City of New Orleans Employees' Retirement System

Review Of Actuarial Experience

For the period January 1, 2019 to December 31, 2023

January 15, 2025 Board Meeting

Jeffrey S. Williams, FCA, ASA, MAAA, EA

Segal

Overview: Purpose of an Experience Study

- An experience study provides the basis for developing recommended assumptions to be used in the annual actuarial valuation
  - Performed on a periodic basis
  - Last full experience study was conducted in 2018 for the six-year period ended December 31, 2016
  - Current study is based on the period January 1, 2019 through December 31, 2023
- Actuarial Standards of Practice Statements 27 and 35 provide guidance on best practices for performing assumption-setting analysis
  - Each assumption should be the actuary's best estimate
- Segal's role is to make appropriate "best estimate" recommendations to the Board for each assumption

The assumptions are the Board's assumptions, and the Board can adopt all, none, or some of the recommendations of the actuary.

Overview: How Assumptions Are Set

- Review past experience
- Compare past experience (“actual”) with assumptions (“expected”)
- Determine trends – make judgments about future
- Develop component parts of each assumption
  - Maintain linkage with investments
  - Maintain internal consistency
- Keep in mind
  - No “right” answer – best estimate
  - Assumptions are long-term, but need to be reviewed and revised periodically
    - Behavioral patterns can change over time
- Appendix 1 includes details of the current and proposed assumptions
- Appendix 2 contains a summary of actual, expected, and proposed experience
  - Proposed mortality counts include updated mortality projection scale

Background Actuarial Assumptions and Methods

Demographic

- Death in active service
- Death after retirement
  - Non-Disabled
  - Disabled
- Mortality Improvement
- Retirement
- Disability
- Turnover
- Other Assumptions, Including Percent Married, Spousal Age Difference, Etc.

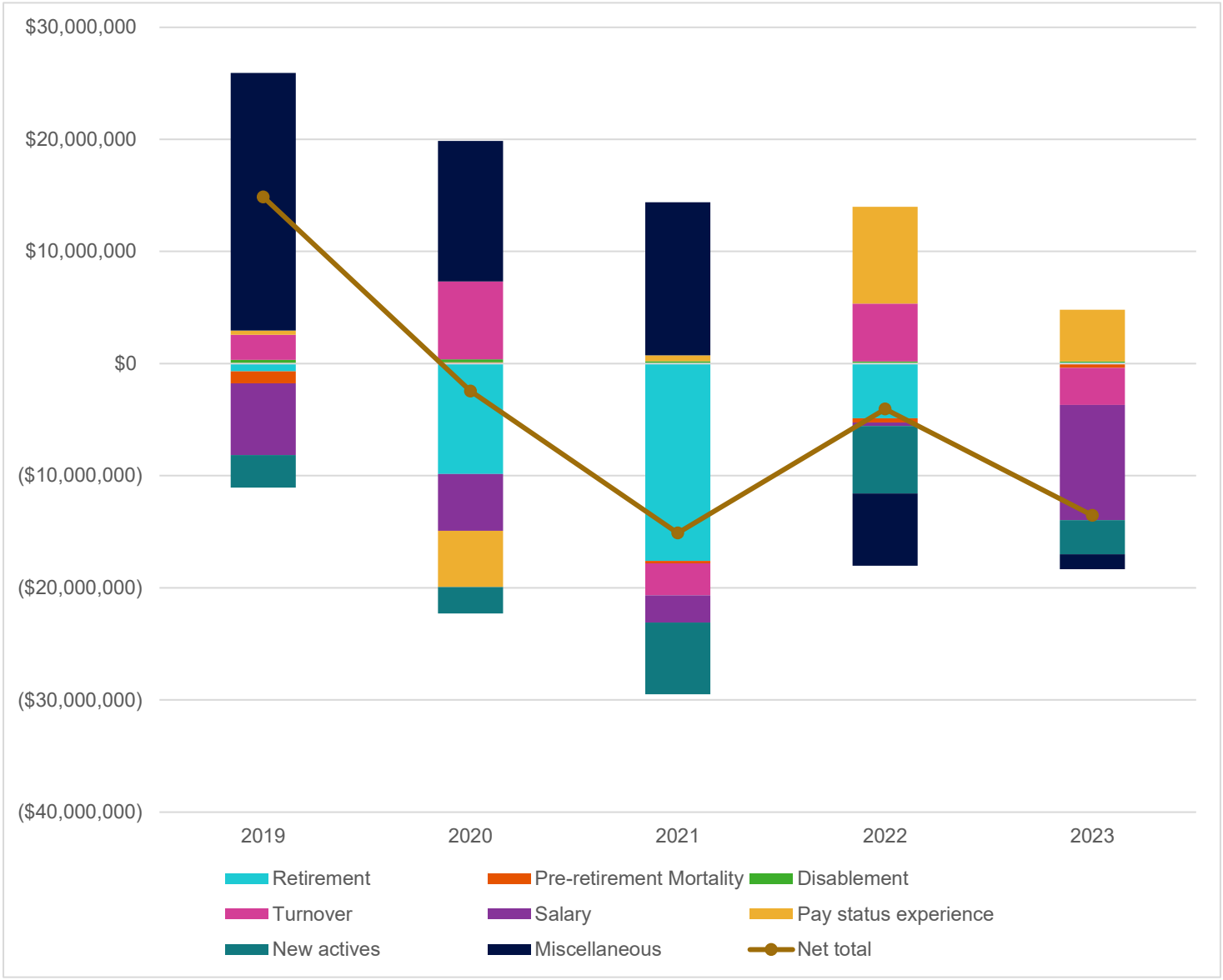
Economic

- Salary Increases
- Inflation/COLA
- Discount rate (Investment Rate of Return)
- Administrative Expenses

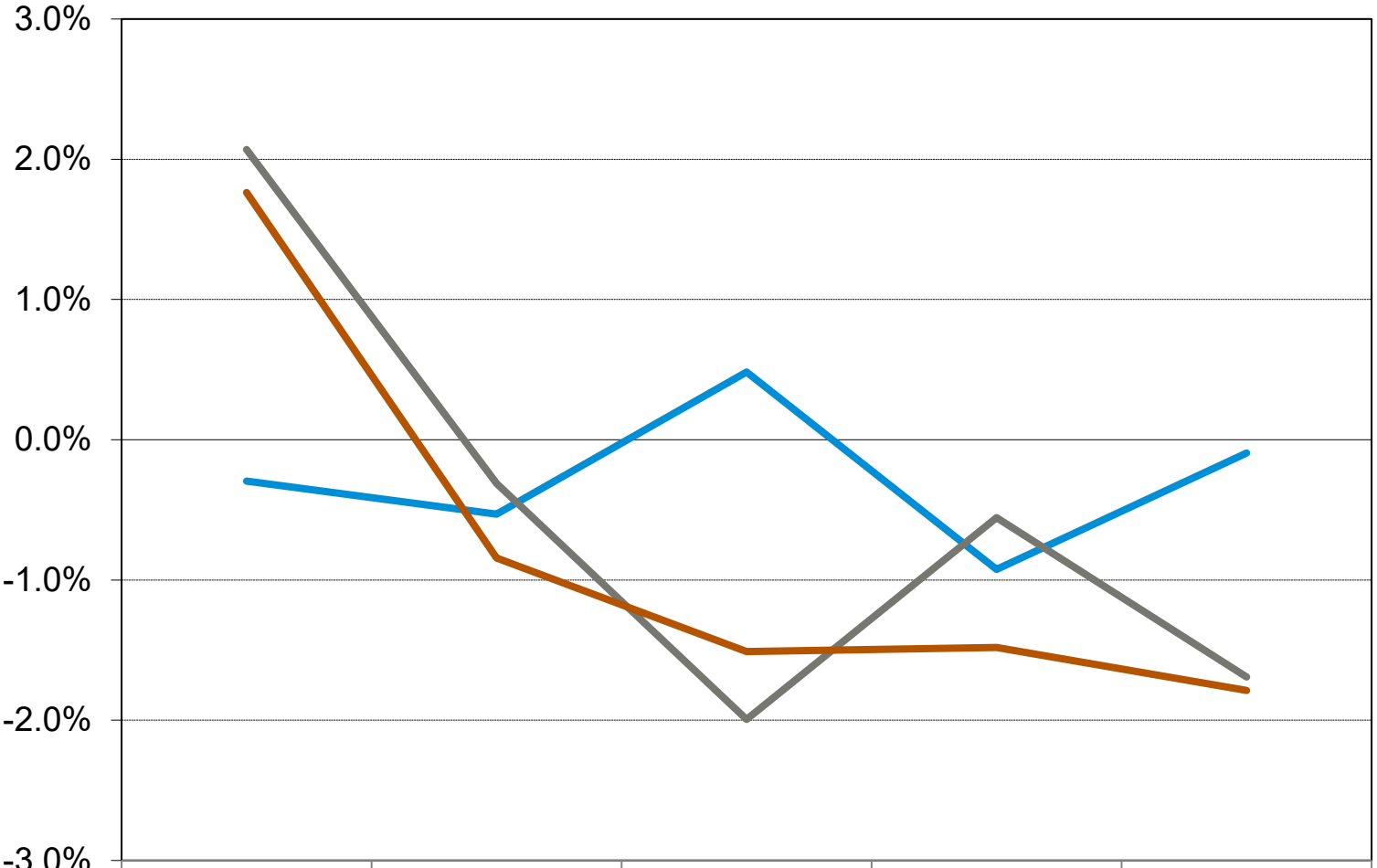
Methods

- Funding Method
- Amortization Method
- Asset Method

Sources of Gain/Loss by Year



Experience Gains and Losses as a % of Actuarial Accrued Liability in Study Period



	2019	2020	2021	2022	2023
Investment	-0.3%	-0.5%	0.5%	-0.9%	-0.1%
Non-Investment	2.1%	-0.3%	-2.0%	-0.6%	-1.7%
Total	1.8%	-0.8%	-1.5%	-1.5%	-1.8%

Summary of Proposed Assumptions

Assumption	Current Assumption	Proposed Assumption
Healthy Retiree Mortality	Sex-distinct PubG-2010 Healthy Annuitant Amount-Weighted Mortality Table	Same tables, with rates loaded 15% for both sexes
Beneficiary Mortality	Sex-distinct PubG-2010 Healthy Annuitant Amount-Weighted Mortality Table	Sex-distinct PubG-2010 General Contingent Survivor Amount-Weighted Annuitant Mortality Table
Disabled Participant Mortality	Sex-distinct PubNS-2010 Non-Safety Disabled Annuitant Amount-Weighted Mortality Table	No change
Active Participant and Inactive Vested Mortality	Sex-distinct PubG-2010 Employee Amount-Weighted Mortality Table	No change
Future Mortality Improvement	Projected generationally from 2012 with the MP-2020 Projection Scale	Projected generationally from 2012 with the MP-2021 Projection Scale
Retirement (Actives)	Age-based rates with 100% retirement assumed at age 70	Updated age-based rates with 100% retirement assumed at age 75
Retirement (Terminated Vesteds)	Age 62	Age-based rates from age 60 to 75
Turnover	Sex-distinct age-based rates, with select rates during first five years of service	Switch to service-based rates
Disability	Age-based rates	25% of prior rates
Percent Married	75%	No change
Spousal Age Difference	Females three years younger than males	No change

Summary of Proposed Assumptions

Assumption	Current Assumption	Proposed Assumption
Benefit Election	Life only form of payment	65% - Life only 20% - 100% J&S 15% - 50% J&S
Salary Scale	Age-based rates ranging from 10% to 3.2%	Service-based rates ranging from 15% to 4%
Inflation	2.50%	No change
Payroll Growth for Amortization Purposes	2.50%	3.00%
Investment Return	7.25%	Between 6.75% and 7.00%
Administrative Expenses	Updated annually based on actual expenses (currently $875,000)	No change, continue annual adjustment based on actual expenses

Impact of Each Proposed Change on Key Metrics

Assumption	Change in ADC as a Percent of Pay	Change in Funded Ratio (AVA)
Disability	-0.16%	+0.11%
Retirement (actives)	-0.93%	+1.25%
Retirement (terminated vesteds)	-0.56%	+0.61%
Benefit Election	-0.71%	+0.86%
Turnover	-0.70%	+0.73%
Mortality and Mortality Improvement Scales	-0.68%	+1.23%
Salary Scale	2.01%	-1.01%
Payroll Growth for Amortization	-0.48%	0.00%
7.00% discount rate	1.05%	-1.62%
6.75% discount rate	1.09%	-1.61%
All changes with 7.00% discount rate	-1.16%	2.16%
All changes with 6.75% discount rate	-0.07%	0.55%

The results above reflect the incremental changes from one change to the next.

Impact of Proposed Changes on Overall Results

The chart below provides the estimated impact of the assumption changes, based on the January 1, 2024 valuation results. All dollar amounts are in millions.

Item	January 1, 2024 Valuation Results	Recommended Changes, 7.00% Discount Rate	Recommended Changes, 6.75% Discount Rate
Employer Normal Cost	$15.08	$16.29	$17.34
Actuarial Accrued Liability (AAL)	$826.95	$797.66	$819.29
Actuarial Value of Assets (AVA)	$486.57	$486.57	$486.57
Unfunded Actuarial Accrued Liability (UAAL)	$340.38	$311.09	$332.72
Funded Percentage	58.84%	61.00%	59.39%
Actuarially Determined Contribution for 2025	**$29.64**	**$27.61**	**$29.52**
2025 Actuarially Determined Contribution as a Percentage of Payroll	**16.95%**	**15.79%**	**16.88%**
Payroll	$174.85	$174.85	$174.85

Demographic Assumptions

Retiree Mortality

Current Assumption

- PubG-2010 Healthy Annuitant Mortality Table, sex-distinct
- The PubG-2010 Tables are projected generationally with the MP-2020 scale.

Findings

- Post-retirement mortality is the most important component of mortality assumptions; it determines the duration over which retirement benefits are paid.
- There were 9,002 non-disabled retiree exposures over the study period, and 364 deaths, which is not enough to be fully credible.
  - 254 deaths were expected
- There were 1,002 beneficiary exposures, and 85 deaths.
  - 42 deaths were expected
- Experience indicates actual rates of mortality 43% higher than assumed for retirees, and actual rates 103% higher than assumed for beneficiaries.

Retiree Mortality

Recommendation

- We recommend maintaining the same mortality table for retirees, with rates loaded by 15% for both males females.
- For beneficiaries, we recommend the sex-distinct PubG-2010 Amount-Weighted Contingent Survivor Table.
- These tables would have predicted 328 retiree deaths and 65 beneficiary deaths during the period.
- In setting these assumptions, we matched experience with loads to the Headcount-Weighted PubG-2010 Tables and then applied the same loads to the Amount-Weighted Tables for purposes of calculating the System's liabilities.

Disabled Retiree Mortality

Current Assumption

PubNS-2010 Non-Safety Disabled Retiree Mortality Table, sex-distinct

Findings

- At only 595 exposures and 37 deaths, the population was not large enough to be credible.
- Based on the current tables, 25.4 deaths were assumed during the study period.
- This assumption should be in a consistent framework with healthy mortality.

Recommendation

- We recommend no change to this assumption.

Pre-Retirement Mortality

Current Assumption

PubG-2010 Employee Mortality Table, sex-distinct

Findings

- These rates are applied to active and terminated members.
- Very few members die in active service.
- The liability associated with active death is a small percentage of the total liability.
- Plan experience is insufficient to set the assumption with full credibility; there were no active member deaths reported in the period, from 14,016 exposures.
  - 18.39 deaths were expected

Recommendation

- We recommend no change to this assumption.

Mortality Improvement

Current Assumption

- Actuarial Standards of Practice require actuaries to include provision to allow for improvements in mortality.
- All assumed mortality tables for NOMERS are projected generationally with the MP2020 2D projection scale.
- Generational projection adjusts the mortality rates each year, so that participants with more recent birth dates are expected to live longer.

Findings

- The Society of Actuaries updates the MP scales most years. In addition, the Social Security Administration releases mortality projection scales each year.

Recommendation

We recommend that the MP-2021 2D projection scale be applied to the PubG-2010 tables. The MP-2021 projection scales are the most recent projection scales published by the Society of Actuaries.

Retirement Rates – Active Participants

Current Assumption

- Age-based rates that assume 100% retirement at age 70

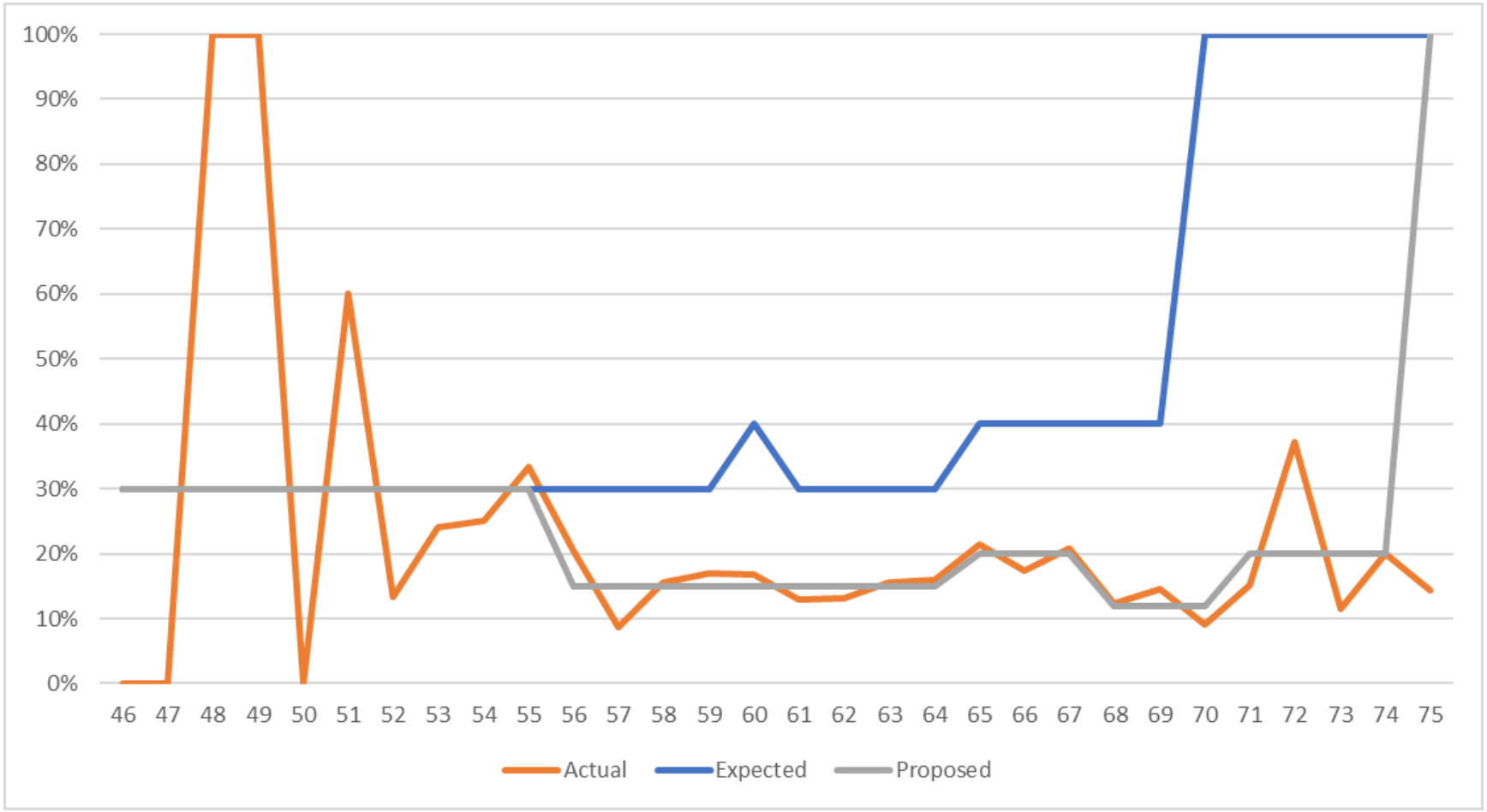
Findings

- The number of actual retirements were only 37% of the expected number
  - 1,460 exposures
  - 256 actual retirements compared to 685.5 expected retirements
  - 37 retirements occurred after age 70

Recommendation

- Lower retirement rates for each age after age 55
- Extend age of assumption of 100% retirement until age 75
- Proposed rates would have 242.07 retirements through age 74 compared to 244 actual retirements

Retirement Rates – Active Participants
Ages 46 through 75



Retirement Rates – Terminated Vested Participants

Current Assumption

- All terminated vested participants retire at age 62

Findings

- The number of actual retirements were only 32% of the expected number
  - 639 exposures
  - 110 actual retirements compared to 344 expected retirements
  - 9 retirements occurred after age 70
- Majority of terminated vested retirements occur between ages 60 and 65, though the latest one during the study period occurred at age 78

Recommendation

- Add rates from ages 60 through 75, with 100% retirement assumed to occur at age 75
- Proposed rates would have 92.1 retirements from ages 60 through 75 compared to 91 actual retirements for this age range

Disability Rates

Current Assumption

- Rates ranging from 0.09% to 0.915%, stopping at age 59
- Rates are quite low

Findings

- Even with low assumed rates, actual rates were only 24.2% of expected.
- There were 4 disabilities in the period, and 14,016 exposed lives, for an overall rate of 0.029%.
  - 16.5 disabilities were expected

Recommendation

- Set rates to 25% of current rates at each age

Turnover Rates

Current Assumption

- Sex-distinct, age-based rates, ranging from 20% at age 20 to 7% at age 40 and older for males, and from 18% at age 20 to 6% at age 40 and older for females
- Rates cut off at first eligibility for retirement

Findings

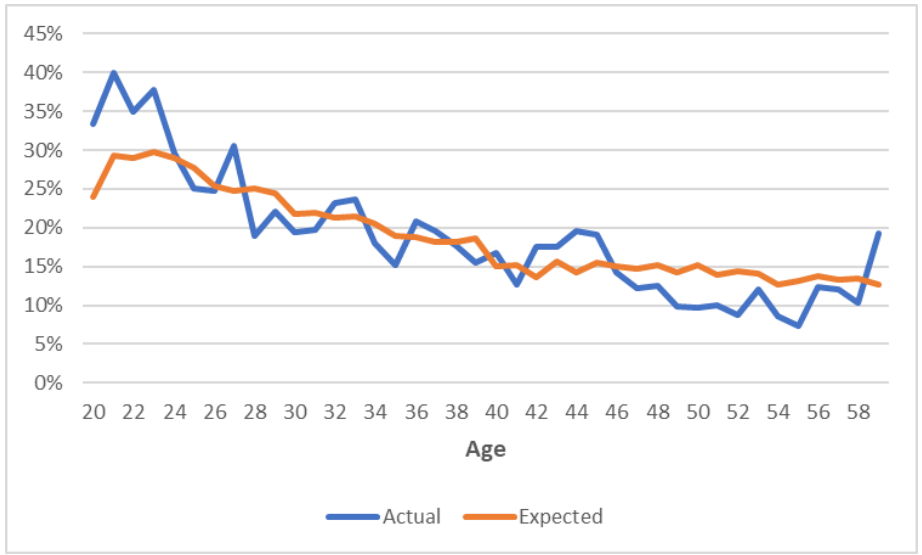
- Current rates closely tracked expected retirements in total for both males and females
- 5,562 male exposures with 966 terminations compared to 973 expected
- 7,085 female exposures with 1,107 terminations compared to 1,093 expected

Recommendation

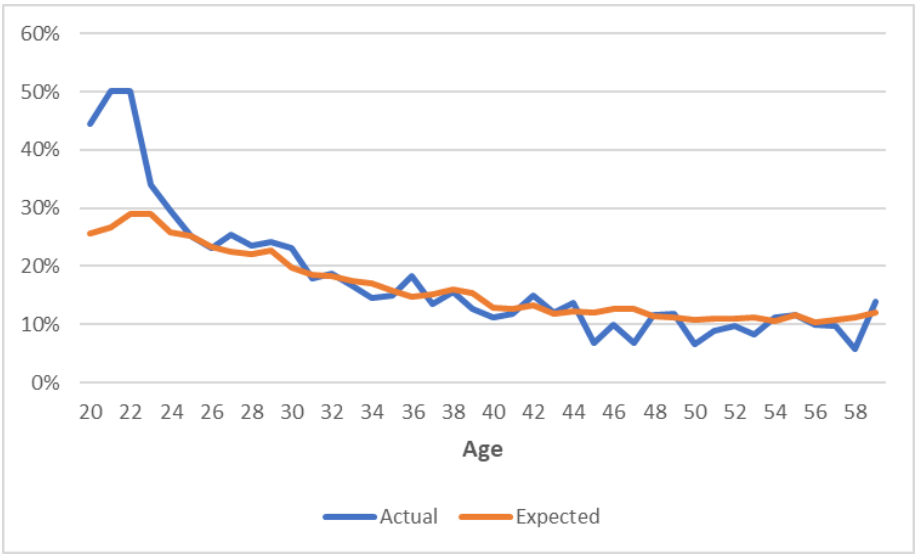
- Switch to service-based rates
- Even though current rates closely track turnover, actual turnover patterns more closely follow service than age
- Rates cut off at first eligibility for retirement

Turnover Rates

Male turnover by age

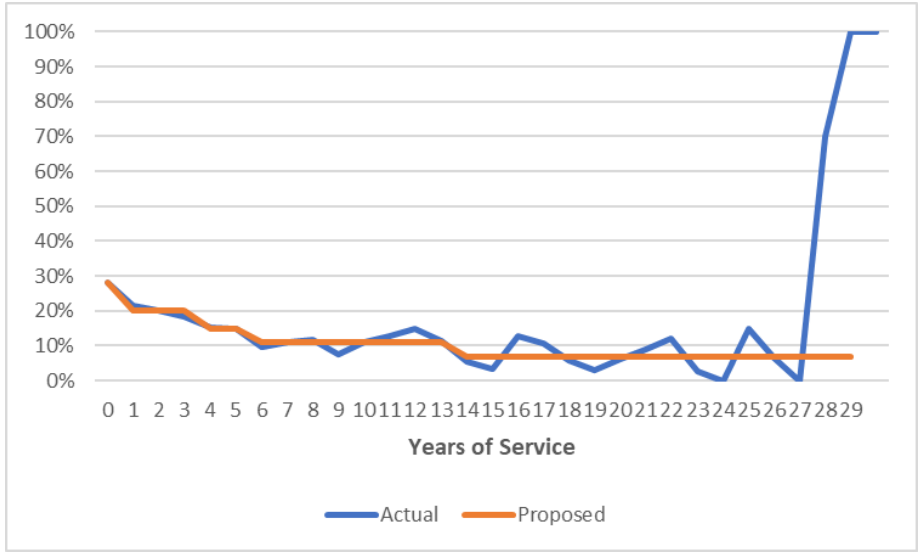


Female turnover by age

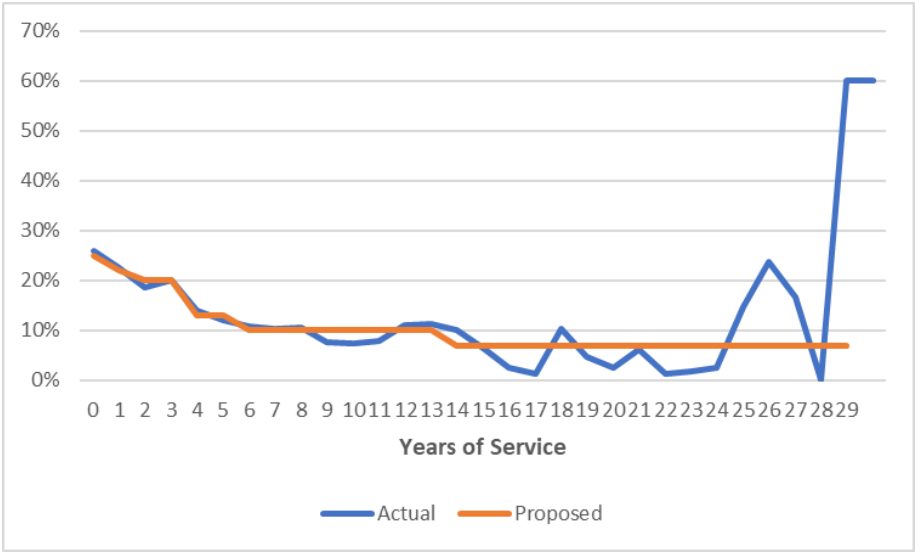


Turnover Rates

Male turnover by service



Female turnover by service



Other Demographic Assumptions

Form of Benefit Election

- Currently assumed all retirees select a life only form of payment
- Recommendation is to assume 65% select a life only annuity, 20% select a 100% J&S annuity, and 15% select a 50% J&S annuity

Spousal Age Difference

- The data does not include dates of birth for spouses of current retirees or active participants.
- The three-year age difference for beneficiaries is reasonable based on actuarial judgment; no change is recommended.

Percentage of Participants Married

- The data does not include dates of birth for spouses of current retirees or active participants.
- The 75% marriage assumption is reasonable based on actuarial judgment; no change is recommended.

Economic Assumptions

Salary Scale

Current Assumption

- Age-based rates ranging from 3.2% to 10.0% salary increases
- The current rates reflect assumed inflation of 2.50%. The increases above inflation reflect the effects of merit (e.g. promotions) and productivity.

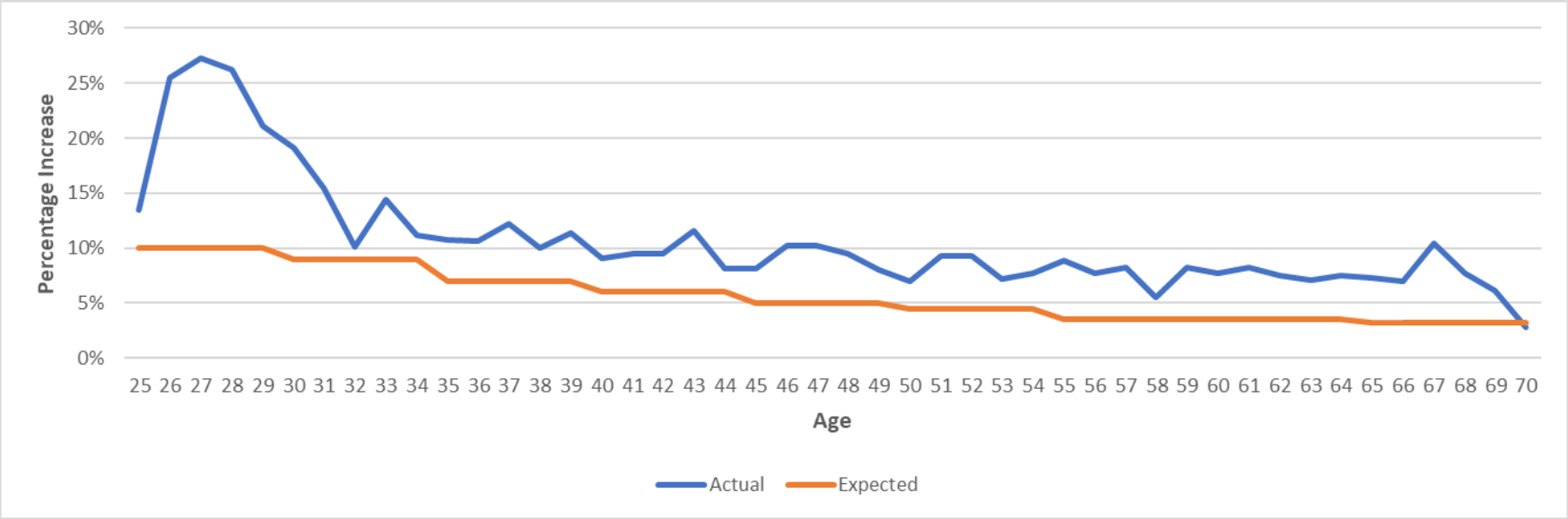
Findings

- Actual increases during the study period were greater than assumed
- Average increase was 8.80%; expected average increase was 5.00%

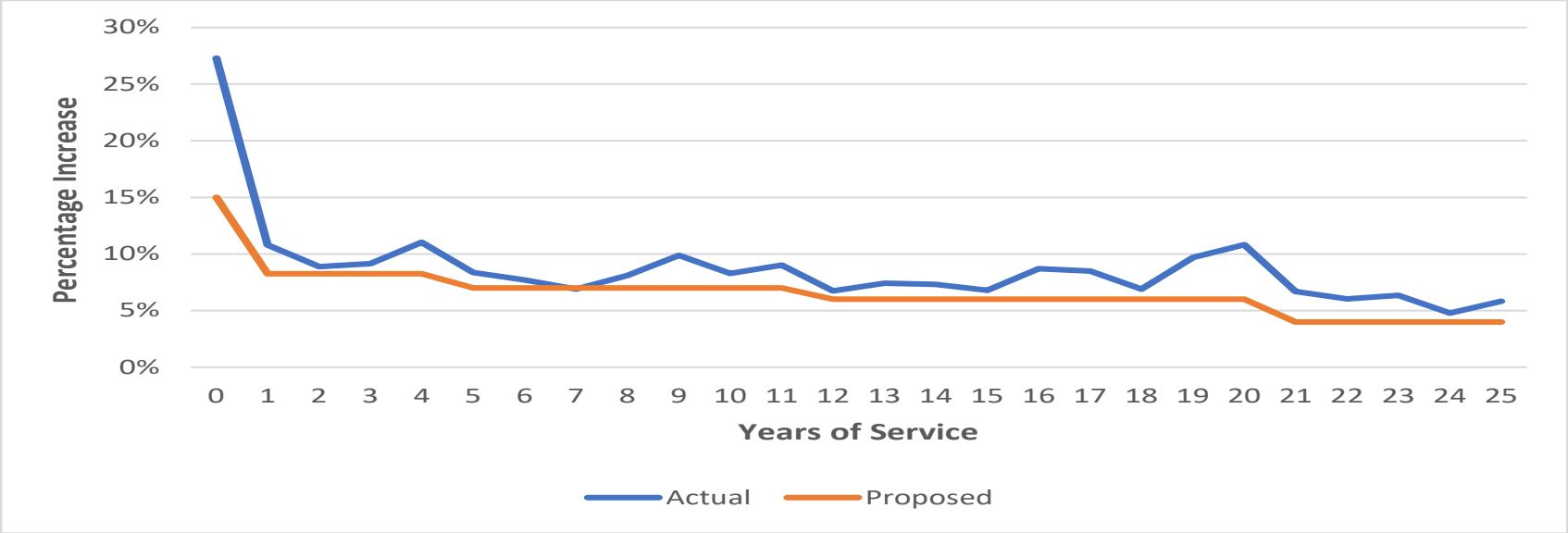
Recommendation

- Switch to a service-based table; increases are typically more closely correlated with service than age
- Update the rates to more closely coincide with recent experience, the new based-table will result in higher expected salary increases across the board
- Raise the ultimate rate to 4.00%, from 3.20%

Salary Scale – Age-Based Experience



Salary Scale – Service-Based Experience



Graph excludes 391 exposures (out of 11,698) with more than 25 years of service.

Inflation Rate

Current Assumption: 2.50%

Historical (through December 2023):

Average Annual Change in CPI-U

Time	Percentage
Last 5 Years	4.07%
Last 10 Years	2.79%
Last 20 Years	2.58%
Last 30 Years	2.51%
Last 40 Years	2.92%

- Over the five-year study period, the annual change ranged from 1.45% to 7.81%.
- NASRA Survey: 2.47% average assumed inflation rate
- 2024 OASDI Trustees Report: assumed ultimate increase rates of 1.80%, 2.40%, and 3.00% for low, intermediate and high-cost projections

Recommendation:

Maintain the assumption of 2.50%

Investment Rate of Return

Current Assumption: 7.25%

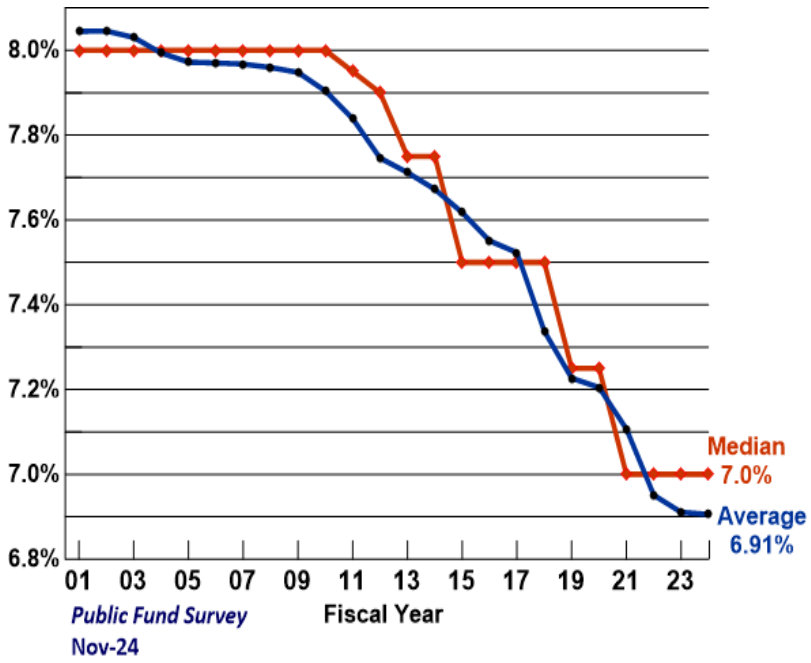
- NASRA Survey, November 2024
  - With FY24, the median has dropped to 7.00%, and the average is 6.91%.
  - Chart shows ongoing trend towards lower investment return assumptions.

Findings

- Based on the current asset allocation and Segal Marco Advisor's capital market assumptions as of December 31, 2023, over the next 20 years, the System has a :
  - 45% chance of exceeding 7.25%
  - 48% chance of exceeding 7.00%
  - 50% chance of exceeding 6.90%
  - 52% chance of exceeding 6.75%

Recommendation: Between 6.75% and 7.00%

Change in Distribution of Public Pension Investment Return Assumptions, FY 01 to FY 24



Economic Assumptions

Investment Return

- The chart below shows actuarial value and market value investment returns over the five-year period ending December 31, 2023.
- As shown below, the System's returns as recognized under the asset smoothing method have fallen just shy of expectations over the prior five years

Year Ended December 31	Actuarial Value Investment Return	Market Value Investment Return	Assumed Return
2019	6.97%	16.27%	7.50%
2020	6.31%	13.09%	7.25%
2021	8.12%	15.77%	7.25%
2022	5.62%	-13.56%	7.25%
2023	7.08%	12.52%	7.25%

Average Rates of Return	Actuarial Value	Market Value
Most recent five-year average return:	7.21%	7.86%
Most recent ten-year average return:	6.81%	5.96%
Most recent 15-year average return:	5.70%	7.66%
20-year average return:	5.36%	5.78%

Administrative Expenses

Current Assumption:

- 0.2% of payroll prior to 2024
- This assumption is reviewed annually and adjusted as necessary.
- For the 2024 plan year, the assumption was increased to 0.4% of payroll

Recommendation:

- Maintain current assumption of 0.4% of payroll, with annual review.

Year	Payroll	Assumed Expenses	Actual Expenses	Actual Expenses as a % of Payroll
2019	$128,530,078	$257,060	$376,002	0.29%
2020	149,538,039	299,076	316,687	0.21%
2021	135,779,772	271,560	560,127	0.41%
2022	142,338,647	284,677	615,589	0.43%
2023	148,582,198	297,164	721,502	0.49%
Total	**$704,768,734**	**$1,409,537**	**$2,589,907**	**0.37%**

Actuarial Methods

Actuarial Cost Method

Current Method: Traditional Entry Age

- Entry Age is the most common method used for public sector plans in the U.S.
- Normal cost stays constant as a percentage of payroll for each member
- Provides more stable normal cost calculation, when assumptions are met
- Actuarial Standard of Practice #4 (ASOP 4) requires disclosure under the “Traditional” Entry Age approach, as does the GASB.

Recommendation

Maintain current method

Actuarial Asset Smoothing Method

Current Method

- Reflects 5-year straight-line amortization of each year's investment gain or loss
- 20% corridor around market
- Treats realized and unrealized losses equally
  - Sale of assets does not affect actuarial value

Recommendation

Maintain current method

Amortization of the Unfunded Actuarial Accrued Liability

Current Method

- Individual, 25-year level-percent-of-pay amortization bases are established each year based on that year's actuarial gain or loss.
- The amortization period declines by one each year.
- The initial base under this methodology was established January 1, 2020.
- Current payroll growth for amortization purposes is 2.50%. Actual average payroll growth has exceeded this assumption.

Recommendation

- Maintain current method
- Increase payroll growth for amortization purposes to 3.00% from 2.50%

Questions

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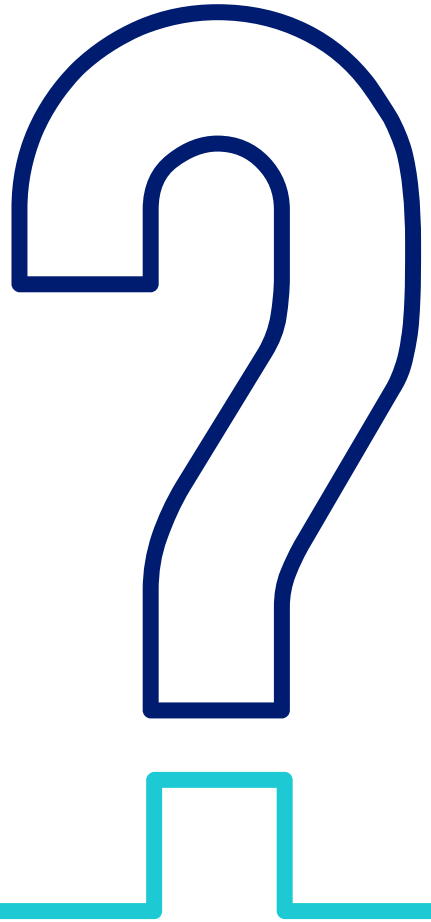


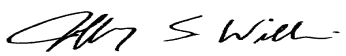
Actuarial Certification

We are pleased to submit this presentation on the actuarial experience of the City of New Orleans Municipal Employees Retirement System for the period January 1, 2019 through December 31, 2023. This investigation is the basis for our recommendation of the assumptions and methods to be used for the January 1, 2025 actuarial valuation. The experience review was completed under my supervision, with the assistance of Malichi Waterman and Evan LaBott.

All current actuarial assumptions and methods were reviewed as part of this study. The study was based on data provided by the Fund for the last six actuarial valuations. Our analysis was conducted in accordance with generally accepted actuarial principles as prescribed by the Actuarial Standards Board (ASB) and the American Academy of Actuaries. Additionally, the development of all assumptions contained herein is in accordance with ASB Actuarial Standard of Practice (ASOP) No. 27 (*Selection of Economic Assumptions for Measuring Pension Obligations*) and ASOP No. 35 (*Selection of Demographic and Other Non-Economic Assumptions for Measuring Pension Obligations*).

The undersigned actuary is experienced with performing experience studies for large public-sector pension plans and is qualified to render the opinions contained in this report.

Sincerely,



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Vice President and Consulting Actuary

Appendix 1 - Assumptions

Healthy Post-Retirement Mortality

Beneficiary Mortality

Disabled Post-Retirement Mortality

Active/Pre-Retirement Mortality

Retirement

Disability

Turnover

Salary Scale

Appendix 1

Proposed Healthy Post-Retirement Mortality

Males

Age	Current Mortality Rate	Proposed Mortality Rate
50	0.30%	0.34%
55	0.43%	0.50%
60	0.62%	0.71%
65	0.91%	1.05%
70	1.53%	1.96%
75	2.67%	3.07%
80	4.77%	5.49%
85	8.59%	9.88%
90	14.67%	16.87%
95	22.89%	26.32%

Females

Age	Current Mortality Rate	Proposed Mortality Rate
50	0.22%	0.26%
55	0.25%	0.28%
60	0.32%	0.37%
65	0.45%	0.52%
70	0.76%	0.87%
75	1.34%	1.54%
80	2.37%	2.72%
85	4.28%	4.92%
90	7.99%	9.19%
95	14.24%	16.37%

Mortality rates shown above are unprojected. For actuarial valuation purposes, the proposed mortality rates will be projected from 2012 on a generational basis using the MP-2021 improvement scale. Proposed mortality rates include 15% load.

Appendix 1

Proposed Beneficiary Post-Retirement Mortality

Males

Age	Current Mortality Rate	Proposed Mortality Rate
50	0.30%	0.70%
55	0.43%	0.82%
60	0.62%	1.01%
65	0.91%	1.38%
70	1.53%	2.13%
75	2.67%	3.38%
80	4.77%	5.36%
85	8.59%	8.74%
90	14.67%	14.42%
95	22.89%	22.80%

Females

Age	Current Mortality Rate	Proposed Mortality Rate
50	0.22%	0.28%
55	0.25%	0.37%
60	0.32%	0.51%
65	0.45%	0.72%
70	0.76%	1.05%
75	1.34%	1.62%
80	2.37%	2.62%
85	4.28%	4.46%
90	7.99%	8.03%
95	14.24%	13.95%

Mortality rates shown above are unprojected. For actuarial valuation purposes, the proposed mortality rates will be projected from 2012 on a generational basis using the MP-2021 improvement scale.

Appendix 1

Proposed Disabled Post-Retirement Mortality

Males

Age	Current Mortality Rate	Proposed Mortality Rate
50	1.61%	1.61%
55	2.11%	2.11%
60	2.50%	2.50%
65	3.04%	3.04%
70	3.90%	3.90%
75	5.19%	5.19%
80	7.35%	7.35%
85	10.82%	10.82%
90	16.25%	16.25%
95	23.62%	23.62%

Females

Age	Current Mortality Rate	Proposed Mortality Rate
50	1.17%	1.17%
55	1.59%	1.59%
60	1.83%	1.83%
65	2.05%	2.05%
70	2.45%	2.45%
75	3.24%	3.24%
80	4.68%	4.68%
85	7.15%	7.15%
90	11.01%	11.01%
95	15.64%	15.64%

Mortality rates shown above are unprojected. For actuarial valuation purposes, the proposed mortality rates will be projected from 2012 on a generational basis using the MP-2021 improvement scale.

Appendix 1

Proposed Pre-Retirement Mortality

Males

Age	Current Mortality Rate	Proposed Mortality Rate
25	0.03%	0.03%
30	0.04%	0.04%
35	0.05%	0.05%
40	0.07%	0.07%
45	0.10%	0.10%
50	0.15%	0.15%
55	0.22%	0.22%
60	0.32%	0.32%
65	0.47%	0.47%
70	0.70%	0.70%
75	1.10%	1.10%

Females

Age	Current Mortality Rate	Proposed Mortality Rate
25	0.01%	0.01%
30	0.01%	0.01%
35	0.02%	0.02%
40	0.03%	0.03%
45	0.04%	0.04%
50	0.07%	0.07%
55	0.10%	0.10%
60	0.14%	0.14%
65	0.22%	0.22%
70	0.36%	0.36%
75	0.60%	0.60%

Mortality rates shown above are unprojected. For actuarial valuation purposes, the proposed mortality rates will be projected from 2012 on a generational basis using the MP-2021 improvement scale.

Appendix 1

Proposed Retirement Rates

Active Participants

Age	Current	Proposed
55	30%	30%
56	30%	15%
57	30%	15%
58	30%	15%
59	30%	15%
60	40%	15%
61	30%	15%
62	30%	15%
63	30%	15%
64	30%	15%
65	40%	20%
66	40%	20%
67	40%	20%
68	40%	12%
69	40%	12%
70	100%	12%
71	100%	20%
72	100%	20%
73	100%	20%
74	100%	20%
75+	100%	100%

Terminated Vested Participants

Age	Current	Age	Proposed
62 & over	100%	60 – 62	28%
		63 – 64	15%
		65 – 66	30%
		67 – 74	15%
		75 & over	100%

Appendix 1

Proposed Disability Rates

Age	Current Disability Rate	Proposed Disability Rate
25	0.165%	0.041%
30	0.165%	0.041%
35	0.090%	0.023%
40	0.135%	0.034%
45	0.330%	0.083%
50	0.525%	0.131%
55	0.645%	0.161%

Appendix 1

Proposed Turnover Rates

Males

Age	Current Turnover Rate	Service	Proposed Turnover Rate
20 – 29	20%	0	28%
30 – 34	15%	1 – 3	20%
35 – 39	12%	4 - 5	15%
40+	7%	6 - 13	11%
		14+	7%

Females

Age	Current Turnover Rate	Service	Proposed Turnover Rate
20 – 29	18%	0	25%
30 – 34	12%	1	22%
35 – 39	9%	2 – 3	20%
40+	6%	4 – 5	13%
		6 – 13	10%
		14+	7%

Current turnover rates during first five years of service

Years of Service	Male	Female
0 but less than 1	35%	35%
1 but less than 2	30%	25%
2 but less than 3	20%	20%
3 but less than 4	20%	20%
4 but less than 5	15%	15%

Appendix 1

Proposed Salary Scale

Age	Current Salary Rate
20 – 24	10%
25 – 29	9%
30 – 34	7%
35 – 39	6%
40 – 44	5%
45 – 49	4.5%
50 – 59	3.5%
60+	3.2%

Years of Service	Proposed Salary Rate
0	15%
1 – 4	8.25%
5 – 11	7%
12 – 20	6%
21+	4%

Appendix 2 - Experience

Healthy Post-Retirement Mortality

Beneficiary Mortality

Disabled Post-Retirement Mortality

Active/Pre-Retirement Mortality

Retirement

Disability

Turnover

Salary Scale

Appendix 2 – Healthy Retiree Mortality Experience

Males

AVERAGE AGE	Number Exposed	Actual Deaths	Actual Mortality Rate	Expected Deaths	Assumed Mortality Rate	Ratio of Actual Rate to Expected Rate	Proposed Deaths	Proposed Mortality Rate	Ratio of Actual Rate to Proposed Rate
Under 55	12	0	0.00%	0.04	0.36%	0.00%	0.08	0.63%	0.00%
55-59	128	0	0.00%	0.66	0.52%	0.00%	1.04	0.82%	0.00%
60-64	456	9	1.97%	3.52	0.77%	255.95%	5.09	1.12%	176.69%
65-69	851	18	2.12%	9.45	1.11%	190.46%	13.11	1.54%	137.33%
70-74	1,084	32	2.95%	19.12	1.76%	167.37%	25.60	2.36%	125.02%
75-79	764	41	5.37%	23.21	3.04%	176.66%	30.16	3.95%	135.92%
80-84	437	38	8.70%	23.98	5.49%	158.48%	30.35	6.94%	125.22%
85-89	264	39	14.77%	25.71	9.74%	151.70%	31.82	12.05%	122.57%
90 & over	187	37	19.79%	35.48	18.97%	104.29%	43.06	23.03%	85.92%
TOTAL	4,183	214	5.12%	141.16	3.37%	151.60%	180.31	4.31%	118.68%

Females

AVERAGE AGE	Number Exposed	Actual Deaths	Actual Mortality Rate	Expected Deaths	Assumed Mortality Rate	Ratio of Actual Rate to Expected Rate	Proposed Deaths	Proposed Mortality Rate	Ratio of Actual Rate to Proposed Rate
Under 55	29	0	0.00%	0.08	0.26%	0.00%	0.10	0.34%	0.00%
55-59	201	0	0.00%	0.70	0.35%	0.00%	1.01	0.50%	0.00%
60-64	717	9	1.26%	3.46	0.48%	260.36%	5.29	0.74%	170.16%
65-69	1,115	17	1.52%	8.00	0.72%	212.39%	12.03	1.08%	141.33%
70-74	1,107	19	1.72%	13.28	1.20%	143.10%	19.13	1.73%	99.33%
75-79	736	24	3.26%	15.80	2.15%	151.91%	21.74	2.95%	110.38%
80-84	460	22	4.78%	18.04	3.92%	121.96%	24.16	5.25%	91.06%
85-89	233	14	6.01%	18.03	7.74%	77.64%	22.81	9.79%	61.39%
90 & over	221	45	20.36%	35.71	16.16%	126.01%	41.59	18.82%	108.19%
TOTAL	4,819	150	3.11%	113.09	2.35%	132.63%	147.85	3.07%	101.45%
Grand Total	9,002	364	4.04%	254.26	2.82%	143.16%	328.17	3.65%	110.92%

Appendix 2 – Beneficiary Mortality Experience

Males

AVERAGE AGE	Number Exposed	Actual Deaths	Actual Mortality Rate	Expected Deaths	Assumed Mortality Rate	Ratio of Actual Rate to Expected Rate	Proposed Deaths	Proposed Mortality Rate	Ratio of Actual Rate to Proposed Rate
Under 55	11	6	54.55%	0.03	0.30%	17916.28%	0.00	0.00%	0.00%
55-59	5	1	20.00%	0.03	0.50%	3996.51%	0.04	0.74%	2719.57%
60-64	14	0	0.00%	0.10	0.75%	0.00%	0.14	1.00%	0.00%
65-69	14	1	7.14%	0.16	1.15%	623.08%	0.19	1.38%	519.05%
70-74	18	2	11.11%	0.29	1.61%	690.99%	0.32	1.78%	623.08%
75-79	11	1	9.09%	0.35	3.23%	281.86%	0.35	3.19%	284.78%
80-84	17	1	5.88%	0.94	5.51%	106.66%	0.87	5.12%	114.95%
85-89	6	0	0.00%	0.63	10.52%	0.00%	0.58	9.62%	0.00%
90 & over	6	1	16.67%	1.11	18.45%	90.33%	1.06	17.63%	94.53%
TOTAL	102	13	12.75%	3.64	3.57%	356.77%	3.55	3.48%	366.57%

Females

AVERAGE AGE	Number Exposed	Actual Deaths	Actual Mortality Rate	Expected Deaths	Assumed Mortality Rate	Ratio of Actual Rate to Expected Rate	Proposed Deaths	Proposed Mortality Rate	Ratio of Actual Rate to Proposed Rate
Under 55	26	7	26.92%	0.07	0.26%	10276.90%	0.07	0.26%	10254.56%
55-59	45	4	8.89%	0.16	0.34%	2577.87%	0.50	1.12%	792.71%
60-64	62	0	0.00%	0.30	0.48%	0.00%	0.94	1.52%	0.00%
65-69	106	5	4.72%	0.78	0.74%	640.12%	2.19	2.07%	227.80%
70-74	179	4	2.23%	2.16	1.21%	185.24%	5.21	2.91%	76.79%
75-79	153	10	6.54%	3.28	2.14%	305.32%	6.68	4.37%	149.63%
80-84	107	7	6.54%	4.35	4.07%	160.77%	7.61	7.11%	91.98%
85-89	97	8	8.25%	7.56	7.80%	105.79%	11.38	11.74%	70.28%
90 & over	125	27	21.60%	19.66	15.73%	137.34%	26.66	21.33%	101.28%
TOTAL	900	72	8.00%	38.31	4.26%	187.93%	61.25	6.81%	117.55%
Grand Total	1,002	85	8.48%	41.96	4.19%	202.59%	64.80	6.47%	131.18%

Appendix 2– Disabled Retiree Mortality Experience

Males

AVERAGE AGE	Number Exposed	Actual Deaths	Actual Mortality Rate	Expected Deaths	Assumed Mortality Rate	Ratio of Actual Rate to Expected Rate
Under 55	7	0	0.00%	0.09	1.29%	0.00%
55-59	14	0	0.00%	0.32	2.29%	0.00%
60-64	22	2	9.09%	0.62	2.83%	321.04%
65-69	51	1	1.96%	1.70	3.34%	58.71%
70-74	79	2	2.53%	3.15	3.99%	63.49%
75-79	57	4	7.02%	3.09	5.43%	129.30%
80-84	40	6	15.00%	3.11	7.78%	192.85%
85-89	10	1	10.00%	1.03	10.33%	96.85%
90 & over	16	5	31.25%	3.21	20.05%	155.90%
TOTAL	296	21	7.09%	16.33	5.52%	128.58%

Females

AVERAGE AGE	Number Exposed	Actual Deaths	Actual Mortality Rate	Expected Deaths	Assumed Mortality Rate	Ratio of Actual Rate to Expected Rate
Under 55	20	1	5.00%	0.28	1.39%	360.81%
55-59	48	2	4.17%	0.93	1.94%	215.16%
60-64	39	0	0.00%	0.82	2.10%	0.00%
65-69	56	1	1.79%	1.29	2.31%	77.39%
70-74	69	4	5.80%	1.98	2.87%	202.18%
75-79	47	3	6.38%	1.96	4.16%	153.39%
80-84	14	3	21.43%	0.93	6.67%	321.16%
85-89	3	0	0.00%	0.29	9.71%	0.00%
90 & over	3	2	66.67%	0.58	19.28%	345.84%
TOTAL	299	16	5.35%	9.06	3.03%	176.68%

Grand Total	595	37	6.22%	25.39	4.27%	145.74%

Appendix 2 – Pre-Retirement Mortality Experience

Males

AVERAGE AGE	Number Exposed	Actual Deaths	Actual Mortality Rate	Expected Deaths	Assumed Mortality Rate	Ratio of Actual Rate to Expected Rate
Under 25	144	0	0.00%	0	0.03%	0.00%
25-29	486	0	0.00%	0	0.04%	0.00%
30-34	748	0	0.00%	0	0.06%	0.00%
35-39	847	0	0.00%	1	0.07%	0.00%
40-44	724	0	0.00%	1	0.09%	0.00%
45-49	631	0	0.00%	1	0.12%	0.00%
50-54	703	0	0.00%	1	0.17%	0.00%
55-59	814	0	0.00%	2	0.26%	0.00%
60-64	608	0	0.00%	2	0.38%	0.00%
65-69	307	0	0.00%	2	0.52%	0.00%
70 & over	158	0	0.00%	1	0.92%	0.00%
TOTAL	6,170	0	0.00%	11.34	0.18%	0.00%

Females

AVERAGE AGE	Number Exposed	Actual Deaths	Actual Mortality Rate	Expected Deaths	Assumed Mortality Rate	Ratio of Actual Rate to Expected Rate
Under 25	192	0	0.00%	0.02	0.01%	0.00%
25-29	828	0	0.00%	0.12	0.01%	0.00%
30-34	1,080	0	0.00%	0.27	0.02%	0.00%
35-39	1,188	0	0.00%	0.42	0.04%	0.00%
40-44	954	0	0.00%	0.44	0.05%	0.00%
45-49	909	0	0.00%	0.57	0.06%	0.00%
50-54	832	0	0.00%	0.79	0.10%	0.00%
55-59	856	0	0.00%	1.30	0.15%	0.00%
60-64	586	0	0.00%	1.31	0.22%	0.00%
65-69	272	0	0.00%	0.89	0.33%	0.00%
70 & over	149	0	0.00%	0.91	0.61%	0.00%
TOTAL	7,846	0	0.00%	7.05	0.09%	0.00%

Grand Total	14,016	0	0.00%	18.39	0.13%	0.00%

Appendix 2 – Retirement Experience

Age at Retirement	Number Exposed	Actual Retirements	Actual Retirement Rate	Expected Retirements	Assumed Retirement Rate	Ratio of Actual Rate to Expected Rate	Proposed Retirements	Proposed Retirement Rate	Ratio of Actual Rate to Expected Rate
Less than 60	368	73	19.84%	119.50	32.47%	61.09%	73.20	19.89%	307.11%
60 - 64	509	76	14.93%	185.60	36.46%	40.95%	76.35	15.00%	272.99%
65 - 69	368	67	18.21%	166.40	45.22%	40.26%	65.76	17.87%	225.32%
70 - 74	147	28	19.05%	146.00	99.32%	19.18%	26.76	18.20%	105.35%
75 & over	68	12	17.65%	68.00	100.00%	17.65%	68.00	100.00%	17.65%
TOTAL	1,460	256	17.53%	685.50	46.95%	37.35%	310.07	21.24%	82.56%

Appendix 2 – Disability Experience

Average Age	Number Exposed	Actual Awards	Actual Disability Rate	Expected Awards	Assumed Disability Rate	Ratio of Actual Rate to Expected Rate	Proposed Disabilities	Proposed Disability Rate
Under 25	336	0	0.00%	0.09	0.03%	0.00%	0.02	0.01%
25-29	1,314	0	0.00%	0.28	0.02%	0.00%	0.07	0.01%
30-34	1,828	0	0.00%	0.37	0.02%	0.00%	0.09	0.01%
35-39	2,035	0	0.00%	0.64	0.03%	0.00%	0.16	0.01%
40-44	1,678	0	0.00%	1.32	0.08%	0.00%	0.33	0.02%
45-49	1,540	1	0.06%	2.66	0.17%	37.63%	0.66	0.04%
50-54	1,535	1	0.07%	4.09	0.27%	24.43%	1.02	0.07%
55-59	1,670	2	0.12%	7.09	0.42%	28.22%	1.77	0.11%
Grand Total	11,936	4	0.03%	16.54	0.14%	24.18%	4.14	0.03%

Appendix 2 – Turnover Experience – Male

Actual Experience Based on Age

Average Age	Total Exposures	Actual Turnover	Actual Turnover Rate	Expected Turnover	Current Assumed Rate	Ratio of Actual Rate to Expected Rate
Under 25	144	49	34.03%	41.45	28.78%	118.21%
25-29	486	116	23.87%	122.95	25.30%	94.35%
30-34	748	156	20.86%	159.85	21.37%	97.59%
35-39	847	151	17.83%	156.96	18.53%	96.20%
40-44	723	121	16.74%	106.84	14.78%	113.25%
45-49	629	85	13.51%	93.85	14.92%	90.57%
50-54	672	66	9.82%	94.82	14.11%	69.61%
55 - 59	708	86	12.15%	93.87	13.26%	91.62%
60 & over	605	136	22.48%	102.44	16.93%	132.76%
Total	5,562	966	17.37%	973.03	17.49%	99.28%

Proposed Experience Based on Service

Average Service	Total Exposures	Actual Turnover	Actual Turnover Rate	Expected Turnover	Current Assumed Rate	Ratio of Actual Rate to Expected Rate	Proposed Turnover	Proposed Rate
0	921	260	28.23%	300.74	32.65%	86.45%	257.88	28.00%
1-3	1,903	383	20.13%	408.81	21.48%	93.69%	380.60	20.00%
4-5	830	124	14.94%	100.31	12.09%	123.62%	124.50	15.00%
6-13	1,346	146	10.85%	122.03	9.07%	119.64%	148.06	11.00%
14+	562	53	9.43%	41.14	7.32%	128.83%	38.71	7.00%
Total	5,562	966	17.37%	973.03	17.49%	99.28%	949.75	17.08%

Appendix 2 – Turnover Experience – Female

Actual Experience Based on Age

Average Age	Total Exposures	Actual Turnover	Actual Turnover Rate	Expected Turnover	Current Assumed Rate	Ratio of Actual Rate to Expected Rate
Under 25	192	67	34.90%	52.18	27.18%	128.40%
25-29	828	201	24.28%	190.73	23.04%	105.38%
30-34	1,080	194	17.96%	196.46	18.19%	98.75%
35-39	1,188	179	15.07%	183.54	15.45%	97.53%
40-44	952	121	12.71%	119.42	12.54%	101.32%
45-49	905	85	9.39%	108.70	12.01%	78.20%
50-54	790	70	8.86%	86.21	10.91%	81.20%
55 - 59	691	71	10.27%	76.91	11.13%	92.32%
60 & over	459	119	25.93%	78.85	17.18%	150.92%
Total	7,085	1,107	15.62%	1,093.00	15.43%	101.28%

Proposed Experience Based on Service

Average Service	Total Exposures	Actual Turnover	Actual Turnover Rate	Expected Turnover	Current Assumed Rate	Ratio of Actual Rate to Expected Rate	Proposed Turnover	Proposed Rate
0	1,044	271	25.96%	317.44	30.41%	85.37%	261.00	25.00%
1	833	188	22.57%	191.00	22.93%	98.43%	183.26	22.00%
2-3	1,358	262	19.29%	259.59	19.12%	100.93%	271.60	20.00%
4-5	1,016	134	13.19%	115.47	11.37%	116.05%	132.08	13.00%
6-13	1,866	181	9.70%	147.64	7.91%	122.60%	186.60	10.00%
14+	968	71	7.33%	61.86	6.39%	114.78%	66.50	7.00%
Total	7,085	1,107	15.62%	1,093.00	15.43%	101.28%	1,101.04	15.54%

Appendix 2 – Salary Experience

Actual Experience Based on Age-Based Assumption

Average Ages	Total Exposures	Prior Year Total Salary	Prior Year Average Salary	Current Year Total Salary	Current Year Average Salary	Actual Rate	Expected Rate	Expected Total Salaries	Average Exp Salary	Percentage Actual/Expected
Under 25	219	6,302,792	28,780	7,780,684	35,528	23.45%	10.00%	6,933,071	31,658	112.22%
25-29	996	38,605,173	38,760	43,818,793	43,995	13.51%	9.00%	42,079,639	42,249	104.13%
30-34	1,479	67,457,981	45,611	74,876,823	50,627	11.00%	7.00%	72,180,039	48,803	103.74%
35-39	1,703	87,835,555	51,577	96,208,521	56,494	9.53%	6.00%	93,105,688	54,672	103.33%
40-44	1,439	78,461,763	54,525	85,726,959	59,574	9.26%	5.00%	82,384,851	57,251	104.06%
44-49	1,367	75,174,277	54,992	81,227,296	59,420	8.05%	4.50%	78,557,120	57,467	103.40%
50-54	1,384	76,553,574	55,313	82,443,343	59,569	7.69%	3.50%	79,232,949	57,249	104.05%
55-59	1,467	75,165,950	51,238	80,863,980	55,122	7.58%	3.50%	77,796,758	53,031	103.94%
60-64	969	46,697,191	48,191	50,301,596	51,911	7.72%	3.20%	48,191,501	49,733	104.38%
65-69	444	22,299,953	50,225	23,159,878	52,162	3.86%	3.20%	23,013,551	51,832	100.64%
Totals	11,467	574,554,208	50,105	626,407,872	54,627	9.03%	5.03%	603,475,167	52,627	103.80%

Appendix 2 – Salary Experience

Proposed Assumption based on Service

Service	Exposures	Prior Year Total Salary	Prior Year Average Salary	Current Year Total Salary	Current Year Average Salary	Actual Rate	Proposed Rate	Proposed Total Salaries	Average Proposed Salary	Percentage Actual/Proposed
0<1	1,235	46,763,962	37,866	59,526,527	48,200	27.29%	15.00%	53,778,556	43,545	110.69%
1<2	1,280	58,842,531	45,971	65,190,563	50,930	10.79%	8.25%	63,697,040	49,763	102.34%
2<3	1,085	50,903,129	46,915	55,422,531	51,081	8.88%	8.25%	55,102,637	50,786	100.58%
3<4	1,034	50,118,845	48,471	54,704,694	52,906	9.15%	8.25%	54,253,650	52,470	100.83%
4<5	929	45,350,484	48,816	50,345,868	54,194	11.02%	8.25%	49,091,899	52,844	102.55%
5<6	779	37,648,213	48,329	40,800,003	52,375	8.37%	7.00%	40,283,588	51,712	101.28%
6<7	653	33,476,402	51,266	36,059,370	55,221	7.72%	7.00%	35,819,751	54,854	100.67%
7<8	553	29,839,985	53,960	31,897,650	57,681	6.90%	7.00%	31,928,784	57,737	99.90%
8<9	445	24,945,618	56,058	26,969,237	60,605	8.11%	7.00%	26,691,812	59,982	101.04%
9<10	360	20,086,818	55,797	22,068,172	61,300	9.86%	7.00%	21,492,895	59,702	102.68%
10<11	367	19,774,419	53,881	21,414,475	58,350	8.29%	7.00%	21,158,628	57,653	101.21%
11<12	349	17,773,997	50,928	19,375,635	55,518	9.01%	7.00%	19,018,177	54,493	101.88%
12<13	297	15,205,961	51,199	16,232,020	54,653	6.75%	6.00%	16,118,319	54,270	100.71%
13<14	245	12,877,349	52,561	13,832,141	56,458	7.41%	6.00%	13,649,990	55,714	101.33%
14<15	207	11,413,558	55,138	12,248,021	59,169	7.31%	6.00%	12,098,372	58,446	101.24%
15<16	165	8,988,383	54,475	9,598,915	58,175	6.79%	6.00%	9,527,686	57,744	100.75%
16<17	155	7,900,440	50,971	8,587,220	55,401	8.69%	6.00%	8,374,466	54,029	102.54%
17<18	140	7,456,716	53,262	8,089,084	57,779	8.48%	6.00%	7,904,119	56,458	102.34%
18<19	131	6,877,711	52,502	7,351,570	56,119	6.89%	6.00%	7,290,374	55,652	100.84%
19<20	134	6,916,414	51,615	7,586,723	56,617	9.69%	6.00%	7,331,398	54,712	103.48%
20<21	122	6,540,895	53,614	7,248,964	59,418	10.83%	6.00%	6,933,349	56,831	104.55%
21<22	138	7,601,356	55,082	8,109,603	58,765	6.69%	4.00%	7,905,410	57,286	102.58%
22<23	143	8,079,892	56,503	8,567,580	59,913	6.04%	4.00%	8,403,087	58,763	101.96%
23<24	139	8,018,588	57,688	8,527,253	61,347	6.34%	4.00%	8,339,332	59,995	102.25%
24<25	121	7,125,862	58,891	7,466,776	61,709	4.78%	4.00%	7,410,896	61,247	100.75%
25	101	6,455,994	63,921	6,832,643	67,650	5.83%	4.00%	6,714,234	66,478	101.76%
Totals	11,307	556,983,523	49,260	614,053,240	54,307	10.25%	7.78%	600,318,449	53,093	102.29%