



Fiscal Year 2022
Actuarial Valuation Report
for the
New York City
Board of Education
Retirement System

JUNE 30, 2020 (LAG) ACTUARIAL VALUATION

prepared by the
New York City
Office of the Actuary

2022



OFFICE OF THE ACTUARY

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MICHAEL J. SAMET
INTERIM CHIEF ACTUARY

September 2, 2022

Board of Trustees
New York City Board of Education Retirement System
55 Water Street – 50th Floor
New York, NY 10041

Re: Fiscal Year 2022 Actuarial Valuation Report (Report)

Dear Trustees:

This Report presents the results of the June 30, 2020 (Lag) actuarial valuation of the benefits under both the New York City Board of Education Retirement System (BERS) Qualified Pension Plan and Group Life Insurance Plan (collectively, the Plan). This valuation, known as the June 30, 2020 (Lag) valuation, forms the basis for determining the statutorily required contribution (Statutory Contribution) of \$262,404,099 for Fiscal Year 2022 (i.e., for the period beginning July 1, 2021 and ending June 30, 2022). It is not intended, nor necessarily suitable, for other purposes. Calculations made for other purposes may differ significantly from those shown herein.

Results of the June 30, 2019 (Lag) actuarial valuation are shown in this Report for comparative purposes. Other historical information that the Actuary believes useful is also included.

The June 30, 2020 (Lag) and June 30, 2019 (Lag) actuarial valuations are based upon census data as of those dates submitted by the Plan's administrative staff and the employers' payroll service provider. Financial information was provided by BERS and the Office of the Comptroller as of June 30, 2020 and June 30, 2019.

Consistent with Actuarial Standards of Practice, the Office of the Actuary has reviewed census data and financial information for consistency and reasonability but has not audited it. The accuracy of the results and calculations presented in this Report are dependent on the accuracy of this census data and financial information. To the extent any such data or information provided is materially inaccurate or incomplete, the results contained herein will require revision.

A summary of the benefits available under the terms of the Plan is shown in SECTION VIII – SUMMARY OF PLAN PROVISIONS. The benefits under the Plan are unchanged from the prior valuation; however, continued compliance has been presumed under the Older Workers Benefit Protection Act.

A summary of the actuarial methods and assumptions used in the valuation of the Plan is shown in SECTION XI – ACTUARIAL ASSUMPTIONS AND METHODS. The actuarial assumptions and methods are unchanged from the prior valuation, except for a method change to include an adjustment based on the value of guaranteed interest credits payable to the Tax Deferred Annuity plan (TDA).

This Report does not present Governmental Accounting Standards Board (GASB) results. The Office of the Actuary will publish the Fiscal Year 2022 GASB67 and GASB68 results in September 2022, which will be available on the website of the Office of the Actuary (www.nyc.gov/actuary).

The undersigned actuaries are Fellows of the Society of Actuaries and Members of the American Academy of Actuaries. In addition, Craig T. Chu is an Enrolled Actuary under the Employee Retirement Income Security Act of 1974 and a Fellow of the Conference of Consulting Actuaries. We meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. To the best of our knowledge, the results contained herein have been prepared in accordance with generally accepted actuarial principles and procedures and with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

Best Regards,



Michael J. Samet, FSA, MAAA
Interim Chief Actuary



Craig T. Chu, FSA, EA, MAAA, FCA
Deputy Chief Actuary

MJS/eh

cc: Melissa Chacko, FSA, EA – New York City Office of the Actuary
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SECTION I – EXECUTIVE SUMMARY

This Report presents the results of the June 30, 2020 (Lag) actuarial valuation of the New York City Board of Education Retirement System (BERS) and Group Life Insurance Plan (collectively, the Plan).

The purposes of the valuation are:

- To determine the actuarially required contribution (Actuarial Contribution) for Fiscal Year 2022 (i.e., July 1, 2021 to June 30, 2022),
- To measure the funding progress of the Plan,
- To disclose the census data and financial information used in the valuation, and
- To disclose the actuarial assumptions and actuarial methods used to determine the Actuarial Contribution.

The statutorily required contribution (Statutory Contribution) is also shown and compared to the Actuarial Contribution in historical years.

This Report does not provide financial and accounting information required by current GASB standards. That information is provided in a separate report.

Future measurements of this information may differ from current measurements for many reasons including, but not limited to, experience differing from economic or demographic assumptions, changes in actuarial assumptions and methods, and changes in applicable statute and plan provisions. These and additional risks may be present for the Plan. A further discussion is presented in SECTION VII – RISK AND UNCERTAINTY for consideration.

Table I-1 Executive Summary

Presented in **Table I-1** are the principal results of the June 30, 2020 (Lag) actuarial valuation and, for comparative purposes, the June 30, 2019 (Lag) actuarial valuation.

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM		
SUMMARY OF VALUATION RESULTS		
Valuation Date	June 30, 2020 (Lag)	June 30, 2019 (Lag)
Fiscal Year	2022	2021
Funded Status		
1. Accrued Liability	\$ 5,620,896,681	\$ 5,306,985,850
2. Actuarial Value of Assets (AVA) ¹	<u>5,121,314,995</u>	<u>5,272,971,751</u>
3. Unfunded Accrued Liability (AVA Basis) (1. - 2.)	\$ 499,581,686	\$ 34,014,099
4. Market Value of Assets (MVA)	5,182,890,000	4,991,832,000
5. Unfunded Accrued Liability (MVA Basis) (1. - 4.)	438,006,681	315,153,850
6. Funded Ratio (MVA Basis) (4. / 1.)	92.2%	94.1%
Contribution		
1. Normal Cost	\$ 163,549,437	\$ 145,648,691
2. Amortization of Unfunded Accrued Liability	73,429,613	17,462,316
3. Administrative Expenses	25,424,795	19,872,029
4. Late Contribution Interest	<u>254</u>	<u>48</u>
5. Actuarial Contribution (1. + 2. + 3. + 4.)	\$ 262,404,099	\$ 182,983,084
6. Statutory Contribution	\$ 262,404,099	\$ 182,983,084
Participant Data		
1. Active Members		
a. Number	28,183	25,825
b. Annual Salary ²	\$ 1,476,597,629	\$ 1,353,266,355
c. Average Salary	\$ 52,393	\$ 52,401
2. Terminated Nonvested Members / Actives Off Payroll ³	8,816	11,422
3. Deferred Vested Members	1,972	2,019
4. Retirees and Beneficiaries		
a. Number	19,120	18,502
b. Total Annual Benefits	\$ 282,558,435	\$ 267,161,833
c. Average Benefit	\$ 14,778	\$ 14,440

¹ Includes adjustments for receivable contributions.

² Salaries shown are the base salary plus assumed overtime paid and reflect certain salary increases with retroactive effective dates, if any, that are not yet reflected in the census data.

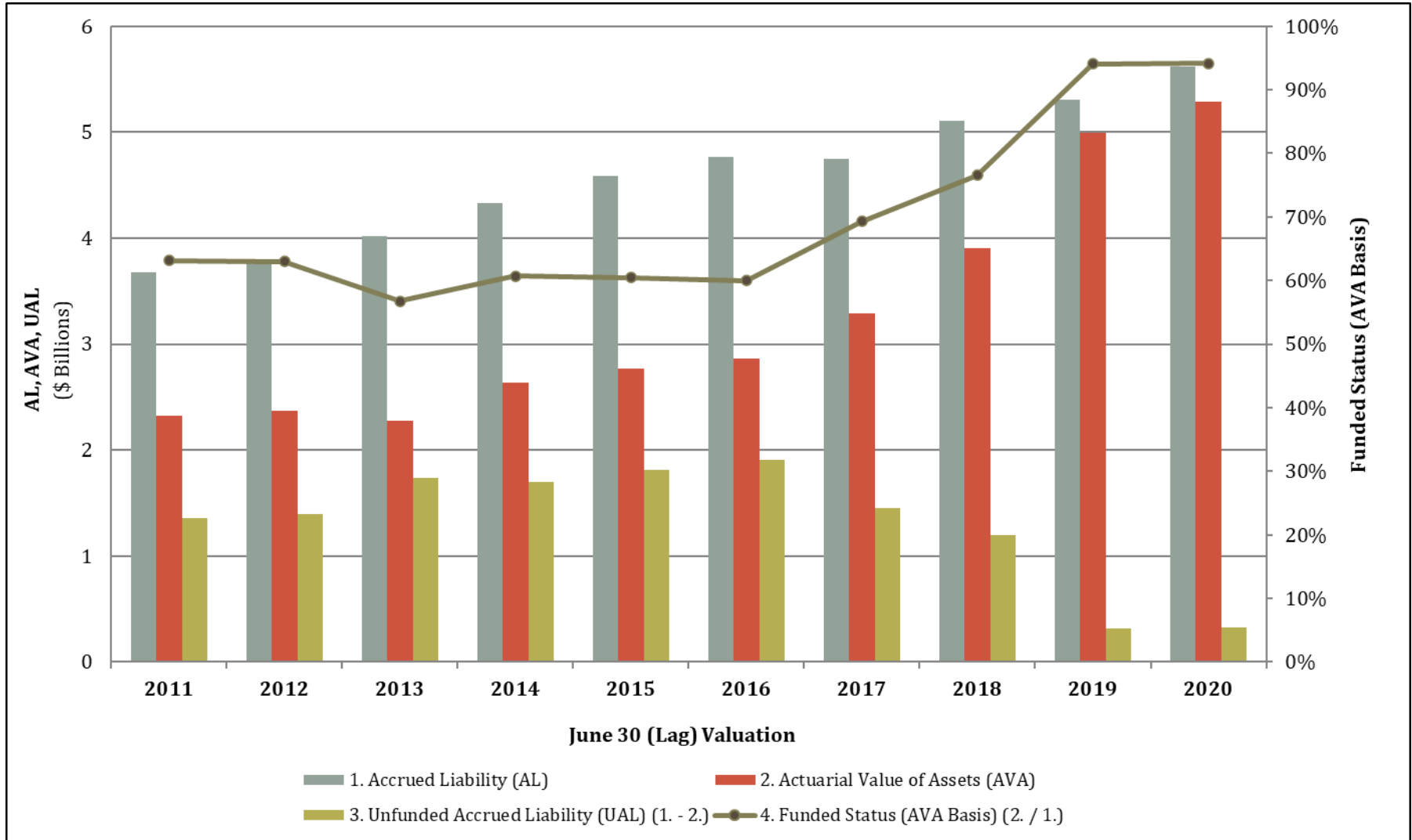
³ Actives Off Payroll as of June 30, 2019 (Lag) represents members no longer on payroll, but not otherwise classified.

Table I-2
Actuarial Liabilities

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM		
ACTUARIAL LIABILITIES BY STATUS		
Valuation Date	June 30, 2020 (Lag)	June 30, 2019 (Lag)
Fiscal Year	2022	2021
Accrued Liability		
1. Active Members	\$ 2,636,191,682	\$ 2,449,040,531
2. Terminated Nonvested Members/Actives Off Payroll ¹	37,253,555	97,203,371
3. Deferred Vested Members	110,450,387	79,591,995
4. Retirees and Beneficiaries	<u>2,836,001,057</u>	<u>2,680,149,953</u>
5. Accrued Liability Pre-Adjustments (1. to 4.)	\$ 5,619,896,681	\$ 5,305,985,850
6. Actuarial Adjustments	<u>1,000,000</u>	<u>1,000,000</u>
7. Total Accrued Liability (AL) (5. + 6.)	\$ 5,620,896,681	\$ 5,306,985,850
Present Value of Benefits		
1. Active Members	\$ 4,354,749,366	\$ 4,024,057,936
2. Terminated Nonvested Members/Actives Off Payroll ¹	37,253,555	97,203,371
3. Deferred Vested Members	110,450,387	79,591,995
4. Retirees and Beneficiaries	<u>2,836,001,057</u>	<u>2,680,149,953</u>
5. Present Value of Benefits (1. to 4.)	\$ 7,338,454,365	\$ 6,881,003,255
6. Actuarial Adjustments	<u>1,000,000</u>	<u>1,000,000</u>
7. Total Present Value of Benefits (5. + 6.)	\$ 7,339,454,365	\$ 6,882,003,255

¹ Actives Off Payroll as of June 30, 2019 (Lag) represents members no longer on payroll, but not otherwise classified.

Graph I-3
Historical Funded Status



SECTION II – MARKET AND ACTUARIAL VALUES OF ASSETS

Information on the Market Value of Assets (MVA) of the Plan is provided by the Office of the Comptroller. An Actuarial Asset Valuation Method (AAVM) is used to determine the Actuarial Value of Assets (AVA) of the Plan.

The Actuary reset the AVA to the market value as of June 30, 2011 and as of June 30, 2019. Beginning with the June 30, 2020 (Lag) actuarial valuation, the AAVM recognizes investment returns greater or less than expected over a period of five years. In accordance with this AAVM, the Unexpected Investment Returns (UIR) are phased into the AVA at rates of 20% per year.

UIR is defined as the excess of net investment return over the Expected Investment Return (EIR) based on the Market Value of Assets (MVA), where EIR is based on beginning-of-fiscal-year MVA and assumes all net cash flow occurs midyear.

The AVA is further constrained to be within a corridor of 80% to 120% of the market value.

Table II-1
Statement of Plan Net Assets

(\$ Thousands)		
	June 30, 2020	June 30, 2019
ASSETS		
Cash	\$ 977	\$ 3,694
Receivables		
Investment Securities Sold	\$ 116,436	\$ 173,665
Member Loans	48,751	50,586
Accrued Interest and Dividends	15,279	15,501
Other	<u>14,724</u>	<u>626</u>
Total Receivables	\$ 195,190	\$ 240,378
INVESTMENTS AT FAIR VALUE		
Fixed return funds		
Short-Term Investments		
Commercial Paper	\$ 29,179	\$ 46,954
Short-term Investment Fund	73,082	26,625
U.S. Treasury Bills	0	0
Discount Notes	149,094	11,108
Debt Securities	1,941,029	1,841,703
Equity Securities	2,723,900	2,116,377
Alternative Investments	976,076	892,479
Collective Trust Funds		
Fixed Income	119,264	123,051
Domestic Equity	51,279	261,858
International Equity	776,286	1,096,779
Mortgage Debt Security	22,965	20,203
Treasury Inflation Protected Securities	0	0
Promissory Notes	0	0
Collateral From Securities Lending	451,742	411,646
Variable return funds		
Short-Term Investments	484	467
Debt Securities	1,250	1,095
Equities	51,826	53,088
Collateral From Securities Lending	<u>345</u>	<u>359</u>
Total Investments	\$ 7,367,801	\$ 6,903,792
TDA Program's interest in the fixed return fund	0	0
OTHER ASSETS	<u>242,160</u>	<u>248,466</u>
TOTAL ASSETS	\$ 7,806,128	\$ 7,396,330
LIABILITIES		
Accounts Payable	\$ 32,441	\$ 43,333
Payable for Investment Securities Purchased	166,434	182,667
Accrued Benefits Payable	12,884	10,034
TDA Program's interest in the fixed return fund	1,959,392	1,756,459
Other Liabilities	0	0
Security Lending	<u>452,087</u>	<u>412,005</u>
TOTAL LIABILITIES	\$ 2,623,238	\$ 2,404,498
PLAN ASSETS HELD IN TRUST FOR PENSION BENEFITS	\$ 5,182,890	\$ 4,991,832

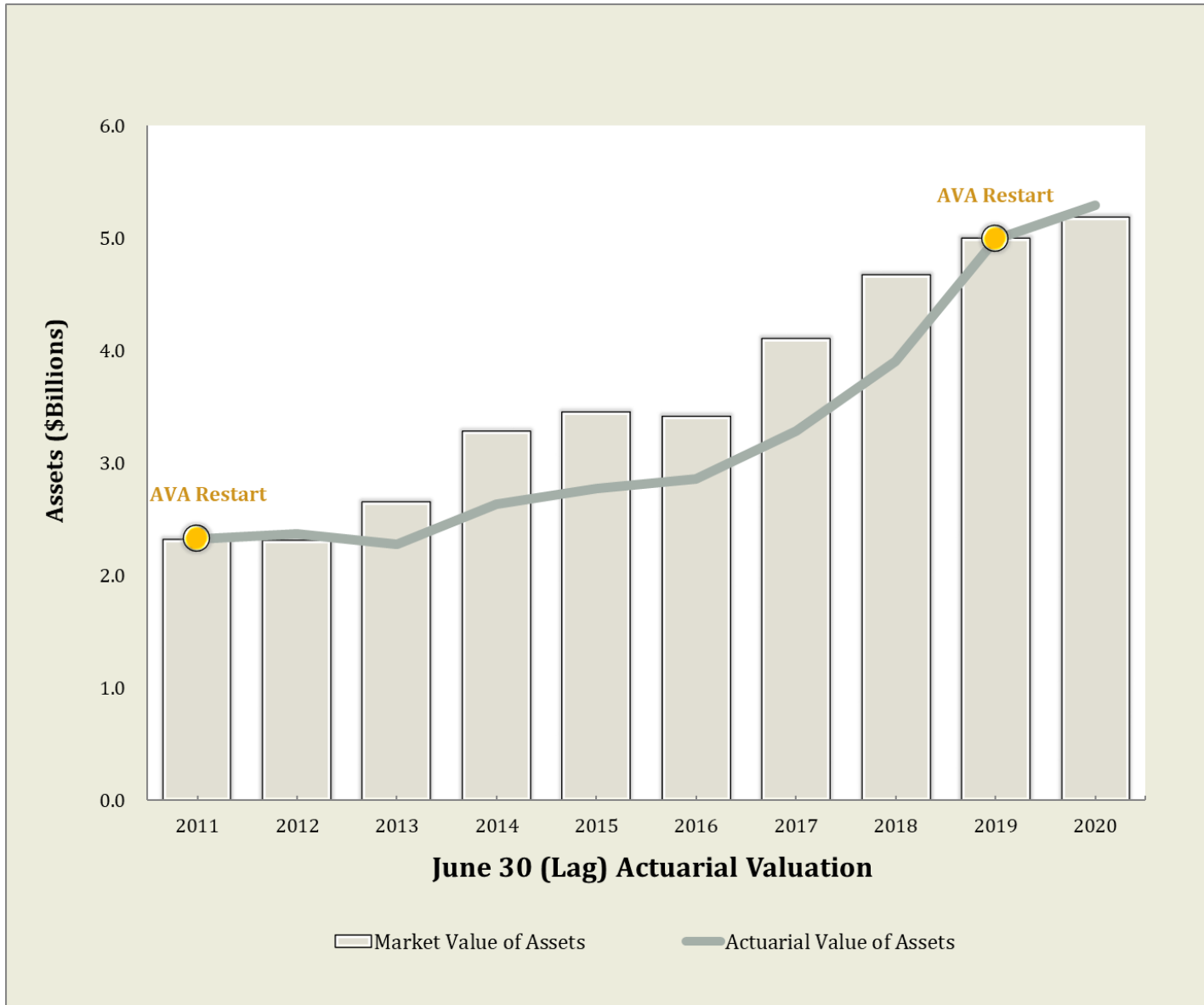
Table II-2
Statement of Changes in Plan Net Assets

(\$ Thousands)		
	June 30, 2020	June 30, 2019
ADDITIONS		
Contributions		
Member Contributions	\$ 49,766	\$ 46,304
Employer Contributions	<u>257,503</u>	<u>269,637</u>
Total Contributions	\$ 307,269	\$ 315,941
Investment Income (Loss)		
Interest Income	\$ 81,870	\$ 85,249
Dividend Income	79,419	82,451
Net Appreciation (Depreciation) in Fair Value	<u>235,683</u>	<u>268,479</u>
Total Investment Income (Loss)	\$ 396,972	\$ 436,179
Less Investment Expenses	32,677	31,220
Net Income (Loss)	\$ 364,295	\$ 404,959
Securities Lending Transactions		
Securities Lending Income	\$ 1,608	\$ 2,124
Securities Lending Fees	<u>(136)</u>	<u>(204)</u>
Net Securities Lending Income (Loss)	<u>\$ 1,472</u>	<u>\$ 1,920</u>
Net Investment Income (Loss)	\$ 365,767	\$ 406,879
Other		
Payments to Other Retirement Systems & Other Revenues/Expenses	\$ (7,975)	\$ 35,624
TDA Program's Interest Income in the Fixed Return Fund	<u>\$ (155,749)</u>	<u>\$ (141,695)</u>
TOTAL ADDITIONS	\$ 509,312	\$ 616,749
DEDUCTIONS		
Benefit Payments and Withdrawals	\$ 296,047	\$ 280,463
Administrative Expenses	<u>22,207</u>	<u>17,357</u>
TOTAL DEDUCTIONS	\$ 318,254	\$ 297,820
NET INCREASE (DECREASE) IN PLAN NET ASSETS	\$ 191,058	\$ 318,929
PLAN NET ASSETS HELD IN TRUST FOR PENSION BENEFITS		
Beginning of Year	\$ 4,991,832	\$ 4,672,903
End of Year	\$ 5,182,890	\$ 4,991,832

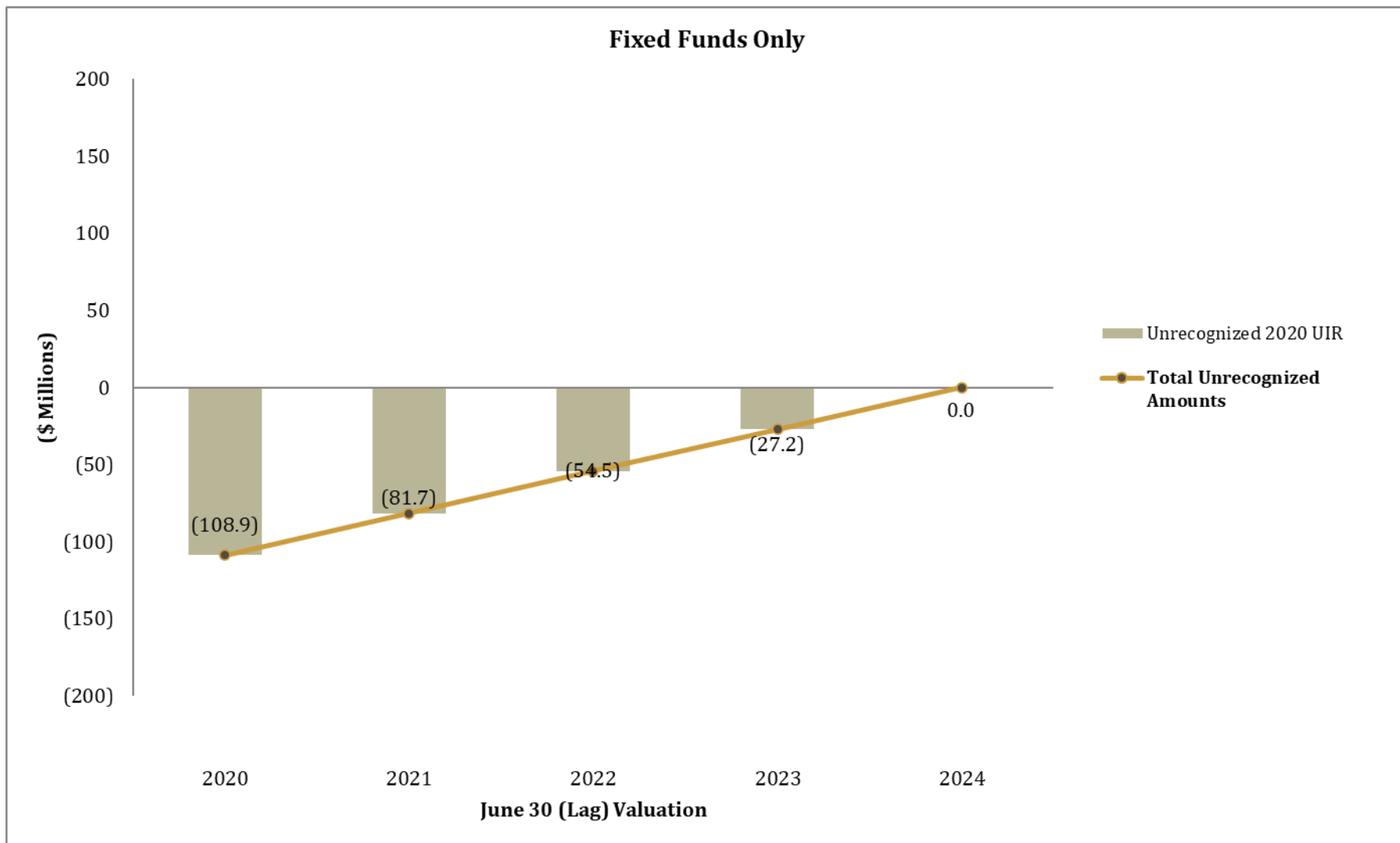
Table II-3
Development of Actuarial Value of Assets

(\$ Thousands)		
Valuation Date	June 30, 2020	June 30, 2019
1. Market Value of Assets (MVA)		
a. Beginning of Year (BOY)	\$ 4,937,065	\$ 4,619,409
b. End of Year (EOY)	\$ 5,129,204	\$ 4,937,065
2. Contributions		
a. Employee	\$ 49,766	\$ 46,304
b. Employer	<u>257,503</u>	<u>269,637</u>
c. Total Contributions	\$ 307,269	\$ 315,941
3. Net Investment Income		
a. Investment Income	\$ 241,492	\$ 292,495
b. Investment Expenses	<u>(32,624)</u>	<u>(31,170)</u>
c. Total Net Investment Income	\$ 208,868	\$ 261,325
4. Benefit Payments and Other Cash Flow	\$ (323,998)	\$ (259,610)
5. Net Cash Flow (2.c. + 4.)	\$ (16,729)	\$ 56,331
6. Expected Investment Return (EIR)	\$ 345,019	\$ 261,325
7. Unexpected Investment Return (UIR) (3.c. - 6.)	\$ (136,151)	\$ 0
8. Preliminary Fixed AVA		
a. Preliminary Fixed AVA @ BOY	\$ 4,937,065	\$ 4,619,409
b. Net Cash Flow (5.)	(16,729)	56,331
c. Expected Investment Return (7.)	345,019	261,325
d. Phase in of UIR		
20% of UIR for prior year	\$ (27,230)	N/A
20% of UIR for second prior year	N/A	N/A
20% of UIR for third prior year	N/A	N/A
20% of UIR for fourth prior year	N/A	N/A
20% of UIR for fifth prior year	N/A	N/A
Total	\$ (27,230)	N/A
e. Lower Corridor Bound (80% of 1.b.)	4,103,364	N/A
f. Upper Corridor Bound (120% of 1.b.)	6,155,044	N/A
g. Preliminary Fixed AVA (a. through d., bounded by e. and f.)	5,238,125	4,937,065
9. Variable Assets	\$ 53,686	\$ 54,767
10. Preliminary AVA (8.g. + 9.)	\$ 5,291,811	\$ 4,991,832
11. Receivable Amounts		
a. PV 1-year Adjusted Employer Contribution	\$ 176,896	\$ 248,938
b. PV Future Administrative Expense Reimbursement	22,971	17,954
c. Amounts due (To)/From TDA	<u>(370,363)</u>	<u>14,248</u>
d. Total	\$ (170,496)	\$ 281,140
12. Final AVA (10. + 11.)	\$ 5,121,315	\$ 5,272,972

Graph II-4
Historical Market and Actuarial Value of Assets



Graph II-5
Future Recognition of UIR as of June 30, 2020



SECTION III - CONTRIBUTION DEVELOPMENT AND HISTORY

Table III-1
Statutory Contributions

Table III-1 shows the components of the Fiscal Year 2022 and the Fiscal Year 2021 Statutory Contributions.

COMPONENTS OF CURRENT AND PRIOR FISCAL YEAR STATUTORY CONTRIBUTIONS		
Valuation Date	June 30, 2020 (Lag)	June 30, 2019 (Lag)
Fiscal Year	2022	2021
Normal Cost ¹	\$ 163,549,437	\$ 145,648,691
Amortization of Unfunded Accrued Liability		
-Initial UAL	132,481,070	128,622,398
-2011 (Gain)/Loss	(21,558,572)	(21,558,572)
-2012 (Gain)/Loss	4,365,823	4,365,823
-2013 (Gain)/Loss	38,526,274	38,526,274
-2014 (Gain)/Loss	9,952,844	9,952,844
-2014 Assumption Changes ²	16,568,028	16,568,028
-2014 Method Changes	(27,567,113)	(27,567,113)
-2015 (Gain)/Loss	15,178,241	15,178,241
-2016 (Gain)/Loss	12,812,358	12,812,358
-2017 (Gain)/Loss	(39,483,349)	(39,483,349)
-2017 Assumption Changes ³	(22,230,444)	(22,230,444)
-2017 Method Changes ³	11,007,581	11,007,581
-2018 (Gain)/Loss	(7,877,140)	(7,877,140)
-2018 Method Change ⁴	(11,267,543)	(11,267,543)
-2018 (Gain)/Loss	(38,601,844)	(38,601,844)
-2019 Assumption Change ⁵	(2,255,653)	(2,255,653)
-2019 Method Change ⁵	(48,729,573)	(48,729,573)
-2020 (Gain)/Loss	12,447,756	N/A
-2020 TDA Method Changes ⁶	35,675,656	N/A
-2020 OWBPA	3,985,213	N/A
Total	\$ 73,429,613	\$ 17,462,316
Administrative Expenses	25,424,795	19,872,029
Late Contribution Interest	254	48
Total Contribution to the New York City Board of Education Retirement System	\$ 262,404,099	\$ 182,983,084

¹ Includes amounts necessary, if any, to provide for financing of the Excess Benefit Plan established by Chapter 623/04.

² Change in post retirement mortality assumptions including the change to the mortality improvement scale MP-2015.

³ 2019 A&M.

⁴ Change in method of characterizing interest credited on TDA Fixed Fund account balances.

⁵ Revised 2021 A&M.

⁶ TDA guaranteed interest credits included as an adjustment to the Actuarial Value of Assets.

Table III-2
Schedule of Unfunded Accrued Liability Bases

The Initial Unfunded Accrued Liability (UAL) is being amortized over a closed 22-year period using Increasing Dollar Payments (IDP). Under IDP, amortization payments increase by 3.0% per year, consistent with the assumed rate of General Wage Increases. Increments to the UAL established after June 30, 2010 are amortized using Level Dollar Payments (LDP) as follows:

- Benefit Changes – Over the remaining working lifetimes of those impacted, unless the amortization period is determined by statute.
- Assumption and Method Changes – Over a closed 20-year period.
- Actuarial Gains and Losses – Over a closed 15-year period.

Under the One-Year Lag methodology (OYLM), the number of payments is one fewer than the number of years in the amortization period (e.g., 14 payments over a closed 15-year amortization period).

Table III-2
Schedule of Unfunded Accrued Liability Bases (cont'd)

Table III-2 shows the Schedule of UAL Bases as of June 30, 2020.

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM SCHEDULE OF UNFUNDED ACCRUED LIABILITY BASES						
Amortization Base	Date Established	Original Amount	Amortization Years	Amortization Payment	Payments Remaining	OYLM UAL June 30, 2020
Initial UAL	6/30/10	\$ 1,312,067,636 ¹	22	\$ 132,481,070	11	\$ 1,096,189,270
(Gain)/Loss	6/30/11	\$ (182,268,307)	15	\$ (21,558,572)	5	\$ (85,454,095)
(Gain)/Loss	6/30/12	\$ 36,911,124	15	\$ 4,365,823	6	\$ 20,117,658
(Gain)/Loss	6/30/13	\$ 325,722,811	15	\$ 38,526,274	7	\$ 200,722,763
(Gain)/Loss	6/30/14	\$ 84,146,947	15	\$ 9,952,844	8	\$ 57,454,507
Assumption Change ¹	6/30/14	\$ 165,544,370	20	\$ 16,568,028	13	\$ 133,863,796
Asset Method Change ²	6/30/14	\$ (275,445,000)	20	\$ (27,567,113)	13	\$ (222,732,514)
(Gain)/Loss	6/30/15	\$ 128,325,391	15	\$ 15,178,241	9	\$ 95,600,341
(Gain)/Loss	6/30/16	\$ 108,322,889	15	\$ 12,812,358	10	\$ 86,995,303
(Gain)/Loss	6/30/17	\$ (333,814,462)	15	\$ (39,483,349)	11	\$ (286,224,355)
Assumption Change ³	6/30/17	\$ (222,122,082)	20	\$ (22,230,444)	16	\$ (203,017,745)
Method Changes ³	6/30/17	\$ 109,985,516	20	\$ 11,007,581	16	\$ 100,525,853
(Gain)/Loss	6/30/18	\$ (66,597,775)	15	\$ (7,877,140)	12	\$ (60,484,496)
Method Change ⁴	6/30/18	\$ (112,583,000)	20	\$ (11,267,543)	17	\$ (106,348,296)
(Gain)/Loss	6/30/19	\$ (326,361,725)	15	\$ (38,601,844)	13	\$ (311,889,235)
Assumption Change ⁵	6/30/19	\$ (22,538,024)	20	\$ (2,255,653)	18	\$ (21,935,064)
Asset Method Change ⁵	6/30/19	\$ (486,896,000)	20	\$ (48,729,573)	18	\$ (473,870,064)
(Gain)/Loss	6/30/20	\$ 105,240,334	15	\$ 12,447,756	14	\$ 105,240,334
Method Change ⁶	6/30/20	\$ 356,463,914	20	\$ 35,675,656	19	\$ 356,463,914
Plan Change ⁷	6/30/20	\$ 18,363,811	7	\$ 3,985,213	6	\$ 18,363,811

¹ Change in post-retirement mortality assumptions including the change to the mortality improvement scale MP-2015.

² AVA is constrained to a corridor of 80% to 120% of the market value.

³ 2019 A&M.

⁴ Change in method of characterizing interest credited on TDA Fixed Fund account balances.

⁵ Revised 2021 A&M.

⁶ TDA guaranteed interest credits included as an adjustment to the Actuarial Value of Assets.

⁷ Older Workers Benefit Protection Act (OWBPA).

Graph III-3
Remaining UAL Amortizations as of June 30, 2020

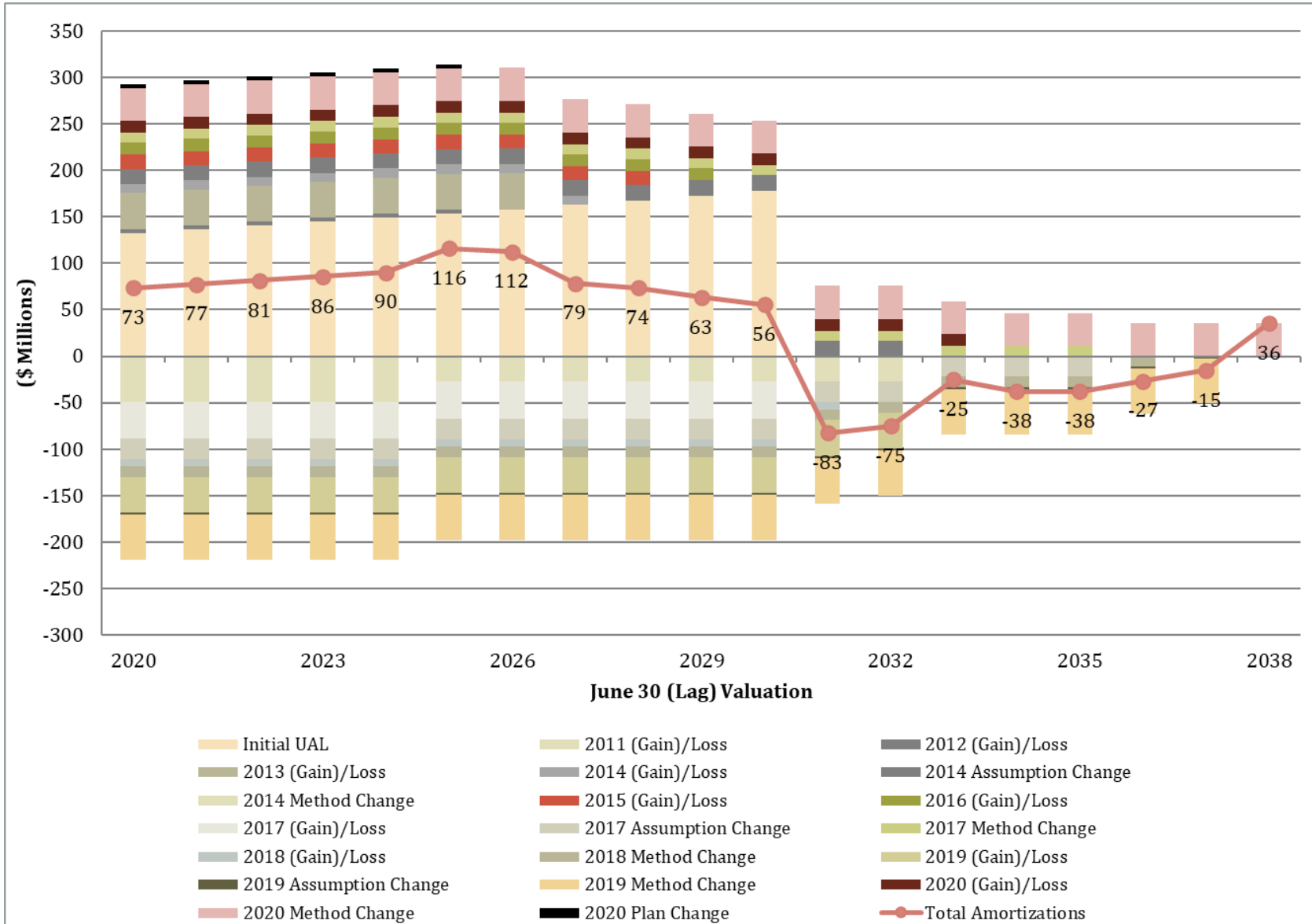


Table III-4
Reconciliation of Outstanding UAL Bases

Amounts Remaining to be Amortized, as of		
June 30 (Lag) Valuation Date	2020	2019
Unfunded Accrued Liability, June 30, 2010	\$ 1,096,189,270	\$ 1,140,685,267
2011 (Gain)/Loss	(85,454,095)	(99,341,638)
2012 (Gain)/Loss	20,117,658	22,746,036
2013 (Gain)/Loss	200,722,763	222,399,549
2014 (Gain)/Loss	57,454,507	62,688,116
2014 Assumption Change	133,863,796	140,075,433
2014 AVA Change	(222,732,514)	(233,067,895)
2015 (Gain)/Loss	95,600,341	103,059,533
2016 (Gain)/Loss	86,995,303	92,879,885
2017 (Gain)/Loss	(286,224,355)	(303,172,289)
2017 Assumption Change	(203,017,745)	(209,821,240)
2017 Method Change	100,525,853	103,894,657
2018 (Gain)/Loss	(60,484,496)	(63,644,500)
2018 AVA Change	(106,348,296)	(109,571,066)
2019 (Gain)/Loss	(311,889,235)	(326,361,725)
2019 Assumption Change	(21,935,064)	(22,538,024)
2019 Method Change	(473,870,064)	(486,896,000)
2020 (Gain)/Loss	105,240,334	
2020 Method Change	356,463,914	
2020 OWBPA	18,363,811	
Sum of Outstanding Amortization Amounts	\$ 499,581,686	\$ 34,014,099

June 30 (Lag) Valuation Date	2020	2019
1. Accrued Liability (AL)	\$ 5,620,896,681	\$ 5,306,985,850
2. Actuarial Value of Assets (AVA) ¹	5,121,314,995	5,272,971,751
3. Unfunded Accrued Liability (UAL) (1. - 2.)	\$ 499,581,686	\$ 34,014,099

¹ Includes adjustments for receivable contributions and estimated payables.

Table III-5
Actuarial and Statutory Contribution History

Table III-5 compares the Statutory Contributions to the Actuarial Contributions for Fiscal Years 2013 through 2022.

(\$ Thousands)			
Fiscal Year Ended June 30	Actuarial Contribution Certified	Statutory Contribution Contributed	Percentage of Actuarial Contribution Contributed
2013	196,246	196,246	100.0%
2014	214,590	214,590	100.0%
2015	258,099	258,099	100.0%
2016	265,532	265,532	100.0%
2017	288,233	288,233	100.0%
2018	318,643	318,643	100.0%
2019	269,637	269,637	100.0%
2020	257,503	257,503	100.0%
2021	182,983	182,983	100.0%
2022	262,404	262,404	100.0%

Table III-6
City Rates: Contributions as a Percentage of Salary

Table III-6 shows the City Rates defined to be the contributions as a percentage of salary for the Fiscal Years 2013 through 2022.

CITY RATES (\$ Thousands)			
Fiscal Year Ended June 30	Actuarial Contribution	Salary ¹ at Beginning of Fiscal Year	City Rate
2013	196,246	886,178	22.1%
2014	214,590	989,160	21.7%
2015	258,099	1,016,822	25.4%
2016	265,532	1,008,056	26.3%
2017	288,233	1,052,171	27.4%
2018	318,643	1,102,184	28.9%
2019	269,637	1,180,855	22.8%
2020	257,503	1,258,395	20.5%
2021	182,983	1,330,996	13.7%
2022	262,404	1,453,042	18.1%

¹ Includes the impact of recent labor contract settlements and certain non-union salary increases with retroactive effective dates, if any.

SECTION IV - RESULTS BY CONTRIBUTING ENTITY

**Table IV-1
Employer Contributions by Obligor**

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM						
EMPLOYER CONTRIBUTION BY OBLIGOR						
Valuation Date	June 30, 2020 (Lag)					
Fiscal Year	2022					
Obligor	Department of Education	NYC School Construction Authority	Renaissance Charter School	KIPP Charter School	Charter School Subtotal	Total
Contribution						
1. Normal Cost	\$ 156,436,451	\$ 7,053,050	\$ 59,936	\$ 0	\$ 59,936	\$ 163,549,437
2. Amortization of Unfunded Accrued Liability	71,110,714	2,264,830	45,357	8,712	54,069	73,429,613
3. Administrative Expenses	24,909,218	504,635	8,316	2,626	10,942	25,424,795
4. Late Contribution Interest	<u>0</u>	<u>0</u>	<u>0</u>	<u>254</u>	<u>254</u>	<u>254</u>
5. Actuarial Contribution (1. + 2. + 3. + 4.)	\$ 252,456,383	\$ 9,822,515	\$ 113,609	\$ 11,592	\$ 125,201	\$ 262,404,099
6. Statutory Contribution (5.)	\$ 252,456,383	\$ 9,822,515	\$ 113,609	\$ 11,592	\$ 125,201	\$ 262,404,099

Table IV-2
Accrued Liabilities by Obligor

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM						
SUMMARY OF LIABILITY BY STATUS AND OBLIGOR						
Valuation Date	June 30, 2020 (Lag)					
Fiscal Year	2022					
Obligor	Department of Education	NYC School Construction Authority	Renaissance Charter School	KIPP Charter School	Charter School Subtotal	Total
Accrued Liability						
1. Active Members	\$ 2,477,763,117	\$ 157,132,962	\$ 1,295,603	\$ 0	\$ 1,295,603	\$ 2,636,191,682
2. Terminated Nonvested Members	36,598,513	583,541	3,216	68,285	71,501	37,253,555
3. Deferred Vested Members	105,617,691	4,796,104	6,953	29,639	36,592	110,450,387
4. Retirees and Beneficiaries	<u>2,717,865,205</u>	<u>117,596,573</u>	<u>539,279</u>	<u>0</u>	<u>539,279</u>	<u>2,836,001,057</u>
5. Accrued Liability Pre-Adjustments (1. to 4.)	\$ 5,337,844,526	\$ 280,109,180	\$ 1,845,051	\$ 97,924	\$ 1,942,975	\$ 5,619,896,681
6. Actuarial Adjustments	<u>981,415</u>	<u>18,585</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1,000,000</u>
7. Total Accrued Liability (AL) (5. + 6.)	\$ 5,338,825,941	\$ 280,127,765	\$ 1,845,051	\$ 97,924	\$ 1,942,975	\$ 5,620,896,681
Present Value of Benefits						
1. Active Members	\$ 4,113,455,134	\$ 239,415,917	\$ 1,878,315	\$ 0	\$ 1,878,315	\$ 4,354,749,366
2. Terminated Nonvested Members	36,598,513	583,541	3,216	68,285	71,501	37,253,555
3. Deferred Vested Members	105,617,691	4,796,104	6,953	29,639	36,592	110,450,387
4. Retirees and Beneficiaries	<u>2,717,865,205</u>	<u>117,596,573</u>	<u>539,279</u>	<u>0</u>	<u>539,279</u>	<u>2,836,001,057</u>
5. Present Value of Benefits (1. to 4.)	\$ 6,973,536,543	\$ 362,392,135	\$ 2,427,763	\$ 97,924	\$ 2,525,687	\$ 7,338,454,365
6. Actuarial Adjustments	<u>981,415</u>	<u>18,585</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1,000,000</u>
7. Total Present Value of Benefits (5. + 6.)	\$ 6,974,517,958	\$ 362,410,720	\$ 2,427,763	\$ 97,924	\$ 2,525,687	\$ 7,339,454,365

**Table IV-3
Participant Data by Obligor**

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM						
PARTICIPANT DATA BY OBLIGOR						
Valuation Date	June 30, 2020 (Lag)					
Fiscal Year	2022					
Obligor	Department of Education	NYC School Construction Authority	Renaissance Charter School	KIPP Charter School	Charter School Subtotal	Total
Participant Data						
1. Active Members						
a. Number	27,440	730	13	0	13	28,183
b. Annual Salary ¹	\$ 1,395,857,119	\$ 80,172,758	\$ 567,752	\$ 0	\$ 567,752	\$ 1,476,597,629
c. Average Salary	\$ 50,869	\$ 109,826	\$ 43,673	\$ 0	\$ 43,673	\$ 52,393
2. Terminated Nonvested Members	8,755	55	1	5	6	8,816
3. Deferred Vested Members	1,932	38	1	1	2	1,972
4. Retirees and Beneficiaries						
a. Number	18,786	330	4	0	4	19,120
b. Total Annual Benefits	\$ 271,124,135	\$ 11,383,682	\$ 50,618	\$ 0	\$ 50,618	\$ 282,558,435
c. Average Annual Benefit	\$ 14,432	\$ 34,496	\$ 12,655	\$ 0	\$ 12,655	\$ 14,778

¹ Salaries shown reflect the impact of recent labor contract settlements and certain non-union salary increases with retroactive effective dates, if any.

SECTION V - (GAIN)/LOSS ANALYSIS

Table V-1
Development of Experience (Gain)/Loss

BOARD OF EDUCATION RETIREMENT SYSTEM DEVELOPMENT OF EXPERIENCE (GAIN) / LOSS JUNE 30, 2020							
	AL		AVA		UAL = AL - AVA		
	FIXED	VARIABLE	FIXED	VARIABLE	FIXED	VARIABLE	TOTAL
AL, AVA, and UAL at June 30, 2019	\$ 5,288,916,090	\$ 18,069,760	\$ 5,218,204,751	\$ 54,767,000	\$ 70,711,339	\$ (36,697,240)	\$ 34,014,099
Normal Cost, Administrative Expenses, and Actuarial Adjustments ¹	201,170,927	0	(266,892,199)	0	468,063,126	0	468,063,126
Contributions Made (Employer and Employee) in Fiscal Year 2020			307,269,000	0	(307,269,000)	0	(307,269,000)
Benefit Payments in Fiscal Year 2020	(293,844,000)	(2,203,000)	(293,844,000)	(2,203,000)	0	0	0
Interest and Expected Return on Assets	374,195,494	1,189,082	347,053,807	3,757,889	27,141,687	(2,568,807)	24,572,880
Actuarial Adjustments ² at June 30, 2020	18,363,811	(2,635,889)	(156,596,436)	(2,635,889)	174,960,247	0	174,960,247
Expected AL, AVA, and UAL at June 30, 2020	\$ 5,588,802,322	\$ 14,419,953	\$ 5,155,194,923	\$ 53,686,000	\$ 433,607,399	\$ (39,266,047)	\$ 394,341,352
Actual AL, AVA, and UAL at June 30, 2020	\$ 5,604,295,484	\$ 16,601,197	\$ 5,067,628,995	\$ 53,686,000	\$ 536,666,489	\$ (37,084,803)	\$ 499,581,686
AL and UAL (Gain)/Loss; AVA Gain/(Loss)	\$ 15,493,162	\$ 2,181,244	\$ (87,565,928)	\$ 0	\$ 103,059,090	\$ 2,181,244	\$ 105,240,334

¹ Actuarial Adjustments include those for receivable contributions and accumulated member contributions in excess of accumulated member normal costs.

² Actuarial Adjustments include those for liability changes other than experience, and include receivable contributions, administrative expenses, and an asset adjustment for the variable fund.

Table V-2
Development of Actuarial Asset (Gain)/Loss

DEVELOPMENT OF ACTUARIAL ASSET (GAIN)/LOSS	
JUNE 30, 2020	
(\$ Thousands)	
1. Phase-in of Unexpected Investment Return (UIR)	
20% of UIR for prior year	\$ 27,230
20% of UIR for second prior year	N/A
20% of UIR for third prior year	N/A
20% of UIR for fourth prior year	N/A
20% of UIR for fifth prior year	<u>N/A</u>
Total	\$ 27,230
2. Non-Benefit Payment Cash Flow	
a. Administrative Expenses paid in Fiscal Year 2020	\$ 22,207
b. Amount paid to Other System in Fiscal Year 2020	7,947
c. Interest on a. and b. to June 30, 2020	<u>1,038</u>
d. Total Change at June 30, 2020	\$ 31,192
3. Changes Due to TDA Receivable	
a. Amount Due To/(From) TDA at June 30, 2019	\$ (14,248)
b. Interest on a. to June 30, 2020	(997)
c. Amount Due To/(From) TDA at June 30, 2020	<u>13,899</u>
d. Total Change at June 30, 2020 (c. - a. - b.)	\$ 29,144
4. Actuarial Asset (Gain)/Loss (1. + 2. + 3.)	\$ 87,566

SECTION VI – SCHEDULE OF FUNDING PROGRESS

A schedule of funding progress is provided below. This schedule of funding progress was previously required by GASB25, which has been superseded by GASB67, and is provided for historical context. These liability and asset measures are used to develop the Actuarial Contribution and are not suitable for other purposes including, but not limited to, settlement of plan obligations. For more information, see SECTION II – MARKET AND ACTUARIAL VALUES OF ASSETS.

Table VI-1
Schedule of Funding Progress

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM (\$ Thousands)						
June 30 (Lag) Valuation Date	(1) Actuarial Value of Assets (AVA) ¹	(2) Accrued Liability (AL)	(3) Unfunded AL (UAL) ¹ (2) - (1)	(4) Funded Ratio (1) / (2)	(5) Covered Payroll ²	(6) UAL as a % of Covered Payroll (3) / (5)
2011	2,323,629	3,681,694	1,358,065	63.1%	920,369	147.6%
2012	2,371,613	3,763,130	1,391,517	63.0%	1,018,895	136.6%
2013	2,277,791	4,015,080	1,737,289	56.7%	1,051,571	165.2%
2014	2,632,922	4,335,746	1,702,824	60.7%	1,045,188	162.9%
2015	2,772,466	4,585,781	1,813,315	60.5%	1,093,962	165.8%
2016	2,858,737	4,767,760	1,909,023	60.0%	1,149,020	166.1%
2017	3,289,191	4,743,881	1,454,690	69.3%	1,201,926	121.0%
2018	3,908,833	5,103,583	1,194,750	76.6%	1,280,302	93.3%
2019	4,991,832	5,306,986	315,154	94.1%	1,353,266	23.3%
2020	5,291,811	5,620,897	329,086	94.1%	1,476,598	22.3%

¹ The Unfunded Accrued Liability excludes receivables and estimated payables in the Actuarial Value of Assets.

² Salaries reflect the impact of recent labor contract settlements and certain non-union salary increases with retroactive effective dates, if any.

SECTION VII - RISK AND UNCERTAINTY

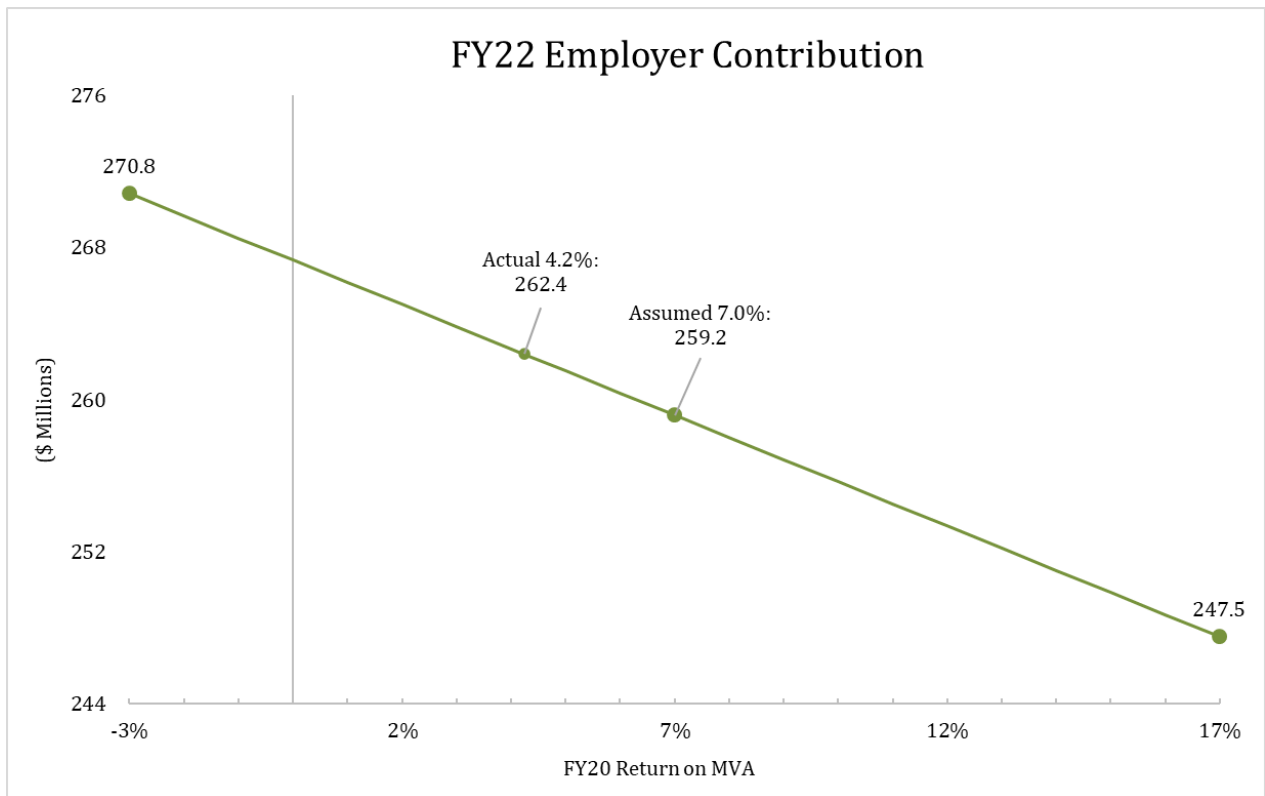
The funded status of BERS depends highly on the realization of the actuarial assumptions used, as well as certain demographic characteristics of the Plan and other exogenous factors. Risks faced by the Plan are described in this Section. These risks have been separated, based on the Actuary's professional judgement, into high, medium, and other risks.

High Risk Types

Investment Risk: The Risk of Not Realizing Expected Returns

The most substantial risk for most pension systems, BERS included, is the risk of investment returns being less than assumed. Generally speaking, as risk-free investment return rates have fallen in recent decades, more aggressive asset allocations have been taken to achieve long-term rates of return commensurate with the actuarial assumption of 7.0%.

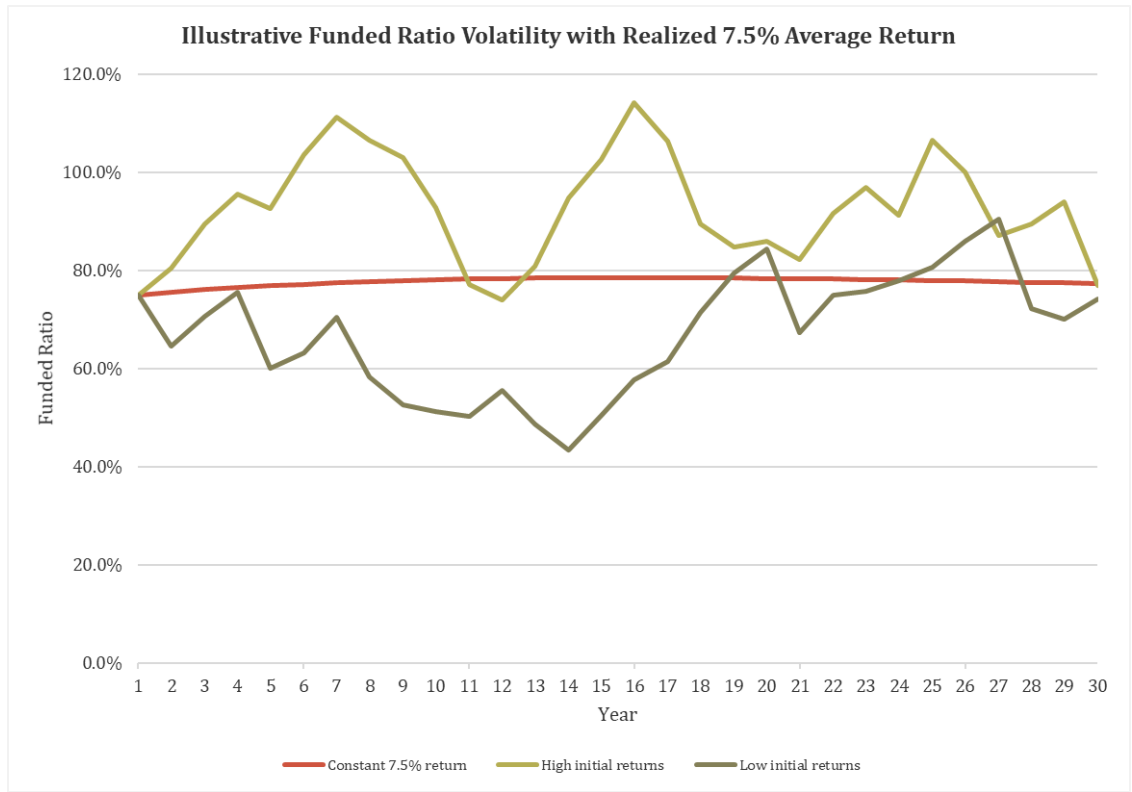
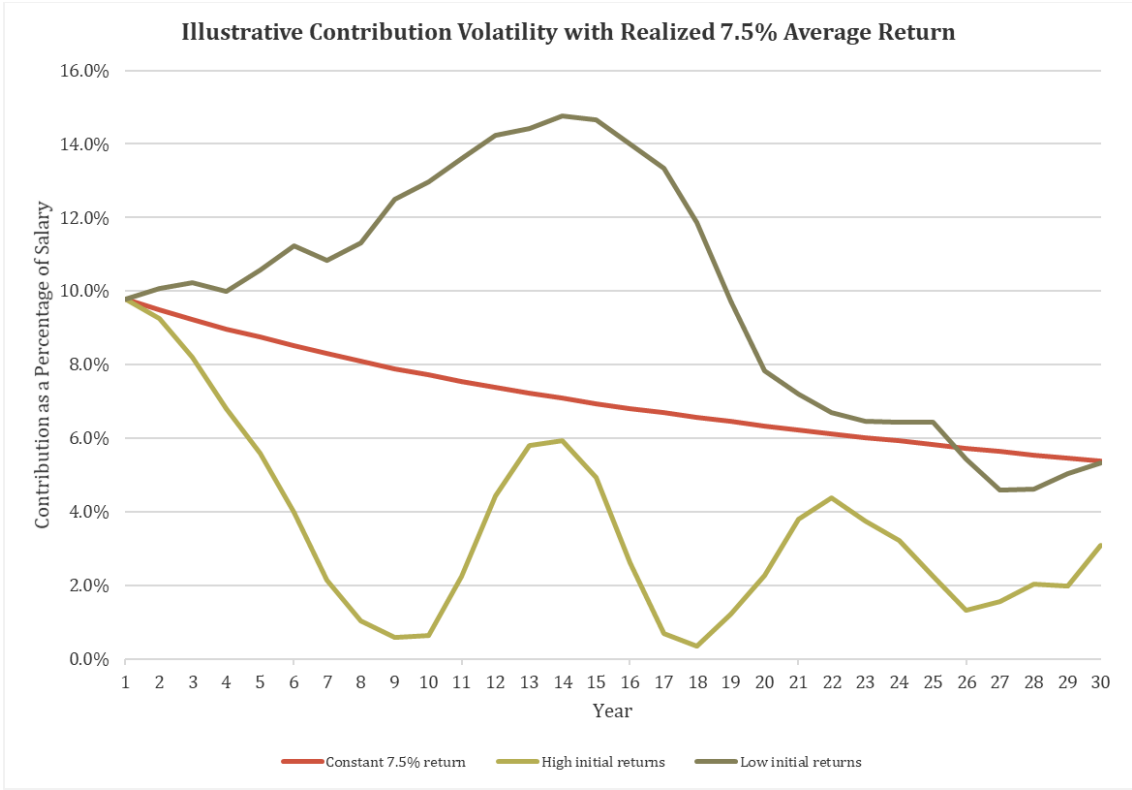
The graph below illustrates the potential FY22 employer contributions for a range of investment return outcomes if returns had differed from the assumed rate of return by up to 10% (i.e., from -3% to 17%). In addition, the actual investment return and employer contribution are shown.



Investment Risk: The Risk of Volatile Realized Returns

Even when long-term investment returns meet actuarial assumptions, investment return volatility can contribute substantially to contribution and funded status volatility. While not yet available specifically for the Plan at this time, recent research demonstrates this volatility based on a sample public plan with typical characteristics, a typical contribution policy, and a long-term return assumption of 7.5%, which can be realized in different patterns.¹

¹ Yin, Yimeng; Boyd, Don. Pension Simulation Project. *The Nelson A. Rockefeller Institute of Government*.



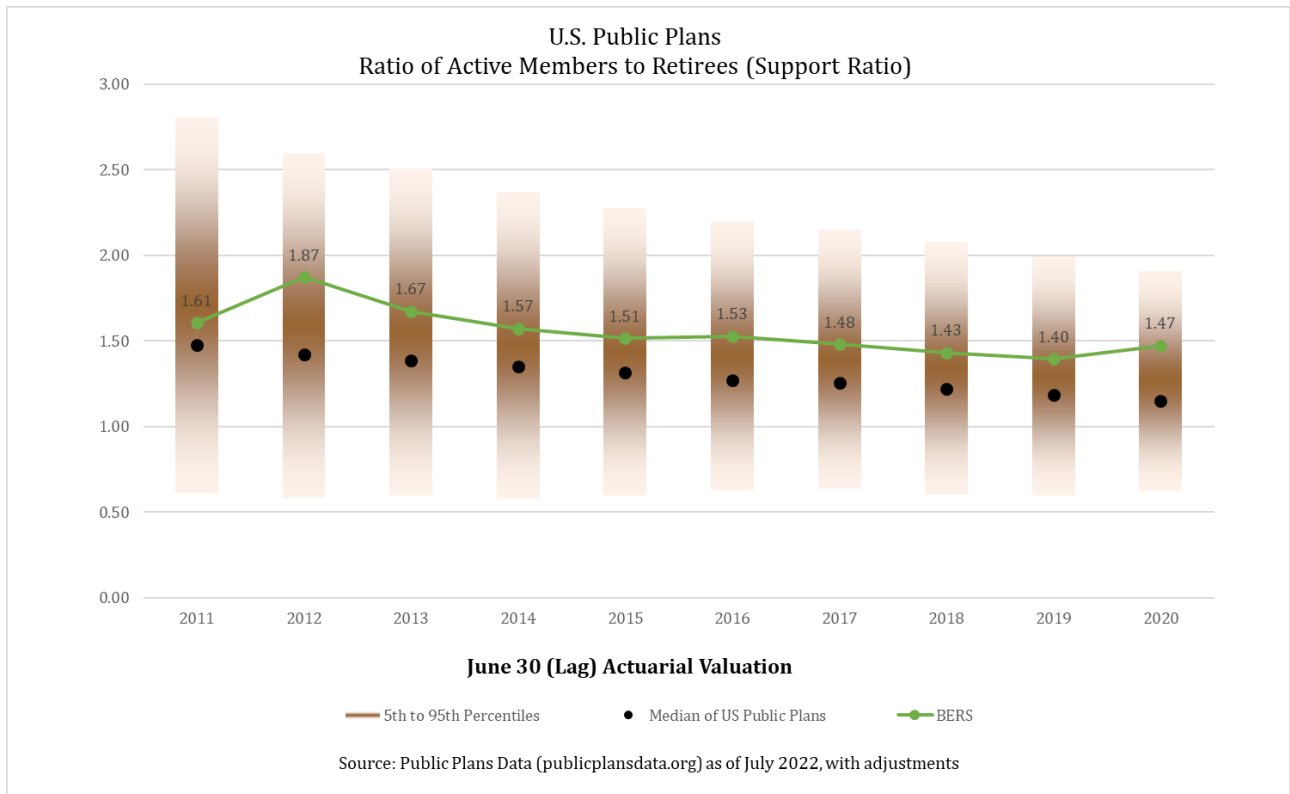
Medium Risk Types

Maturity Risk: The Risk of Demographic Imbalance

In this subsection, the maturity of the Plan is examined with several metrics.

Ratio of Active Members to Retirees (Support Ratio)

A plan's Support Ratio (i.e., the ratio of active members to retirees) is an indicator of the Plan's maturity level. In a plan's early years, the ratio is very high as the plan contains mostly active members. As it matures, more active members transition to retirement, leading to a decrease in the Support Ratio over time that can result in a ratio near or below one. For BERS, this ratio has been steadily declining in recent years, meaning that fewer active workers exist to support guaranteed pensioner payments.

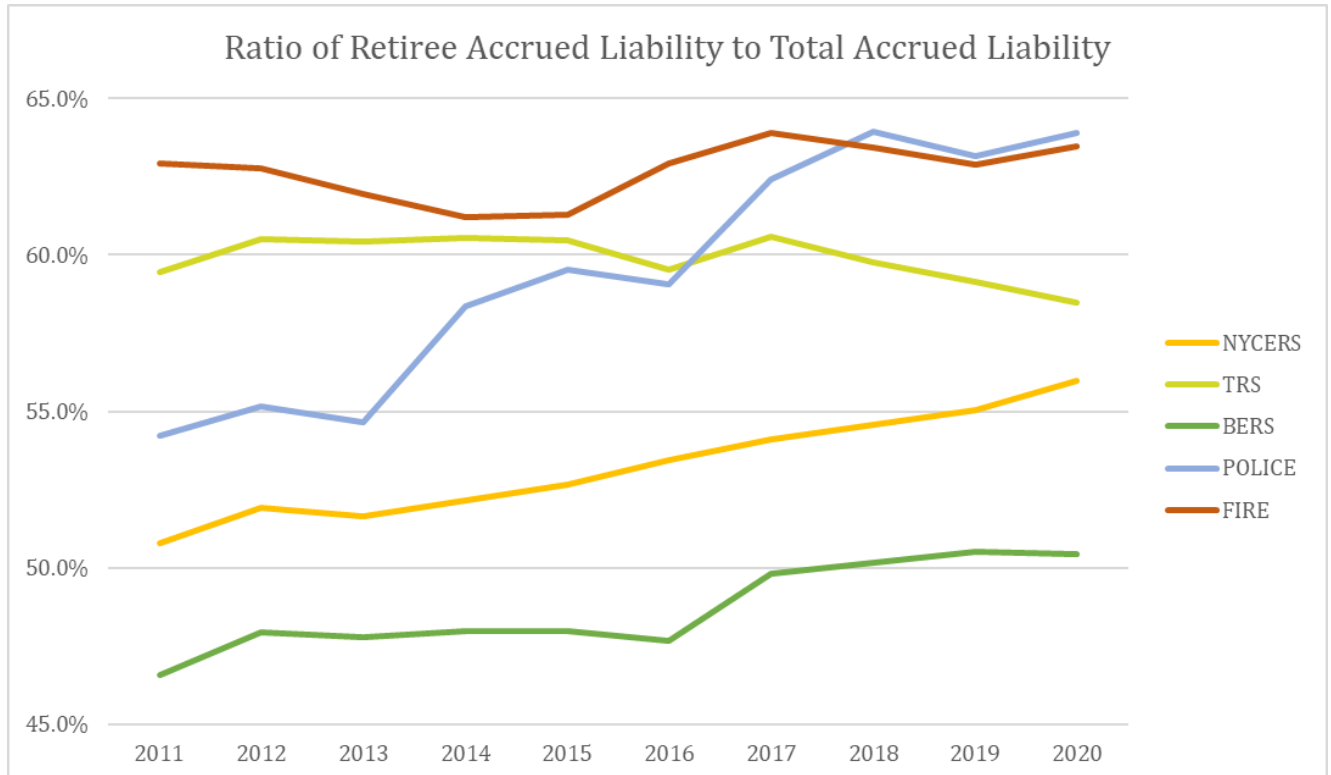


The chart above shows U.S. public pension plan Support Ratios in comparison to the Plan's. The median Support Ratio amongst US public pensions has declined from 1.48 in the 2011 valuation year to 1.15 in the 2020 valuation year. Over that same period, the Plan's Support Ratio declined from 1.61 to 1.47, meaning fewer active workers exist to support guaranteed pensioner payments.

Because the Plan's Support Ratio is above the median, BERS's contributions for active members form a larger proportion of the total actuarial contribution than other pension funds with average maturity.

Ratio of Retiree Accrued Liability to Total Accrued Liability

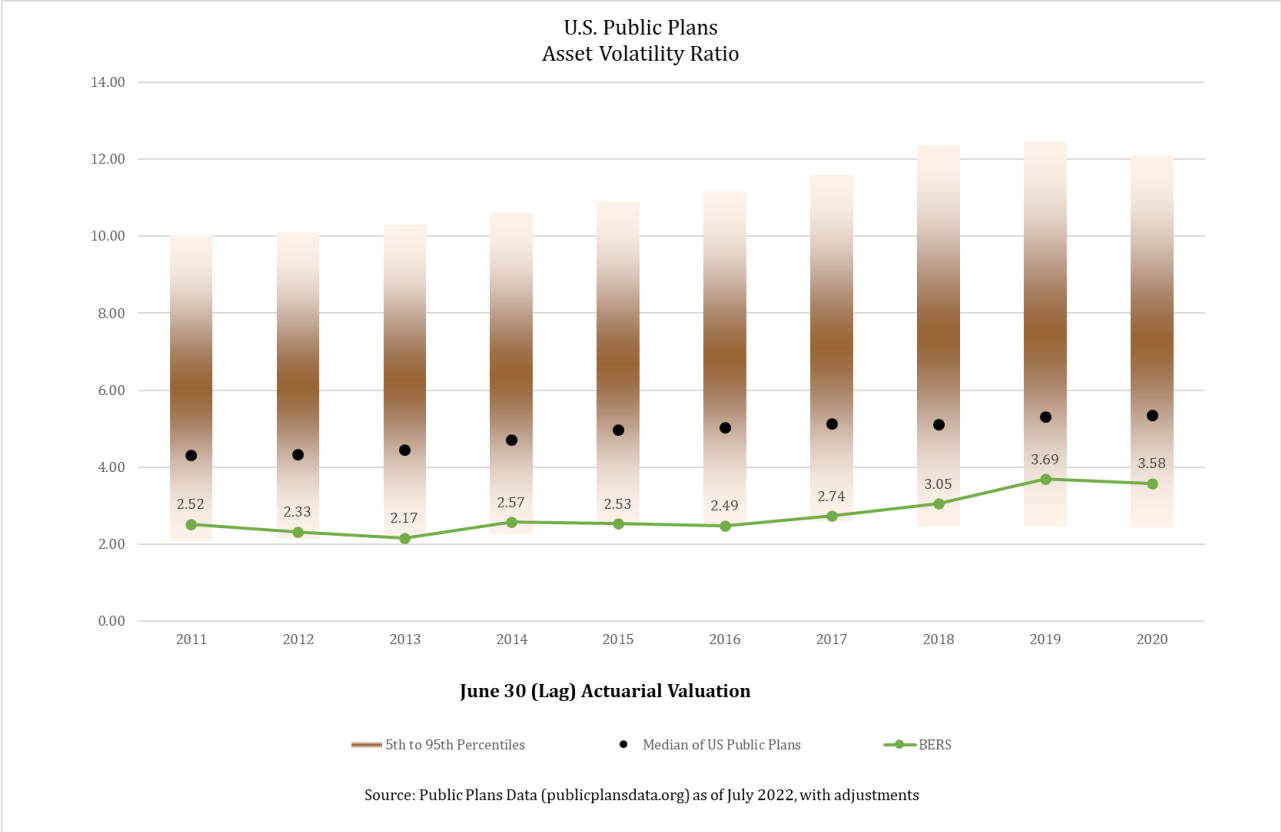
We can also consider the ratio of the Plan’s retiree liability to its total liability. A new pension plan begins with this ratio at zero; as the plan matures, the ratio increases. Mature plans often have ratios above 60%. This measure is shown in the graph below for BERS; the other New York City Retirement Systems¹ (NYCRS) are included for comparison. The ratio for BERS has been between 48-51% for the past few years, indicating that BERS is not a fully mature retirement system.



Asset Volatility Ratio

Another way to look at plan maturity is the Asset Volatility Ratio (AVR), or ratio of assets to payroll. This ratio tends to rise as plans mature because assets generally need to accumulate to provide for benefit payments. The chart below compares the AVR (on an AVA basis) for BERS to the population of public pension systems.

¹ New York City Employees’ Retirement System (NYCERS); Teachers’ Retirement System (TRS); Police Pension Fund (POLICE); Fire Pension Fund (FIRE)



As a plan approaches maturity, AVRs tend to increase, and the plan’s actuarially determined contribution becomes more sensitive to investment losses. For example, the same percentage of investment losses in more mature plans with a larger asset base can increase contributions as a percentage of payroll more than in less mature plans, leading to additional volatility. Therefore, mature plans may wish to consider more conservative investment strategies. Typical AVRs for a mature retirement system are between five and six. As shown in the tables above, for BERS, since ratios are lower than the average, BERS is not considered a mature plan under this measure.

Interest Rate Risk: The Risk of Reduction in the Long-Term Rate of Return

The Accrued Liability for the Plan depends heavily on the actuarial assumption used for future investment returns. While the returns themselves can produce substantial volatility, as detailed in the Investment Risk subsection above, the long-term rate of return assumption of 7.0% is highly dependent on the allocation of Plan assets.

If market conditions and/or the allocation of Plan assets no longer support a long-term rate of return assumption of 7.0%, the Actuarial Interest Rate (AIR) may have to be reduced, which can significantly increase the Accrued Liability, Unfunded Accrued Liability, Normal Cost, and resulting contribution of the Plan. The sensitivity of the Accrued Liability, the Unfunded Accrued Liability, and Normal Cost of the Plan are shown below:

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM	
SENSITIVITY ANALYSIS AS OF JUNE 30, 2020	
Valuation Date	June 30, 2020 (Lag)
Results at 7.0%	
1. Accrued Liability	\$ 5,620,896,681
2. Actuarial Value of Assets (AVA)	5,121,314,995
3. Unfunded Accrued Liability (1. - 2.)	\$ 499,581,686
4. Normal Cost	\$ 163,549,437
Results at 6.0%	
1. Accrued Liability	\$ 6,279,283,794
2. Actuarial Value of Assets (AVA) ¹	5,121,314,995
3. Unfunded Accrued Liability (1. - 2.)	\$ 1,157,968,799
4. Normal Cost	\$ 248,749,235
Sensitivity Analysis for 1.0% Reduction in Interest Rate	
1. Increase in Accrued Liability	11.7%
2. Increase in Unfunded Accrued Liability	131.8%
3. Increase in Normal Cost	52.1%

¹ Disregarding certain actuarial methodologies (e.g., receivable contributions and estimated payables) that would be revalued under a discount rate of 6.0%.

Longevity Risk: The Risk of Higher than Assumed Mortality Improvement

BERS faces risk in its assumption of future mortality rates. Actuarial experience studies were used to develop the base mortality rates assumed in the valuation; Society of Actuaries mortality improvement scale MP-2020 was subsequently applied to these base rates.¹

This scale MP-2020 is an assumption regarding the *improvement* of future mortality rates as compared to mortality when the experience studies were completed. The scale was developed using large amounts of historical data from the Social Security Administration. Risk therefore exists that the mortality improvement inherent in the Plan population is higher than the improvement seen in the population provided by the Social Security Administration. When mortality improvement is higher than assumed, plan participants will live longer than expected, and the Plan will pay more pension payments than had been previously funded.

Furthermore, while the scale uses recent experience to develop short-term mortality improvement rates, an actuarial assumption is applied to long-term mortality improvement rates based on expert opinion. A rate of 1.0% is assumed, which the Society of Actuaries characterizes as “neither overly optimistic nor too pessimistic with respect to future longevity improvements.”² Risk to the Plan exists, however, if Plan mortality experience shows higher levels of long-term mortality improvement; expert opinion can in some cases be flawed, particularly when past experience is not indicative or predictive of future experience.

In a letter dated June 28, 2019, Buck analyzed historical Plan experience and noted “it appears that historical mortality improvement in NYC pensioners has kept pace with, and in some cases may have exceeded slightly, the mortality improvement trends in historical Social Security Administration graduated rates that are based on a broad US population” and that “continued use of MP-20xx mortality improvement scales seems reasonable.” It may be prudent in future years, after longer trends can be observed, to quantify the effect of changing the ultimate mortality improvement rate to be higher than 1.0%.

Litigation Risk: The Risk of Legal Claims and Lawsuits

It is not uncommon for New York City to be a defendant in legal claims and lawsuits.³ In its most recent claims report, the Comptroller reports that in FY2021, NYC settled 10,618 claims and lawsuits for \$933.7 million. On occasion, these settlements involve NYCERS. The 1996 case *Gulino v. Board of Education* awards damages to plaintiffs that in some cases include counterfactual service and salary in NYCERS. It remains a continuing risk that litigation may expand the scope of pension benefits beyond what is intended or codified in statute.

¹ Retirement Plans Experience Committee. “Mortality Improvement Scale MP-2020 Report,” “Mortality Improvement Scale MP-2018 Report,” and “Mortality Improvement Scale MP-2014 report.” *Society of Actuaries*.

² Retirement Plans Experience Committee. “Mortality Improvement Scale BB Report” 5.5 Selection of 1.0% Long-Term Rate of Mortality Improvement. *Society of Actuaries*.

³ <https://comptroller.nyc.gov/reports/annual-claims-report>

Credit/Solvency Risk: The Risk of Potential Insolvency of Contributing Entities

All public pension systems face credit risk in the event their sponsoring entities become unable to pay their debts and obligations. Credit rating agencies currently consider New York City bonds to be of high quality, and the Actuary believes the City faces low credit risk as a main contributing entity to BERS.

In addition, BERS is a multiple-employer plan with several contributing entities. BERS faces risk if contributing entities become insolvent while still carrying Unfunded Accrued Liability. Existing law and precedent transfer these amounts to other employers, creating imbalanced funding responsibility in the event of default. For example, in the final June 30, 2016 (Lag) actuarial valuation for FY18, the Department of Education assumed responsibility for unfunded liabilities associated with the Beginning with Children Charter School, which closed in 2016.

Other Risk Types

Inflation Risk: The Risk of Higher than Assumed Inflation

BERS faces risk if inflation is higher than expected. Inflation is a key driver of the salary increase assumptions (affecting active members) and COLA assumptions (affecting both active members and pensioners/beneficiaries). A quantitative analysis is not available at this time. Notably, however, the pensioner COLA is limited to half of CPI on the first \$18,000 of annual benefits, which limits the risk exposure to inflation.

Contribution Risk: The Risk that Future Contributions Are Less Than the Actuarially Determined Contributions

Public pension systems can suffer from contribution risk when sponsoring governmental entities fail to make contributions as determined by the actuary under their funding policies. A 2018 study¹ which used data from 50 states and 230 retirement systems, found that since 2007 the shortfall between actual contributions to state pension plans and minimum actuarial funding standards was \$200 billion.²

The New York City Retirement Systems and Pension Funds face low contribution risk. Participating employers have historically contributed to the actuarial contribution as certified by the Actuary. The Actuary believes the City will continue to do so in future years. See Table III-5 ACTUARIAL AND STATUTORY CONTRIBUTION HISTORY.

Contribution risk may also increase in future years if the actuarial contribution determined for the Plan grows to be a larger part of the City budget. The five New York City Retirement Systems and Pension Funds currently require contributions of approximately 10% of the City's annual budget, and contribution risk may increase if this contribution rate becomes untenable.

Agency/Political Risk: The Risk of Stakeholder Influences

With assumed long-term asset returns and gradual amortization of unfunded liabilities, the funded status of the Plan is expected to improve over time. Many public pension systems suffer from agency risk, wherein different stakeholders or agents want to influence the cost calculations in directions favorable to their interests. Agents may also downplay other risks (e.g., investment risk) to advance specific agendas. These situations create cases where promises for future funding can be disregarded for political expediency or other priorities. In other cases, certain plan provisions or administrative practices intended to provide occasional clarity or relief become commonplace or intentionally sought for the benefit of members at the expense of taxpayers.

¹ The Pew Charitable Trusts. *"The State Pension Funding Gap: 2018."*

² Accounting standards changed in 2014. From 2007 to 2013, the shortfall is calculated between the actuarial recommended contribution and actual employer contributions. From 2014 to 2018, the shortfall represents the gap between the net amortization benchmark and employer contributions.

Intergenerational Equity Risk: The Risk of Inequity in the Actuarially Determined Contributions

Intergenerational inequity could exist for certain stakeholders (e.g., public taxpayers). If, for example, liabilities are valued using overly conservative assumptions, aggressive funding patterns may occur, thus causing current taxpayers to shoulder a disproportionately high share of the funding burden, as compared to past and future taxpayers. The reverse can also be true if aggressive or unrealistic assumptions are used. As the Plan is ongoing, taxpayers across all generations should be expected to offer similar funding contributions over the lifetime of the Plan.

Additionally, in future years of higher or lower funded status, changes in statute may take place that improve or diminish plan provisions. If so, intergenerational equity risk could increase as taxpayers and plan members at that time may receive preferential or less preferential treatment over the taxpayers and plan members prior to and subsequent to them.

SECTION VIII - SUMMARY OF PLAN PROVISIONS

A. Covered Employment

Membership in BERS is open to all employees of the Department of Education who are not eligible to participate in the New York City Teachers' Retirement System. In addition, employees of the New York City School Construction Authority, employees of the Office of the Special Commissioner of Investigation, School Crossing Guards employed by the New York City Police Department, and employees of NYC charter schools that have elected and are approved to participate in the plan may also be eligible for membership. Membership in BERS may be voluntary or mandated.

B. Tier Membership

Tier membership is based on the date that the member joined BERS. The tier status of earlier membership in BERS or another New York City or New York State public employee retirement system is reflected, but only if the service associated with that membership is purchased and included in Credited Service.

Tier 1: Prior to July 1, 1973

Tier 2: July 1, 1973 through July 26, 1976

Tier 4: July 27, 1976 through March 31, 2012

Tier 6: April 1, 2012

Tier 4 members who joined BERS before September 1, 1983 may elect a Tier 3 benefit. Unless otherwise noted, Tier 1 and Tier 2 provisions are hereafter omitted for brevity.¹ For more information about plan provisions, see the applicable Summary Plan Descriptions at www.nycbers.org. In the event of a conflict between this summary and applicable law, the applicable laws will govern.

C. Basic Member Contributions (BMC)

Basic Member Contributions earn 5% interest per year, compounded annually.

Tier 4: The contribution rate is 3% of Salary. Tier 4 members contribute BMC for the first 10 years of Credited Service except members of the Chapter 504 55/27 plan contribute BMC for the first 27 years of Credited Service.

¹ Approximately 0.1% of active members as of June 30, 2020 are members of Tier 1 and Tier 2.

Tier 6: BMC are made for all years of Credited Service according to the following schedule:

Lookback Wages	BMC Contribution Rate
Up to \$45,000	3.00%
\$45,001 up to \$55,000	3.50%
\$55,001 up to \$75,000	4.50%
\$75,001 up to \$100,000	5.75%
Greater than \$100,000	6.00%

The lookback wages used for determining the Tier 6 BMC contribution rate for a plan year are the actual wages earned two plan years prior to the plan year. A projected salary is used during the first three years of Credited Service. The BMC contribution rate was limited to 3% from April 1, 2012 through March 31, 2013.

D. Additional Member Contributions (AMC)

Additional Member Contributions including AMCs for work in physically taxing employment (AMC-PT) earn 5% interest per year, compounded annually.

Tier 4: Members of the Basic 62/5 plan do not make AMC. For other Tier 4 members, the AMC contribution rate as a percentage of Salary varies by plan in accordance with the following schedule:

Plan Description	AMC Contribution Rate	Years Required
Chapter 96 55/25	1.85% ¹	30
Chapter 96 57/5		
Chapter 19 55/25	1.85%	25
Chapter 19 55/27	1.85%	27
Special Officers 25-yr plan	6.25%	30
Auto Mechanics 50/25-yr plan	4.83%	30
Chapter 504 55/27 plan	1.85%	All years

Tier 6: Members of the 63/10 plan do not make Additional Member Contributions. For members of the Special Officers 25-yr plan and Auto Mechanics 50/25-yr plan, AMC contributions of 6.25% and 4.83%, respectively, are required for the first 30 years of Credited Service.

¹ Members of Chapter 96 55/25 and 57/5 who work in physically taxing employment contribute an additional 1.98%, on top of the 1.85%.

E. Credited Service

Credited Service is comprised of Membership Service, Part-time Service, Previous Service, Transferred Service, and Military Service:

1. **Membership Service**: Service earned while a member of BERS.
2. **Part-time Service**: Service that is prorated based on the number of hours or days worked in the year.
3. **Previous Service**: Service earned prior to membership while employed by the Department of Education, the City of New York, the State of New York, or any of its political subdivisions, or by another covered employer.
4. **Transferred Service**: Service earned as a member of another public retirement system in the City or State of New York.
5. **Military Service**: Service for qualified time served in one of the armed forces of the United States.

Previous Service, Transferred Service, and Military Service must be purchased to count as Credited Service. Payments made for purchasing Military Service are considered Employer contributions.

F. Salary

Salary is based on the annual wages earned in covered employment including overtime pay. Some limitations apply for the Salary used to determine Final Average Salary (FAS).

Tier 4: Wages greater than 110% of the average of the previous two years are excluded for purposes of determining FAS.

Tier 6: Wages greater than 110% of the average of the previous four years are excluded for purposes of determining FAS. In addition, the following payments are also excluded from wages for purposes of determining FAS:

1. Wages greater than the annual salary paid to the Governor of the State of New York;
2. Lump sum payments for deferred compensation, sick leave, accumulated vacation, or other credits for time not worked;
3. Overtime greater than the overtime ceiling of \$15,000, effective April 1, 2012 and indexed annually by the Consumer Price Index (CPI-U);
4. Any form of termination pay;
5. Any additional compensation paid in anticipation of retirement; and

6. In the case of employees who receive wages from three or more employers in a twelve-month period, the wages paid by the third and each successive employer.

G. Final Average Salary (FAS)

Service retirement, early retirement, disability retirement, and vested retirement benefits are based on FAS.

Tier 4: FAS is the highest average Salary earned in any three consecutive years of Credited Service or in the final 36 months of Credited Service if greater.

Tier 6: FAS is the highest average Salary earned in any five consecutive years of Credited Service or in the final 60 months of Credited Service if greater.

H. Service Retirement

1. Eligibility: The eligibility requirements for an unreduced service retirement are summarized in the table below:

Tier	Plan Description	Minimum Age	Minimum Service
4	Basic 62/5 plan	62	5
4	Chapter 96 55/25 plan	55	25
4	Chapter 96 55/25 plan Physically-Taxing	50	25
4	Chapter 96 57/5 plan	57	5
4	Chapter 96 57/5 plan Physically-Taxing	50	25
4	Chapter 19 55/25	55	25
4	Chapter 19 55/27	55	27
4	Special Officers 25-yr plan	N/A	25
4	Auto Mechanics 50/25-yr plan	50	25
4	Chapter 504 55/27 plan	55	27
6	Basic 63/10 Plan	63	10
6	Special Officers 25-yr plan	N/A	25
6	Auto Mechanics 50/25-yr plan	50	25

2. Benefits:

a. Tier 4 Plans except for the Special Officers 25-year plan and Auto Mechanics 50/25-yr plan:

- i. Less than 20 years of Credited Service: $1/60$ times FAS times Credited Service
- ii. 20 or more years of Credited Service: Sum of 2.0% times FAS times Credited Service up to 30 years plus 1.5% times FAS times Credited Service in excess of 30 years.

b. Basic Tier 6 63/10 Plan:

- i. Less than 20 years of Credited Service: $1/60$ times FAS times Credited Service;
- ii. 20 or more years of Credited Service: Sum of 35% times FAS plus 2.0% times FAS times Credited Service in excess of 20 years.

c. Tier 4 and Tier 6 Special Officers 25-year and Auto Mechanics 50/25-yr plans:

- i. 2.0% times FAS times Credited Service up to 30 years.

I. Early Retirement

1. Eligibility: Not all plans provide for early retirement. However, certain participants may be eligible for early retirement under the Tier 4 or Tier 6 Basic plans. The eligibility requirements for early retirement plans are summarized in the table below:

Tier	Plan Description	Minimum Age	Minimum Service
4	Basic 62/5 plan	55	5
4	Chapter 504 55/27 plan	55	10
6	Basic 63/10 plan	55	10

2. Benefits:

The service retirement benefit is reduced for early retirement based on the age at commencement.

a. Tier 4 Basic 62/5 Plan:

The service retirement benefit is reduced by 0.50% for each of the first 24 months that the age at commencement precedes age 62, and reduced 0.25%

for each of the next 60 months that the age of commencement precedes age 60:

Age	Early Retirement Factor
61	0.94
60	0.88
59	0.85
58	0.82
57	0.79
56	0.76
55	0.73

b. Tier 6 Basic 63/10 Plan:

The service retirement benefit is reduced by $13/2400$ for each month (i.e., 6.5% per year) that the age of commencement precedes age 63.

J. Disability Retirement

1. Accidental Disability (ADR)

- a. Eligibility: No age or service requirement. Requires Medical Board determination that the active member is physically or mentally incapacitated due to an accident in the performance of duties and that the accident is not due to willful negligence of the member.
- b. Benefits: Greater of $1/60$ times FAS times Credited Service or $1/3$ times FAS. The member may elect a service retirement benefit, if eligible.

2. Ordinary Disability (ODR)

- a. Eligibility: 10 years of Credited Service. Requires Medical Board determination that the member is physically or mentally incapacitated while an active member.
- b. Benefits: Greater of $1/60$ times FAS times Credited Service or $1/3$ times FAS. The member may elect a service retirement benefit, if eligible.

K. Death Benefits

1. Accidental Death Benefits

- a. Eligibility: No age or service requirement. Death due to the performance of duties while an active member.
- b. Benefits: A monthly pension is payable to the beneficiary equal to 50% of 1/12 of annual wages earned during the year prior to death. The benefit is equal to 50% of 1/12 of the annual wage rate if the member had less than one year of Credited Service.

2. Ordinary Death Benefit

a. Eligibility

- i. Active members: No age or service requirement. Death during active employment while not in the performance of duties.
- ii. Deferred vested members: Death after termination of employment and prior to benefit commencement.
- iii. Retired Members: Death after benefit commencement.

b. Benefits

- i. Active members: Refund of BMC and the employee portion of AMC, if any, with interest plus a salary-based death benefit. The salary-based death benefit is equal to one year's wages times completed years of Credited Service up to three years. The salary-based portion of the death benefit is reduced 5% for each year the member remains in service beyond age 60 (to a maximum reduction of 50% at age 70).
- ii. Deferred vested members with 10 or more years of Credited Service: Refund of BMC and the employee portion of AMC, if any, with interest plus one half of the salary-based death benefit that would have been payable had the member died on the last day of active service as described above.
- iii. Deferred vested members with less than 10 years of Credited Service: Refund of BMC and the employee portion of AMC, if any, with interest.
- iv. Retirees: The active salary-based death benefit that would have been payable had the member died on the last day of active service times the Adjustment Factor described in the table below:

Year of Death	Adjustment Factor
1 st year after retirement	50%
2 nd year after retirement	25%
3 rd year or later after retirement	10% times the benefit in effect at age 60 or at retirement if earlier

c. Form of Payment: Lump sum.

L. Vested Benefit After Termination

1. Eligibility

- a. Tier 4 Chapter 504 55/27 plan: 10 years of Credited Service.
- b. All other Tier 4 plans: 5 years of Credited Service.
- c. Tier 6 plans: 10 years of Credited Service.

2. Benefits: The vested benefit is equal to the amount of the Service Retirement benefit (unless noted otherwise below), payable at the times specified below.

- a. Tier 4 Special Officers 25-year plan: When the member would have earned 25 years of Credited Service if he or she had continued working in covered employment.
- b. Tier 4 Auto Mechanics 50/25-year plan: When the member would have earned 25 years of Credited Service if he or she had continued working in covered employment, but not prior to age 50.
- c. All other Tier 4 plans: Age 62.
- d. Tier 6 Plans: Age 63. In no case can the vested benefit be less than the annuity equivalent of the BMC.

M. Forms of Payment

1. Normal Form of Payment: Single Life Annuity.
2. Optional Forms of Payment: Joint and Survivor Annuities, Certain and Life Annuities, and Pop-up Annuities.

N. Cost of Living Adjustments (COLA)

Annuity payments are increased annually on September 1st, but only after a pensioner has attained the applicable eligibility threshold. Some beneficiaries are not eligible for COLA increases. The COLA increase is equal to a base benefit times a COLA percentage. The COLA

increase for a spouse receiving a joint & survivor annuity is one half of the COLA increase that would have been applicable to the member had he or she survived.

1. Eligibility Thresholds:
 - a. Service Retirement and Vested Retirement: The earlier of (i) and (ii):
 - i. Attainment of age 62 and 5 years since commencement
 - ii. Attainment of age 55 and 10 years since commencement
 - b. Disability Retirement: 5 years since commencement
 - c. Beneficiaries of an Accidental Death benefit: 5 years since commencement
2. Eligible beneficiaries: Spouses receiving a joint & survivor annuity. All others are non-eligible.
3. Base Benefit: The lesser of \$18,000 and the maximum retirement allowance plus the sum of prior years' COLA increases.
4. COLA percentage: 50% of the Consumer Price Index (CPI-U) based upon the 12 months ending March 31 prior to each September 1 effective date, rounded to the next higher 0.1%. Such percentage shall not be less than 1.0% nor greater than 3.0%.

O. Refund of BMC and AMC

Refunded with interest under some circumstances. AMC include Additional Member Contributions for work in physically taxing employment (AMC-PT). Only the employee portion of AMC is refunded.

1. Employee Portion of AMC: 50% for all plans that require AMC except for the Special Officers and Auto Mechanics plans, it is 100%.
2. Non-vested termination: BMC and employee portion of AMC are refunded with interest.
3. Vested termination:
 - a. A member may elect a refund of BMC and the employee portion of AMC with interest in lieu of a pension benefit, but only if he or she has less than 10 years of Credited Service.
 - b. A member of one of the Special Officer plans may elect a refund of AMC in lieu of remaining in the Special Officers 25-year plan if he or she leaves

service as a special officer prior to earning 15 years of Credited Service as a special officer.

- c. A member of one of the Auto Mechanics plans may elect a refund of AMC in lieu of remaining in the Auto Mechanics 50/25-year plan if he or she leaves service as an auto mechanic prior to earning 5 years of Credited Service as an auto mechanic.
4. Ordinary death: BMC and the employee portion of AMC are refunded with interest.
5. Accidental death: The employee portion of AMC are refunded with interest.
6. Disability Retirement: The employee portion of AMC are refunded with interest.
7. Service Retirement: The employee portion of AMC are refunded with interest if the member retires on or after age 62. For retirement prior to age 62, the employee portion of AMC-PT are refunded if a member of the Chapter 96 55/25 plan retires on or after age 55 with 25 years of Credited Service or if a member of the Chapter 96 57/5 plan retires on or after age 57 with 25 years of Credited Service.

P. Service and Early Retirement for Tier 4 Members with Tier 3 Rights

1. Eligibility: Age 55 and 5 years of Credited Service.
2. Benefits: These members may elect a Tier 3 benefit instead of a Tier 4 benefit. The benefit formula for Tier 3 is the same as the benefit formula for the Tier 4 Basic 62/5 plan except:
 - a. Credited Service under the Tier 3 benefit formula is capped at 30 years,
 - b. The Tier 3 benefit formula includes an offset starting at age 62 equal to 50% of the Primary Social Security benefit, and
 - c. The early retirement factors used to reduce benefits for early commencement are smaller and thus reduce benefits more for Tier 3 than the corresponding factors used under the Basic Tier 4 62/5 plan.
3. Cost of Living Adjustments: Tier 3 retirement benefits may be adjusted annually by Escalation. A Tier 3 retirement benefit cannot be less than the initial benefit payable at the commencement date.
 - a. Full Escalation: Applicable for benefits commencing on or after age 65. Equal to the lesser of 3% and the Consumer Price Index (CPI-U) for positive

increases in the CPI-U, and the greater of -3% and the Consumer Price Index (CPI-U) for negative increases in the CPI-U.

- b. Partial Escalation: Applicable for benefits commencing after age 62 and prior to age 65. Equal to full escalation reduced by $1/36$ times the number of months that the age at commencement precedes age 65.

Q. Loans

A member generally may borrow up to 75% of the accumulated BMC with interest. A member's unpaid loan balance will reduce his or her retirement benefit.

R. Tax-deferred Annuity Program (TDA)

Members may elect to make voluntary employee contributions to the BERS TDA. A member's contributions to a TDA account are capped by the dollar limitations under §402(g)(1) of the Internal Revenue Code on the exclusion for elective deferrals described in §402(g)(3), and the dollar limitation under §414(v)(2)(B)(i) of the Internal Revenue Code for catch-up contributions for members who have attained aged 50.

A member may withdraw his or her TDA account balance as a lump sum or convert a portion of the accumulated balance into an annuity upon retirement.

S. Changes Since the Prior Valuation

Continued compliance has been presumed under the OWBPA.

SECTION IX - CHAPTER AMENDMENTS

The June 30, 2020 (Lag) actuarial valuation results reflect the following Chapter amendments from the prior five years.

- **Chapter 89 of the Laws of 2020** (Chapter 89/20) provides death benefits to statutory beneficiaries of members whose death was a result of or was attributed to COVID-19.
- **Chapter 266 of the Laws of 2018** (Chapter 266/18) extends the deadline to file a Notice of Participation in the World Trade Center Rescue, Recovery, and Cleanup Operations to September 11, 2022.
- **Chapter 438 of the Laws of 2016** (Chapter 438/16), enacted on November 14, 2016, amended Retirement and Social Security Law Section 43 to eliminate restrictions upon transferring between public retirement systems.
- **Chapter 41 of the Laws of 2016** (Chapter 41/16) provides up to three years of service credit to members of public retirement systems of the State of New York for military service. Chapter 41/16 removes the requirement that such military service occur during specified periods of hostilities.

SECTION X – SUBSEQUENT EVENTS

The following legislation was adopted after the June 30, 2020 valuation date and could have an impact on future years' valuations:

Chapter 56 of the Laws of 2022 (Chapter 56/22) reduces the Tier 6 vesting requirement from 10 years to five years and allows for retirement with five years of service, and excludes certain forms of overtime and extracurricular compensation from the salary used to determine Tier 6 BMC Contribution Rates during the specified period from 2022 through 2024.

Chapter 78 of the Laws of 2021 (Chapter 78/21) amends Chapter 89/20 by extending the eligibility window of these death benefits through December 31, 2022.

Chapter 424 of the Laws of 2021 (Chapter 424/21) expands eligibility of certain public service employees for participation in the World Trade Center Rescue, Recovery, or Clean-up Operations.

SECTION XI - ACTUARIAL ASSUMPTIONS AND METHODS

The results in this valuation report are based upon standard actuarial models (including but not limited to Entry Age Normal and related parameters) that are widely used in actuarial practice. The models are intended to calculate the liabilities associated with these plan provisions using data and assumptions as of the measurement date, and using actuarial assumptions and methods further described below. Most of this liability and cashflow modeling is currently implemented using ProVal, a ubiquitous actuarial valuation and projection software program developed by Winklevoss Technologies (WinTech). These results are reviewed for accuracy, reasonability, and consistency with prior results, consistent with the requirements of Actuarial Standard of Practice 56. The model is also reviewed extensively when significant changes are made to the software by experts who are familiar with the applicable actuarial methods used therein.

There were no changes in actuarial assumptions and methods compared to the June 30, 2019 (Lag) valuation, except for a method change to include an adjustment equal to the unfunded value of guaranteed interest credits payable to the TDA.

Table XI-1
Active Retirement Rates

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM					
PROBABILITIES OF SERVICE RETIREMENT					
Age	Reduced Service Retirement	Unreduced Service Retirement Probabilities For Members Who Did Not Elect an Improved Retirement Program		Unreduced Service Retirement Probabilities For Members Who Elected an Improved Retirement Program	
		Year 1	Ultimate	Year 1	Ultimate
55	2.50%	15.00%	0.00%	35.00%	0.00%
56	2.50%	15.00%	6.50%	35.00%	12.00%
57	2.50%	15.00%	6.50%	35.00%	12.00%
58	2.50%	15.00%	6.50%	35.00%	12.00%
59	3.75%	15.00%	6.50%	35.00%	12.00%
60	5.00%	15.00%	6.50%	35.00%	12.00%
61	6.25%	15.00%	10.00%	35.00%	12.00%
62	7.50% ¹	20.00%/15.00% ²	10.00%	50.00%	20.00%
63	0.00%	15.00%/20.00% ³	10.00%	35.00%	15.00%
64	0.00%	15.00%	10.00%	35.00%	15.00%
65	0.00%	20.00%	15.00%	50.00%	20.00%
66	0.00%	15.00%	10.00%	35.00%	15.00%
67	0.00%	15.00%	10.00%	35.00%	15.00%
68	0.00%	15.00%	10.00%	35.00%	15.00%
69	0.00%	15.00%	10.00%	35.00%	15.00%
70	0.00%	20.00%	20.00%	35.00%	15.00%
71	0.00%	20.00%	20.00%	35.00%	15.00%
72	0.00%	20.00%	20.00%	35.00%	15.00%
73	0.00%	20.00%	20.00%	35.00%	15.00%
74	0.00%	20.00%	20.00%	35.00%	15.00%
75	0.00%	20.00%	20.00%	35.00%	15.00%
76	0.00%	20.00%	20.00%	35.00%	15.00%
77	0.00%	20.00%	20.00%	35.00%	15.00%
78	0.00%	20.00%	20.00%	35.00%	15.00%
79	0.00%	20.00%	20.00%	35.00%	15.00%
80+	NA	100.00%	100.00%	100.00%	100.00%

¹ 7.50% only applies to Tier 6 members; 0.00% otherwise.

² 20.00% for Tier 1, 2, & 4 members and 15.00% for Tier 6 members.

³ 15.00% for Tier 1, 2, & 4 members and 20.00% for Tier 6 members.

Table XI-2
Active Termination Rates

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM		
PROBABILITIES OF TERMINATION		
Years of Service	Males	Females
0	8.40%	5.60%
1	7.70%	5.30%
2	7.20%	5.00%
3	6.70%	4.70%
4	6.20%	4.50%
5	5.70%	4.20%
6	5.20%	3.90%
7	4.70%	3.60%
8	4.30%	3.30%
9	3.90%	3.00%
10	3.50%	2.80%
11	3.20%	2.60%
12	2.90%	2.50%
13	2.60%	2.40%
14	2.30%	2.20%
15	2.10%	2.10%
16	1.90%	1.90%
17	1.80%	1.80%
18	1.70%	1.70%
19	1.50%	1.50%
20+	1.40%	1.40%

Table XI-3
Active Disability Rates

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM				
PROBABILITIES OF DISABILITY RETIREMENT				
	Ordinary Disability		Accidental Disability	
Age	Males	Females	Males	Females
15	0.20%	0.20%	0.030%	0.025%
16	0.20%	0.20%	0.030%	0.025%
17	0.20%	0.20%	0.030%	0.025%
18	0.20%	0.20%	0.030%	0.025%
19	0.20%	0.20%	0.030%	0.025%
20	0.20%	0.20%	0.030%	0.025%
21	0.20%	0.20%	0.030%	0.025%
22	0.20%	0.20%	0.030%	0.025%
23	0.20%	0.20%	0.030%	0.025%
24	0.20%	0.20%	0.030%	0.025%
25	0.20%	0.20%	0.030%	0.025%
26	0.20%	0.20%	0.030%	0.025%
27	0.20%	0.20%	0.030%	0.025%
28	0.20%	0.20%	0.030%	0.025%
29	0.20%	0.20%	0.030%	0.025%
30	0.20%	0.20%	0.030%	0.025%
31	0.22%	0.20%	0.030%	0.025%
32	0.24%	0.20%	0.030%	0.025%
33	0.26%	0.20%	0.030%	0.025%
34	0.28%	0.20%	0.030%	0.025%
35	0.30%	0.20%	0.030%	0.025%
36	0.32%	0.21%	0.030%	0.025%
37	0.34%	0.22%	0.030%	0.025%
38	0.36%	0.23%	0.030%	0.025%
39	0.38%	0.24%	0.030%	0.025%
40	0.40%	0.25%	0.030%	0.025%
41	0.42%	0.26%	0.030%	0.025%
42	0.44%	0.27%	0.030%	0.025%
43	0.46%	0.28%	0.030%	0.025%
44	0.48%	0.29%	0.030%	0.025%
45	0.50%	0.30%	0.030%	0.025%
46	0.52%	0.34%	0.030%	0.025%
47	0.54%	0.38%	0.030%	0.025%
48	0.56%	0.42%	0.030%	0.025%
49	0.58%	0.46%	0.030%	0.025%
50	0.60%	0.50%	0.030%	0.025%
51	0.62%	0.54%	0.030%	0.025%
52	0.64%	0.58%	0.030%	0.025%
53	0.66%	0.62%	0.030%	0.025%
54	0.68%	0.66%	0.030%	0.025%
55	0.70%	0.70%	0.030%	0.025%
56	0.70%	0.70%	0.030%	0.025%
57	0.70%	0.70%	0.030%	0.025%
58	0.70%	0.70%	0.030%	0.025%
59	0.70%	0.70%	0.030%	0.025%
60	0.70%	0.70%	0.030%	0.025%
61	0.70%	0.70%	0.030%	0.025%
62	0.70%	0.70%	0.030%	0.025%
63	0.70%	0.70%	0.030%	0.025%
64	0.70%	0.70%	0.030%	0.025%
65	0.70%	0.70%	0.030%	0.025%
66	0.70%	0.70%	0.030%	0.025%
67	0.70%	0.70%	0.030%	0.025%
68	0.70%	0.70%	0.030%	0.025%
69	0.70%	0.70%	0.030%	0.025%
70	0.70%	0.70%	0.030%	0.025%
71	0.70%	0.70%	0.030%	0.025%
72	0.70%	0.70%	0.030%	0.025%
73	0.70%	0.70%	0.030%	0.025%
74	0.70%	0.70%	0.030%	0.025%
75	0.70%	0.70%	0.030%	0.025%
76	0.70%	0.70%	0.030%	0.025%
77	0.70%	0.70%	0.030%	0.025%
78	0.70%	0.70%	0.030%	0.025%
79	0.70%	0.70%	0.030%	0.025%
80+	NA	NA	NA	NA

Table XI-4
Active Mortality Rates

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM			
PROBABILITIES OF MORTALITY FOR ACTIVE MEMBERS BASE RATES			
Age	Ordinary Death		Accidental Death
	Males	Females	
15	0.027%	0.020%	0.000%
16	0.027%	0.020%	0.000%
17	0.027%	0.020%	0.000%
18	0.027%	0.020%	0.000%
19	0.027%	0.020%	0.000%
20	0.027%	0.020%	0.000%
21	0.027%	0.020%	0.000%
22	0.027%	0.020%	0.000%
23	0.027%	0.020%	0.000%
24	0.027%	0.020%	0.000%
25	0.027%	0.020%	0.000%
26	0.029%	0.021%	0.000%
27	0.032%	0.023%	0.000%
28	0.035%	0.024%	0.000%
29	0.037%	0.025%	0.000%
30	0.040%	0.027%	0.000%
31	0.043%	0.028%	0.000%
32	0.045%	0.029%	0.000%
33	0.048%	0.031%	0.000%
34	0.051%	0.032%	0.000%
35	0.053%	0.033%	0.000%
36	0.056%	0.035%	0.000%
37	0.059%	0.036%	0.000%
38	0.061%	0.037%	0.000%
39	0.064%	0.039%	0.000%
40	0.067%	0.040%	0.000%
41	0.073%	0.045%	0.000%
42	0.080%	0.051%	0.000%
43	0.087%	0.056%	0.000%
44	0.093%	0.061%	0.000%
45	0.100%	0.067%	0.000%
46	0.107%	0.073%	0.000%
47	0.113%	0.080%	0.000%
48	0.120%	0.087%	0.000%
49	0.127%	0.093%	0.000%
50	0.133%	0.100%	0.000%
51	0.147%	0.107%	0.000%
52	0.160%	0.113%	0.000%
53	0.173%	0.120%	0.000%
54	0.187%	0.127%	0.000%
55	0.200%	0.133%	0.000%
56	0.213%	0.140%	0.000%
57	0.227%	0.147%	0.000%
58	0.240%	0.153%	0.000%
59	0.253%	0.160%	0.000%
60	0.267%	0.167%	0.000%
61	0.280%	0.173%	0.000%
62	0.293%	0.180%	0.000%
63	0.307%	0.187%	0.000%
64	0.320%	0.193%	0.000%
65	0.333%	0.200%	0.000%
66	0.360%	0.213%	0.000%
67	0.387%	0.227%	0.000%
68	0.413%	0.240%	0.000%
69	0.440%	0.253%	0.000%
70	0.500%	0.300%	0.000%
71	0.580%	0.350%	0.000%
72	0.660%	0.400%	0.000%
73	0.740%	0.450%	0.000%
74	0.820%	0.500%	0.000%
75	0.900%	0.550%	0.000%
76	1.020%	0.640%	0.000%
77	1.140%	0.730%	0.000%
78	1.260%	0.820%	0.000%
79	1.380%	1.000%	0.000%
80+	NA	NA	NA

Table XI-5
Service Retiree Mortality

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM					
PROBABILITIES OF MORTALITY FOR SERVICE RETIREES					
BASE RATES					
Age	Males	Females	Age	Males	Females
15	0.0105%	0.0090%	68	1.6659%	0.9362%
16	0.0142%	0.0110%	69	1.7932%	1.0193%
17	0.0191%	0.0120%	70	1.9258%	1.1035%
18	0.0222%	0.0130%	71	2.0702%	1.2437%
19	0.0240%	0.0140%	72	2.2162%	1.3853%
20	0.0251%	0.0142%	73	2.3643%	1.5280%
21	0.0268%	0.0150%	74	2.5141%	1.6727%
22	0.0284%	0.0158%	75	2.6665%	1.8182%
23	0.0301%	0.0168%	76	3.0461%	2.0628%
24	0.0315%	0.0179%	77	3.4300%	2.3088%
25	0.0327%	0.0191%	78	3.8175%	2.5551%
26	0.0342%	0.0204%	79	4.2104%	2.8024%
27	0.0354%	0.0217%	80	4.6069%	3.0489%
28	0.0371%	0.0231%	81	5.1554%	3.4450%
29	0.0394%	0.0247%	82	5.7232%	3.8502%
30	0.0427%	0.0265%	83	6.3098%	4.2655%
31	0.0495%	0.0316%	84	6.9124%	4.6895%
32	0.0562%	0.0360%	85	7.5337%	5.1258%
33	0.0625%	0.0398%	86	8.3597%	5.8556%
34	0.0682%	0.0427%	87	9.1919%	6.5878%
35	0.0743%	0.0455%	88	10.0369%	7.3277%
36	0.0780%	0.0474%	89	10.8896%	8.0720%
37	0.0818%	0.0497%	90	11.7567%	8.8218%
38	0.0861%	0.0521%	91	13.4856%	10.1869%
39	0.0917%	0.0551%	92	15.2819%	11.5772%
40	0.0997%	0.0588%	93	17.1377%	13.0290%
41	0.1422%	0.0633%	94	19.0983%	14.4884%
42	0.1848%	0.0702%	95	21.2134%	16.0080%
43	0.2279%	0.0792%	96	23.2990%	17.8232%
44	0.2725%	0.0907%	97	25.4356%	19.4807%
45	0.3194%	0.1052%	98	27.7079%	20.8097%
46	0.3686%	0.1228%	99	29.9402%	21.7553%
47	0.4207%	0.1427%	100	32.1584%	22.1859%
48	0.4752%	0.1652%	101	33.7521%	23.0680%
49	0.5320%	0.1896%	102	35.1259%	24.0803%
50	0.5908%	0.2151%	103	36.3671%	25.2770%
51	0.6563%	0.2401%	104	37.3834%	26.6309%
52	0.7203%	0.2647%	105	38.1051%	28.0912%
53	0.7821%	0.2889%	106	38.4698%	29.6244%
54	0.8405%	0.3120%	107	38.6325%	31.1943%
55	0.8938%	0.3338%	108	38.8076%	32.7579%
56	0.9368%	0.3689%	109	38.9794%	34.2712%
57	0.9718%	0.4030%	110	50.0000%	50.0000%
58	0.9982%	0.4360%	111	50.0000%	50.0000%
59	1.0164%	0.4677%	112	50.0000%	50.0000%
60	1.0277%	0.4987%	113	50.0000%	50.0000%
61	1.0989%	0.5398%	114	50.0000%	50.0000%
62	1.1606%	0.5722%	115	50.0000%	50.0000%
63	1.2158%	0.6041%	116	50.0000%	50.0000%
64	1.2656%	0.6395%	117	50.0000%	50.0000%
65	1.3111%	0.6785%	118	50.0000%	50.0000%
66	1.4252%	0.7529%	119	50.0000%	50.0000%
67	1.5432%	0.8397%	120	100.0000%	100.0000%

Table XI-6
Disabled Retiree Mortality

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM					
PROBABILITIES OF MORTALITY FOR DISABLED RETIREES BASE RATES					
Age	Males	Females	Age	Males	Females
15	0.3309%	0.3302%	68	2.8866%	2.3870%
16	0.4477%	0.4467%	69	2.9926%	2.4723%
17	0.6034%	0.6020%	70	3.1133%	2.5721%
18	0.7007%	0.6521%	71	3.2494%	2.6887%
19	0.7591%	0.7023%	72	3.4007%	2.8231%
20	0.7745%	0.7242%	73	3.5688%	2.9757%
21	0.8177%	0.7766%	74	3.7535%	3.1493%
22	0.8636%	0.8321%	75	3.9565%	3.3428%
23	0.9115%	0.8806%	76	4.1960%	3.5573%
24	0.9623%	0.9414%	77	4.4576%	3.7722%
25	1.0128%	0.9950%	78	4.7400%	4.0056%
26	1.0629%	1.0450%	79	5.0460%	4.2512%
27	1.1121%	1.1039%	80	5.3741%	4.5399%
28	1.1590%	1.1437%	81	5.7241%	4.8505%
29	1.2025%	1.1849%	82	6.0991%	5.1822%
30	1.2403%	1.2276%	83	6.5012%	5.5379%
31	1.2721%	1.2719%	84	6.9293%	5.9081%
32	1.2964%	1.2906%	85	7.5490%	6.6447%
33	1.3125%	1.3095%	86	8.3752%	7.3415%
34	1.3230%	1.3220%	87	9.2076%	8.0805%
35	1.3497%	1.3314%	88	10.0528%	8.8285%
36	1.3769%	1.3388%	89	10.9057%	10.1243%
37	1.4047%	1.3459%	90	11.7730%	11.4944%
38	1.4330%	1.3555%	91	13.5023%	12.9995%
39	1.4619%	1.3700%	92	15.2987%	14.4425%
40	1.4914%	1.3831%	93	17.1548%	15.8488%
41	1.5215%	1.3968%	94	19.1157%	17.6512%
42	1.5522%	1.4199%	95	21.2311%	19.4304%
43	1.5835%	1.4535%	96	23.3168%	20.7560%
44	1.6154%	1.4910%	97	25.4537%	21.5692%
45	1.6480%	1.5473%	98	27.7263%	22.0007%
46	1.6812%	1.6100%	99	29.9589%	23.0087%
47	1.7151%	1.6774%	100	32.1584%	23.1230%
48	1.7497%	1.7359%	101	33.7521%	23.6022%
49	1.7850%	1.7789%	102	35.1259%	24.0803%
50	1.8210%	1.8069%	103	36.3671%	25.2770%
51	1.8577%	1.8265%	104	37.3834%	26.6309%
52	1.8952%	1.8400%	105	38.1051%	28.0912%
53	1.9838%	1.8414%	106	38.4698%	29.6244%
54	2.0700%	1.8419%	107	38.6325%	31.1943%
55	2.1499%	1.8425%	108	38.8076%	32.7579%
56	2.2301%	1.8428%	109	38.9794%	34.2712%
57	2.2996%	1.8478%	110	50.0000%	50.0000%
58	2.3571%	1.8725%	111	50.0000%	50.0000%
59	2.4033%	1.9054%	112	50.0000%	50.0000%
60	2.4415%	1.9416%	113	50.0000%	50.0000%
61	2.4758%	1.9833%	114	50.0000%	50.0000%
62	2.5090%	2.0209%	115	50.0000%	50.0000%
63	2.5475%	2.0671%	116	50.0000%	50.0000%
64	2.5926%	2.1353%	117	50.0000%	50.0000%
65	2.6476%	2.2013%	118	50.0000%	50.0000%
66	2.7148%	2.2603%	119	50.0000%	50.0000%
67	2.7940%	2.3165%	120	100.0000%	100.0000%

Table XI-7
Beneficiary Mortality

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM					
PROBABILITIES OF BENEFICIARY MORTALITY BASE RATES					
Age	Males	Females	Age	Males	Females
15	0.0105%	0.0092%	68	1.8256%	1.3605%
16	0.0142%	0.0112%	69	1.9386%	1.4332%
17	0.0191%	0.0122%	70	2.0542%	1.5007%
18	0.0222%	0.0133%	71	2.2359%	1.6745%
19	0.0240%	0.0143%	72	2.4230%	1.8463%
20	0.0251%	0.0145%	73	2.6165%	2.0157%
21	0.0268%	0.0153%	74	2.8157%	2.1838%
22	0.0284%	0.0161%	75	3.0220%	2.3492%
23	0.0301%	0.0171%	76	3.4928%	2.6652%
24	0.0315%	0.0183%	77	3.9787%	2.9831%
25	0.0327%	0.0195%	78	4.4792%	3.3011%
26	0.0342%	0.0208%	79	4.9963%	3.6207%
27	0.0354%	0.0221%	80	5.5282%	3.9391%
28	0.0371%	0.0236%	81	6.1051%	4.4386%
29	0.0394%	0.0252%	82	6.6894%	4.9473%
30	0.0427%	0.0270%	83	7.2805%	5.4665%
31	0.0495%	0.0330%	84	7.8749%	5.9942%
32	0.0562%	0.0384%	85	8.4753%	6.5354%
33	0.0625%	0.0431%	86	9.6136%	7.4659%
34	0.0682%	0.0471%	87	10.8005%	8.3995%
35	0.0743%	0.0511%	88	12.0443%	9.3428%
36	0.0780%	0.0542%	89	13.3397%	10.2918%
37	0.0818%	0.0579%	90	14.6958%	11.2477%
38	0.0861%	0.0618%	91	16.4185%	12.8868%
39	0.0917%	0.0666%	92	18.1416%	14.4887%
40	0.0997%	0.0719%	93	19.8574%	16.0801%
41	0.1394%	0.0775%	94	21.6187%	17.5854%
42	0.1774%	0.0859%	95	23.5884%	19.0626%
43	0.2143%	0.0968%	96	25.4266%	20.2474%
44	0.2507%	0.1111%	97	27.2119%	21.2937%
45	0.2875%	0.1287%	98	29.0202%	22.0663%
46	0.3207%	0.1501%	99	30.6654%	22.5443%
47	0.3534%	0.1748%	100	32.1584%	22.6473%
48	0.3849%	0.2022%	101	33.7521%	23.5294%
49	0.4150%	0.2319%	102	35.1259%	24.5619%
50	0.4431%	0.2633%	103	36.3671%	25.7825%
51	0.5156%	0.2999%	104	37.3834%	27.1635%
52	0.5928%	0.3376%	105	38.1051%	28.6530%
53	0.6740%	0.3762%	106	38.4698%	30.2169%
54	0.7583%	0.4151%	107	38.6325%	31.8182%
55	0.8440%	0.4540%	108	38.8076%	33.4131%
56	0.9048%	0.5132%	109	38.9794%	34.9566%
57	0.9604%	0.5735%	110	50.0000%	50.0000%
58	1.0101%	0.6353%	111	50.0000%	50.0000%
59	1.0536%	0.6981%	112	50.0000%	50.0000%
60	1.0919%	0.7631%	113	50.0000%	50.0000%
61	1.1835%	0.8329%	114	50.0000%	50.0000%
62	1.2676%	0.8908%	115	50.0000%	50.0000%
63	1.3473%	0.9493%	116	50.0000%	50.0000%
64	1.4238%	1.0146%	117	50.0000%	50.0000%
65	1.4985%	1.0876%	118	50.0000%	50.0000%
66	1.6059%	1.1681%	119	50.0000%	50.0000%
67	1.7146%	1.2609%	120	100.0000%	100.0000%

**Table XI-8
Salary Scale**

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM		
ANNUAL RATES OF MERIT AND SALARY INCREASE		
Years of Service	Merit Increase	Salary Scale¹
0	6.00%	9.00%
1	5.00%	8.00%
2	4.00%	7.00%
3	3.00%	6.00%
4	2.50%	5.50%
5	2.00%	5.00%
6	1.90%	4.90%
7	1.80%	4.80%
8	1.70%	4.70%
9	1.60%	4.60%
10	1.50%	4.50%
11	1.50%	4.50%
12	1.50%	4.50%
13	1.50%	4.50%
14	1.50%	4.50%
15	1.50%	4.50%
16	1.45%	4.45%
17	1.40%	4.40%
18	1.35%	4.35%
19	1.30%	4.30%
20	1.25%	4.25%
21	1.20%	4.20%
22	1.15%	4.15%
23	1.10%	4.10%
24	1.05%	4.05%
25+	1.00%	4.00%

¹ Salary increase is the General Wage Increase of 3% plus the Merit Increase.

Additional Assumptions and Methods

1. **Actuarial Interest Rate (AIR):** 7.0% per annum, net of investment expenses.
2. **Mortality Assumption:** The mortality base tables are projected from 2012 using mortality improvement table MP-2020. The post-commencement base tables are also multiplied by adjustment factors to convert them from lives-weighted to amounts-weighted tables to account for socioeconomic effects on mortality. The adjustment factors used are as follows:

	Adjustment Factor	
	Male	Female
Service Retiree	0.980	0.980
Disabled Retiree	0.980	0.980
Beneficiary	0.890	0.951

3. **Marital Assumption:** All active members are assumed to be married, male employees are assumed to be four years older than their female spouses, and female employees are assumed to be two years younger than their male spouses.
4. **Credited Service:** Calculated in whole year increments for valuation purposes.
5. **Loans:** Except for Death Benefits, it is assumed that eligible members take a loan at retirement equal to 25% of their member contribution balances.
6. **Inflation:** The long-term Consumer Price Index inflation rate is assumed to be 2.50% per year. AutoCOLA is assumed to be 1.50% per year, and Escalation is assumed at 2.50% per year. The assumed 30-year Treasury rate for annuitization of outstanding loans at retirement is 3.50%.
7. **Form of Payment:** Retiring members are assumed to elect the Maximum Retirement Allowance (i.e., single life annuity) form of payment.
8. **Actuarial Asset Valuation Method (AAVM):**

The Actuary reset the Actuarial Value of Assets to Market Value as of June 30, 2019.

Beginning with the June 30, 2020 (Lag) actuarial valuation, the AAVM recognizes investment returns greater or less than expected over a period of five years.

In accordance with this AAVM, the UIR are phased into the AVA over a five-year period at 20% per year, with the calculation of the EIR based on the MVA.

The AVA is further constrained to be within a corridor of 80% to 120% of the MVA.

Beginning with the June 30, 2020 (Lag) actuarial valuation, the AAVM includes an adjustment based on the unfunded value of guaranteed interest credits payable to the TDA. See item 15 below for more information.

For more information, see SECTION II – MARKET AND ACTUARIAL VALUES OF ASSETS.

9. **Actuarial Cost Method:** The Entry Age Normal (EAN) cost method of funding is used by the Actuary to calculate the Employer Contribution.

Under this method, the Present Value (PV) of Future Benefits (PVFB) of each individual included in the actuarial valuation is allocated on a level basis over the expected earnings (or service) of the individual between entry age and the assumed exit age(s). The employer portion of this PVFB allocated to a valuation year is the Normal Cost. The portion of this PVFB not provided for at a valuation date by the PV of Future Normal Costs or future member contributions is the Accrued Liability (AL).

The excess, if any, of the AL over the Actuarial Value of Assets (AVA) is the Unfunded Accrued Liability (UAL).

Under this method, actuarial gains and losses, as they occur, reduce and increase the UAL, respectively, and are explicitly identified and amortized. Increases or decreases in obligations due to benefit changes, actuarial assumption changes, and actuarial method changes are also explicitly identified and amortized.

The explicit UALs that are developed each year under EAN are financed over fixed periods. For more information see Page 12.

Under EAN, the Normal Cost as a percentage of pay remains stable by individual and changes gradually over time for the entire plan as the characteristics of the group changes (e.g., more Tier 6 active members decrease the average Normal Cost as a percentage of pay).

10. **Allowances for Administrative Expenses:** The Employer Contribution for a fiscal year is increased by the interest-adjusted amount of administrative expenses paid from BERS during the second prior fiscal year.
11. **WTC Disability and Death Benefits:** Obligations attributable to the WTC Disability Benefits Law and to the WTC Death Benefits Law are determined through estimation techniques for post-retirement reclassifications.
12. **One-Year Lag Methodology (OYLM):** One-Year Lag Methodology uses a June 30, XX-2 valuation date to determine Fiscal Year XX employer contributions.

This methodology requires adjustments to certain components used to determine the Fiscal Year XX employer contributions as follows:

a. Normal Cost

The normal cost as of June 30, XX-2 is rolled forward with the assumed AIR of 7.0% to derive the normal cost as of December 31, XX-1.

b. UAL Payments

For determining the UAL payments for Fiscal Year XX, and to be consistent with the OYLM, the UAL as of June 30, XX-2 is adjusted by the discounted value of employer normal cost and UAL payments paid during Fiscal Year XX-1 and the discounted value of Administrative Expenses reimbursed during Fiscal Years XX-1 and XX.

13. Excess Benefit Plan: The valuation includes liabilities and costs, if any, associated with benefits in excess of the Internal Revenue Code Section 415 limitation.

14. TDA Fixed Fund Normal Cost: A cost is added to each year's Normal Cost for providing a guaranteed return on the TDA Fixed Fund. See item 15 below for more information.

15. Additional Assumptions used for the TDA fixed fund:

- a. Active TDA members would contribute the currently elected percentage of compensation to the TDA fixed fund.
- b. TDA members would transfer 25% of their TDA variable fund to the TDA fixed fund.
- c. Active members in the QPP who have not joined the TDA would join and contribute 1% of pay to the TDA fixed fund.
- d. The probability that a member elects 4% per year withdrawals from the TDA fixed fund starting from the later of age 60 and the age at termination is 25%.
- e. The probability that a member elects required minimum distributions from the TDA fixed fund starting from the later of age 72 and the age at termination is 75%.
- f. The probability that a member elects a lump sum of the TDA fixed fund and the probability that a member elects to annuitize the TDA fixed fund is 0%.

SECTION XII – SUMMARY OF DEMOGRAPHIC DATA

The June 30, 2020 (Lag) and June 30, 2019 (Lag) actuarial valuations are based upon census data as of those dates submitted by the Plan’s administrative staff and the employers’ payroll facilities. Financial information was provided by the Office of the Comptroller as of June 30, 2020 and June 30, 2019.

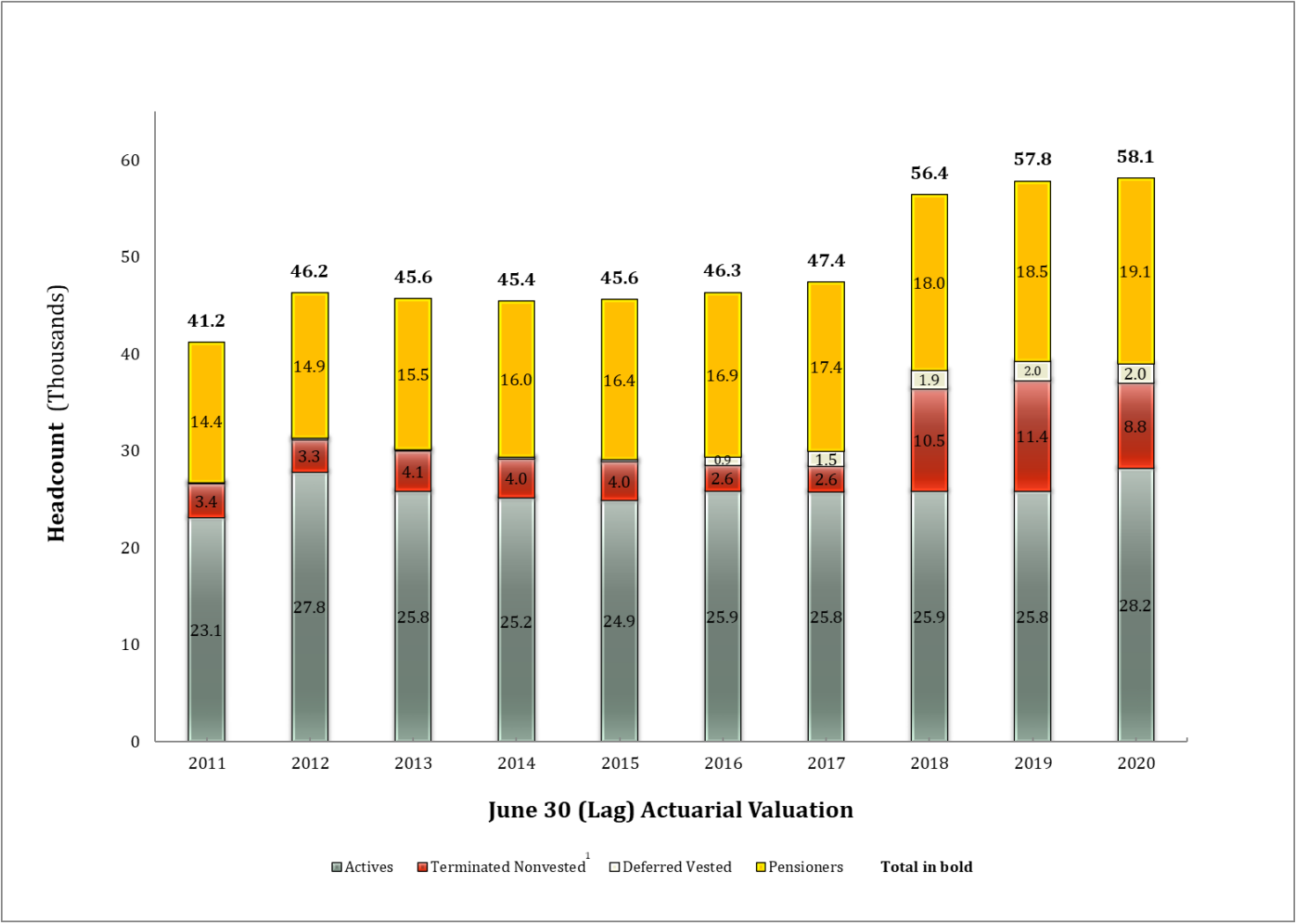
Beginning at June 30, 2020, BERS members who are no longer on payroll but not otherwise classified, have been classified as Active, Terminated Nonvested, or Deferred Vested members using actuarial judgment and consideration of available data, including leave of absence data when available.

Consistent with Actuarial Standards of Practice, the Office of the Actuary has reviewed census data and financial information for consistency and reasonability but has not audited it. The accuracy of the results and calculations contained in this Report are dependent on the accuracy of this census data and financial information. To the extent any such data or information provided is materially inaccurate or incomplete, the results contained herein will require revision.

**Table XII-1
Status Reconciliation**

CHANGES IN MEMBERSHIP DURING THE FISCAL YEAR CLASSIFIED BY STATUS										
Status	(1) Active Members	(2) Active Off Payroll / Terminated Nonvested	(3) Deferred Vested	(4) Service Pension	(5) Ordinary Disability	(6) Accidental Disability	(7) Accidental Death	(8) Other Beneficiary	(9) Pensioners Subtotal (4) to (8)	(10) Grand Total (1) + (2) + (3) + (9)
Number at June 30, 2019	25,825	11,422	2,019	16,156	1,136	223	2	985	18,502	57,768
New Entrants / Pick-ups	1,980	55	0	0	0	0	0	0	0	2,035
Rehires	1,888	(1,641)	(247)	0	0	0	0	0	0	0
Non-Vested Termination not cashed out	(445)	489	(44)	0	0	0	0	0	0	0
Non-Vested Termination / Cashout	(32)	(713)	(196)	0	0	0	0	0	0	(941)
Vested Termination	(91)	(460)	551	0	0	0	0	0	0	0
Accidental Death (from Active)	(1)	0	0	0	0	0	1	0	1	0
Ordinary Death (from Active)	(48)	(37)	(33)	0	0	0	0	0	0	(118)
Service Retirement	(836)	(269)	(77)	1,183	0	0	0	0	1,183	1
Ordinary Disability Retirement	(54)	(19)	(1)	0	74	0	0	0	74	0
Accidental Disability Retirement	(4)	(9)	0	0	0	13	0	0	13	0
Death with Beneficiary	0	0	0	(109)	(7)	(4)	0	120	0	0
Death without Beneficiary	0	0	0	(589)	(46)	(6)	0	(65)	(706)	(706)
Net Adjustment for Pensioners	0	0	0	50	0	0	0	3	53	53
Data Correction	1	(2)	0	0	0	0	0	0	0	(1)
Net Change	2,358	(2,606)	(47)	535	21	3	1	58	618	323
Number at June 30, 2020	28,183	8,816	1,972	16,691	1,157	226	3	1,043	19,120	58,091

Graph XII-2
Headcount Summary by Status



¹ Active Off Payroll prior to June 30, 2020

Table XII-3
Summary of Active Membership

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM		
ACTIVE MEMBERS INCLUDED IN THE JUNE 30, 2020 (LAG) AND THE JUNE 30, 2019 (LAG) ACTUARIAL VALUATIONS		
	June 30, 2020 (Lag)	June 30, 2019 (Lag)
Number		
Males	7,235	6,797
Females	<u>20,948</u>	<u>19,028</u>
Total	28,183	25,825
Annual Salary¹		
Males	\$ 513,816,357	\$ 484,067,258
Females	<u>962,781,272</u>	<u>869,199,097</u>
Total	\$ 1,476,597,629	\$ 1,353,266,355
Average Salary¹		
Males	\$ 71,018	\$ 71,218
Females	45,961	45,680
Total Average	\$ 52,393	\$ 52,401
Average Age		
Males	48.8	48.9
Females	51.5	51.4
Total Average	50.8	50.8
Average Past Service		
Males	9.5	9.7
Females	8.9	9.1
Total Average	9.1	9.3

¹Salaries reflect the impact of recent labor contract settlements and certain non-union salary increases with retroactive effective dates, if any.

Graph XII-4
Active Membership by Tier

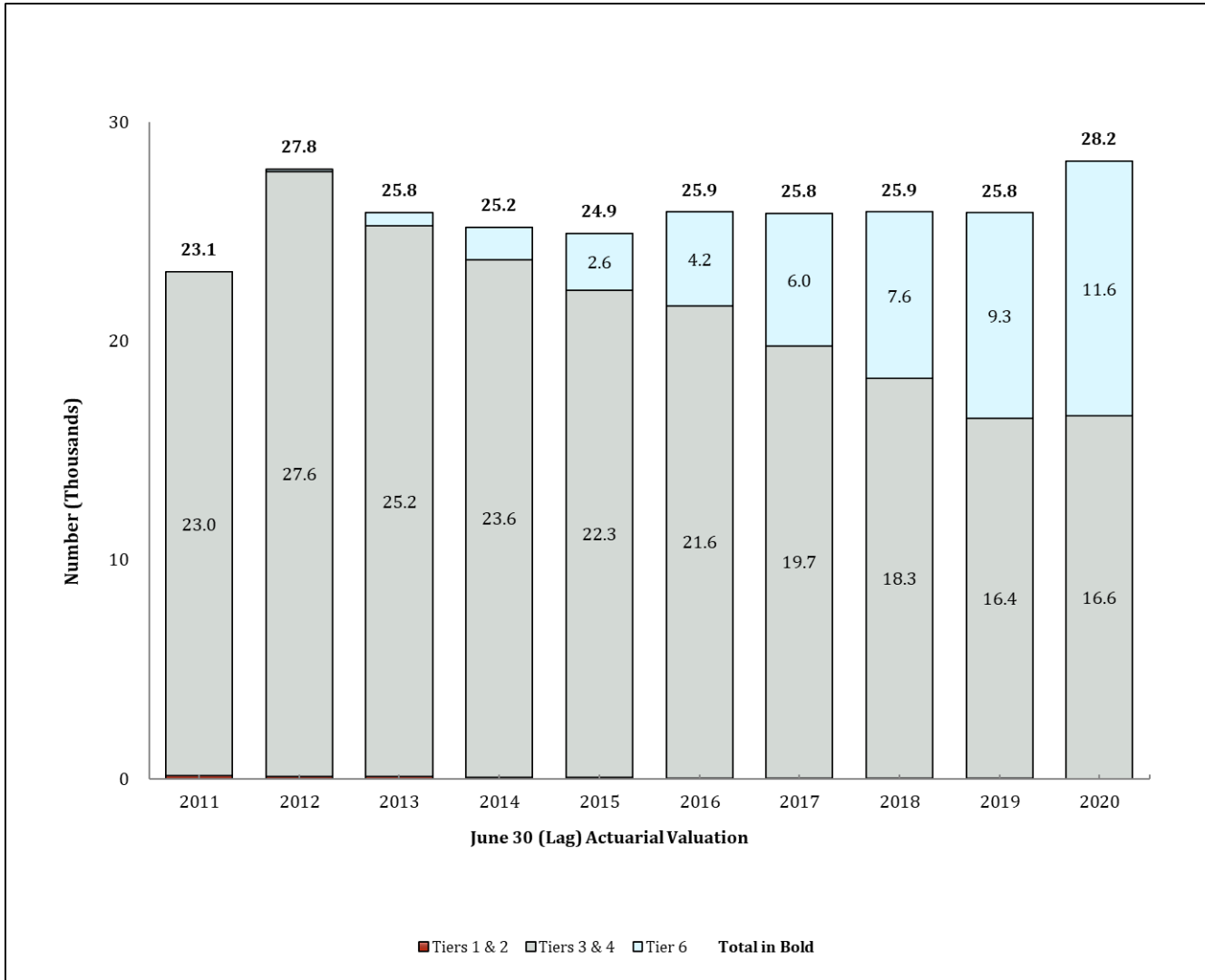


Table XII-5
Schedule of Active Member Salary Data

June 30 (Lag) Actuarial Valuation	Number	Annual Salary	Average Annual Salary	Percentage Increase/ (Decrease) In Avg. Salary
2011	23,131	920,369,154	39,789	1.7%
2012	27,840	1,018,895,365	36,598	- 8.0%
2013	25,848	1,051,571,168	40,683	11.2%
2014	25,182	1,045,187,738	41,505	2.0%
2015	24,903	1,093,962,316	43,929	5.8%
2016	25,864	1,149,019,892	44,425	1.1%
2017	25,794	1,201,925,550	46,597	4.9%
2018	25,864	1,280,302,470	49,501	6.2%
2019	25,825	1,353,266,355	52,401	5.9%
2020	28,183	1,476,597,629	52,393	0.0%

Salaries reflect the impact of recent labor contract settlements and certain non-union salary increases with retroactive effective dates, if any.

Table XII-6
Detailed Active Membership and Salaries as of June 30, 2020

AGE \ SVC	Male Total									
	UNDER 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & UP	ALL YEARS
<i>NUMBER:</i>										
UNDER 20	2	0	0	0	0	0	0	0	0	2
20 TO 24	67	0	0	0	0	0	0	0	0	67
25 TO 29	300	9	0	0	0	0	0	0	0	309
30 TO 34	471	121	12	0	0	0	0	0	0	604
35 TO 39	462	238	87	10	0	0	0	0	0	797
40 TO 44	378	223	152	58	15	0	0	0	0	826
45 TO 49	325	217	234	139	43	5	0	0	0	963
50 TO 54	320	208	211	171	104	51	7	0	0	1,072
55 TO 59	307	223	191	156	125	80	46	5	0	1,133
60 TO 64	194	186	130	121	108	103	59	17	2	920
65 TO 69	66	75	69	58	29	22	20	10	6	355
70 & UP	36	40	40	23	20	12	6	2	8	187
TOTAL	2,928	1,540	1,126	736	444	273	138	34	16	7,235

<i>SALARIES (IN THOUSANDS):</i>										
UNDER 20	63	0	0	0	0	0	0	0	0	63
20 TO 24	2,386	0	0	0	0	0	0	0	0	2,386
25 TO 29	14,405	459	0	0	0	0	0	0	0	14,864
30 TO 34	27,195	7,491	919	0	0	0	0	0	0	35,606
35 TO 39	29,196	15,360	6,877	1,030	0	0	0	0	0	52,464
40 TO 44	24,525	15,047	12,698	4,649	1,216	0	0	0	0	58,135
45 TO 49	20,978	14,212	21,264	13,503	4,150	652	0	0	0	74,759
50 TO 54	21,559	12,465	18,834	17,117	9,391	4,448	675	0	0	84,489
55 TO 59	18,464	12,284	15,751	14,228	12,369	7,454	4,444	474	0	85,470
60 TO 64	10,988	9,494	10,234	10,272	9,928	10,100	5,981	1,888	212	69,097
65 TO 69	3,900	3,920	4,600	5,285	2,426	1,978	1,832	1,165	543	25,649
70 & UP	1,366	1,393	2,307	1,175	1,827	996	638	279	856	10,837
TOTAL ¹	175,026	92,127	93,483	67,260	41,307	25,628	13,570	3,805	1,611	513,816

<i>AVERAGE SALARIES: ²</i>										
UNDER 20	31,427	0	0	0	0	0	0	0	0	31,427
20 TO 24	35,611	0	0	0	0	0	0	0	0	35,611
25 TO 29	48,016	50,995	0	0	0	0	0	0	0	48,103
30 TO 34	57,740	61,908	76,604	0	0	0	0	0	0	58,950
35 TO 39	63,195	64,540	79,048	103,012	0	0	0	0	0	65,826
40 TO 44	64,881	67,474	83,537	80,163	81,062	0	0	0	0	70,381
45 TO 49	64,548	65,493	90,870	97,142	96,504	130,463	0	0	0	77,631
50 TO 54	67,371	59,930	89,259	100,097	90,302	87,216	96,467	0	0	78,815
55 TO 59	60,145	55,087	82,466	91,208	98,952	93,181	96,609	94,825	0	75,437
60 TO 64	56,641	51,045	78,720	84,893	91,924	98,054	101,375	111,035	106,099	75,105
65 TO 69	59,088	52,269	66,665	91,126	83,655	89,904	91,615	116,456	90,452	72,250
70 & UP	37,952	34,832	57,671	51,075	91,341	83,016	106,269	139,523	107,015	57,951
TOTAL	59,777	59,822	83,022	91,385	93,033	93,877	98,336	111,921	100,689	71,018

Note: Age is nearest birthday. Service is nearest year.

¹ Total may not add up due to rounding.

² Average based on unrounded salary.

Table XII-6
Detailed Active Membership and Salaries as of June 30, 2020 (cont'd)

AGE \ SVC	Female Total									
	UNDER 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & UP	ALL YEARS
<i>NUMBER:</i>										
UNDER 20	1	0	0	0	0	0	0	0	0	1
20 TO 24	60	0	0	0	0	0	0	0	0	60
25 TO 29	620	15	0	0	0	0	0	0	0	635
30 TO 34	1,013	247	12	0	0	0	0	0	0	1,272
35 TO 39	1,014	418	144	17	0	0	0	0	0	1,593
40 TO 44	1,143	527	362	133	15	0	0	0	0	2,180
45 TO 49	1,119	653	394	249	91	8	1	0	0	2,515
50 TO 54	1,199	915	538	355	162	53	16	0	0	3,238
55 TO 59	1,009	1,052	823	608	251	105	49	19	0	3,916
60 TO 64	616	736	726	645	322	147	53	44	4	3,293
65 TO 69	226	342	334	313	171	69	20	13	10	1,498
70 & UP	76	149	181	169	103	36	19	10	4	747
TOTAL	8,096	5,054	3,514	2,489	1,115	418	158	86	18	20,948

<i>SALARIES (IN THOUSANDS):</i>										
UNDER 20	56	0	0	0	0	0	0	0	0	56
20 TO 24	2,006	0	0	0	0	0	0	0	0	2,006
25 TO 29	34,093	924	0	0	0	0	0	0	0	35,017
30 TO 34	57,322	17,807	1,008	0	0	0	0	0	0	76,138
35 TO 39	51,352	28,626	11,180	1,235	0	0	0	0	0	92,394
40 TO 44	46,979	31,118	27,396	10,970	1,152	0	0	0	0	117,616
45 TO 49	41,222	30,314	26,012	18,920	7,395	720	69	0	0	124,652
50 TO 54	40,265	36,434	26,416	19,946	10,577	4,146	1,289	0	0	139,072
55 TO 59	32,981	36,431	33,238	29,464	14,393	7,417	3,871	1,612	0	159,406
60 TO 64	20,153	24,509	28,770	28,515	16,408	8,148	4,595	3,504	332	134,933
65 TO 69	6,287	10,799	11,633	13,174	7,527	3,951	1,250	970	847	56,438
70 & UP	1,694	4,089	5,127	6,663	3,841	1,719	1,103	573	245	25,053
TOTAL ¹	334,410	221,051	170,781	128,887	61,292	26,101	12,177	6,658	1,424	962,781

<i>AVERAGE SALARIES: ²</i>										
UNDER 20	56,144	0	0	0	0	0	0	0	0	56,144
20 TO 24	33,432	0	0	0	0	0	0	0	0	33,432
25 TO 29	54,989	61,575	0	0	0	0	0	0	0	55,144
30 TO 34	56,587	72,093	84,029	0	0	0	0	0	0	59,857
35 TO 39	50,643	68,484	77,641	72,673	0	0	0	0	0	58,000
40 TO 44	41,102	59,048	75,680	82,483	76,809	0	0	0	0	53,952
45 TO 49	36,839	46,422	66,020	75,983	81,263	90,040	68,759	0	0	49,563
50 TO 54	33,582	39,818	49,100	56,187	65,288	78,220	80,591	0	0	42,950
55 TO 59	32,686	34,631	40,387	48,460	57,341	70,635	79,009	84,821	0	40,706
60 TO 64	32,715	33,300	39,628	44,209	50,956	55,432	86,694	79,630	83,039	40,976
65 TO 69	27,819	31,577	34,829	42,088	44,016	57,265	62,493	74,621	84,731	37,676
70 & UP	22,292	27,443	28,326	39,424	37,292	47,743	58,044	57,297	61,145	33,538
TOTAL	41,306	43,738	48,600	51,782	54,970	62,443	77,070	77,423	79,113	45,961

Note: Age is nearest birthday. Service is nearest year.

¹ Total may not add up due to rounding.

² Average based on unrounded salary.

Table XII-6
Detailed Active Membership and Salaries as of June 30, 2020 (cont'd)

AGE \ SVC	Total									
	UNDER 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & UP	ALL YEARS
<i>NUMBER:</i>										
UNDER 20	3	0	0	0	0	0	0	0	0	3
20 TO 24	127	0	0	0	0	0	0	0	0	127
25 TO 29	920	24	0	0	0	0	0	0	0	944
30 TO 34	1,484	368	24	0	0	0	0	0	0	1,876
35 TO 39	1,476	656	231	27	0	0	0	0	0	2,390
40 TO 44	1,521	750	514	191	30	0	0	0	0	3,006
45 TO 49	1,444	870	628	388	134	13	1	0	0	3,478
50 TO 54	1,519	1,123	749	526	266	104	23	0	0	4,310
55 TO 59	1,316	1,275	1,014	764	376	185	95	24	0	5,049
60 TO 64	810	922	856	766	430	250	112	61	6	4,213
65 TO 69	292	417	403	371	200	91	40	23	16	1,853
70 & UP	112	189	221	192	123	48	25	12	12	934
TOTAL	11,024	6,594	4,640	3,225	1,559	691	296	120	34	28,183

<i>SALARIES (IN THOUSANDS):</i>										
UNDER 20	119	0	0	0	0	0	0	0	0	119
20 TO 24	4,392	0	0	0	0	0	0	0	0	4,392
25 TO 29	48,498	1,383	0	0	0	0	0	0	0	49,881
30 TO 34	84,518	25,298	1,928	0	0	0	0	0	0	111,743
35 TO 39	80,548	43,987	18,058	2,266	0	0	0	0	0	144,857
40 TO 44	71,504	46,165	40,094	15,620	2,368	0	0	0	0	175,751
45 TO 49	62,200	44,526	47,276	32,422	11,545	1,373	69	0	0	199,410
50 TO 54	61,823	48,899	45,249	37,063	19,968	8,594	1,965	0	0	223,561
55 TO 59	51,445	48,716	48,989	43,692	26,762	14,871	8,315	2,086	0	244,876
60 TO 64	31,141	34,003	39,004	38,787	26,336	18,248	10,576	5,391	544	204,030
65 TO 69	10,187	14,720	16,233	18,459	9,953	5,929	3,082	2,135	1,390	82,087
70 & UP	3,060	5,482	7,434	7,837	5,668	2,715	1,740	852	1,101	35,890
TOTAL ¹	509,436	313,178	264,264	196,146	102,599	51,730	25,747	10,464	3,035	1,476,598

<i>AVERAGE SALARIES: ²</i>										
UNDER 20	39,666	0	0	0	0	0	0	0	0	39,666
20 TO 24	34,581	0	0	0	0	0	0	0	0	34,581
25 TO 29	52,715	57,608	0	0	0	0	0	0	0	52,840
30 TO 34	56,953	68,744	80,316	0	0	0	0	0	0	59,565
35 TO 39	54,572	67,053	78,171	83,910	0	0	0	0	0	60,610
40 TO 44	47,011	61,553	78,004	81,779	78,935	0	0	0	0	58,467
45 TO 49	43,075	51,179	75,280	83,563	86,153	105,587	68,759	0	0	57,335
50 TO 54	40,700	43,543	60,413	70,462	75,068	82,632	85,423	0	0	51,870
55 TO 59	39,092	38,208	48,313	57,189	71,174	80,384	87,531	86,905	0	48,500
60 TO 64	38,446	36,880	45,565	50,635	61,246	72,992	94,428	88,382	90,726	48,429
65 TO 69	34,886	35,299	40,280	49,755	49,764	65,156	77,054	92,810	86,876	44,300
70 & UP	27,326	29,007	33,637	40,820	46,081	56,561	69,618	71,001	91,725	38,426
TOTAL	46,212	47,494	56,953	60,820	65,811	74,862	86,985	87,197	89,267	52,393

Note: Age is nearest birthday. Service is nearest year.

¹ Total may not add up due to rounding.

² Average based on unrounded salary.

Table XII-7
Detailed Reconciliation of Active Membership

TIER	GENDER	TOTAL ACTIVE MEMBERS AS OF JUNE 30, 2020					TOTAL ACTIVE MEMBERS AS OF JUNE 30, 2019				
		NUMBER	SALARY	AVG SAL	AVG AGE	AVG SVC	NUMBER	SALARY	AVG SAL	AVG AGE	AVG SVC
1	M	5	565,014	113,003	73.0	35.3	5	555,561	111,112	72.0	34.4
1	F	11	691,197	62,836	75.4	28.9	11	752,071	68,370	73.8	33.5
		16	1,256,211	78,513	74.6	30.9	16	1,307,632	81,727	73.3	33.8
2	M	5	597,709	119,542	67.8	16.9	9	1,007,590	111,954	69.2	25.0
2	F	5	184,991	36,998	72.2	20.3	6	367,101	61,184	70.2	21.0
		10	782,700	78,270	70.0	18.6	15	1,374,692	91,646	69.6	23.4
4	M	4,086	314,049,281	76,860	53.0	14.6	4,168	318,954,564	76,525	52.6	14.2
4	F	12,478	584,921,680	46,876	55.7	13.1	12,279	566,596,182	46,144	55.2	12.8
		16,564	898,970,961	54,273	55.1	13.5	16,447	885,550,746	53,843	54.5	13.2
6	M	3,139	198,604,353	63,270	43.4	2.8	2,615	163,549,543	62,543	43.0	2.3
6	F	8,454	376,983,405	44,592	45.2	2.7	6,732	301,483,742	44,784	44.4	2.3
		11,593	575,587,757	49,650	44.7	2.7	9,347	465,033,285	49,752	44.0	2.3
ALL		28,183	1,476,597,629	52,393	50.8	9.1	25,825	1,353,266,355	52,401	50.8	9.3

JUNE 30, 2020 MEMBERS ALSO PRESENT AS OF JUNE 30, 2019						JUNE 30, 2019 MEMBERS ALSO PRESENT AS OF JUNE 30, 2020					
1	M	5	565,014	113,003	73.0	35.3	5	555,561	111,112	72.0	34.4
1	F	10	686,197	68,620	75.1	31.5	10	698,050	69,805	74.1	31.9
		15	1,251,211	83,414	74.4	32.7	15	1,253,611	83,574	73.4	32.7
2	M	5	597,709	119,542	67.8	16.9	5	581,378	116,276	66.8	19.7
2	F	4	170,783	42,696	71.3	21.2	4	166,602	41,651	70.3	19.4
		9	768,492	85,388	69.3	18.8	9	747,981	83,109	68.3	19.6
4	M	3,893	306,683,343	78,778	53.1	15.0	3,893	298,837,118	76,763	52.1	14.0
4	F	11,413	556,425,263	48,754	55.8	13.6	11,413	530,523,566	46,484	54.8	12.7
		15,306	863,108,606	56,390	55.1	14.0	15,306	829,360,684	54,185	54.1	13.0
6	M	2,483	168,816,051	67,989	44.0	3.2	2,483	155,674,728	62,696	43.0	2.3
6	F	6,383	302,506,909	47,393	45.6	3.2	6,383	284,219,185	44,528	44.6	2.3
		8,866	471,322,960	53,161	45.1	3.2	8,866	439,893,913	49,616	44.1	2.3
ALL		24,196	1,336,451,268	55,234	51.5	10.0	24,196	1,271,256,188	52,540	50.5	9.1

ADDITIONS DURING THE YEAR ¹						SEPARATIONS FROM MEMBERSHIP DURING THE YEAR ¹					
1	M	0	0	0	0.0	0.0	0	0	0	0.0	0.0
1	F	1	5,000	5,000	78.0	3.4	1	54,021	54,021	71.0	49.6
		1	5,000	5,000	78.0	3.4	1	54,021	54,021	71.0	49.6
2	M	0	0	0	0.0	0.0	4	426,212	106,553	72.3	31.5
2	F	1	14,209	14,209	76.0	16.8	2	200,499	100,249	70.0	24.1
		1	14,209	14,209	76.0	16.8	6	626,711	104,452	71.5	29.1
4	M	193	7,365,938	38,165	51.7	8.1	275	20,117,446	73,154	59.8	18.2
4	F	1,065	28,496,417	26,757	55.3	7.6	866	36,072,616	41,654	60.9	15.2
		1,258	35,862,355	28,507	54.7	7.7	1,141	56,190,062	49,246	60.6	15.9
6	M	656	29,788,302	45,409	41.0	1.0	132	7,874,815	59,658	43.3	2.7
6	F	2,071	74,476,495	35,962	44.2	1.2	349	17,264,557	49,469	42.1	2.0
		2,727	104,264,797	38,234	43.4	1.2	481	25,139,372	52,265	42.4	2.2
ALL		3,987	140,146,361	35,151	47.0	3.2	1,629	82,010,167	50,344	55.3	11.9

Note: Age is nearest birthday. Service is nearest year. The member is considered also present if active with the same tier and gender as of both valuation dates.

¹ Separations and additions do not include members who joined after June 30, 2019 and are no longer members on June 30, 2020. Members are included as separations and additions if the tier or gender has changed.

Table XII-8
Distribution of Pension Benefits by Cause and Age as of June 30, 2020

AGE	MALE			FEMALE			TOTAL		
	NUMBER	BENEFITS	AVERAGE	NUMBER	BENEFITS	AVERAGE	NUMBER	BENEFITS	AVERAGE
<i>SERVICE RETIREMENT:</i>									
UNDER 30	0	0	0	0	0	0	0	0	0
30 TO 34	0	0	0	0	0	0	0	0	0
35 TO 39	0	0	0	0	0	0	0	0	0
40 TO 44	0	0	0	0	0	0	0	0	0
45 TO 49	0	0	0	0	0	0	0	0	0
50 TO 54	4	230,954	57,738	0	0	0	4	230,954	57,738
55 TO 59	93	3,097,026	33,301	221	2,511,684	11,365	314	5,608,710	17,862
60 TO 64	332	11,409,733	34,367	1,188	14,360,620	12,088	1,520	25,770,352	16,954
65 TO 69	691	22,726,379	32,889	2,705	35,941,528	13,287	3,396	58,667,907	17,276
70 TO 74	704	21,048,959	29,899	3,074	36,608,956	11,909	3,778	57,657,915	15,261
75 TO 79	563	15,881,587	28,209	2,532	27,875,941	11,009	3,095	43,757,528	14,138
80 TO 84	393	11,479,024	29,209	1,719	16,115,822	9,375	2,112	27,594,846	13,066
85 TO 89	238	6,455,559	27,124	1,091	10,255,165	9,400	1,329	16,710,724	12,574
90 & UP	173	4,303,136	24,874	970	8,348,917	8,607	1,143	12,652,054	11,069
TOTAL	3,191	96,632,356	30,283	13,500	152,018,633	11,261	16,691	248,650,989	14,897
<i>ORDINARY DISABILITY:</i>									
UNDER 30	0	0	0	0	0	0	0	0	0
30 TO 34	0	0	0	0	0	0	0	0	0
35 TO 39	0	0	0	0	0	0	0	0	0
40 TO 44	1	32,759	32,759	2	37,200	18,600	3	69,959	23,320
45 TO 49	8	116,772	14,596	8	102,338	12,792	16	219,110	13,694
50 TO 54	10	161,217	16,122	30	452,037	15,068	40	613,253	15,331
55 TO 59	35	658,154	18,804	114	1,501,718	13,173	149	2,159,872	14,496
60 TO 64	51	955,024	18,726	193	2,202,595	11,412	244	3,157,618	12,941
65 TO 69	52	937,508	18,029	205	2,279,604	11,120	257	3,217,112	12,518
70 TO 74	42	731,713	17,422	181	1,930,582	10,666	223	2,662,296	11,939
75 TO 79	25	419,749	16,790	114	1,127,568	9,891	139	1,547,317	11,132
80 TO 84	12	160,262	13,355	52	496,572	9,549	64	656,834	10,263
85 TO 89	4	83,280	20,820	7	51,750	7,393	11	135,030	12,275
90 & UP	6	102,920	17,153	5	44,514	8,903	11	147,435	13,403
TOTAL	246	4,359,358	17,721	911	10,226,478	11,226	1,157	14,585,837	12,607
<i>ACCIDENTAL DISABILITY:</i>									
UNDER 30	0	0	0	0	0	0	0	0	0
30 TO 34	0	0	0	0	0	0	0	0	0
35 TO 39	0	0	0	1	23,879	23,879	1	23,879	23,879
40 TO 44	0	0	0	1	9,637	9,637	1	9,637	9,637
45 TO 49	1	11,956	11,956	2	20,841	10,421	3	32,797	10,932
50 TO 54	1	10,250	10,250	3	29,502	9,834	4	39,752	9,938
55 TO 59	10	250,624	25,062	20	204,136	10,207	30	454,760	15,159
60 TO 64	8	181,063	22,633	32	317,687	9,928	40	498,750	12,469
65 TO 69	11	172,359	15,669	44	497,663	11,311	55	670,022	12,182
70 TO 74	7	122,377	17,482	29	298,851	10,305	36	421,227	11,701
75 TO 79	4	75,991	18,998	19	157,111	8,269	23	233,101	10,135
80 TO 84	5	168,282	33,656	13	98,529	7,579	18	266,811	14,823
85 TO 89	1	25,228	25,228	7	50,179	7,168	8	75,408	9,426
90 & UP	3	107,362	35,787	4	36,489	9,122	7	143,852	20,550
TOTAL	51	1,125,492	22,068	175	1,744,504	9,969	226	2,869,996	12,699

Table XII-8

Distribution of Pension Benefits by Cause and Age as of June 30, 2020 (cont'd)

AGE	MALE			FEMALE			TOTAL		
	NUMBER	BENEFITS	AVERAGE	NUMBER	BENEFITS	AVERAGE	NUMBER	BENEFITS	AVERAGE
<i>ACCIDENTAL DEATH:</i>									
UNDER 30	0	0	0	0	0	0	0	0	0
30 TO 34	0	0	0	0	0	0	0	0	0
35 TO 39	0	0	0	0	0	0	0	0	0
40 TO 44	0	0	0	0	0	0	0	0	0
45 TO 49	0	0	0	0	0	0	0	0	0
50 TO 54	0	0	0	0	0	0	0	0	0
55 TO 59	0	0	0	0	0	0	0	0	0
60 TO 64	1	5,299	5,299	1	51,707	51,707	2	57,006	28,503
65 TO 69	0	0	0	0	0	0	0	0	0
70 TO 74	0	0	0	0	0	0	0	0	0
75 TO 79	0	0	0	0	0	0	0	0	0
80 TO 84	0	0	0	0	0	0	0	0	0
85 TO 89	1	397	397	0	0	0	1	397	397
90 & UP	0	0	0	0	0	0	0	0	0
TOTAL	2	5,696	2,848	1	51,707	51,707	3	57,403	19,134
<i>OTHER BENEFICIARIES:</i>									
UNDER 30	4	22,754	5,689	1	3,717	3,717	5	26,471	5,294
30 TO 34	8	57,309	7,164	2	9,248	4,624	10	66,556	6,656
35 TO 39	4	71,663	17,916	6	47,235	7,873	10	118,898	11,890
40 TO 44	5	46,283	9,257	12	138,796	11,566	17	185,079	10,887
45 TO 49	7	67,266	9,609	19	170,478	8,973	26	237,744	9,144
50 TO 54	9	62,257	6,917	44	278,232	6,323	53	340,489	6,424
55 TO 59	20	254,950	12,747	44	306,990	6,977	64	561,939	8,780
60 TO 64	32	315,499	9,859	46	447,219	9,722	78	762,718	9,778
65 TO 69	29	480,959	16,585	61	833,109	13,658	90	1,314,068	14,601
70 TO 74	55	1,067,618	19,411	73	1,093,688	14,982	128	2,161,305	16,885
75 TO 79	65	1,226,859	18,875	79	1,432,958	18,139	144	2,659,817	18,471
80 TO 84	51	966,595	18,953	102	2,068,015	20,275	153	3,034,610	19,834
85 TO 89	35	806,930	23,055	94	1,879,757	19,997	129	2,686,688	20,827
90 & UP	35	627,812	17,937	101	1,610,016	15,941	136	2,237,828	16,455
TOTAL	359	6,074,752	16,921	684	10,319,459	15,087	1,043	16,394,211	15,718
<i>ALL PENSIONERS AND BENEFICIARIES:</i>									
UNDER 30	4	22,754	5,689	1	3,717	3,717	5	26,471	5,294
30 TO 34	8	57,309	7,164	2	9,248	4,624	10	66,556	6,656
35 TO 39	4	71,663	17,916	7	71,114	10,159	11	142,777	12,980
40 TO 44	6	79,042	13,174	15	185,633	12,376	21	264,675	12,604
45 TO 49	16	195,993	12,250	29	293,658	10,126	45	489,651	10,881
50 TO 54	24	464,677	19,362	77	759,771	9,867	101	1,224,448	12,123
55 TO 59	158	4,260,753	26,967	399	4,524,528	11,340	557	8,785,281	15,772
60 TO 64	424	12,866,618	30,346	1,460	17,379,827	11,904	1,884	30,246,444	16,054
65 TO 69	783	24,317,205	31,056	3,015	39,551,905	13,118	3,798	63,869,110	16,817
70 TO 74	808	22,970,667	28,429	3,357	39,932,076	11,895	4,165	62,902,743	15,103
75 TO 79	657	17,604,186	26,795	2,744	30,593,577	11,149	3,401	48,197,762	14,172
80 TO 84	461	12,774,163	27,710	1,886	18,778,939	9,957	2,347	31,553,102	13,444
85 TO 89	279	7,371,395	26,421	1,199	12,236,851	10,206	1,478	19,608,246	13,267
90 & UP	217	5,141,231	23,692	1,080	10,039,937	9,296	1,297	15,181,168	11,705
TOTAL	3,849	108,197,654	28,111	15,271	174,360,780	11,418	19,120	282,558,435	14,778

Graph XII-9
Pensioner Average Benefits

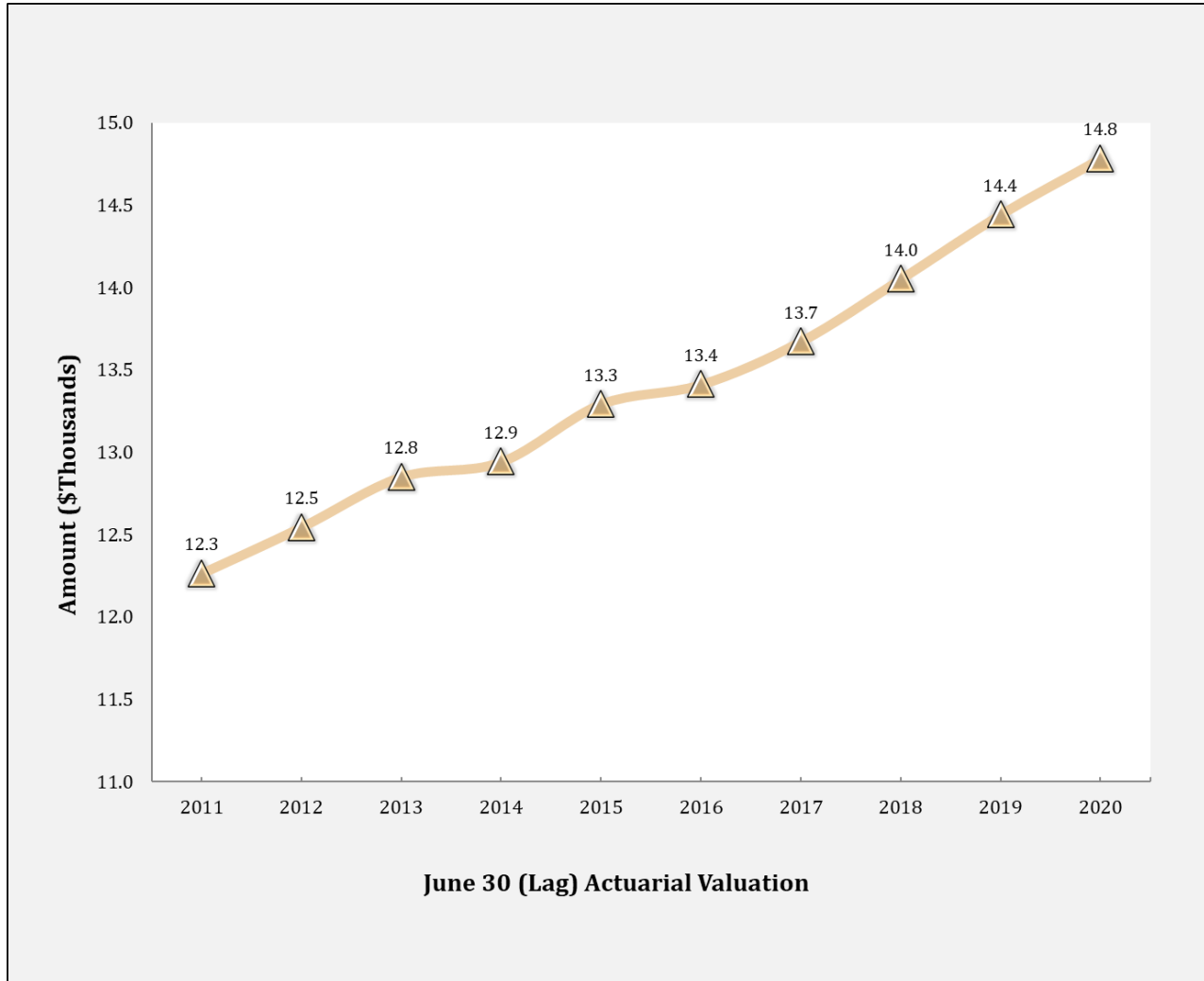


Table XII-10
Reconciliation of Pensioner and Beneficiary Data

SCHEDULE OF PENSIONERS AND BENEFICIARIES ADDED TO AND REMOVED FROM THE ROLLS								
June 30 (Lag) Actuarial Valuation	Added to Rolls		Removed from Rolls		End of Year Rolls		% Increase in Annual Allowances	Average Annual Allowances
	Number	Annual Allowances ¹	Number	Annual Allowances	Number	Annual Allowances ¹		
2011	901	14,977,636	471	4,325,573	14,399	176,523,316	6.4%	12,259
2012	1,053	16,201,746	578	6,211,198	14,874	186,513,864	5.7%	12,540
2013	1,110	16,977,455	529	4,957,022	15,455	198,534,297	6.4%	12,846
2014	1,094	13,701,890	554	5,306,812	15,995	206,929,375	4.2%	12,937
2015	1,002	16,482,509	559	4,979,621	16,438	218,432,263	5.6%	13,288
2016	1,075	14,412,852	576	5,776,541	16,937	227,068,574	4.0%	13,407
2017	1,061	17,321,922	573	6,234,174	17,425	238,156,322	4.9%	13,668
2018	1,179	20,878,837	563	5,613,557	18,041	253,421,602	6.4%	14,047
2019	1,216	22,617,426	755	8,877,194	18,502	267,161,833	5.4%	14,440
2020	1,326	22,984,672	708	7,588,070	19,120	282,558,435	5.8%	14,778

¹ Amounts shown include changes in benefit type (e.g., Service to Accidental Disability), COLA increases, and other changes.

APPENDIX: ACRONYMS AND ABBREVIATIONS

Revised 2021 A&M	Actuarial Assumptions and Methods with changes proposed by the Actuary and adopted by the Board of Trustees during Fiscal Year 2021
2019 A&M	Actuarial Assumptions and Methods with changes proposed by the Actuary and adopted by the Board of Trustees during Fiscal Year 2019
AAVM	Actuarial Asset Valuation Method
ACCNYS	Administrative Code of the City of New York
AIR	Actuarial Interest Rate
AL	Accrued Liability
AMC	Additional Member Contributions
AMC-PT	Additional Member Contributions for Physically-Taxing Employment
AVA	Actuarial Value of Assets
BERS	Board of Education Retirement System
BMC	Basic Member Contributions
COLA	Cost-of-Living Adjustment
EAN	Entry Age Normal cost method
EIR	Expected Investment Return
FAS	Final Average Salary
FIRE	Fire Pension Fund
FS	Final Salary
GASB	Governmental Accounting Standards Board
IRC	Internal Revenue Code
MVA	Market Value of Assets
NYCERS	New York City Employees' Retirement System
NYCRS	New York City Retirement Systems
OWBPA	Older Workers Benefit Protection Act
OYLM	One-Year Lag Methodology
POLICE	Police Pension Fund
PT	Physically-Taxing Employment
PV	Present Value
PVFB	Present Value of Future Benefits
PVFNC	Present Value of Future Normal Costs
PVFS	Present Value of Future Salary
TDA	Tax-Deferred Annuity Program
TRS	Teachers' Retirement System
UAL	Unfunded Accrued Liability
UIR	Unexpected Investment Return
WTC	World Trade Center