

# City Pension Fund for Firefighters and Police Officers In the City of Miami Beach

Experience Study for the Five Years Ended September 30, 2019

January 14, 2021







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Ms. Donna Brito  
Executive Director  
City Pension Fund for Firefighters and Police Officers  
in the City of Miami Beach  
1691 Michigan Avenue, Suite 355  
Miami Beach, Florida 33139

**Re: Experience Study**

Dear Board Members:

Gabriel, Roeder, Smith & Company is pleased to provide the results of an *updated* experience investigation for the City Pension Fund for Firefighters and Police Officers in the City of Miami Beach (Fund). The update reflects the cost impact based on the updated investment return assumption, financial data and member census data as of September 30, 2020. The purpose of this report is to assist in assumption selection for future actuarial valuations by comparing actual to expected experience over a recent period of time and reviewing economic assumptions based on the current economic environment and forecasts.

The experience investigation covers the five-year period from October 1, 2014 through September 30, 2019 and uses census data provided by the City for the annual actuarial valuations applicable for each year in this period.

With the Board's approval of the recommendations in this report, we believe the actuarial condition of the Fund will be more accurately portrayed. The Board's decisions should be based on the appropriateness of each recommendation, not on their collective effect on the costs.

The Table of Contents, which immediately follows, sets out the material contained in this report.

This Experience Study is based upon assumptions regarding future events, which may or may not materialize and based upon Fund provisions as outlined in our October 1, 2019 Actuarial Valuation Report. Should you have reason to believe the assumptions used are unreasonable, the Fund provisions are incorrectly described, the important and relevant Fund provisions are not described, or that conditions have changed since the date of the calculations, you should contact the undersigned prior to relying on information in the Experience Study.

The cost impact shown in this report has been updated to reflect preliminary October 1, 2020 actuarial valuation results, based on information provided by the Board.

This report does not reflect the recent and still developing impact of COVID-19.

As you may be aware, in the event that more than one change is being considered, it is important to note that separate valuations cannot generally be added together to produce a total. The total can be considerably greater than the sum of the parts due to interaction of various Fund provisions, actuarial assumptions and actuarial methods with each other. This Experience Study is intended to describe the estimated future financial effects of the proposed assumption changes on the Fund.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: Fund experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in Fund provisions or applicable law. Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

This report was prepared using ProVal's valuation model, a software product of Winklevoss Technologies. We are relying on the ProVal model. We performed tests of the ProVal model with this assignment and made a reasonable attempt to understand the developer's intended purpose of, general operation of, major sensitivities and dependencies within, and key strengths and limitations of the ProVal model. In our professional judgment, the ProVal valuation model has the capability to provide results that are consistent with the purposes of the valuation.

This report should not be relied on for any purpose other than the purpose described in the primary communication. Determinations of the financial results associated with the benefits described in this report in a manner other than the intended purpose may produce significantly different results.

The signing actuaries are independent of the Fund and City.

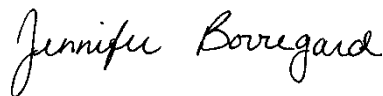
The undersigned are Members of the American Academy of Actuaries and meet the qualification standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. We are available to respond to any questions with regards to matters covered in this report.

Respectfully submitted,  
GABRIEL, ROEDER, SMITH & COMPANY



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Shelly L. Jones, A.S.A., E.A.  
Consultant and Actuary



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Jennifer Borregard, E.A.  
Consultant and Actuary



## EXPERIENCE STUDY

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## EXPERIENCE STUDY

### SUMMARY OF FINDINGS

The five-year period (October 1, 2014 to September 30, 2019) covered by this experience investigation provided sufficient data to form a basis for recommending updates in the following demographic and financial assumptions used in the actuarial valuation of the Pension Fund.

Recommended changes in actuarial assumptions resulting from this experience investigation including costs as a dollar amount and as a percentage of projected annual pensionable payroll (\$69.2M excluding DROP payroll for fiscal year ending September 30, 2022) are summarized below. As a reference, the preliminary total minimum required contribution for fiscal year ending September 30, 2022 is \$52.0M (75.2%) and the net minimum required City contribution is \$44.9M (64.9%). (Note: the amortization period for the change in actuarial accrued liability resulting from the modeled assumption is 30 years; Updated salary increase assumptions increase the projected annual pensionable payroll to \$69.7M)

- Update the **future salary increase** assumption to better reflect higher than expected observed salary increases.

Total City Contribution	Cost Increase
\$46.1M	+ \$1.2M
66.1%	+ 1.2%

- Update assumed **rates of future retirement** to reflect higher than expected observed retirement experience.

Total City Contribution	Cost Increase
\$45.4M	+ \$0.5M
65.6%	+ 0.7%

- Update assumed **DROP assumptions** to better reflect anticipated future DROP experience.

Total City Contribution	Cost Increase
\$45.4M	+ \$0.5M
65.6%	+ 0.7%

- Update assumed **rates of future withdrawal** to reflect lower than expected observed withdrawal experience.

Total City Contribution	Cost
\$45.0M	+ \$0.1M
65.0%	+ 0.1%

- Combined** effect of all recommended assumption updates.

Total City Contribution	Cost
\$47.2M	+ \$2.3M
67.7%	+ 2.8%

## EXPERIENCE STUDY

### SUMMARY OF FINDINGS 20 YEAR PROJECTIONS

Throughout the forecast period, new members are assumed to be hired each year at a rate sufficient to maintain a constant active employee headcount – stationary population. Newly employed members are assumed to have the same average demographic characteristics (age, gender and salary – adjusted each year for inflation) as those of members hired during the past five (5) years. State (Share Plan) contributions are projected to remain \$120,549 during the projection period.

Projections are deterministic – assume all actuarial assumptions are realized. Investment return is assumed to be 7.55% for FYE 2022 and 7.50% for FYE 2023 and thereafter. Payroll growth is assumed to remain the same as current year 3.0% for all projection years. Administrative expenses included in the normal cost are assumed to grow at 3% per year under the Preliminary Valuation and 2.75% under the Experience Study Changes.

Contribution Fiscal Year	Preliminary Valuation			Combined Experience Study Changes			Difference
	Projected Annual Pensionable (in Millions)	Projected Net City Required Contribution (in Millions)	% of Pay	Projected Annual Pensionable (in Millions)	Projected Net City Required Contribution (in Millions)	% of Pay	Projected Net City Required Contribution (in Millions)
	Payroll	Amount		Payroll	Amount		Amount
2021 - 2022	69.2	44.9	64.9%	69.7	47.2	67.7%	2.3
2022 - 2023	71.5	46.6	65.1%	72.5	49.3	68.1%	2.8
2023 - 2024	74.5	48.2	64.6%	75.8	51.1	67.4%	3.0
2024 - 2025	77.3	49.7	64.3%	79.0	52.9	66.9%	3.2
2025 - 2026	79.8	51.1	64.1%	82.0	54.6	66.6%	3.4
2026 - 2027	82.3	52.6	63.9%	85.3	56.3	66.1%	3.8
2027 - 2028	84.5	54.0	63.9%	88.2	58.1	65.8%	4.1
2028 - 2029	86.8	55.7	64.2%	91.2	60.1	65.8%	4.4
2029 - 2030	89.2	57.2	64.1%	94.4	61.9	65.6%	4.7
2030 - 2031	91.3	58.3	63.9%	97.3	63.3	65.1%	5.0
2031 - 2032	92.9	60.0	64.5%	99.7	65.2	65.4%	5.2
2032 - 2033	94.7	59.7	63.0%	102.1	65.2	63.8%	5.5
2033 - 2034	96.6	59.2	61.2%	105.0	65.0	61.9%	5.8
2034 - 2035	98.5	55.9	56.7%	107.8	62.0	57.5%	6.1
2035 - 2036	100.5	52.1	51.8%	110.8	58.5	52.8%	6.4
2036 - 2037	102.5	53.8	52.5%	113.6	60.5	53.3%	6.7
2037 - 2038	104.8	53.0	50.5%	116.7	60.0	51.4%	7.1
2038 - 2039	107.1	50.9	47.5%	119.9	58.3	48.6%	7.4
2039 - 2040	108.5	46.8	43.1%	121.7	54.3	44.6%	7.6
2040 - 2041	109.9	35.5	32.3%	124.0	43.2	34.9%	7.8
5 Year Totals	372.3	240.5	64.6%	379.0	255.2	67.3%	14.7
10 Year Totals	806.4	518.2	64.3%	835.4	554.8	66.4%	36.6
20 Year Totals	1,822.5	1,044.8	57.3%	1,956.6	1,146.9	58.6%	102.1



## EXPERIENCE INVESTIGATION RESULTS

### Methodology

The methodology, basic results and conclusions of the five-year experience investigation of the actuarial assumptions are described below.

#### **Methodology**

The expected salaries at the end of each year were obtained by the salary increase assumption. Resulting expected salary were compared with actual salaries.

The number of members exposed to risk during each period was tabulated (exposure) and the expected incidence of withdrawal (vested and non-vested) and retirement were obtained by use of the withdrawal and retirement rates employed in the most recent actuarial valuation. The actual number of separations and retirements were tabulated and compared with those expected.

Actuaries are guided by the Actuarial Standards of Practice (ASOP) adopted by the Actuarial Standards Board (ASB).

One of these standards is ASOP No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*. This standard provides guidance to actuaries giving advice on selecting noneconomic assumptions for measuring obligations under defined benefit plans.

Additionally, Actuarial Standards of Practice (ASOP) No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*, provides guidance to actuaries on giving advice on selecting economic assumptions for measuring obligations for defined benefit pension plans.



## EXPERIENCE INVESTIGATION RESULTS

### Basic Results and Conclusions

#### *Rates of Salary Increase and Inflation*

The expected salaries at the end of each year were obtained by the salary increase assumption. Resulting expected salary were compared with actual salaries.

We propose generally increasing the salary merit increase assumption at the representative ages as follows.

SALARY INCREASES		
Age	Prior Merit Salary Increase Rates *	Proposed Merit Salary Increase Rates *
20	3.7%	9.8%
25	7.7%	9.8%
30	6.7%	6.8%
35	3.7%	3.8%
40	2.7%	3.3%
45	2.7%	2.9%
50	2.7%	2.6%

\* Cost of living increases of 1% each April through 2021 contained in the collective bargaining agreement and long term expected increases of 2.18% annually each July are additionally applicable.

The overall inflation assumption is currently 3.0%. Most economists predict inflation closer to 2.0% particularly in the near term. Thus, we are recommending to reduce the assumption to 2.75%. Please note, this change does not have an immediate impact on the annual contribution but is more influential on projections of long-term costs, future building block investment analysis, and the long-term payroll growth assumption.

With lower overall inflation, typically, we would also recommend lowering the payroll growth assumption (currently no more than 3.5%). However, due to Florida Statute, the payroll growth assumption is subject to the lesser of the assumption (3.5%) or the ten-year average. Due to the Florida Statute limitation we are not recommending a change in this assumption; as we believe the 10-year average will prevail if inflation is indeed lower.

## EXPERIENCE INVESTIGATION RESULTS

### *Rates of Retirement and DROP Assumptions*

The observed number of retirements was slightly higher than anticipated under the assumed rates of retirement employed in the latest actuarial valuation.

We propose rates of retirement as follows.

RETIREMENT RATES *				
	Meets Rule of 70		Does Not Meet Rule of 70	
Years of Service	Expected Current	Expected Proposed	Expected Current	Expected Proposed
< 20	20%	30%	4%	8%
20	25%	45%	5%	8%
21	30%	45%	10%	8%
22	35%	50%	10%	8%
23	40%	50%	20%	20%
24	50%	70%	60%	60%
25	70%	70%	60%	60%
26 & After	100%	100%	100%	100%

\* For employees who meet the age and service eligibility requirements for normal or vested retirement.

## EXPERIENCE INVESTIGATION RESULTS

### *Rates of Retirement and DROP Assumptions (cont'd)*

Over the last 5 years, 95% of retirees entered DROP and the remaining 5% retired immediately. Currently our assumption is 80% of retirees enter the DROP, however we recommend increasing the DROP assumption to 90% for Tier 1, Tier 2 and Tier 3 members. For Tier 4 and Tier 5 members, no COLA is provided until the 5<sup>th</sup> annual adjustment date in the DROP, therefore we are recommending a lower assumption for these members which is only 85% enter the DROP.

We also reviewed the DROP exit year for the members.

We recommend adjustments to the DROP exit percentage based on Tier.

For Tier 1, Tier 2 and Tier 3 members, we recommend an assumption of 50% of the DROP members will leave before the end of year 5. Additionally, we recommend an assumption of 30% will leave in year 6, 30% will leave in year 7 and all must exit by year 8.

DROP EXIT RATES - TIERS 1, 2 AND 3		
Leave DROP	Current	Proposed
End of 5 years	5%	50%
End of 6 years	5%	30%
End of 7 years	10%	30%
End of 8 years	100%	100%

For Tier 4 and Tier 5 members, it is anticipated that 85% of those who retire will enter the DROP and stay until the COLA is received (year 5). For valuation purposes, the applicable COLA is the same as a retiree for those DROP members in years 6 to 8. Since experience is not available for these Tier members, this assumption will need to be monitored.

## EXPERIENCE INVESTIGATION RESULTS

### *Rates of Withdrawal*

Observed withdrawals were generally lower than the number of expected incidences of withdrawal during the observation period. We propose rates of future withdrawal as follows.

WITHDRAWAL RATES		
Age	Current Rates	Proposed Rates
Under 20	0.00%	0.00%
20 - 24	2.00%	2.00%
25 - 29	1.75%	1.15%
30 - 34	1.50%	1.15%
35 - 39	1.25%	1.00%
40 - 44	1.00%	1.00%
45 - 49	0.75%	1.00%
50 & Over	0.00%	1.00%

## EXPERIENCE INVESTIGATION RESULTS

### *Service / Non-service Incurred Disability*

There were too few incidences of active employees becoming disabled to analyze the current rate assumptions.

Of the 5 disabled members (all police officers) during the experience study period, 3 (approximately 60%) were in service disability. The current assumption is 70% of new disabled firefighters and 65% of new disabled police officers will be in service disabilities.

Therefore, we do not recommend a change in the rates at this time.

**APPENDIX  
TABLE I**

**COMPARISON OF ACTUAL AND EXPECTED  
ANNUAL MEMBER SALARIES**

<b>ANNUAL SALARY INCREASES EXPERIENCE By Attained Age</b>							
<b>Age</b>	<b>Prior Year</b>	<b>Actual</b>	<b>% Incr</b>	<b>Expected</b>	<b>% Incr</b>	<b>Proposed</b>	<b>% Incr</b>
< 30	\$ 23,714,105	\$ 27,089,361	14.23%	\$ 26,120,111	10.15%	12.0%	\$ 26,559,798
30 - 34	41,800,931	46,196,860	10.52%	45,164,682	8.05%	9.0%	45,563,015
35 - 39	49,037,240	52,806,465	7.69%	51,707,363	5.45%	6.0%	51,979,474
40 - 44	45,817,170	48,603,747	6.08%	48,165,489	5.13%	5.5%	48,337,114
45 - 49	43,156,059	45,412,420	5.23%	45,372,470	5.14%	5.1%	45,357,018
50 & Over	13,608,871	14,268,963	4.85%	14,269,461	4.85%	4.8%	14,262,097
<b>Total</b>	<b>\$ 217,134,376</b>	<b>\$ 234,377,816</b>	<b>7.94%</b>	<b>\$ 230,799,576</b>	<b>6.29%</b>	<b>6.87%</b>	<b>\$ 232,058,516</b>

**APPENDIX  
TABLE II**

**COMPARISON OF ACTUAL AND EXPECTED RETIREMENTS  
(INCLUDES DROPS)**

RETIREMENT EXPERIENCE							
Service	Exposure	Current Assumed Rates	Expected Retirements (Current)	Actual Retirements	Actual Rates	Proposed Retirement Rates	Expected Retirements (Proposed)
<b>Meets Rule of 70</b>							
< 20	50	20%	10.0	21	42.00%	30%	15.0
20	20	25%	5.0	14	70.00%	45%	9.0
21	28	30%	8.4	16	57.14%	45%	12.6
22	33	35%	11.6	25	75.76%	50%	16.5
23	21	40%	8.4	11	52.38%	50%	10.5
24	13	50%	6.5	13	100.00%	70%	9.1
25	5	70%	3.5	3	60.00%	70%	3.5
26 & After	6	100%	6.0	4	66.67%	100%	6.0
<b>Subtotal</b>	<b>176</b>	<b>33.75%</b>	<b>59.4</b>	<b>107</b>	<b>60.80%</b>	<b>46.70%</b>	<b>82.2</b>
<b>Does Not Meet Rule of 70</b>							
< 26	115	4%	4.7	14	12.17%	8%	9.2
26 & After	0	100%	0.0	0	0.00%	100%	0.0
<b>Subtotal</b>	<b>115</b>	<b>4.09%</b>	<b>4.7</b>	<b>14</b>	<b>12.17%</b>	<b>8.00%</b>	<b>9.2</b>
<b>Total</b>	<b>291</b>	<b>22.03%</b>	<b>64</b>	<b>121</b>	<b>41.58%</b>	<b>31.41%</b>	<b>91.4</b>

**APPENDIX  
TABLE III**

**COMPARISON OF ACTUAL AND EXPECTED  
TERMINATIONS**

<b>WITHDRAWAL EXPERIENCE</b>							
<b>Age</b>	<b>Exposure</b>	<b>Current Assumed Rates</b>	<b>Expected Withdrawals (Current)</b>	<b>Actual Withdrawals</b>	<b>Actual Rates</b>	<b>Proposed Rates</b>	<b>Expected Withdrawals (Proposed)</b>
< 20	0	0.00%	0.0	0	0.00%	0.00%	0.0
20 - 24	29	2.00%	0.6	0	0.00%	2.00%	0.6
25 - 29	304	1.75%	5.3	1	0.33%	1.15%	3.5
30 - 34	488	1.50%	7.3	4	0.82%	1.15%	5.6
35 - 39	511	1.25%	6.4	5	0.98%	1.00%	5.1
40 - 44	483	1.00%	4.8	5	1.04%	1.00%	4.8
45 - 49	348	0.75%	2.6	5	1.44%	1.00%	3.5
50 & After	31	0.00%	0.0	1	3.23%	1.00%	0.3
<b>Total</b>	<b>2,194</b>	<b>1.23%</b>	<b>27.0</b>	<b>21</b>	<b>0.96%</b>	<b>1.07%</b>	<b>23.4</b>



## APPENDIX

### Purpose of the Actuarial Valuation

In a defined benefit pension plan, an employer makes a promise to its employees of a lifetime pension. The amount of the monthly pension is determined by a *benefit formula* which is often based upon a multiplier percentage and the number of years of service and the average final earnings of the employee.

The employer must design and follow a systematic plan for advance-funding this obligation. That is accomplished by establishing a pension fund and performing annual actuarial valuations to measure the liabilities associated with the obligation and to calculate how much the employer must contribute to the pension fund in order to make good on its promise.

The calculations in the actuarial valuation are performed each year to re-measure the liabilities. The stakeholders need to know how the fund is doing in its goal of systematically financing the promised benefits. So it is important to make the actuarial calculations in accordance with the professional actuarial standards of practice and the accounting standards.

### Role of Actuarial Assumptions

The nature of the pension promise and its systematic funding require long term projections of the employee workforce (using demographic assumptions) and long-term projections of the salaries and investment returns (using economic assumptions). The entire actuarial valuation process depends on the selection and use of reasonable actuarial assumptions as to future demographics and future economics. There are many different actuarial assumptions employed in an actuarial valuation. The primary actuarial assumptions include:

1. Rates of Salary Increases
2. Rates of Termination of Employment
3. Rates of Mortality
4. Rates of Disability
5. Rates of Retirement / DROP Assumptions

The actuary and fund management must be comfortable with the actuarial assumptions. The assumptions must be reasonable. Without a level of confidence in the reasonableness of the actuarial assumptions, the stakeholders and users of the valuation results cannot have confidence in the results. However, there is no way to have confidence in the actuarial assumptions unless an actuarial experience study is performed to assess the reasonableness of the current assumptions or to change them to be more in line with past experience and with future expectations.

For this reason, the Board has requested that we undertake an actuarial experience study to recommend changes to the actuarial assumptions used in the annual actuarial valuation.