

City Employees' Retirement Fund for the City of New Haven

2020 Experience Study-REVISED







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Report Prepared By:



City Employees' Retirement Fund of the City of New Haven

2014-2020 Experience Study

Executive Summary

The following is an Executive Summary of our recommendations based on the results of the 2014-2020 Experience Study. Exhibit A shows the details of the impact by group on the actuarial valuation results. Exhibit B shows the data analysis used to develop the recommendations.

Impact on 2020 Actuarial Valuation Results

Current Basis: Accrued Liability = \$463.62 million

City Normal Cost = \$1.26 million

Annual Required Contribution = \$23.30 million

Recommendation: All Changes with 7.75% Investment Return

Basis: Accrued Liability = \$474.22 (\$10.6 million increase)

City Normal Cost = \$1.30 million (\$0.04 million increase)

Annual Required Contribution = \$26.08 million (\$2.78 million increase)

All Changes with 7.00% Investment Return

Basis: Accrued Liability = \$509.80 million (\$35.58 million increase)

City Normal Cost = \$2.26 million (\$0.96 million increase)

Annual Required Contribution = \$28.54 million (\$2.46 million increase)

The Investment Return assumption should be supported by an analysis performed by New Haven's investment Advisor. We have provided the results using both an Investment Return of 7.75% and 7.00% to provide The Board with a range.

Mortality Basis

Current Basis: RP-2014 with one year age set forward, fully projected (projected to the year of

decrement), with separate male & female tables and separate rates for annuitants and

non-annuitants. Mortality Improvement is based on the MP-2018 scale.

Comment: In 2019, The Society of Actuaries published mortality tables that measure mortality rates

for public sector employees. Actual experience closely matches expectations based on the

Pub-2010 Public Retirement Plans Mortality Tables for General Employees.

Recommendation: Pub-2010 Public Retirement Plans Amount-Weighted Mortality Tables for General

Employees, projected to the valuation date with Scale MP-2020.



Termination Rates

Current Basis: Annual rates of termination are illustrated as follows:

Years of Service								
Age	Age < 1 1 2 3+							
<=20	12.00%	12.00%	12.00%	12.00%				
25	12.00%	12.00%	11.75%	11.00%				
30	12.00%	11.00%	10.00%	8.60%				
35	12.00%	11.00%	10.00%	6.60%				
40	12.00%	11.00%	10.00%	6.00%				
45	12.00%	11.00%	10.00%	5.00%				
50	10.00%	9.00%	8.00%	5.00%				
55	7.00%	6.50%	6.00%	5.00%				
>=60	6.00%	5.50%	5.00%	4.50%				

Age at Retirement

Current Basis: Annual rates of retirement are illustrated as follows:

Years of Service							
Age	10	15	20	25	30+		
45	0%	3%	5%	5%	5%		
50	3%	3%	10%	10%	15%		
55	5%	5%	10%	15%	20%		
60	10%	10%	18%	18%	23%		
65	25%	25%	25%	25%	30%		
70	10%	10%	10%	10%	20%		
75	35%	35%	35%	35%	50%		
80	100%	100%	100%	100%	100%		

Salary Scale

Current Basis: Annual rates of salary increases are illustrates as follows:

Years of Service							
Age	< 1	1	2	3+			
<=30	10.50%	8.25%	6.00%	3.75%			
30	9.50%	7.50%	5.50%	3.50%			
40	8.50%	6.75%	5.00%	3.25%			
50	7.50%	6.00%	4.50%	3.00%			
55	6.50%	4.75%	4.00%	2.75%			
>=60	5.50%	4.50%	3.50%	2.50%			

^{*}Inflation assumption implicit in table= 2.50%.

Comment: Experience suggests that our assumptions in regards to termination, retirement age and salary increases are reasonable and no further changes are needed to these tables.



Overtime and Longevity Pay

Current Basis: Current gross pay for all active participants (adjusted for new entrants).

Comment: Current salary overtime levels reasonably approximate impact of overtime pay on final

average compensation, when applicable.

Recommendation: No change is needed.

Payroll Increase Assumption

Current Basis: Total annual payroll is assumed to increase at a rate of 2.0% per year for purpose of

amortizing the unfunded actuarial liability. The amortization of the unfunded liability

does not currently cover the interest on the unfunded.

Comment: Common practice is trending toward level dollar amount.

Alternative: Total annual payroll is assumed to increase at a rate of 1.0% per year for purposes of

amortizing the unfunded actuarial liability. Doing so results in the ADEC increasing by about \$1.9 million and covers the interest on the unfunded liability. This will be an

interim step with the final step being level dollar.

Investment Return

Current Basis: 7.75% per year, net of investment expenses.

Comment: The Investment Return assumption should be supported by an expected return analysis

performed by New Haven's investment advisor.

Alternative: 7.00% per year, net of investment expenses

Cost of Living Increases

Current Basis: Increases are assumed to average 2.3% per year for Tier 1 employees, 1.7% for Tier 2, Tier

3, and some Tier 4 employees, and 1.4% for the remaining Tier 4 employees.

Comment: Based upon recent history on CPI-W we recommend lowering the COLA increase

assumption.

Recommendation: Increases are assumed to average 2.1% per year for Tier 1 employees, 1.7% for Tier 2, Tier

3, and some Tier 4 employees, and 1.3% for the remaining Tier 4 employees.

COLA Buyout Assumption

Current Basis: There is currently no assumption in regards to percent of retires who elect a COLA buyout.

Comment: Experience from 2016-2020 suggests that about 30% of population requests a buyout.

Recommendation: Assume 30% of retirees will elect a COLA Buyout.



Actuarial Certification

This report presents the results of the 2014-2020 Experience Study of the City Employees' Retirement Fund of the City of New Haven and the impact our recommendations for changes in assumptions has on the June 30, 2020 Actuarial Valuation results. It also provides the support for our recommendations. This report may not be appropriate for any other purpose.

The valuation results present in this report have been calculated in accordance with generally accepted actuarial principles and practices. I certify that the actuarial assumptions and methods were selected by me and represent my best estimate of anticipated actuarial experience under the plan.

In preparing all related valuation results, I have relied on employee data provided by the City, and on asset and contribution information also provided by the City. I have not audited the employee data or the financial information, although I have reviewed them for reasonableness.

The results in this report are based on the Plan as summarized in the *Plan Provisions* section of the June 30, 2018 Actuarial Valuation Report and unless otherwise specified in this report the actuarial assumptions and methods detailed in the *Description of Actuarial Methods and Assumptions* section of the June 30, 2018 Actuarial Valuation Report including the recommended assumption changes described here.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as: plan 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 or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of this report, an analysis of the potential range of such future measurements has not been performed.

I have no relationship with the employer or the Plan that would impair, or appear to impair, my objectivity in performing the work presented in this report. I am a member of the American Academy of Actuaries and meet its Qualification Standards to render the actuarial opinion contained herein.

Richard S. Sych, FSA, FCA, MAAA, Enrolled Actuary 20-05065

January 21, 2021

Daniel G. McCarthy, ASA, MAAA Enrolled Actuary 20-08718



Exhibit A

Impact on Actuarial Valuation Results

	Current Assumptions- Baseline	All New Assumptions with 7.75% Investment Return	All New Assumptions with 7.00% Investment Return
	CERF	CERF	CERF
Actuarial Accrued Liability (EAN % Salary)			
Actives	\$137,137,597	\$138,357,175	\$152,728,088
Deferred Inactives	\$1,897,410	1,952,626	2,101,872
Retirees/Beneficiaries	\$324,586,969	333,914,885	354,976,096
	\$463,621,976	\$474,224,686	\$509,806,056
	4470.006.004	4470.006.004	4470.006.004
Market Value of Assets (MVA)	\$179,036,391	\$179,036,391	\$179,036,391
Funded % on a MVA Basis	38.6%		35.1%
Actuarial Value of Assets (AVA)	\$181,722,891	\$181,722,891	\$181,722,891
Funded % on an AVA Value Basis	39.2%	38.3%	35.6%
Unfunded Accrued Liability (UAL)	\$281,899,085	\$292,501,795	\$328,083,165
Gross City Normal Cost (Before EE Contributions)	\$5,902,663	\$5,942,194	\$6,901,172
Amortization of UAL	\$21,467,261	\$24,139,760	\$25,585,363
Expected Payroll for Valuation Year	\$53,907,457	\$53,907,457	\$53,907,457
Gross City Normal Cost (includes expenses)	\$6,322,663	\$6,362,194	\$7,321,172
Employee Contribution	\$5,062,670	\$5,062,670	\$5,062,670
Net City Normal Cost	\$1,259,993	\$1,299,524	\$2,258,502
A) City Contribution (Including Expenses) as of 6/30/2020	\$22,727,254	\$25,439,284	\$27,843,865
City Contribution (Including Expenses) as % of Payroll	42.16%	47.19%	51.65%
B) Expected Payroll for ADEC Year (2020-2021)	\$55,255,143	\$55,255,143	\$55,255,143
City Contribution for ADEC Year (2021-2022)	\$23,295,435	\$26,075,266	\$28,539,962

NOTE: The increases in the ADEC shown above are based on June 30, 2020 preliminary results. The recommendations, if adopted, would first be reflected in the June 30, 2020 Actuarial Valuation which determines the ADEC for fiscal years ending 2021-2022 and 2022-2023.



Exhibit B – Section I Retirement Rates

Actual 2014-2020 Experience Compared to Current Assumption

Years of			Actual	Expected	Actual	Current
Service	Near age	Exposed	Retirements	Retirements	Experience	Assumption
<10	<50	0	0	0.00	0.0%	0.0%
	50-54	2	1	0.00	50.0%	0.0%
	55-59	5	0	0.00	0.0%	0.0%
	60-64	2	0	0.00	0.0%	0.0%
	65-74	1	0	0.00	0.0%	0.0%
	75+	0	0	0.00	0.0%	0.0%
	<total></total>	10	1	0.00	10.0%	0.0%
10-20	<50	396	13	10.50	3.3%	2.7%
	50-54	371	6	11.13	1.6%	3.0%
	55-59	372	7	18.60	1.9%	5.0%
	60-64	228	21	24.94	9.2%	10.9%
	65-74	136	26	19.80	19.1%	14.6%
	75+	6	2	3.40	33.3%	56.7%
	<total></total>	1509	75	88.37	5.0%	5.9%
20-29	<50	245	7	10.75	2.9%	4.4%
	50-54	306	23	30.60	7.5%	10.0%
	55-59	285	22	35.96	7.7%	12.6%
	60-64	209	18	37.62	8.6%	18.0%
	65-74	122	17	19.40	13.9%	15.9%
	75+	12	4	4.20	33.3%	35.0%
	<total></total>	1179	91	138.53	7.7%	11.7%
30+	<50	0	0	0.00	0.0%	0.0%
	50-54	48	11	7.20	22.9%	15.0%
	55-59	102	13	20.40	12.7%	20.0%
	60-64	88	12	20.24	13.6%	23.0%
	65-74	74	10	19.50	13.5%	26.4%
	75+	17	4	9.00	23.5%	52.9%
	<total></total>	329	50	76.34	15.2%	23.2%
<total></total>	<50	641	20	21.25	3.1%	3.3%
	50-54	727	41	48.93	5.6%	6.7%
	55-59	764	42	74.96	5.5%	9.8%
	60-64	527	51	82.80	9.7%	15.7%
	65-74	333	53	58.70	15.9%	17.6%
	75+	35	10	16.60	28.6%	47.4%
	<total></total>	3027	217	303.24	7.2%	10.0%

Recommendation: Actual experience from 2014-2020 suggests that our assumption regarding retirement rates is reasonable. We are recommending no further changes to this assumption.



Exhibit B – Section II

Turnover Rates

Actual 2014-2020 Experience Compared to Current Assumption

Years of			Actual	Expected	Actual	Current
Service	Near age	Exposed	Terminations	Terminations	Experience	Assumption
<3	<20	0	0	0.0	0.0%	0.0%
	20-29	200	25	23.3	12.5%	11.6%
	30-39	279	29	30.5	10.4%	10.9%
	40-49	177	13	19.4	7.3%	11.0%
	50-59	165	11	11.4	6.7%	6.9%
	60+	50	4	2.7	8.0%	5.4%
	<total></total>	871	82	87.3	9.4%	10.0%
3+	<20	2	0	0.1	0.0%	6.0%
	20-29	76	7	7.4	9.2%	9.8%
	30-39	530	34	35.2	6.4%	6.6%
	40-49	592	27	31.1	4.6%	5.3%
	50-59	281	15	14.1	5.3%	5.0%
	60+	108	9	4.9	8.3%	4.5%
	<total></total>	1589	92	92.8	5.8%	5.8%
<total></total>	<20	2	0	0.1	0.0%	6.0%
	20-29	276	32	30.7	11.6%	11.1%
	30-39	809	63	65.7	7.8%	8.1%
	40-49	769	40	50.6	5.2%	6.6%
	50-59	446	26	25.4	5.8%	5.7%
	60+	158	13	7.6	8.2%	4.8%
	<total></total>	2460	174	180.1	7.1%	7.3%

Recommendation: Actual experience from 2014-2020 suggests that our assumption regarding turnover rates is reasonable. We are recommending no further changes to this assumption.



Exhibit B - Section III

Salary Scale

Actual 2014-2020 Experience Compared to Current Assumption

						Current
			Prior Year	Actual		Expected
Service	Near age	Exposed	Salaries	Salaries	Actual Increase	Increase
<1	<30	67	1,499,901	3,088,259	205.9%	111.0%
	30-39	75	2,044,934	3,453,925	168.9%	109.9%
	40-49	51	1,480,104	2,520,452	170.3%	108.9%
	50-59	41	1,151,610	2,026,433	176.0%	107.6%
	60+	11	430,986	625,479	145.1%	105.8%
	<total></total>	245	6,607,535	11,714,547	177.3%	109.3%
1	<30	62	2,856,554	2,982,105	104.4%	108.7%
	30-39	95	4,488,031	4,568,149	101.8%	107.9%
	40-49	59	3,022,985	3,168,936	104.8%	107.1%
	50-59	58	2,906,753	2,955,678	101.7%	106.1%
	60+	16	867,998	957,529	110.3%	104.8%
	<total></total>	290	14,142,321	14,632,396	103.5%	107.3%
2	<30	46	2,084,434	2,247,434	107.8%	106.3%
	30-39	80	3,816,105	3,969,764	104.0%	105.8%
	40-49	54	2,707,309	2,897,466	107.0%	105.3%
	50-59	55	2,755,614	2,900,436	105.3%	104.6%
	60+	19	1,090,033	1,115,740	102.4%	103.8%
	<total></total>	254	12,453,495	13,130,841	105.4%	105.4%
3+	<30	71	3,352,710	3,463,462	103.3%	104.0%
	30-39	495	24,404,705	25,331,622	103.8%	103.8%
	40-49	1,182	59,893,066	61,814,713	103.2%	103.5%
	50-59	1,666	86,586,218	89,155,324	103.0%	103.1%
	60+	868	49,242,751	50,387,455	102.3%	102.8%
	<total></total>	4,282	223,479,451	230,152,576	103.0%	103.2%
<total></total>	<30	246	9,793,598	11,781,260	120.3%	106.9%
	30-39	745	34,753,775	37,323,459	107.4%	104.9%
	40-49	1,346	67,103,464	70,401,567	104.9%	103.9%
	50-59	1,820	93,400,196	97,037,871	103.9%	103.3%
	60+	914	51,631,768	53,086,203	102.8%	102.8%
	<total></total>	5,071	256,682,802	269,630,359	105.0%	103.7%

Recommendation: Actual experience from 2014-2020 suggests that our assumption regarding salary increases is reasonable. We are recommending no further changes to this assumption.



Exhibit B - Section IV

Mortality Table

Actual 2014-2020 Experience Compared to Current Assumption:

Retiree Mortality: RP-2014 MP-2018 with a one year set forward

			Expected	Actual	Current
Near age	Exposed	Actual Deaths	Deaths	Experience	Assumption
< 50	73	2	0.13	2.7%	0.2%
50-59	655	7	3.88	1.1%	0.6%
60-69	1605	15	18.48	0.9%	1.2%
70-79	1536	26	38.92	1.7%	2.5%
80-89	820	52	62.97	6.3%	7.7%
90-99	174	25	32.34	14.4%	18.6%
100+	4	0	1.28	0.0%	31.9%
<total></total>	4867	127	158	2.6%	3.2%

Beneficiary Mortality: RP-2014 MP-2018 with a one year set forward

			Expected	Actual	Current
Near age	Exposed	Actual Deaths	Deaths	Experience	Assumption
< 50	30	1	0.03	3.3%	0.1%
50-59	84	4	0.4	4.8%	0.5%
60-69	160	5	1.75	3.1%	1.1%
70-79	329	6	8.64	1.8%	2.6%
80-89	444	24	32.75	5.4%	7.4%
90-99	172	25	31.82	14.5%	18.5%
100+	15	3	5.21	20.0%	34.7%
<total></total>	1234	68	81	5.5%	6.5%



Exhibit B – Section IV

Mortality Table (continued)

Actual 2014-2020 Experience Compared to Proposed Assumption:

Retiree Mortality: PUB-2010 MP-2020 for General Employees

			Expected	Actual	Current
Near age	Exposed	Actual Deaths	Deaths	Experience	Assumption
< 50	73	2	0.07	2.7%	0.1%
50-59	655	7	2.65	1.1%	0.4%
60-69	1605	15	12.54	0.9%	0.8%
70-79	1536	26	29.59	1.7%	1.9%
80-89	820	52	53.06	6.3%	6.5%
90-99	174	25	28.15	14.4%	16.2%
100+	4	0	1.16	0.0%	29.0%
<total></total>	4867	127	127	2.6%	2.6%

Beneficiary Mortality: PUB-2010 MP-2020 for General Employees

			Expected	Actual	Current
Near age	Exposed	Actual Deaths	Deaths	Experience	Assumption
< 50	30	1	0.03	3.3%	0.1%
50-59	84	4	0.45	4.8%	0.5%
60-69	160	5	1.63	3.1%	1.0%
70-79	329	6	7.39	1.8%	2.2%
80-89	444	24	27.46	5.4%	6.2%
90-99	172	25	27.25	14.5%	15.8%
100+	15	3	4.8	20.0%	32.0%
<total></total>	1234	68	69	5.5%	5.6%

Recommendation: Actual experience from 2014-2020 suggests that the PUB mortality table with MP 2020 closely matches mortality expectations.



Exhibit B – Section V

Investment Return Assumption

25-Year Asset Return History

Effective Rate* of Return on Market Value of Plan Assets	
Period Ending June 30	CERF
2020	7.08%
2019	5.57%
2018	7.91%
2017	8.73%
2016	-2.64%
2015	-1.14%
2014	14.32%
2013	7.21%
2012	-0.41%
2011	18.10%
2010	10.90%
2009	-23.24%
2008	-2.12%
2007	15.14%
2006	7.01%
2005	8.52%
2004	14.69%
2003	3.37%
2002	-2.66%
2001	5.57%
2000	5.70%
1999	7.80%
1998	19.20%
1997	19.30%
1996	16.90%

^{*} Net of investment related expenses.

Geometric Annualized 25-year Return 6.41%