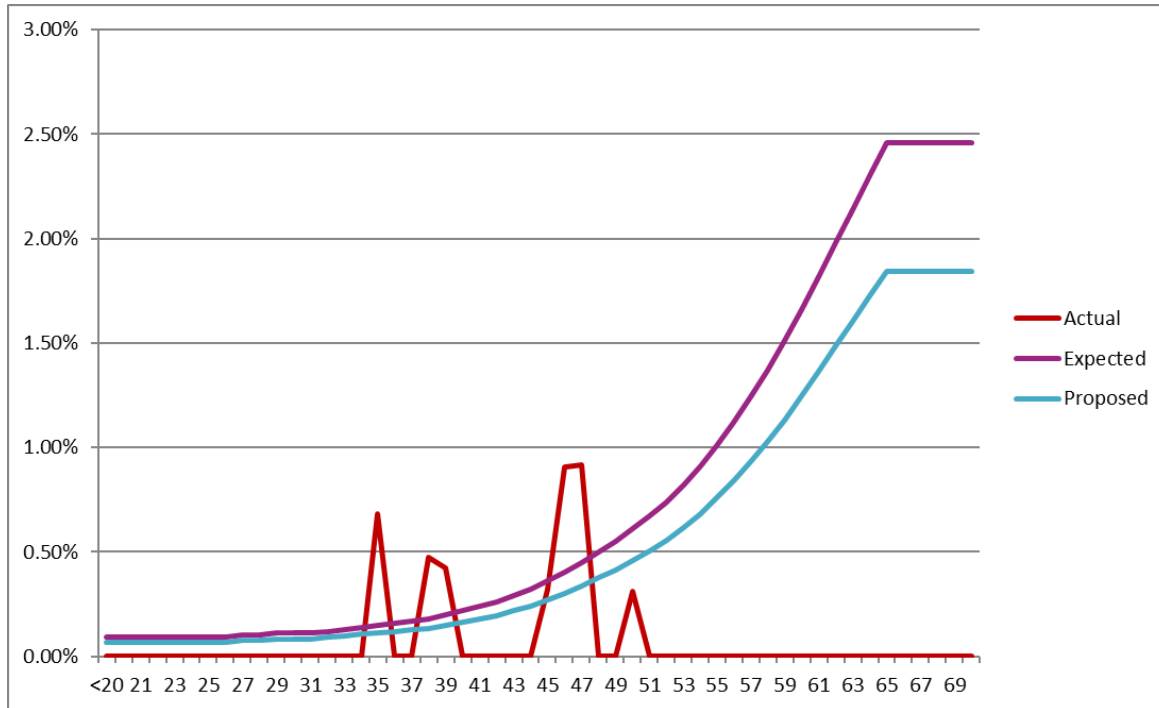
Sheriff’s Department (25+ YOS)

Actual Retirements: 37
 Expected Retirements: 17.80
 Ratio of Actual to Expected: 208%
 Expected under Proposed Rates: 26.75
 Ratio of Actual to Proposed: 138%

Overall experience shows higher than expected retirements.

Recommendation: Increase retirement rate at 25 years of service to 75%, and increase rates to 50% for 26-34 years of service.

Disability



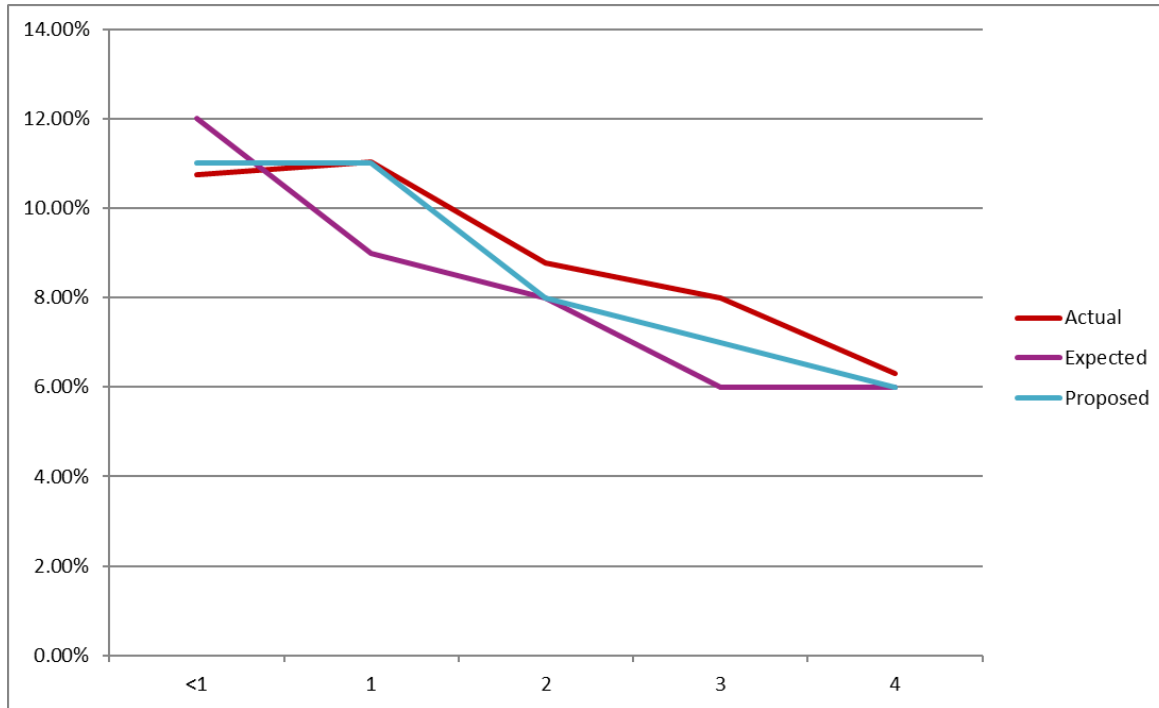
All Employees

Actual Disabilities: 11
Expected Disabilities: 39.63
Ratio of Actual to Expected: 28%
Expected under Proposed Rates: 29.72
Ratio of Actual to Proposed: 37%

Overall experience shows lower than expected disabilities.

Recommendation: Decrease disability rates at all ages by 25%.

Termination – General County (<5 Years of Service)



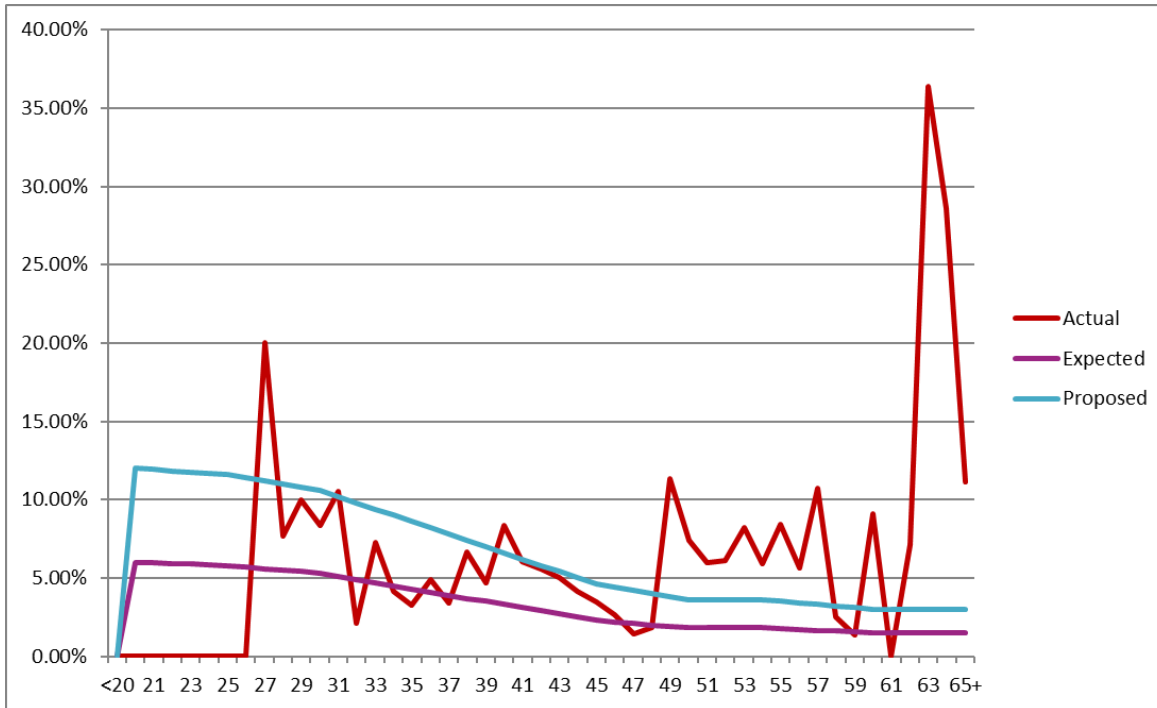
General County (<5 YOS)

Actual Withdrawals: 193
Expected Withdrawals: 171.66
Ratio of Actual to Expected: 112%
Expected under Proposed Rates: 184.77
Ratio of Actual to Proposed: 104%

Overall experience shows slightly higher than expected withdrawals.

Recommendation: Adjust termination rates at 0-1 years of service and 3 years of service to better reflect experience.

Termination – General County (5+ Years of Service)



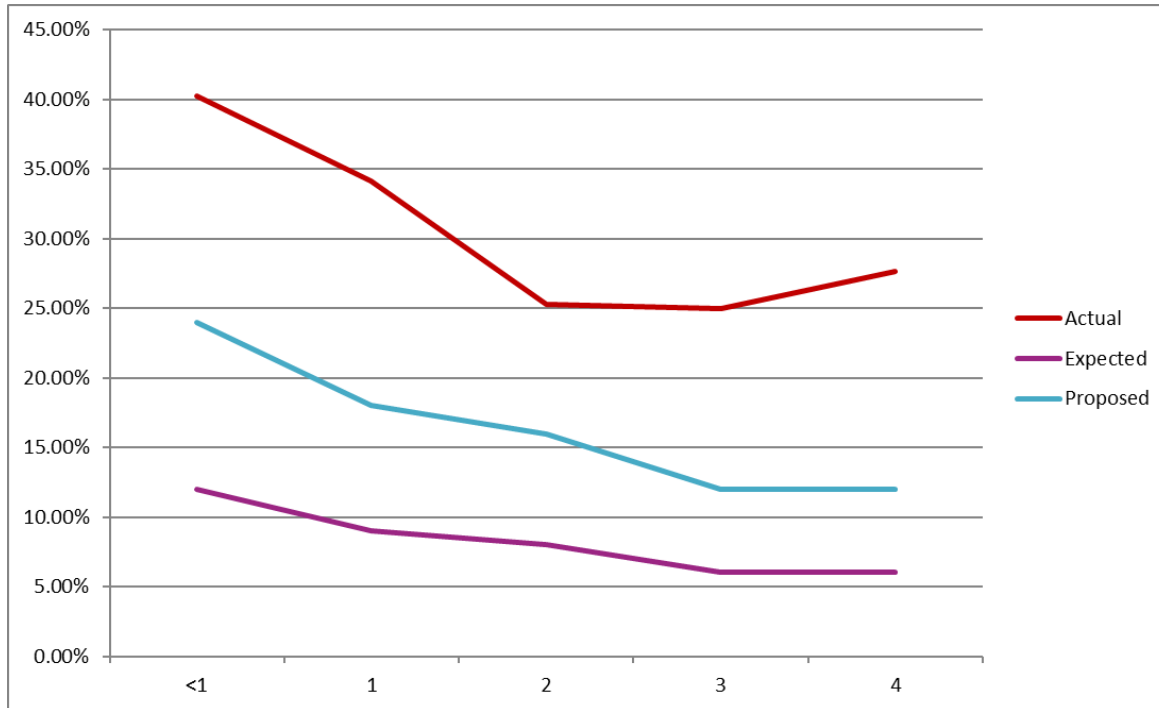
General County (5+ YOS)

Actual Withdrawals: 223
 Expected Withdrawals: 102.67
 Ratio of Actual to Expected: 217%
 Expected under Proposed Rates: 205.35
 Ratio of Actual to Proposed: 109%

Overall experience shows higher than expected withdrawals.

Recommendation: Increase termination rates to two times current rates at all ages.

Termination – Martha T. Berry (<5 Years of Service)



Martha T. Berry (<5 YOS)

Actual Withdrawals: 125

Expected Withdrawals: 34.21

Ratio of Actual to Expected: 365%

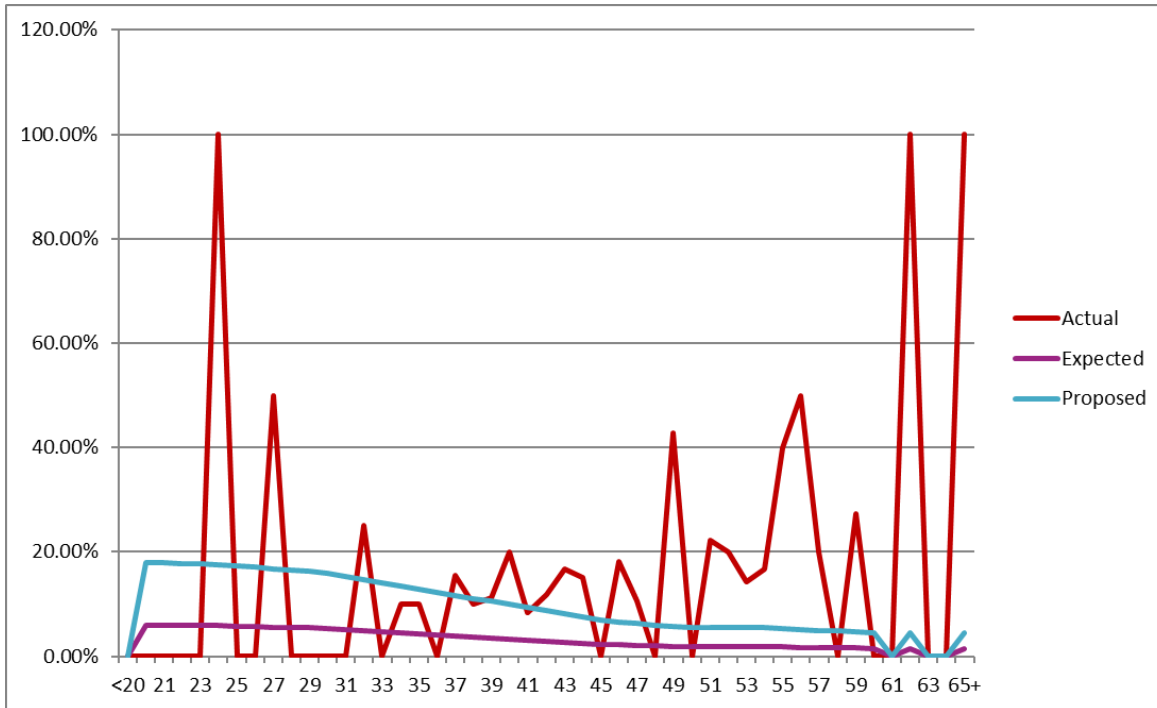
Expected under Proposed Rates: 68.42

Ratio of Actual to Proposed: 183%

Overall experience shows higher than expected withdrawals.

Recommendation: Increase termination rates to two times the current rates for all years of service.

Termination – Martha T. Berry (5+ Years of Service)



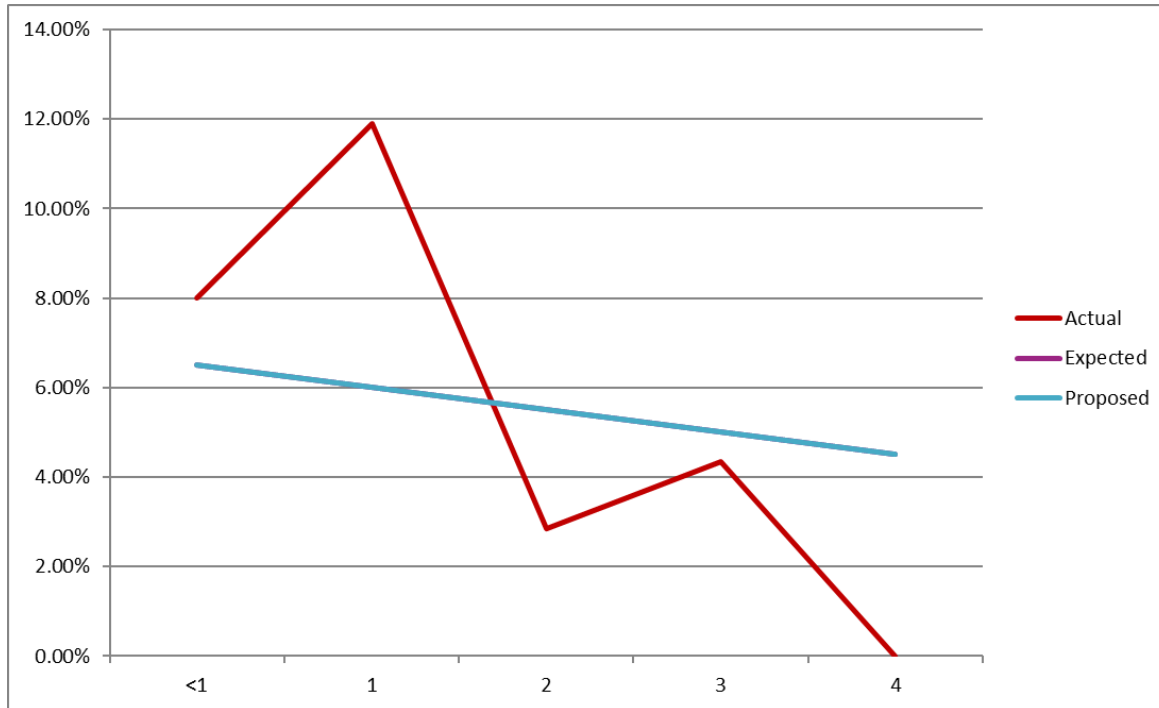
Martha T. Berry (5+ YOS)

Actual Withdrawals: 47
 Expected Withdrawals: 9.00
 Ratio of Actual to Expected: 522%
 Expected under Proposed Rates: 27.00
 Ratio of Actual to Proposed: 174%

Overall experience shows higher than expected withdrawals.

Recommendation: Increase termination rates to three times current rates at all ages.

Termination – Road Commission (<5 Years of Service)



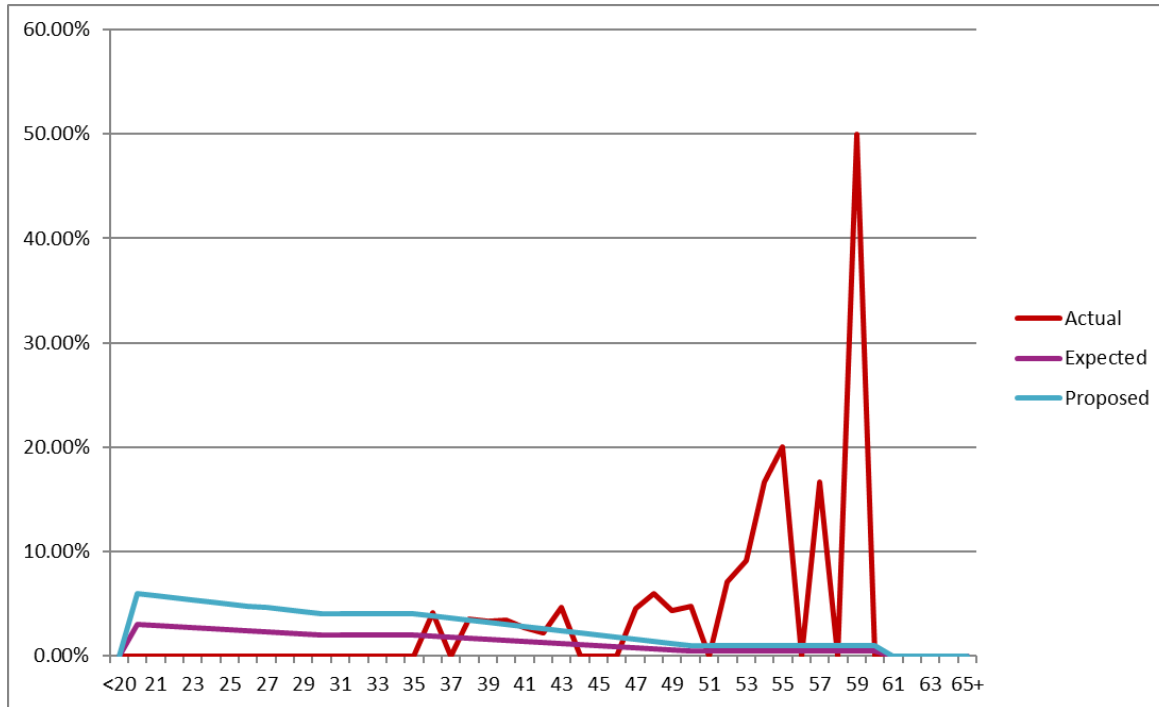
Road Commission (<5 YOS)

Actual Withdrawals: 9
Expected Withdrawals: 7.67
Ratio of Actual to Expected: 117%
Expected under Proposed Rates: 7.67
Ratio of Actual to Proposed: 117%

Overall experience shows slightly higher than expected withdrawals.

Recommendation: Leave termination rates the same due to lack of experience for this group.

Termination – Road Commission (5+ Years of Service)



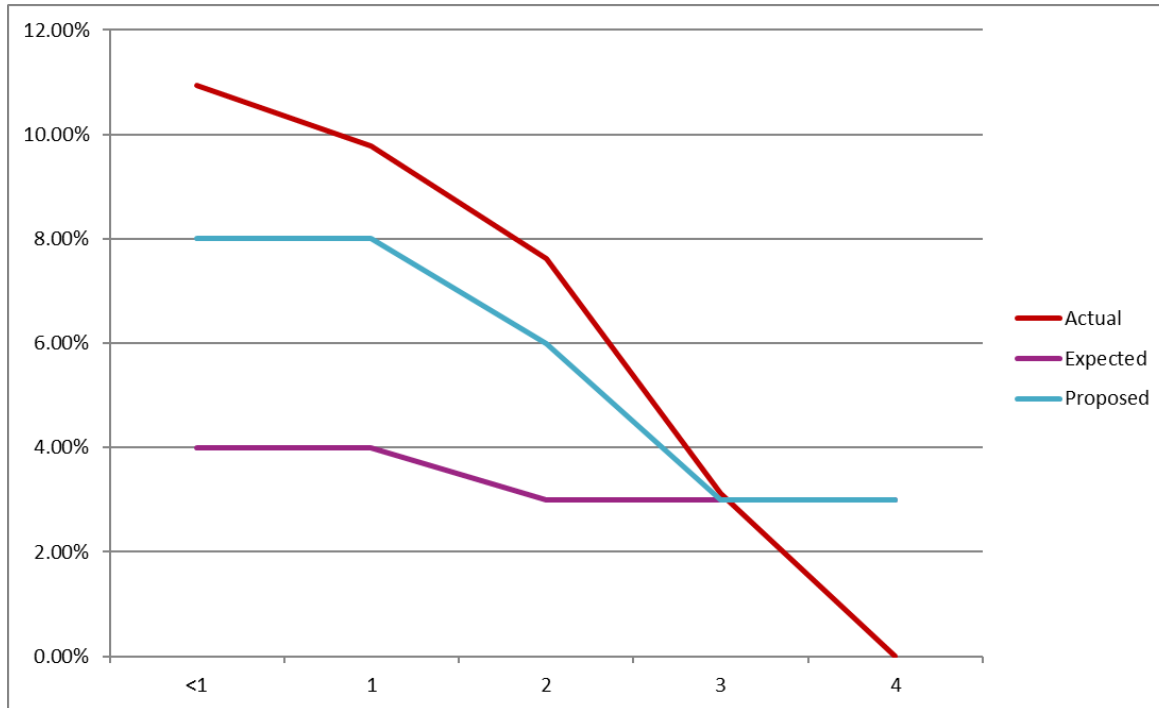
Road Commission (5+ YOS)

Actual Withdrawals: 24
 Expected Withdrawals: 8.73
 Ratio of Actual to Expected: 275%
 Expected under Proposed Rates: 17.46
 Ratio of Actual to Proposed: 137%

Overall experience shows higher than expected withdrawals.

Recommendation: Increase termination rates to two times current rates at all ages.

Termination – Sheriff’s Department (<5 Years of Service)



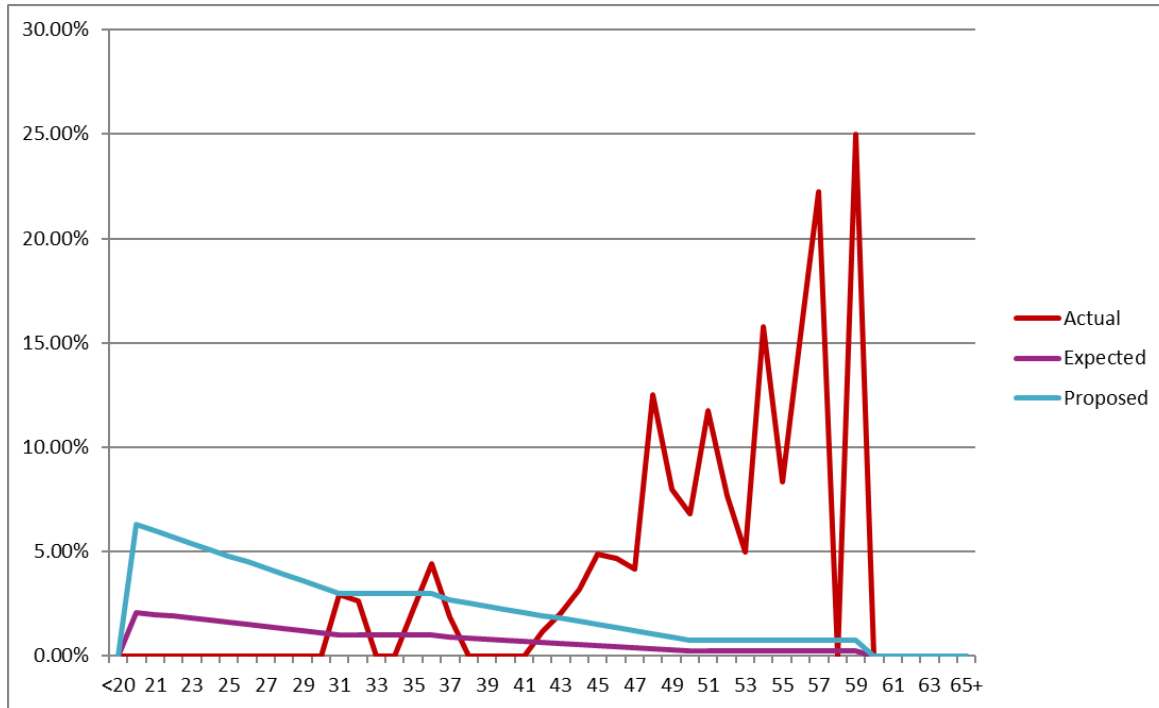
Sheriff’s Department (<5 YOS)

Actual Withdrawals: 30
Expected Withdrawals: 14.30
Ratio of Actual to Expected: 210%
Expected under Proposed Rates: 25.33
Ratio of Actual to Proposed: 118%

Overall experience shows higher than expected withdrawals.

Recommendation: Increase termination rates to two times the current rates for 0-2 years of service.

Termination – Sheriff’s Department (5+ Years of Service)



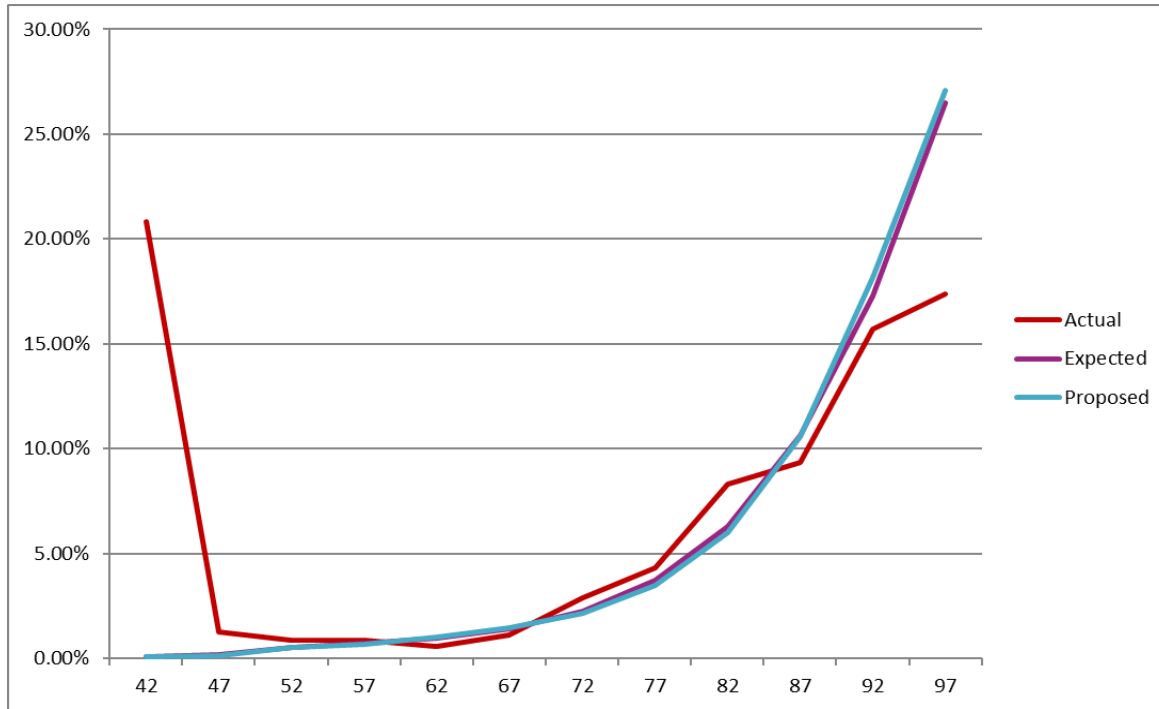
Sheriff’s Department (5+ YOS)

Actual Withdrawals: 53
 Expected Withdrawals: 9.48
 Ratio of Actual to Expected: 559%
 Expected under Proposed Rates: 28.45
 Ratio of Actual to Proposed: 186%

Overall experience shows higher than expected withdrawals.

Recommendation: Increase termination rates to three times current rates at all ages.

Death – Healthy Male Pensioners & Beneficiaries



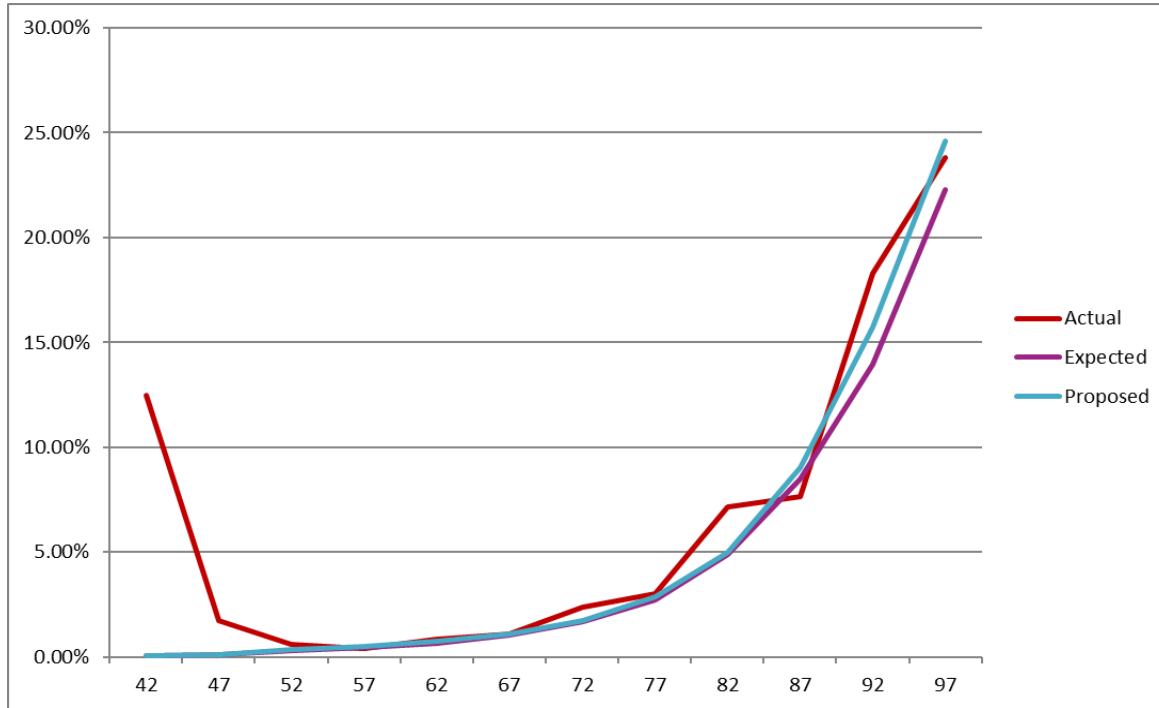
Healthy Pensioners & Beneficiaries - Male

Actual Deaths: 142
 Expected Deaths: 133.08
 Ratio of Actual to Expected: 107%
 Expected under Proposed Rates: 131.75
 Ratio of Actual to Proposed: 108%

Overall experience shows slightly higher than expected deaths. Current Assumption is the RP-2014 Healthy Annuitant table for General County and Martha T. Berry participants and the RP-2014 Blue Collar Mortality Table for Road Commission and Sheriff's Department participants.

Recommendation: Update to the RP-2014 Healthy Annuitant Table using 105% of the male rates for all 4 groups. Also use mortality improvement Scale MP-2018 on a fully generational basis.

Death – Healthy Female Pensioners & Beneficiaries



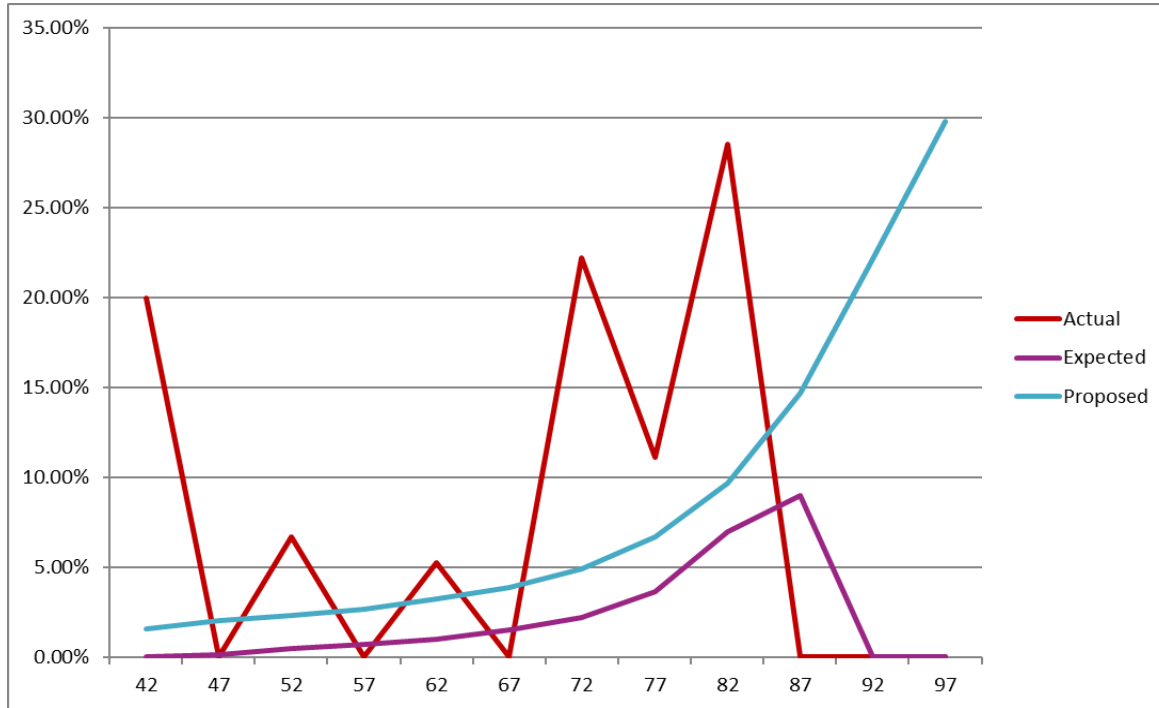
Healthy Pensioners & Beneficiaries - Female

Actual Deaths: 245
 Expected Deaths: 203.75
 Ratio of Actual to Expected: 120%
 Expected under Proposed Rates: 218.25
 Ratio of Actual to Proposed: 112%

Overall experience shows higher than expected deaths. Current Assumption is the RP-2014 Healthy Annuitant table for General County and Martha T. Berry participants and the RP-2014 Blue Collar Mortality Table for Road Commission and Sheriff's Department participants.

Recommendation: Update to the RP-2014 Healthy Annuitant Table using 110% of the female rates for all 4 groups. Also use mortality improvement Scale MP-2018 on a fully generational basis.

Death – Disabled Male Pensioners



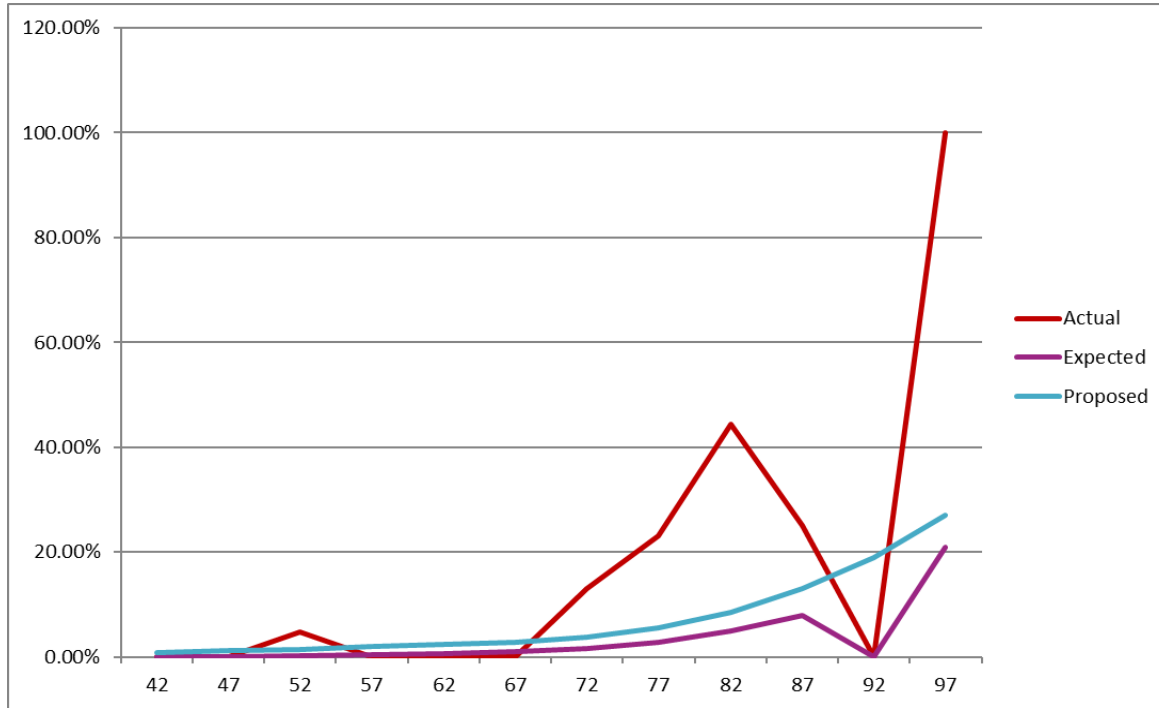
Disabled Pensioners - Male

Actual Deaths: 9
 Expected Deaths: 1.99
 Ratio of Actual to Expected: 452%
 Expected under Proposed Rates: 5.02
 Ratio of Actual to Proposed: 179%

Overall experience shows higher than expected deaths. Current Assumption is the RP-2014 Healthy Annuitant table for General County and Martha T. Berry participants and the RP-2014 Blue Collar Mortality Table for Road Commission and Sheriff’s Department participants.

Recommendation: Update to the RP-2014 Disabled Annuitant Table using 106% of the male rates for all 4 groups. Also use mortality improvement Scale MP-2018 on a fully generational basis.

Death – Disabled Female Pensioners



Disabled Pensioners - Female

Actual Deaths: 14
 Expected Deaths: 2.48
 Ratio of Actual to Expected: 565%
 Expected under Proposed Rates: 5.34
 Ratio of Actual to Proposed: 262%

Overall experience shows higher than expected deaths. Current Assumption is the RP-2014 Healthy Annuitant table for General County and Martha T. Berry participants and the RP-2014 Blue Collar Mortality Table for Road Commission and Sheriff's Department participants.

Recommendation: Update to the RP-2014 Disabled Annuitant Table using 114% of the female rates for all 4 groups. Also use mortality improvement Scale MP-2018 on a fully generational basis.

DROP Assumptions

- **Years in DROP Prior to Commencing a Monthly Benefit**

- Current Assumption: 5 Years
- Proposed Assumption: 4 Years
- Experience: Over the last 5 years, participants in DROP have commenced their monthly benefit an average of 4.22 years after entering DROP status (excluding a few participants with 7+ years in DROP who would skew the average). Participants in DROP have commenced their monthly benefit an average of 3.69 years after entering DROP status (excluding participants with 6+ years in DROP).

- **Percent of Active Participants Electing DROP When Eligible**

- Current Assumption: 100%
- Proposed Assumption: 75%
- Experience: Over the last 3 years, approximately 60% of eligible actives have elected DROP and 40% have elected an immediate monthly benefit.

Economic Assumptions Results & Recommendations

Economic Assumptions

Current Assumptions

Investment Rate of Return 7.25% per annum

Inflation 3.00% per annum

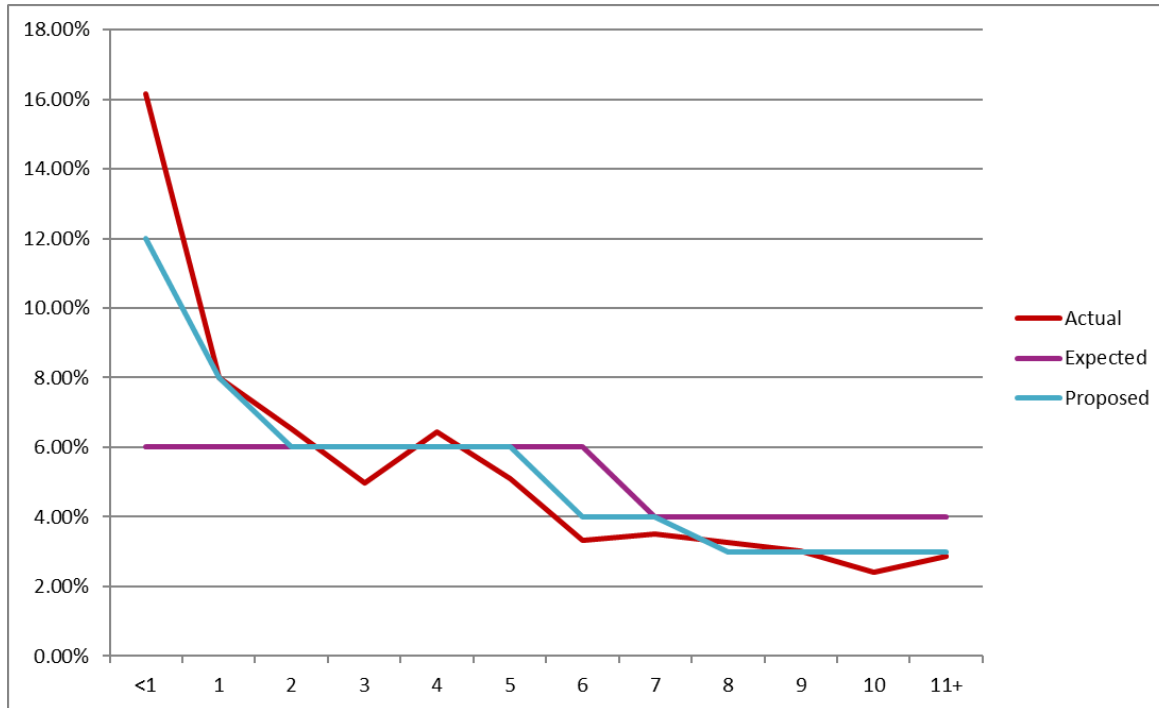
Individual Salary Increases:

- General County 4.00% - 6.00%
- Sheriff's Department 4.00% - 10.00%
- Road Commission 4.00% - 9.00%
- Martha T. Berry 4.00% - 6.00%

Final Average Compensation Loads:

- General County 4.50%
- Sheriff's Department 0.00% - 11.00%
- Road Commission 6.00%
- Martha T. Berry 4.50%

Salary Increases – General County



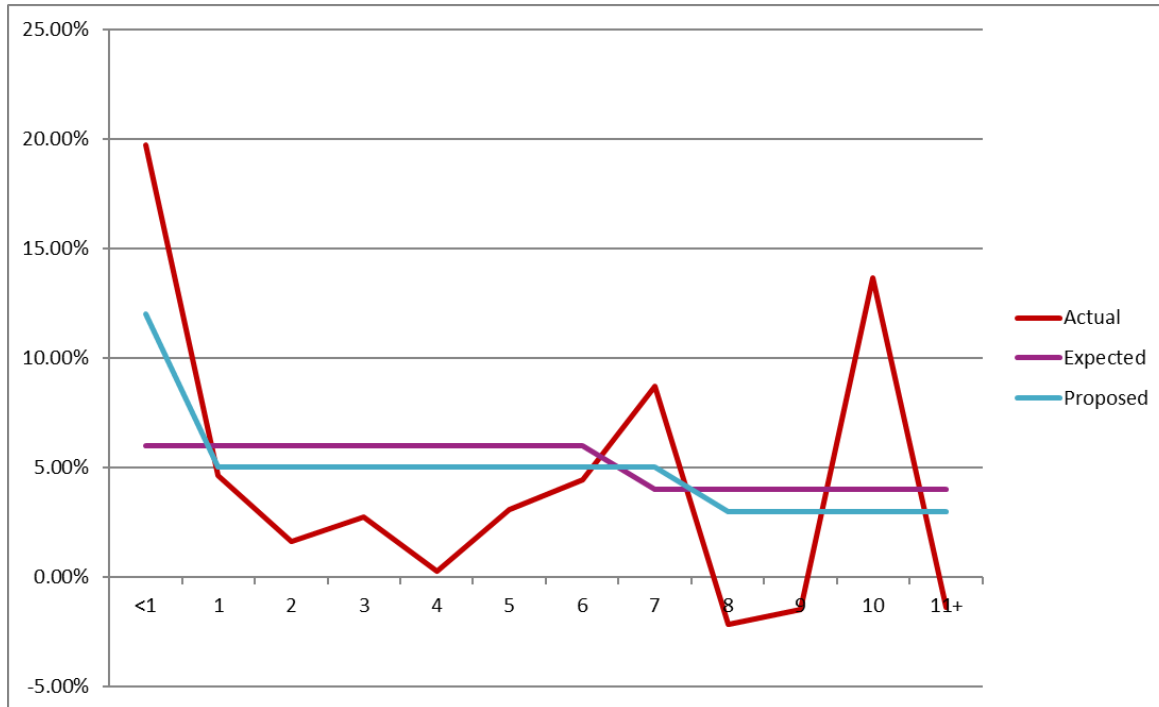
General County

Actual Salary Increase: 5.22%
 Expected Salary Increase: 4.80%
 Ratio of Actual to Expected: 109%
 Expected under Proposed Rates: 4.93%
 Ratio of Actual to Proposed: 106%

Overall experience shows slightly higher than expected salary increases.

Recommendation: Increase rates for 0-1 years of service and decrease rates for 6 or more years of service to better reflect experience.

Salary Increases – Martha T. Berry



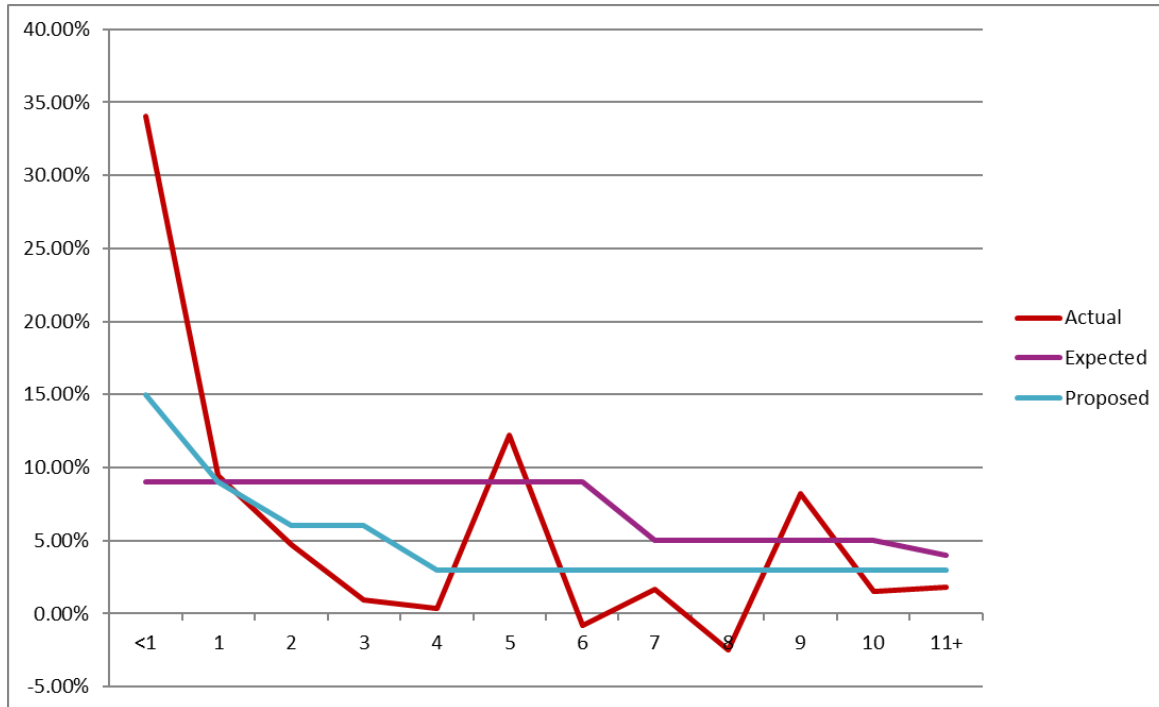
Martha T. Berry

Actual Salary Increase: 6.20%
Expected Salary Increase: 5.33%
Ratio of Actual to Expected: 116%
Expected under Proposed Rates: 5.93%
Ratio of Actual to Proposed: 104%

Overall experience shows higher than expected salary increases.

Recommendation: Increase the rate to 12% for service up to 1 year. Set the rate at 5% for 1-7 years of service.
Decrease the rate to 3% for 8 or more years of service.

Salary Increases – Road Commission



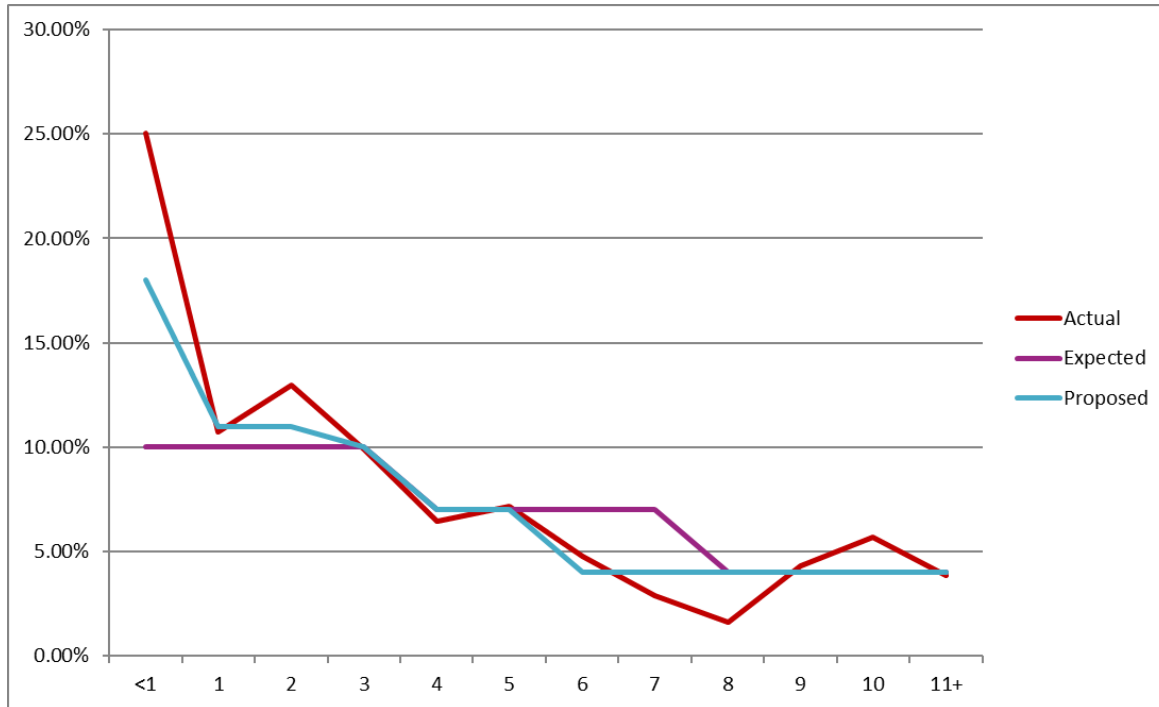
Road Commission

Actual Salary Increase: 3.47%
 Expected Salary Increase: 4.83%
 Ratio of Actual to Expected: 72%
 Expected under Proposed Rates: 3.75%
 Ratio of Actual to Proposed: 93%

Overall experience shows lower than expected salary increases.

Recommendation: Increase the rate to 15% for service up to 1 year. Decrease the rate to 6% for 2-3 years of service. Decrease the rate to 3% for 4 or more years of service.

Salary Increases – Sheriff’s Department



Sheriff’s Department

Actual Salary Increase: 6.00%
 Expected Salary Increase: 5.21%
 Ratio of Actual to Expected: 115%
 Expected under Proposed Rates: 5.60%
 Ratio of Actual to Proposed: 107%

Overall experience shows slightly higher than expected salary increases.

Recommendation: Increase rates for 0-2 years of service and decrease rates for 6-7 years of service to better reflect experience.

Inflation

Forecasts of inflation:

- 2019 OASDI Trustees Report projects long-term (75-year) estimates of inflation ranging from between 2.0% and 3.2%
- Buck's projection of inflation using a forward looking model produces *average* compound inflation over 30 years of 3.12%
 - *Median* compound inflation over 30 years of 3.00%
- Other market-based estimates of inflation range from 2.0-2.5%, but over shorter time horizons
- Based on the available data, we believe that maintaining the inflation assumption at 3.00% can be supported

Cost Results

Impact on Actuarial Liability and Normal Cost

A. Actuarial Liabilities and Normal Cost - Current Assumptions

Actuarial Liabilities based on December 31, 2017 Valuation	General County	Sheriff's Department	Road Commission	Martha T. Berry	Totals
1. Active Members PVFB	226,207,232	138,822,059	48,386,699	12,622,003	426,037,993
2. Vested Inactive Members with Deferred Benefits	15,602,239	2,772,444	1,769,543	1,123,683	21,267,909
3. Retired Members and Beneficiaries Receiving Benefits	338,378,260	140,291,566	70,983,271	25,852,586	575,505,683
4. DROP Participants Receiving Benefits	<u>90,771,167</u>	<u>33,515,418</u>	<u>13,712,200</u>	<u>2,287,096</u>	<u>140,285,881</u>
5. Total Present Value of Projected Benefits (1+2+3+4)	670,958,898	315,401,487	134,851,713	41,885,368	1,163,097,466
6. Present Value of Future Normal Costs	<u>78,424,647</u>	<u>51,733,381</u>	<u>13,246,752</u>	<u>6,582,573</u>	<u>149,987,353</u>
7. Total Actuarial Accrued Liability (5-6)	592,534,251	263,668,106	121,604,961	35,302,795	1,013,110,113
1. Normal Cost	9,464,297	5,125,171	1,696,201	666,419	16,952,088
2. Expected Member Contribution	<u>(1,888,651)</u>	<u>(1,262,701)</u>	<u>(391,990)</u>	<u>(132,228)</u>	<u>(3,675,570)</u>
3. Employer Normal Cost	7,575,646	3,862,470	1,304,211	534,191	13,276,518

B. Actuarial Liabilities and Normal Cost - Proposed Assumptions

Actuarial Liabilities based on December 31, 2017 Valuation	General County	Sheriff's Department	Road Commission	Martha T. Berry	Totals
1. Active Members PVFB	187,925,361	130,947,172	43,178,075	8,312,636	370,363,244
2. Vested Inactive Members with Deferred Benefits	15,493,613	2,814,797	1,797,079	1,116,834	21,222,323
3. Retired Members and Beneficiaries Receiving Benefits	330,856,265	139,325,677	70,564,801	25,060,121	565,806,864
4. DROP Participants Receiving Benefits	<u>88,636,554</u>	<u>32,990,253</u>	<u>13,696,494</u>	<u>2,193,586</u>	<u>137,516,887</u>
5. Total Present Value of Projected Benefits (1+2+3+4)	622,911,793	306,077,899	129,236,449	36,683,177	1,094,909,318
6. Present Value of Future Normal Costs	<u>49,916,542</u>	<u>41,045,133</u>	<u>8,299,929</u>	<u>2,789,669</u>	<u>102,051,273</u>
7. Total Actuarial Accrued Liability (5-6)	572,995,251	265,032,766	120,936,520	33,893,508	992,858,045
Change in Total Actuarial Accrued Liability	(19,539,000)	1,364,660	(668,441)	(1,409,287)	(20,252,068)
8. Total Actuarial Accrued Liability at 7.00%	587,299,573	272,522,431	124,067,179	34,725,284	1,018,614,467
Change in Total Actuarial Accrued Liability at 7.00% (8-7)	14,304,322	7,489,665	3,130,659	831,776	25,756,422
1. Normal Cost	7,296,622	4,619,813	1,270,114	418,462	13,605,011
2. Expected Member Contribution	<u>(1,854,562)</u>	<u>(1,265,222)</u>	<u>(363,054)</u>	<u>(130,897)</u>	<u>(3,613,735)</u>
3. Employer Normal Cost	5,442,060	3,354,591	907,060	287,565	9,991,276
Change in Employer Normal Cost	(2,133,586)	(507,879)	(397,151)	(246,626)	(3,285,242)
4. Employer Normal Cost at 7.00%	5,842,681	3,644,090	983,146	309,981	10,779,898
Change in Employer Normal Cost at 7.00% (4-3)	400,621	289,499	76,086	22,416	788,622

Impact on Employer Contribution Requirements

A. Summary of Actuarial Valuation Results as of December 31, 2017 - Current Assumptions

Employer Contribution for Fiscal 2019	General County	Sheriff's Department	Road Commission	Martha T. Berry	Total
1. Total Actuarial Accrued Liability	592,534,251	263,668,106	121,604,961	35,302,795	1,013,110,113
2. Actuarial Value of Assets	<u>567,659,409</u>	<u>261,875,404</u>	<u>120,840,728</u>	<u>40,427,021</u>	<u>990,802,562</u>
3. Unfunded Actuarial Accrued Liability (UAAL) (1-2)	24,874,842	1,792,702	764,233	(5,124,226)	22,307,551
4. Funded Ratio (2/1)	95.80%	99.32%	99.37%	114.52%	97.80%
5. Projected Fiscal 2018 Pay	65,999,631	29,170,608	10,423,120	4,959,112	110,552,471
6. Total Employer Contribution for Fiscal 2019	10,129,157	4,320,231	1,492,942	194,998	16,137,328
7. Total Employer Contribution (% of Pay)	15.35%	14.81%	14.32%	3.93%	14.60%

B. Summary of Actuarial Valuation Results as of December 31, 2017 - Proposed Assumptions

Employer Contribution for Fiscal 2019	General County	Sheriff's Department	Road Commission	Martha T. Berry	Total
1. Total Actuarial Accrued Liability	572,995,251	265,032,766	120,936,520	33,893,508	992,858,045
2. Actuarial Value of Assets	<u>567,659,409</u>	<u>261,875,404</u>	<u>120,840,728</u>	<u>40,427,021</u>	<u>990,802,562</u>
3. Unfunded Actuarial Accrued Liability (UAAL) (1-2)	5,335,842	3,157,362	95,792	(6,533,513)	2,055,483
4. Funded Ratio (2/1)	99.07%	98.81%	99.92%	119.28%	99.79%
5. Projected Fiscal 2018 Pay	66,100,831	29,200,199	10,281,320	4,918,744	110,501,094
6. Total Employer Contribution for Fiscal 2019	6,441,725	3,897,064	1,030,881	0	11,369,670
Change in Employer Contribution	(3,687,432)	(423,167)	(462,061)	(194,998)	(4,767,658)
7. Total Employer Contribution (% of Pay)	9.75%	13.35%	10.03%	0.00%	10.29%
Change in Total Employer Contribution (% of Pay)	-5.60%	-1.46%	-4.29%	-3.93%	-4.31%
8. Total Employer Contribution for Fiscal 2019 at 7.00%	7,904,436	4,744,345	1,340,789	0	13,989,570
Change in Employer Contribution at 7.00% (8-6)	1,462,711	847,281	309,908	0	2,619,900
9. Total Employer Contribution (% of Pay) at 7.00%	11.96%	16.25%	13.04%	0.00%	12.66%
Change in Total Employer Contribution (% of Pay) at 7.00% (9-7)	2.21%	2.90%	3.01%	0.00%	2.37%

Disclosures

- The information and cost estimates in this presentation were developed for the Board of Trustees and the Macomb County Employees Retirement System by Buck Global, LLC (Buck) using generally accepted actuarial principles and techniques in accordance with all applicable Actuarial Standards of Practice (ASOPs) for the purpose of assisting the Board in setting actuarial assumptions to be used in future actuarial valuations. The cost estimates are based on census data, plan provisions and actuarial methods as described in the December 31, 2017 Actuarial Valuation report dated September 20, 2018 and assumptions described in the aforementioned actuarial report and this presentation.
- Use of these results for any other purpose or by anyone other than the Board, the Macomb County Employees Retirement System, or their respective staffs may not be appropriate and may result in mistaken conclusions due to failure to understand applicable assumptions, methodologies, or inapplicability of the results for that purpose. Because of the risk of misinterpretation of actuarial results, Buck should be asked to review any statement to be made on the basis of the results contained in this presentation. Buck will not accept any liability for any such statement made without such prior review.
- Future actuarial measurements may differ significantly from the current measurements shown in this presentation due to plan experience differing from that anticipated by the economic and demographic assumptions, changes expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions, applicable law or regulations. An analysis of the potential range of such future differences is beyond the scope of this presentation.
- Troy Jaros is a Fellow of the Society of Actuaries and Members of the American Academy of Actuaries. He meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this presentation. He is available to answer any questions on the material contained in this presentation, or to provide explanations or further details as may be appropriate.

